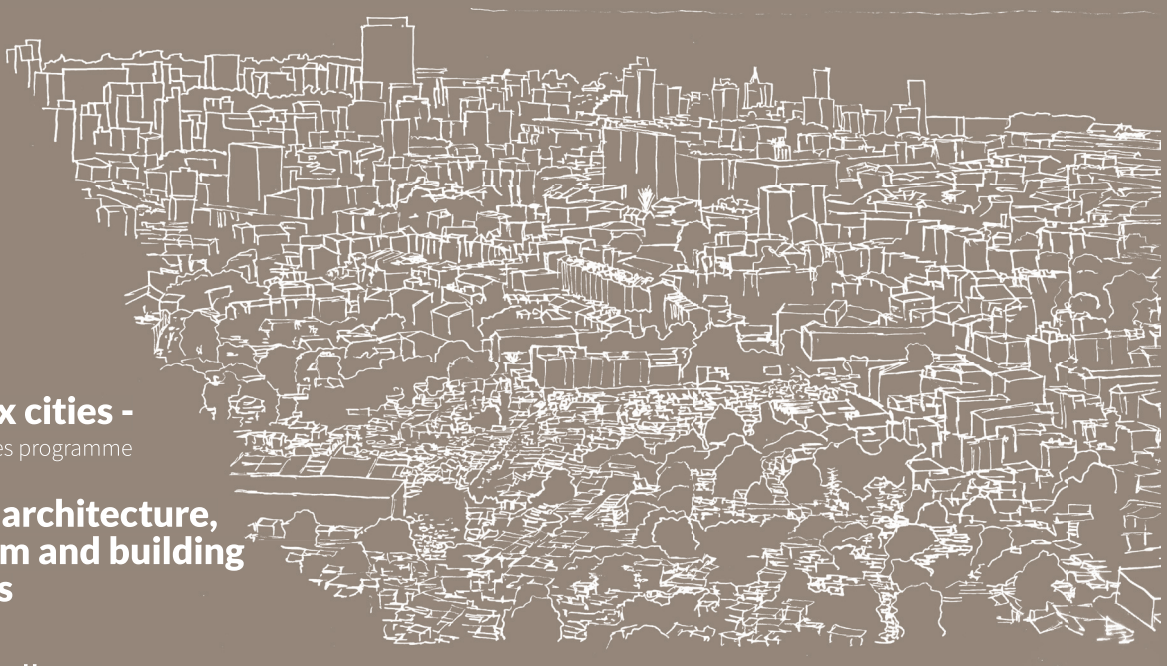
MOZAMBIQUE

MAPUTO METROPOLITAN AREA

a corridor

TOWARDS SUSTAINABLE urban development”



complex cities -
Inclusive cities programme

Master architecture, urbanism and building sciences

Frank van der Hoeven
Roberto Rocco

Concepción del Rocío Aranda Iglesias
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The process of this thesis suppossed the culmination of my academic career and an encounter between my passion for Africa and my passion for urbanism. The guidance of my mentors Frank van der Hoeven and Roberto Rocco has been essential for materializing my thoughts. The hours of discussion and teaching have been a pleasure, as a student and as a person.

At the same time, the opportunity of going to Maputo was a breakthrough for this research, I am so thankful to Universiteit funds, The Faculty of Architecture of TU Delft, the urbanism department of TU Delft and TU Delft Global for trusting in the group of 'Urbanism for Africa' and funding the trips. To create this group with other six students interested in Africa has been an exciting adventure, thanks to Mona, Beke, Chris, Eva and Gereon.

During the fieldtrip I only met good and helpful people that I will not forget. Susana Jeque opened the city of Maputo to me and introduced it with such elegance and love that I got to feel its spirit in only two weeks. You have a friend in Europe. Thanks to Nicholas Clarke for making the contact and for sharing your material and knowledge about Maputo with me.
Special thank you to Joao Tique, director of the Faculty of Architecture in Eduardo Mondlane University for inviting me as a researcher, to Domingos Macucule to open the amazing space of the research center 'Centro de Estudios de Desenvolvimiento del Habitat' and the researchers there: Ana, Marta, Vanessa. This thesis would not be developed as it is without the discussions on the field with Luis Lage, Alfonso Cabrillo, María Salazar, Álvaro Delgado, Anselmo Cani, Mario del Rosario, Nacho Martínez and Joaquin Ortega. Finally, to those who opened their lifes for me in the two weeks I passed in Maputo. Thank you Nacho for being my person and Flori for your kindness and interesting talks. Lucia and Francisco, I was so happy to see your amazing world. Isa, for being my teammate during the trip and Vasco for his incredible knowledge of the context and the language. Paulino, for allowing me to move through the complexity of Maputo and his constant smile and Amina, because she had open arms in a scary first day.

I need to mention the office J van't Spijker where I worked while I was developing the thesis, they presented an incredible respect and interest for my work. Thank you.

To my grandmother Josefina, my biggest inspiration in life, because I learnt that women are strong and independent from her courage and sense of humour. You are my Dynamique femme.
I will always owe my parents the opportunity of investing in my master and be my major support in life, professionally and personally. They always encouraged me to pursue my passions and stand by my side without judgment or hesistation, I am the luckiest daughter.
How my brother has always enjoy my sucesses and pushed me to work harder and get out of my comfort zone is what brought me to the Netherlands. His wisdom and unique way of knowing me have been essential during this year. I will always admire and love him.
To my uncle Jose and aunt Maria Luisa, because they were able to appreciate my life in the Netherlands and always believed in me. Also, to my cousins Elena and Teresa, because your visit was a necessary break for this project.
To my family in Madrid: Paloma, Elena, Alba, Sara, Pitu and Maria, because you will always be in any of my acknowledgments.
Finally, to my family in Delft: Maria, you are my person. Esmee and Carol, thank you for the sheeps and hugs. The Spanish team: Albert, Mireia, Blanca, Alejandro. To the most talented urbanists in TU Delft: Vaggy, Mona, Chris, Eva, Matias, Erik, Angeliki, Amanda, Vera, Beke, Jesse and Donald; it was an enormous pleasure to share this experience with you. And to my flatmates, for supporting me during the taugh days of working: Dan, Vic, Jorge, Dan, Anna, Frans and Kosti.

To all the times my computer broke and was stolen this year, you made me stronger.

"This is, to me, the loveliest and saddest landscape in the world. It is the same as that on the preceding page, but I have drawn it again to impress it on your memory. It is here that the little prince appeared on Earth, and disappeared.
Look at it carefully so that you will be sure to recognise it in case you travel some day to the African desert. And, if you should come upon this spot, please do not hurry on. Wait for a time, exactly under the star. Then, if a little man appears who laughs, who has golden hair and who refuses to answer questions, you will know who he is. If this should happen, please comfort me. Send me word that he has come back."
(Saint - Exupéry, A. 1946)

This work entails the living experience of 10 months of my life (from September 2017 to July 2018). It represents a very much personal journey through the exploration of the urbanism in African contexts and the role that European urbanists can have in this complex reality.
It contains my own discussion about how to position myself as a professional in the current debate of development goals and the perspective to approach foreign realities.

Once you turn this page, you will face a process of learning that started seven years ago and, hopefully, will continue for longer in the future. During this time, I understood the inmensity of knowledge to be acquired and the enormous pleasure it is to be part of the academic community.



This thesis seeks to be an asset to the collective academic work of understanding the planning tools and just one more proposal of a possible perspective of the future urbanization in Mozambique. It is meant to be polemic and looks for the reflection over the current urban proposals trend in the majority of the African countries, as well as raising awareness in the necessity of propose a shift in the governance perception. However, I am convinced that my current perspective will change in parallel to the development of my professional career and my life experience .

With no further reflection, I encourage you to start reading. Keep in mind that every word in this booklet has been carefully chosen and revised several times and that it is not perfect, it's human.

Enjoy!

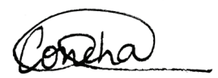




Image 02. Image of Maputo city from informal settlement
Source- https://esfmozambique.files.wordpress.com/2015/04/2015-04-23alvaro.jpg

Image 01. Cover image. The color of Maputo-
Source- hand drawing by author

WHAT'S IN?

Abstract - Summary of project

A corridor towards sustainable urban development is a reflection about the current planning techniques and how to apply them in the African context, specifically in Mozambique. It aims to raise awareness about the necessity of an understanding and adapting of European urban theories to the context conditionants and strong cultural identity of the African location.
The main aim is **to explore a shift in the metropolitan planning approaches in developing countries via a contextualized vision and strategy for Maputo Metropolitan Area 2040 that translates the expected growth of the area into a sustainable urban development introducing principles of adaptive governance and 'non conventional' housing policies.**
This project proposes a shift in perspective to approach the danger of the fast growing trend happening in the Metropolitan Area of Mozambique, which is currently leading to high rates of informality and precarious living conditions in 70% of its extension, **The Maputo Metropolitan Area (MMA).** The project reflect towards the research question: How can **contextualized planning strategies** structure **metropolitan growth** in a **fast urbanization context** as the back bone of mobility based **sustainable spatial urbanization**? How can **adaptive governance** support the decision making in this strategy?. It presents a detailed analysis and diagnosis of the area, the study of different growing scenarios and the proposal of a **vision and strategy for Maputo Metropolitan Area 2040.** This final strategy is just a pilot of new approaches to orientate the urban development considering the different aspects that condition the current situation of MMA: the spatial strategies and the policies to structure them. It introduce the proposition of changing certain principles of how to approach the context complexity, it does not aim to be a final solution.
The integrated strategy is divided in three multi-scale strategies: The Corridors, Moamba airport and New Katembe that, based on a non conventional housing policies and adaptive governance theoretical framework, will propose a suistainable framework for the urban development of MMA 2040.



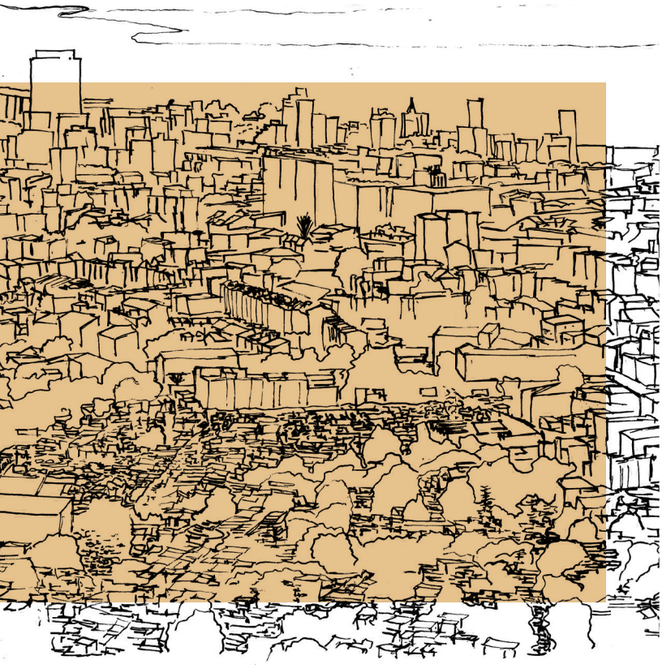
map 35. General strategy map

LIST OF ABBREVIATIONS

AECID - Agencia Española de Cooperación Internacional para el Desarrollo (Spanish agency for international development cooperation)
CEDH - Centro Estudios Desenvolvimiento del Habitat, research group inside Eduardo Mondlane University.
BRT - Bus Rapid Transit
CRT - Chapa Rapid Transit
DUAT: Land ownership title
ISCTEM - Instituto Superior de ciencias e tecnologia de Mozambique
MDC - Maputo Development Corridor
MMA - Maputo Metropolitan Area
MTZ: Mozambican coin. 72 MTZ=1€
UEM - University Eduardo Mondlane
MZ: Mozambique
SA: South Africa
UEM: Eduardo Mondlane University in Maputo

A Corridor towards sustainable urban development

CONTENT



PROLOGUE

- ACKNOWLEDGEMENTS
- WHAT'S IN? Abstract
- Abbreviation list
- Personal motivation

A- **Understanding the context** [page 11]

[01] Urban development in Africa.
[02] Mozambique, Southern Africa.
[03] Area of intervention- Maputo Metropolitan Area

Summary *Introduction of the context of Mozambique and the specific area of intervention. General data about thev current situation.*

B- **Understanding the theory** [page 23]

[01] Urban planning in MMA.
[02] Spatial development initiatives - The case of the Maputo Development Corridor
[03] The urbanization of Katembe district
[04] Non conventional housing policies

Summary *General overview of the current urbanization trend in MMA and the main urban planning theories and tools used for the urban development in the moment.*

C- **Description of research** [page 33]

[01] Problem definition&Statement
[02] Questions and objectives
[03] Methodology
[04] Relevance
[05] Ethical dimension
[06] Timeline

Summary *Definition and organization of the research, understanding its purpose and final objectives as well as the relevance in a scientific and social atmosphere.*

D- **Analysis & Diagnosis** [page 47]

[01] Layers & SWOT analysis.
[02] Diagnosis - conclusions of the analysis.
[03] Growth study
[04] Development scenarios
[05] Policies study

Summary *Mapping and understanding of the spatial implications of the area and their relation with the problem statement.*

E- **Vision & Strategy MMA 2040** [page 63]
3MK - CBD [MOAMBA-MAPUTO-MATOLA-KATEMBE | CONTEXT BASED DEVELOPMENT]

[01] Vision definition
[02] Main principles
[03] Evaluation of scenarios
[04] Vision 3MK - CBD
[05] Changes in perspective
[06] Structural factors of the strategy
[07] Sustainable development framework
[08] Strategy development
[09] Timeline - phasing
[10] General strategy overview
[10A] Core initiatives
[10B] The Corridors strategy
{B1} Definition of corridor
{B2} Strategy S. Informal nodes inclusive consolidation
{B3} Connections
[10C] Moamba airport strategy
{C1} Strategy definition
{C2} Current airport development strategy
{C3} Hierarchy of roads
{C4} Guided occupation
[10D] New Katembe strategy
{D1} Evakuation of current plan
{D2} Proposal and comparison

Summary *Detailed definition and description of the planning proposal: A Corridor towards sustainable urban development. Vision and Strategy for MMA 2040.*

F- **Process of constructing a vision** [page 135]

[01] Vision 1.0
[02] Main discussions with stakeholders
[03] Feedback summary
[04] Conclusions
[05] Final vision

Summary *Description of the process followed to build up the final vision for MMA 2040 (Vision 2.0) and the essential role of the stakeholders in the shape and transformation of the first definition and draft.*

G- **Conclusions & Reflection** [page 149]

[01] General conclusion
[02] Answering the SRQ
[03] Replicability scope
[04] Relation to sustainable development goals
[05] Reflection

Summary *Evaluation of the proposal in relation to the research question of the thesis and overview of main outcomes and conclusions.* **REFLECTION + REFERENCES**

ANNEXES

WORKBOOK OF INNOVATIVE POLICIES
Policy framework to support the vision and strategy and detailed study of innovative policies and institutional guidelines, as well as evaluation of the main examples that were used to reference this thesis.

ATLAS
Overview of the maps in the strategy in bigger size and resolution.

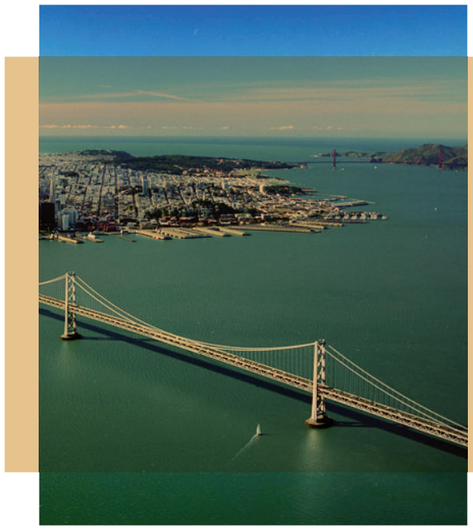


Image 03. Image of Maputo city from bay bridge
Source- https://www.worldpackers.com/pt-BR/positions/9002



WHY MOZAMBIQUE
Personal motivation and passion

Image 04. Image from Avenida Marginal. View of Maputo in background.
Source- photo by author during fieldtrip

PERSONAL MOTIVATION

Concepción R. Aranda Iglesias

Since I was in the second year of my bachelor of Architecture in Madrid, my professional passion has been directed towards the international cooperation, the basic habitability and the complex realities in the Global South, in special the African context.
I find myself interested in the crucial character of a proper governance in any urban strategy or even vision, specially in these backgrounds where most of the population do not count on a proper education. I believe that the spatial planning is one of the most effective approaches to improve the precarious situation that is currently happening in a huge amount of areas in Africa where the fundamental human rights are not being preserved. However, it needs to be applied under a contextualization and there is an urgent need for a shift in perception about the role of the urban planner. We should consider our position as experts that use our own toolds to recognize the problematic of an area and improve its situation with the help of locals in a technical yet contextualized approach.
The selection of the location was based in my former experienced in Senegal with the NGO "Architects without borders". I wanted to explore a new area of the African continent, finding Mozambique as a relevant case of study where I could have contacts and data available from my former university colleagues and some professors of TU Delft in Architecture master track. At the same time, I conducted my final bachelor work about the informal city and the indicators to measure the informality in developing situations.
My main motivation for this thesis is the opportunity to get in contact with a new complex reality in Africa, Maputo, and a different way of approaching it from a top-down perspective through the rethinking of big scale planning strategies such as the Maputo Development Corridor ot the current housing policies and the actors involved in the urban development. However, at the same time, emphasising the essential role of the citizens' participation and the informal current governance structures of the location in the process of development.
I find essential to collaborate with local experts to acquire an insight in the reality of the area and be able to present a proposal as attached to the context as possible. Something that I reafirmed after this thesis.

SELECTION OF RESEARCH GROUP

COMPLEX CITIES

Inclusive cities
Following the planning pespective

Maputo is a growing city within the Global South that counts on a wide variety of problematic to reflect about. I am interested in the context of governance and the approach from a planning perspective. That is why I think Complex cities is the Research Group that can help me to organize my ideas and learn further on this.

I find my interests in line with the discussion of "Inclusive cities" graduation topic. Starting from the unsustainable situation that the city is currently living (unsustainable in terms of lack of human rights, precarious conditions and inequalities); Maputo also relies on a history of corruption and oppression, not only from the foreign conquers, but from their own people; which lead to the civil war from 1975-2002, background of the current structure of the city. (Jenkins, 2000)

In terms of development, the inner city was involved in a westernisation process. The colonial tissue, unreachable for part of the population, together with the arrival of war refugees and the shortage of resources were part of the causes that leaded to the formation of informal settlements all around the inner city.
Within the different aspects in the "Inclusive cities" topic. The problematic of "Urban reform: use, regulation and taxation of land" and "Environmental sustainability and informal urbanization" can define my main research interests. Therefore, I would be please to research towards the questions presented from the group:
"How can planning and design explore new paradigms that deal with informal rules and customs?" and "Where does planning meet informal urbanisation?"

A- UNDERSTANDING THE CONTEXT



Image 05. Ortophoto of Maputo Metropoliran Area
source: illustration by author with Google Earth images

A-

Context Overview - This thesis will be conducted focusing on a territorial scale. Located in the sub-Saharan country of Mozambique, it will study the urban development of the Maputo Metropolitan Area for 2040. It focuses on the problematic of the southern province of Mozambique, Maputo province with a population of 1 638 631 people and a density of 60,3 people/km2 (Estatística 2014) The province of Maputo is the location of the capital of the country, 'Maputo cidade', Maputo city.

At the same time, within this frame, this thesis will be focus in the mobility network of the area, as elements with an essential role in the urban development, specially in developing contexts. In this area, the major infrastructures of the country are found, connecting the capital city with the surrounding countries of South Africa and Swaziland. The connection road between Maputo and the province of Gauteng in South Africa receive the name of Maputo Development Corridor and it was the first Spatial Development Strategy that took place in the African continent.

In order to assess the main objectives (described in the section C02, Project Objectives), this thesis will be framed in a multi-scale approach. For the first definition, the context will be the Maputo Metropolitan Area. However, the impact of the final proposal will assess the problem of the urban development in the areas of Moamba, Maputo-Matola and Katembe.

The context definition is divided into the following:

- 01. Urban Development in Africa
- 02. Mozambique, Southern Africa
- 03. Area of intervention | Maputo Metropolitan Area: Maputo & Matola

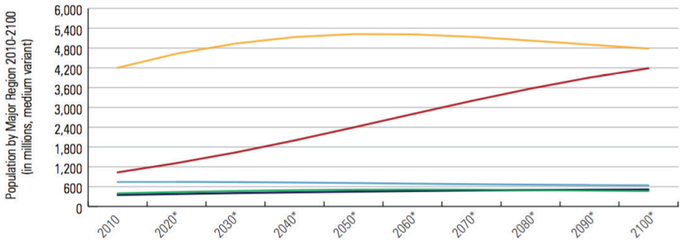


Image 06. Population by major region 2010 -2100 (millions)
Source - World Population Prospects. The 2012 Revision, (2013) UNDESA, NY, http://esa.un.org/wpp/Excel-Data/population.htm, last accessed 25 October 2017

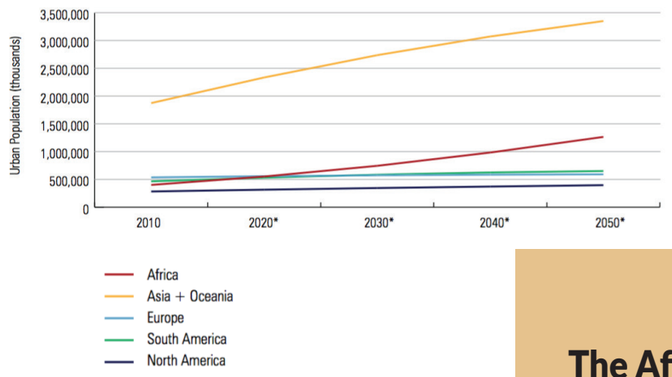


Image 07. Urban Population by major region 2010-2050 (in thousands)
Source- World urbanization Prospects. The 2011 Revision, (2012) UNDESA, NY

01

The African CONTEXT



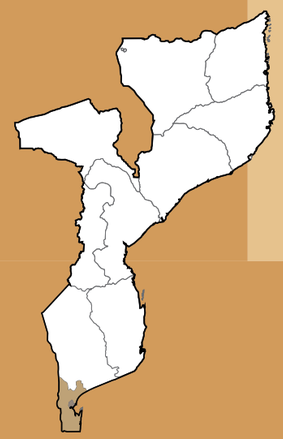
Image 08. Africa
source - illustration by author

URBAN DEVELOPMENT IN AFRICA -
The world is undoubtedly in process of urbanization (Image 06 and 07). According to UN World Urbanization prospects of 2014, in 2007, the world became urban when the urban population exceeded the rural. The African continent, together with Asia, is urbanising faster than the rest of the world; it is expected to count on a 56% of urban population in 2050. And, at the same time, the faster urbanization will take place in medium-size cities with less than 1 million inhabitants. This urbanization will suppose extreme changes in the African continent and it is essential to count on reliable policies and strategies to adapt the current growth prospects to a proper living environment.

The process of urbanization is historically associated with mobility- This association has been pilot in poverty reduction in both rural and urban areas by the establishment of connections and new access to economical opportunities. However, the urban process, when not planned, is proved to lead to precarious living conditions and unsustainable city structures where the fundamental human rights can not be preserved. Therefore, it is essential to seek for an adaptation of the basic infrastructures, specially in the developing contexts, not only in terms of mobility but basic services like electricity or proper sewage system. (UN 2014)

As stated in "The State of African cities" UN report 2014, the majority of African cities relies on a strong colonial background that provided a planning basis related to an external imported context. It is evident that these models failed as urban framework for current development and it is essential to introduce a shift in the approaches of the African current reality. The African cities are not only facing a rapid urbanization, but also a diminishing in the resources base, high fossil fuel costs, global economical and climate threats and limited urban-based industries.
Currently, Africa is still under the 50% of urban population(UN-Habitat 2014). This means that there is scope for rethinking the planning approaches and understanding the context as principal factor of new strategies. There is a necessity of sustainable and healthy urban developments.

Image 09. Mozambique
source - illustration by author



02

MOZAMBIQUE

49% urban population by 2050
according an average annual growth of 0.8% from 2010 to 2014

80.3% population in slums living in cities
cities as not sustainable.

Accelerated urban transition - Shift into context specific approaches

Mozambique is located in the eastern part of the region of Southern Africa. According to "The State of African cities" UN report of 2014, Southern Africa is the most urbanized region in sub-Saharan Africa. It is projected to reach, by 2050, an overall urban character in every country but Swaziland. Currently, 32% of the population in Mozambique is urban. By 2050, it is expected that the urban population will increase up until 49%, according an average annual growth of 0.8% from 2010 to 2014 (UN 2014)
There is a big external influence in the demand of mineral and oil, specially from China and India. This cushioned the recession of this country during the world economic crisis of 2008. This has been represented mostly in capital cities, where there was a construction boom related to international trade and foreign investments (UN-Habitat 2014).
Despite the success of the Southern Africa region in terms of GDP, this has not been related to raising the living standards. Instead, it affected the main capital cities, like Maputo, with a negative connotation of increasing the inequalities and fragmentation. Mozambique, together with Angola and Zambia, are the three countries with bigger amount of people living in slums of the region. Currently, Mozambique count of a percentage of 80.3% people living in slums (World Bank 2014), which leads to the conclusion that the current Mozambican cities are not sustainable.
As highlighted from UN-Habitat "State of African cities" 2014 report, the accelerated urban transition is one of the most crucial phenomenon in Africa for the last decade. These transitions need to be approached as challenges and opportunities to reflect about past policies and strategies and rethink the attitudes towards a shift into context specific approaches. It is essential to enhance the cross-border cooperation and understand a multi-level approach as the only step forward.
As it can be seen in the Image 10, Mozambique count on two cities within the big cities with highest population growth projection, Maputo and Matola, that suppose a continuous urban extension. Both within the province of Maputo and the area of intervention of this thesis: Maputo Metropolitan Area

MAIN CITIES SOUTHERN AFRICA

Image 10. Projected population dynamics for Southern African cities with more than 250.000 inhabitants
source - World Population Prospects. The 2011 Revision, (2012) UNDESA, NY,

City	Country	2010 Population (000s)	Average annual Growth rate 2010-25* (%)	% of Urban Population	% of Total Population	Average Annual Population Increase* (000s)	2025 Population* (000s)
Johannesburg	RSA	3,763	1.72	12.3	7.1	64.6	4,732
Cape Town	RSA	3,492	1.71	11.4	7.1	59.8	4,388
Ekurhuleni	RSA	3,357	1.76	10.7	6.7	57.7	4,150
eThekwini (Durban)	RSA	2,954	1.74	9.6	6.0	51.4	3,724
Lusaka	Zambia	1,719	6.89	34.2	13.4	118.5	3,496
Harare	Zimbabwe	1,526	3.54	31.3	12.1	54.0	2,337
Vereeniging	RSA	1,174	1.98	3.8	2.4	23.2	1,522
Maputo	Mozambique	1,132	4.07	15.4	4.8	46.1	1,823
Port Elizabeth	RSA	1,097	1.95	3.6	2.2	21.4	1,418
Matola	Mozambique	759	5.28	10.6	3.3	40.1	1,360



Image 05. Ortophoto of Maputo Metropoliran Area
source: illustration by author with Google Earth images

AREA OF
INTERVENTION

03 MAPUTO METROPOLITAN AREA

AREA OF INTERVENTION

Cities of Maputo and Matola. Most urbanized areas of Mozambique.

The Metropolitan Area is defined by the continuous urban extension of Maputo and Matola, only separated by the Infulene river valley, affluent of the Gran Usutu river. The area is limited by water in the East, South and West. By the Indian Ocean on the east, and the Matola river in the South and West. In the North, the urban extension continues with the settlement of Marracuene. In the Image 05, the area of intervention and the main elements surrounding it are presented. The main infrastructure of the area is the Maputo Development Corridor, currently named as N4 that connects the cities with the economical core of south Africa and its defined in the next section.

The Maputo Metropolitan Area has a population of 2.270.780 people according to the projections of the INE for 2017 (INE 2007) in a surface of 71400 ha. The main urban trend is low density -32 hab/ha- urban sprawl, characterized by precarious conditions and informality. The Metropolitan Area has an annual growth of 4.68% which is higher in Matola than in Maputo according to the projections of INE from 2017 to 2040 (INE 2007).

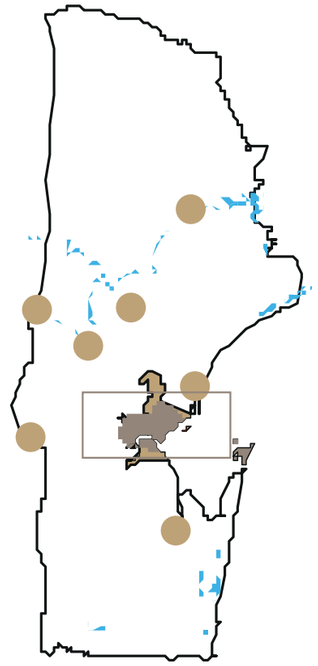
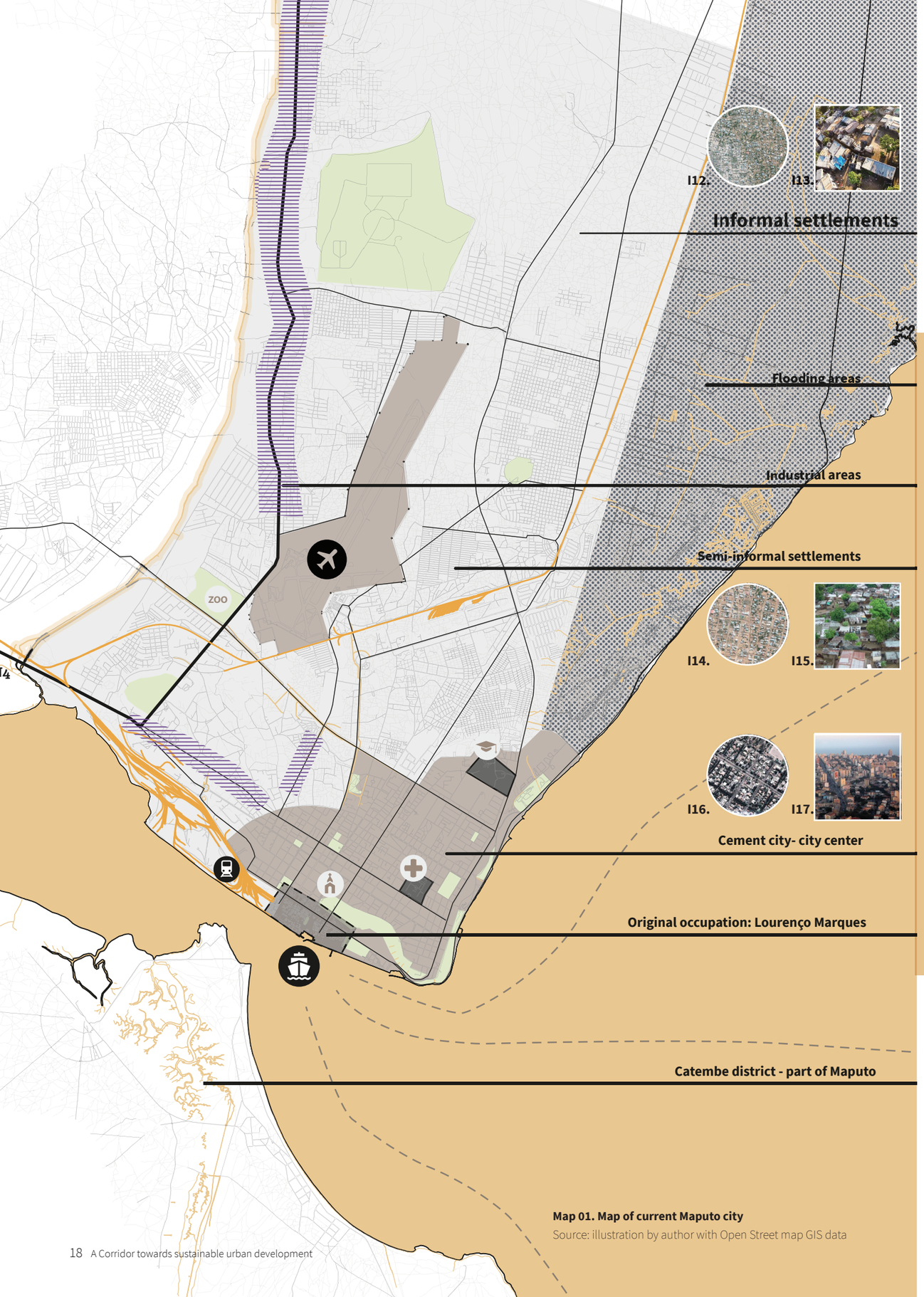


Image 11. Maputo province.
Illustration by author from GIS data

About Maputo Metropolitan Area

"Despite not existing officialy, due to the social and economic interdependencies, the mobility problem will be approached in the Metropolitan Area which will be here assumed as the area corresponding to the territory of the cities of Maputo and Matola. Due to their characteristics, both cities form a continuous urban area." (Nhatugues de Mendoça, I. 2014)



Map 01. Map of current Maputo city
Source: illustration by author with Open Street map GIS data

Image 18. Map of Lourenço Marques settlement in 1903
source: Archive of Pretoria University.



AREA OF INTERVENTION

3.1 MAPUTO CIDADE
AREA OF INTERVENTION

Maputo is the capital city of Mozambique. Located in the South of the country, it frames the access of the Indian Ocean by the creation of the Maputo Bay, former Delagoa Bay. The city belongs to the Southern province of the country, Maputo province, with a population of 1.638.631 people. 70% of the province population lives in Maputo and 30% in Matola. There are not other important communities in the province (INE 2017). Maputo cidade has a population of 1.616.268 inhabitants in an area of 347 km2, the city experience a population density of 46.58 inhabitants/ha (INE 2017). There was a rapid urbanization trend between 1870 and 1975, however, the majority of the inhabitants were immigrants during the civil war between 1975 and 2002. Because of a lack of proper land management, specially during the civil war, the immigrants started to occupy the areas in the Northern part of the city and in between the industrial zones. The government adapted a “laissez-faire” policy, which lead to the current structure of the city where the majority of urban tissue is not properly planned on access to basic services. From that moment, there were several plans to improve the conditions of the informal areas of the city, which leaded to the creation of semi-informal zones with basic planning but informal constructions.

Historical remark- Portuguese colony, the city of Maputo was initially named Lourenço Marques, after its discoverer in 1540. However, it was not until 1799 when the Portuguese occupied the land to start an economical exploitation of the region, specially due to its strategic position for trading by maritime routes.

In 1876, the settlement of Lourenço Marques received the town status with the railway constructed in 1895 to enhance commercial connections with South Africa.
During the colonial time, there were several slavery trade agreements, specially with the closest country of South Africa, in exchange for a percentage of the rail and port exports through Maputo port. During this period, there were severous inequalities between African and Portuguese colonialists expressed in a dualism in the city: in the inner city only the non Africans could live; therefore, it leaded to the creation of a poverty belt in the periphery of the city where the African population working in the city were established. This separation set the guides to the current city inequalities. (Jenkins 2000);(Pestana Barros 2014)

In 1975, the city of Lourenço Marques was declared independant from the Portuguese government; moment in which the civil war in the city started (from 1975 to 2002) between the political parties of Freelimo and Renamo. The Freelimo party assumed the control of the government of the renamed Maputo. During war time, there was a refugee crisis when most of the current population settled in the periphery of the city extension in a low density informal urban tissue. In 1976, there was a nationalisation programme pursued by Freelimo Party which supposed the nationalisation of banks and key industries, all the land in the city extension and abandoned or rented colonial properties, apart from education and health systems. This enhanced the inequalities in the city between the supporters of this party and the rest of the population; increasing the poverty belt that was created during the colonial times. (Pestana Barros 2014); (Boyd 2014). This history of inequalities illustrates the current city division and caotic situation.

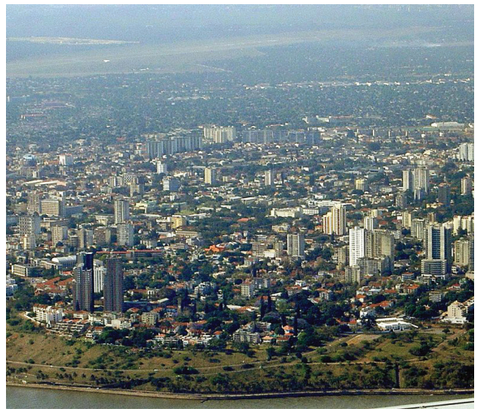


Image 19. Maputo view from South East
Source-https://upload.wikimedia.org/wikipedia/commons/thumb/6/65/Maputo_seen_from_south-east_-_October_2006.jpg/1200px-Maputo_seen_from_southeast_-_October_2006.jpg

És a vela içada -
POEM BY EDUARDO WHITE

És a vela içada
a quilha que contorna
a carne das águas.
És a tempestade
a chuva premeditada
e eu o náufrago
que não se permite afogado.



Image 20. Matola Westyle Interview
source - https://casamatola.fr.usge.com/?cat=1&lang=matola



Image 21. Matola coastline
source - https://www.vesselfinder.com/ports/MATOLA-MOZAMBIQUE-11817



Image 22. Matola bulk terminal
Source-http://www.portmaputo.com/matola-bulk-terminal/



Image 23. Maputo cargo terminal
Source-http://www.portmaputo.com/maputo-cargo-terminal/



Image 24.Companhia Industrial da Matola nos anos 60
Source-http://housesofmaputo.blogspot.nl/2016/11/companhia-industrial-da-matola-e-as.html

AREA OF INTERVENTION

3.2 MATOLA CIDADE

AREA OF INTERVENTION

The city of Matola was originally the industrial area linked to the capital city of Maputo.In 1970 the cities of Maputo and Matola conformed a common administrative system named "The big Maputo". However, due to the confrontation between the leaders, they were administrativelly separated in 1988 despite the continued urban extension of their tissue.

The city presents a population of 1.101.170 people according to the projections 2017 census (INE, 2017). The city's area is 36700,00 ha, which suppose an urban density of 27 hab/ha; lower density than the city of Maputo.

The main economical sources of the city are related to the industrial sector, located around the water systems of the Maputo river and the Infulene Valley that separates the cities of Maputo and Matola. The main industry is the Mozal Aluminium Melter, English inversion in the country related to the infrastructure development of the N4v.

The city presents an important bulk terminal, connected to the facilities of the port of Maputo, associated with export and manufacturing industries, including the new Mozal Aluminium Terminal and the Oil Terminal.

Historical remark- Nowadays, the city presents a higher growth annual rate than Maputo with 5.28%. This growing trend respond to the industrial boom of Matola in 1960 when there were incentives from Maputo municipality to invest in residential areas in the extension of Matola, specially directed to the medium class or burguesy, in an intend of alleviating pressure from Maputo city. (Mendes de Araujo 2006)

Because of the increasing of job opportunities in the industrial tissue of Matola, there was a national immigration from different parts of the country to the city. As a consequence of their low income, the new inhabitants of the city could not live in the new residential areas and started to settle in the peripheries, creating the informal settlements that surround the inner city nowadays. (Mendes de Araujo 2006)

This, together with the lack of proper facilities and city structure, turned Matola into a dormitory city of Maputo. Which increases the problems of traffc and lack of job opportunities for most of its population. They are disconnected from the city center and outside the formal city consolidation.

Therefore, the current city presents the same dualism than the city of Maputo, as heritage of the burguesy colonialism and the periphery living environment for industry workers or informal dwellers.

Moçambique - POEM BY TANIA TONÉ

Quando me sento descalça
sobre o sapato do menino pobre
que me enche o pé
muito mais que outro qualquer
me lembro que existir
não é sozinha
é com toda gente.
E me lembro
que tenho de embebedar-me de ti
Moçambique
Porque tenho saudades de mim

B - UNDERSTANDING THE THEORY



Image 25. Proposed urbanization in Katembe
Source- Maputo Municipality, T., Betar, G., & Maputo Sul, E. (2017). A nova Katembe - Uma cidade para o futuro. Retrieved from Eduardo Mondlane University repository

B -

01

Urban planning in MMA - The urban planning approach in Mozambique is suffering from a lack of contextualized strategies that acknowledge the reality of its cities. According to the definition from Kamete, A. Y. & Lindell, I. in 2010, there is a ‘non-planning strategies’ development trend:

“In most cities, formal intervention strategies for controlling the use of urban space hinge on an officially approved planning framework, such as a town planning scheme, a master plan, a local plan, or an explicit urban development framework. We refer to these as planning intervention strategies. Some interventions, although undertaken in the name of some plan, appear to have little or no basis in existing city plans, designs or urban development strategies. We label these non-planning strategies.”

The main cause of the disconnection between the urban planning and the context might be related to a lack of reality understanding from the agents involved in the urban development:

“The dilemma for governments is ‘to perform as global centres of production that must compete internationally for corporate location and, at the same time, generate local economic development opportunities for their citizens” (Kamete, A. Y. & Lindell, I. 2010)

The government approach to the informal reality of the city of Maputo can be perceived in the strategy followed during the Second Ordinary Session of the Assembly of Heads of State and Government (the African Union Summit) that was scheduled to be held in Maputo in July 2003. In order to accommodate the city for that event, there were several ‘make up’ strategies such as cleaning the streets from homeless people or building a wall from the airport to the city center to protect the view of the informal settlements located in the route.
This non-planning strategies that confront the informality situation of the cities with strategies to cover it or reallocate it is complemented with some planning strategies that do not introduce changes in the planning system to avoid an increase of the poverty belt. Furthermore, the urban planning propose Western tools and apply them to a completely different context. This trend has been happening since long time ago and continues nowadays.

In this section, two projects that help to understand this idea are explained: the Maputo Development Corridor and the strategy for New Katembe.

The Maputo Development Corridor, built in 1995 between the governments of Mozambique and South Africa suppossed the introduction of SDI ‘Spatial Development Initiatives’ -a European planning tool- in the region of Southern Africa. However, the planning of the Corridor was not connected with the planning of urban development along it and the outcomes, although introducing certain economical development, did not present any success for the urban development of MMA.

This uncontextualized urbanization trend is also used nowadays, something that can be perceived in the development proposal for a new urban area in Katembe that will be implemented from the end of this year, as soon as the Katembe bridge project is finished. It illustrates a Western planning vision without introducing any reflection about how the new development will deal with the current informal development trend that is a reality in Maputo. It introduces a completelly fixed urban approach that could perfectly be propose for any European city.



Image 26. Maputo Development Corridor- Continent scale.
Source-Author from Google Maps information.

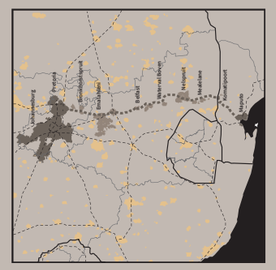


Image 27. Maputo Development Corridor- Country scale.
Source-Author from Google Maps information and NASA Data collection.



Image 28. Maputo Development Corridor on its arrival to Maputo city.
Source-Author from Google Maps information and base map from Eduardo Mondlane University.

02 SPATIAL DEVELOPMENT INITIATIVES [SDI]

THE CASE OF THE MAPUTO DEVELOPMENT CORRIDOR

Road - rail corridor

General overview of SDI-

In a general overview, the SDI are intensive short-term initiatives concentrated on potential areas for the economic growth of the country to attract private investments and minimize the economic impact in the public institutions; later, they seek for a reorientation of the impact into the marginal and problematic areas of the location. (Rogerson 2000); (Platzky 1998)

In the case of the development corridors SDIs, according to "The State of African cities" report of 2014, there was a seek of unpressured the African main cities in terms of land, housing, services and mobility. In order to do so, there was a promotion of satellite cities to disperse the economic activities and the population in order to maintain the national hierarchies balanced. The development corridors are strategies to embrace these changes and create new guides of development in between the connection of two cities.

However the successful outcomes of these strategies in European contexts, there is a lack of direct benefits between the corridors and the improvement of the living conditions in the African cities. There is a disconnection between the necessity of solving the poverty situation and the solutions that these development corridors suppose.

One of the main causes of this disconnection is the lack of communication between the institutions in charge of the development of infrastructures and those who plan the urban development.

The case of Maputo Development Corridor -

The Maputo Development Corridor is a major cross-border 'Spatial Development Strategy' (SDI) realized in 1995 in cooperation between the governments of Mozambique and South Africa. It was facilitated by the introduction of Mozambique in the "Southern Africa Development Community"

This strategy supposed a 'flagship' for new developments in the African continent and introduced a change towards a "new regionalism". This new planning approach for the African context was based on an internationalization of the economy, the co-operation between African countries and the starting point to rethink the apartheid ownership structures into a change towards an egalitarian and sustainable reality (Rogerson 2000).

The aim of this strategy was to create a connection between the port of Maputo, capital of Mozambique, with Gauteng, the economical heart of South Africa. However, the objectives were beyond the merely infrastructure (port, rail, roads) upgrading; the Corridor was planned to maximize the investments and create competitiveness in the global economy but, at the same time, create social opportunities for the disadvantages communities of the area and ensure sustainability within the developing process by policies and plans. (Rogerson 2000); (Söderbaum 2001); (Taylor 2002). As consequence of this corridor, there was a development node around Maputo, based primarily on industrial and commercial developments, urban development, airports and the new port of Techobanine (SADC 2012). Also, there was a coordination between the public sector and privates enterprises involved in the corridor that was launch in 2004, The Maputo Corridor Logistics Initiative (MCLI).

The Maputo Development Corridor was the stimulus for some secondary projects like the Mozal aluminium

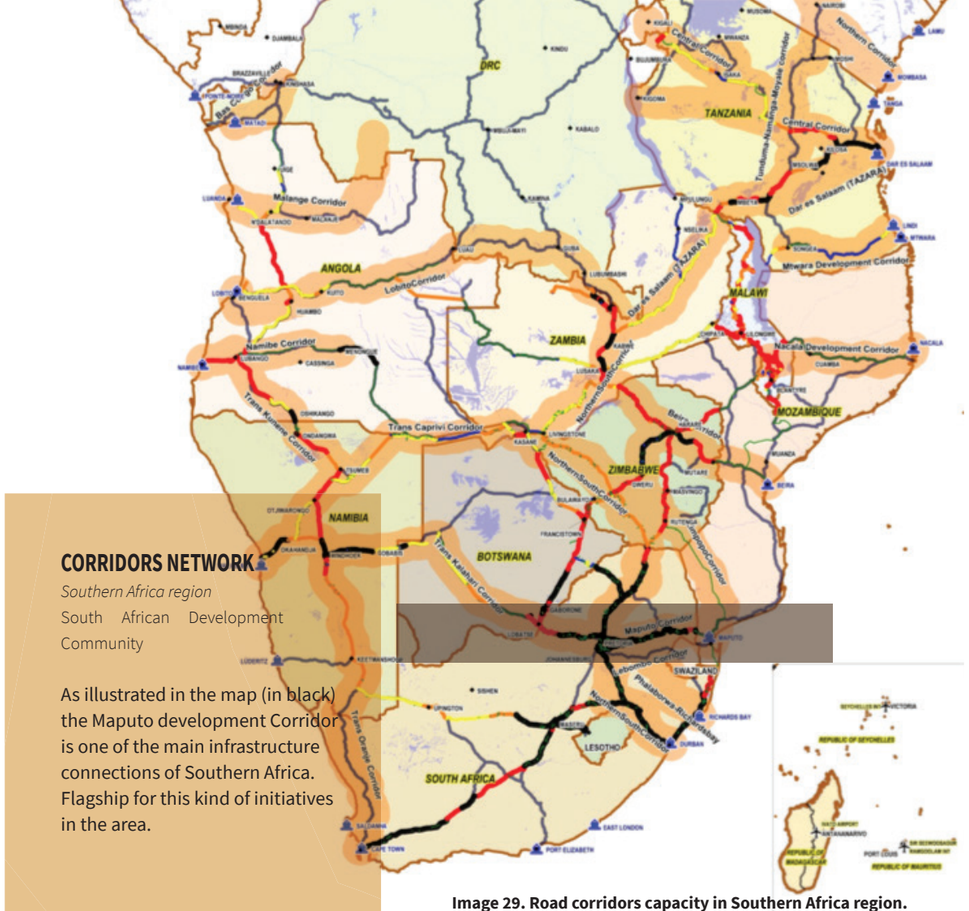

DRC
TANZANIA
ANGOLA
ZAMBIA
MALAWI
MOZAMBIQUE
ZIMBABWE
NAMIBIA
BOTSWANA
SWAZILAND
LESOTHO
SOUTH AFRICA
Dar es Salaam (TAZARA)
Mwara Development Corridor
Nacala Development Corridor
Trans Caprivi Corridor
Trans Kalahari Corridor
Trans Oranje Corridor
Maputo Corridor
Beira Corridor
Lobito Corridor
Namibe Corridor
Malange Corridor
Central Corridor
Northern Corridor
Tunduma-Nacala-Dar es Salaam-Mtwara corridor
Northern-South Corridor
Lebombo Corridor
Walvis Bay Corridor
Trans Kunene Corridor
Trans Kalahari Corridor
Trans Oranje Corridor
Trans Caprivi Corridor
Pitsaboes-Richards Bay
Richards Bay
Durban
East London
Port Elizabeth
Cape Town
Walvis Bay
Lüderitz
Oranjemund
Oshikango
Katima
Francistown
Gaborone
Mafikeng
Kimberley
Sishen
Upington
Keetmanshoop
Bulawayo
Harare
Mutare
Kariba
Kasane
Livingstone
Lusaka
Ndola
Kitwe
Chingola
Solwezi
Kolwezi
Lubumbashi
Likasi
Kolwezi
Kabalo
Kindu
Bukavu
Kigali
Kisumu
Nairobi
Mombasa
Tanga
Dar es Salaam
Lindi
Mtwara
Nacala
Beira
Maputo
Matola
Nelspruit
Witbank
Johannesburg
Pretoria
Rustenburg
Klerksdorp
Welkom
Bloemfontein
Kimberley
Upington
Springbok
Port Nolloth
Windhoek
Walvis Bay
Swakopmund
Luderitz
Oranjemund
Oshikango
Katima
Rundu
Grootfontein
Otjiwarongo
Omaruru
Karibib
Okahandja
Windhoek
Gobabis
Keetmanshoop
Mariental
Lüderitz
Oranjemund
Brazzaville
Pointe Noire
Cabinda
Soyo
Matadi
Kinshasa
Boma
Luanda
Lobito
Benguela
Huambo
Kuito
Menongue
Cuito Cuanavale
Namibe
Lubango
Cassinga
Xangongo
Ondjiva



Image 30. A nova Katembe plan
Source- Maputo Municipality, T., Betar, G., & Maputo Sul, E. (2017). A nova Katembe - Uma cidade para o futuro. Retrieved from Eduardo Mondlane University repository



Image 25. Proposed urbanization in Katembe
Source- Maputo Municipality, T., Betar, G., & Maputo Sul, E. (2017). A nova Katembe - Uma cidade para o futuro. Retrieved from Eduardo Mondlane University repository

Image 31. General image of Katembe development project.
Source- Maputo Municipality, T., Betar, G., & Maputo Sul, E. (2017). A nova Katembe - Uma cidade para o futuro. Retrieved from Eduardo Mondlane University repository



03 THE NEW KATEMBE

URBANIZATION OF KATEMBE DISTRICT

Expected implementation at the end of 2018

The project for the New Katembe is proposed due to the finishing state of a new bridge that will connect the area of Katembe with the city center of Maputo.
As reflected in the report, the strategy proposes the development of the area from scratch, without consideration of the current urban layer in Katembe.

"The urban development of KaTembe is an opportunity to create from the very beginning a new city, equipped with roads and infrastructure. The building of the bridge and road network change the conditions of accessibility to a level of excellence. The infrastructures create good service levels – water, sanitation, energy, telecommunications and gas. Green spaces are included in this global supported project." (Maputo Municipality Katembe report 2017)

Despite the necessity of raising awareness about the adaptation of the plan to the current situation, the overall approach seems to introduce a development into a sustainable framework. But, how is this framework described?

The planning approach introduces a new network of basic infrastructures and connections next to an urbanization. It proposes an improvement in the connection with 'Ponta do Ouro', one of the most touristic points of Mozambique, and an extension of the port with a new point in the coast of Katembe.
At the same time, it illustrates an industrialization process related to job creation and economic growth.
The project consists of 9.510.000 m2 of housing, 980.000 m2 for collective equipments, 1.880.000 m2 for industry and logistics, 490.000 m2 for tourismand 3.270.000 m2 for commerce and services.
It is a project developed by a collaboration between the following stakeholders:

- Maputo Sul E.P, created by the Government of Mozambique to promote the building and management of the Bridge KaTembe and the roads from Maputo to Ponta do Ouro and from Bela Vista to Boane.
- Maputo Municipality
- Betar group
- Promontorio planning Mozambique
- Nemus
- Coteprol engineers
- Eace
- Beta engineers
- BMZ betar engineers

Once the proposal is explored, there is no doubt of its Western inspiration. and a clear objective of internationalization, which is completelly disconnected from the current informal urban deveopment trend of MMA.

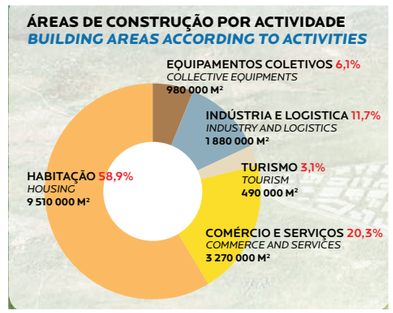


Image 32. Distribution of uses in New Katembe project.
Source- Maputo Municipality, T., Betar, G., & Maputo Sul, E. (2017). A nova Katembe - Uma cidade para o futuro. Retrieved from Eduardo Mondlane University repository

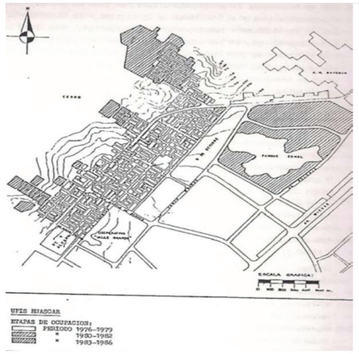




Image 33. Example of guided ocupation in UPIS Huascar, Lima.
Source- Gesto, B. (2015)

04 ´NON CONVENTIONAL HOUSING POLICIES

NEW PERSPECTIVES TO APPROACH INFORMAL CITIES IN DEVELOPING COUNTRIES

General overview -

This thesis is a reflection about planning for future development with what is known as ´Non conventional housing policies´. It follows the theory proposed by Gesto, B (2015) on her phD thesis: "Municipal programs of guided occupation: preference instrument of basic habitability versus future informal urbanization". The basis of the theory resides in the shift of the concept towards an understanding of the house as a process of living and not as a final object. Therefore, there is a perception of housing as a dynamic reality that do not need to be closed as final proposal in the master planning and that is adapted to the reality of the inhabitants and residents.
This basic idea emerges from the immense complexity of the developing countries and the necessity to adapt the planning tools to a flexible frame where the particular inhabitant can decide and develop in relation to his resources.
In order to present this theory, it is essential to define what are housing policies, defined as: "set of guidelines that motivate, restrict or facilitate actions related to housing". The first reflection about new ways of approaching the housing techniques was introduced by John Turner in 1968 on his book "Uncontrolled urban settlement: problems and policies", where the 'non conventional housing policies' are proposed due to the increasing of social conflict, the necessity of reducing costs and the changing of the housing concept into its understanding as a process of living. Therefore, the ´non conventional housing policies´ are defined as "partial, gradual interventions of different densities, character and importance, in the housing process, directed to go forward, contributing to the consolidation of the housing forms that are more adapted to the social levels" (Ramírez, 2002) and can also be named as 'alternative housing policies'
In order to understand the concept of 'Non conventional housing policies', it is essential to define what is a conventional housing policy, introduced by Gesto, B. (2015) as "those policies characterized by the systemic intervention of the state in all the phases of the production and provision process until the finishing phase of the house". As an alternative, Gesto, B reflects about the involvement of the state in the ´non conventional housing policies´ where the state only presents a partial intervention due to the shift of the housing concept consequence of a lack of resources. As stated on the document: "The house is not understood as a final object, a commodity and conceived as a process, the 'living process' where the object is not recognizable anymore and the house – as socially accepted- can not appear until some time ahead."

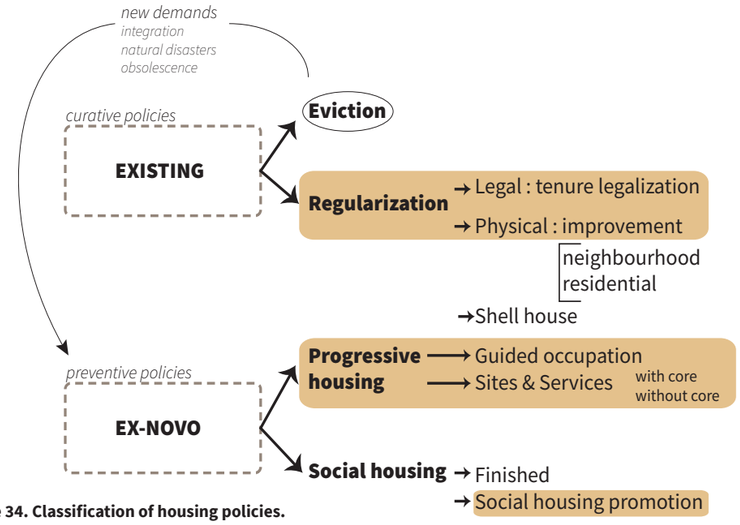


Image 34. Classification of housing policies.
Source- Graph translated by author from the theory of Gesto, b. (2015). LOS PROGRAMAS MUNICIPALES DE OCUPACIÓN GUIADA: INSTRUMENTOS PREFERENTES DE HABITABILIDAD BÁSICA VERSUS LA URBANIZACIÓN INFORMAL FUTURA. El caso de Trujillo (Perú). http://oa.upm.es/39714/.

Classification of housing policies -

There are two main groups to understand the housing policies, keeping in mind that this research is based in the work of Gesto, B. in 2015 and therefore, there are other housing policies that are not included in this classification. As can be perceived in the following diagram, the housing policies studied propose a resolution of the existing housing problem in developing countries based on the precarious conditions of the informal cities and introduce techniques to prevent its extension into new development proposals, preventive policies for ex-novo strategies.

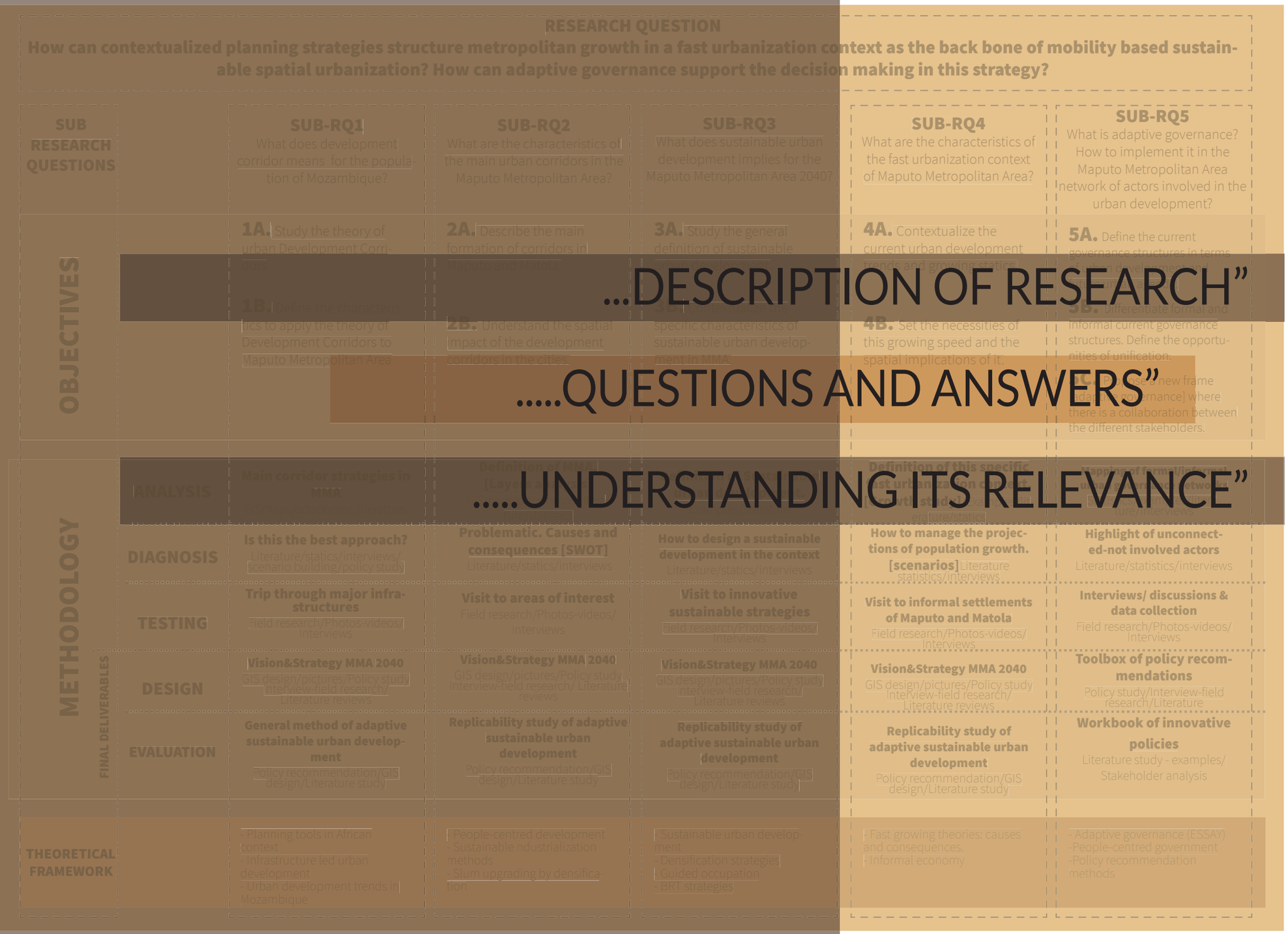
Considering the policies directed to improve the current situations of informality, two alternatives are proposed. Since long time ago, there have been eviction policies in which the solution for an informal settlement upgrading was based in the reallocation of the inhabitants in areas far away from the settlement, the destruction of the settlement and the building of a new development following the tabula rasa strategy.

After the study of the 'non conventional housing policies' there is a new perspective based on the effort on regularizing the existent housing tissue. The regularization seeks for a legal recognition based on the tenure permits and rights. Once there are tenure rights, the inhabitants of the informal settlements are keen to invest on their own houses and develop a proper frame for the improvement of the informal settlements. At the same time, there is need for a physical improvement with the introduction of basic infrastructures (water, energy, sewage...) and facilities than can be considered in a neighbourhood or residential scale.

On the other hand, the preventive measures to avoid the formation of informal tissue on ex-novo developments that have been proposed historically are related with the social housing. The planning proposals rely on a percentage of social housing that expressed their commitment with the realities of the areas. However, this percentage was usually smaller than needed and the houses did not fulfil the necessities of the inhabitants. As a consequence, the social housing strategies did not avoid completely the informal settlements next to new developments. However, there are new approaches known as 'non conventional' based on the progressive housing that reduce the initial costs of the strategies and allow the inhabitant to develop in relation to his particular economic situation and necessities. These approaches are: the guided occupation –explained in detail in the section 10C.4 Moamba airport strategy- together with the sites and services approach, where there is a basic infrastructure urbanization before the occupation that can get to individual bathrooms and kitchen (without core) or with the planning of common kitchen and bathrooms (with core). These two strategies are based on the housing typology of shell house that defines a house that is understood as a process and the construction and development of facilities is implemented gradually as soon as the inhabitant obtain the resources to finance it.

It is essential to highlight, that although proposing alternative ways to approach the reality in the MMA, this thesis do not state that the informal city is something good. There are precarious living conditions in most of the informal extensions. As state by Busquets in 1999: "it is not about exalting and encouraging the 'informal urbanization' but acknowledge its value as city construction process". The proposal of this thesis seeks for a proper adaptation of the current reality and a planning approach related with the current reality of the area and to raise awareness about the value of the informal city for the current identity of MMA

C - DESCRIPTION OF RESEARCH



...DESCRIPTION OF RESEARCH"

.....QUESTIONS AND ANSWERS"

.....UNDERSTANDING ITS RELEVANCE"

Image 35. Methodology in relation with questions and objectives
Source- diagram by author

C -

Aim of the research-

To explore a shift in the metropolitan planning approaches in developing countries via a contextualized vision and strategy for Maputo Metropolitan Area 2040 that translates the expected growth of the area into a sustainable urban development introducing principles of adaptive governance and 'non conventional' housing policies.

This research will aim to develop a strategy for a sustainable development in Maputo Metropolitan Area 2040 from an adaptive governance perspective. It will focus on the understanding of the necessity of inclusion and training of the civil society and the connection of all the actors involved in the urban development of this context for a successful final result in a sustainable planning initiative. This framework will rethink the current policies oriented to the demolishing of the informal settlements of Maputo and Matola with the proposal of new ways of developing in balance with the current situation of the location. At the same time, it will propose a developing strategy to enhance the existing infrastructures and use them to lead the growth of the area in a sustainable and inclusive way.

Therefore, the spatial framework proposed will contain a proposal for urban development in the Maputo Metropolitan Area, together with an study of the current governance structures and a proposal of policy recommendations to implement the collaboration between the different actors involved in the development.

The section of research description introduce the following aspects of the thesis

- 01. Problem definition
- 02. Research questions and objectives
- 03. Methodology and main methods
- 04. Societal & Scientific relevance
- 05. Ethical dimension
- 06. General timeline



PROBLEM DEFINITION

PROBLEM DEFINITION 01

Mozambique is in the position 181 of 217 countries in the World Development Indicator. this means that is one of the poorest countries in the world

It will grow in 54% for 2040, in only 22 years according to the expected growth of the Mozambican Statistics Institute

It is essential to provide contextualized and useful planning tools for this region and rethink what did not work in the past.

Image 36. Spatial inequalities in Maputo city
Source-http://www.africaprogresspanel.org/oxfam-inequality-report-adds-to-groundswell-of-public-opinion/

Currently, the country of Mozambique is in the position 181 in the list of 217 countries regarding the World Development Indicator (World Bank 2017). This means that it is one of the poorest countries in the world and, therefore, there is an urgency in developing strategies to implement the precarious situation of the country.

During history, there were several attempts to approach the diverse problematic of the area through the use of planning tools; some of them were top-down big scale infrastructure developments as The Maputo Development Corridor or the current development planning for the "New Katembe".

However, the positive impact projected on these strategies can not be identified in the development of the region of Maputo. As stated by Kamete, A.Y. and Lindell, I. in 2010:

> *"In Africa, for various bureaucratic and political reasons, urban planning has often been notoriously lax. In the face of uncontrolled urban development, many urban governments have abandoned comprehensive planning and increasingly resort to ad-hoc 'sanitising' measures of various kinds."*

There is a disconnection between most of the planning strategies proposal and their actual implementation. This do not help the cities currently serious deficiencies with 70% of its population currently living in slums (UN-Habitat 2010).

At the same time, the Maputo Metropolitan Area is the most important urban extension of the country of Mozambique and it is immersed in a fast urbanization process. According to the future vision of the cities of Maputo and Matola, the urban population in 2040 will grow in 1.230.883 people; which suppose an annual growing rate of 2.4% from the current population, reaching a estimated growth in the Metropolitan Area of 54% in only 22 years(INE 2010). Therefore, the urban development is expected to increase the population in a short-term scope.
In the absence of a proper shift in the current planning strategy, the growth will lead to a major increase of the informal areas of the city.
There are several institutions trying to propose guidelines to approach this problematic. According to "The State of African cities" UN Report 2014, it is essential to strengthen the infrastructures to lead the urban development in the surroundings of the capital cities, in order to deal with the increasing population alleviating pressure to the main cities. The development of population outside the city cores is depending on the mobility policies, which can provide livelihood and opportunities in new areas to become urban. Because of the rapid urbanization of the African continent, this matter is a priority.
However, in order for any development strategy to success, it is essential to understand the context in which they will be implemented and shape the planning tools and policies to fit the especific identity of MMA.

PROBLEM **STATEMENT**

MAPUTO METROPOLITAN AREA
Urban population growth 2040
Sustainable urban development

The Maputo Metropolitan Area is immersed in a fast urbanization trend that is leading to precarious conditions on its urban extension with 70% of the city currently living in slums (UN-Habitat 2008). The area expects a minimum growth of 54% for 2040 (INE, 2007). The current conditions illustrate the lack of a proper frame to absorb the growing population developed by the main agents currently involved in the urban development. If continuing with the current urban trend, the expected growth will aggravate the conditions of the country.

There have been several strategies to plan the coming development following European planning tools such as the Maputo Development Corridor -Spatial Development Initiative- or the current proposeal for urban extension in Katembe. Despite their positive impact in the economy of the city, these strategies are proved to not have the expected output over its urban development; mainly because of their lack of direct impact in the improvement of the disadvantages communities in the Metropolitan Area that results in aggravating the duality between the city centers and the poverty belt surrounding.

However, there is scope for rethinking the planning strategies to alleviate the pressure of population growing in the main cities of Mozambique (Maputo and Matola). By the inclusion of the growth in a bigger urbanization strategy, proposing a new sustainable development approach and adapting the planning perspective to the reality of the context. In this way, the urban development would lead to the improvement of the current habitability conditions of the Metropolitan Area.

THIS THESIS PROVIDES A CHANGING PERSPECTIVE TOWARDS THE APPROACHING OF URBAN DEVELOPMENT IN THE FAST GROWING URBAN EXTENSION OF THE MAPUTO METROPOLITAN AREA. IT SUPPOSES ONE POSSIBLE APPROACH TO THE COMPLEXITY OF THE CONTEXT MATERIALIZED IN A VISION AND STRATEGY FOR MAPUTO METROPOLITAN AREA 2040 AS AN ADAPTIVE SUSTAINABLE DEVELOPMENT. IT IS SUPPORTED IN 8 NEW PERSPECTIVES ABOUT THE USE OF EUROPEAN PLANNING TOOLS IN MOZAMBIQUE.



Image 37.Avenida 24 de Julho
Source-photography by author
Image 38. Avenida Marginal.
Source-photography by author

02 Reseach Question

How can **contextualized planning strategies** structure **metropolitan growth** in a **fast urbanization context** as the back bone of mobility based **sustainable spatial urbanization**? How can **adaptive governance** support the decision making in this strategy?

QUESTIONS

Sub-research questions
Sections and methodology in which they are answered.

O1 About contextualized development corridors

What does development corridor means for the population of Mozambique?

Related sections *[01.b. Mozambique. Southern Africa]; [02. Understanding the theory]; [03.a. problem definition]; [04.a. Layers and SWOT analysis]; [04.b. Diagnosis]; [05. Vision construction process]; [06. Vision and strategy] *this sub-research question is especially related to "The Corridors" strategy.*

O2 About the impact of the corridors in the Metropolitan Area

What are the characteristics of the main urban corridors in the Maputo Metropolitan Area?

Related sections *[01.c. Area of intervention]; [02. Understanding the theory]; [03.a. problem definition]; [04.a. Layers and SWOT analysis]; [04.b. Diagnosis]; [06. Vision and strategy] *this subresearch question is especially related to "Moamba airport" and "Katembe bridge" strategies.*

O3 About sustainable development

What does sustainable urban development implies for the Maputo Metropolitan Area 2040?

Related sections *[01.c. Area of intervention]; [02. Understanding the theory]; [03.a. problem definition]; [04.b. Diagnosis]; [06.f. sustainable development] *especially related to the S strategies such as "Inclusive consolidation of informal nodes", "Connections"; or "Guided occupancy"*

O4 About the context

What are the characteristics of the fast urbanization context of Maputo Metropolitan Area?

Related sections *[01.Understanding the context]; [02. Understanding the theory]; [03.a. problem definition]; [04.c. Growth study]; [06. Vision and strategy] *this subresearch question is especially related to "Moamba airport" and "Katembe bridge" strategies and the proposed techniques for smart growth.*

O5 About adaptive governance

What is adaptive governance? How to implement it in the Maputo Metropolitan Area network of actors involved in the urban development?

Related sections *[04.e. Current policies]; [05. Vision construction process - fieldtrip]; [06.b. Changes in perspective]; *this subresearch question is especially related to the Workbook of innovative policies and institutional guidelines annex of this booklet.*

OBJECTIVES

1A European Development Corridors
Study the theory of urban Development Corridors

1B Mozambican Development Corridors
Define the characteristics to apply the theory of Development Corridors to Maputo Metropolitan Area

2A Current main urban corridors
Describe the main formation of corridors in Maputo and Matola

2B How the corridors change the city
Understand the spatial impact of the development corridors in the cities

3A Sustainable urban development
Study the general definition of sustainable urban development

3B MMA Sustainable urban development
Contextualize the specific characteristics of sustainable urban development in MMA

4A Development and growth
Contextualize the current urban development trends and growing statics.

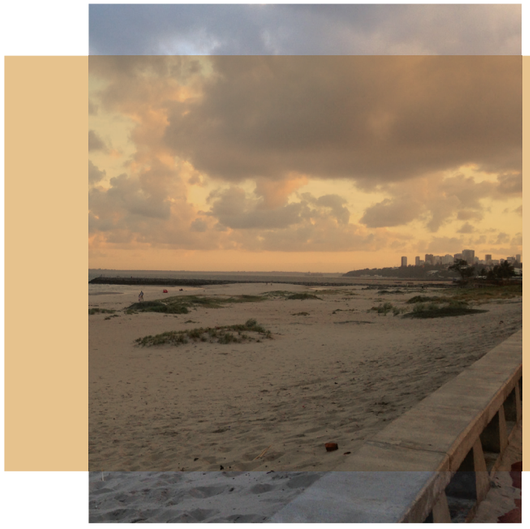
4B Neccessities and implications
Set the necessities of this growing speed and the spatial implications of it.

5A Current governance
Define the current governance structures in terms of urban development and future urban agenda.

5B Formal-informal structures
Differentiate formal and informal current governance structures. Define the opportunities of unification.

5C Adaptive governance frame
Propose a new frame [adaptive governance] where there is a collaboration between the different stakeholders.

PROJECT OBJECTIVES
Related to the subresearch questions
The project objectives clarify the main aspects to be studied in the vision and strategy and have been modified during the process of formulating the thesis.



03
METHODOLOGY

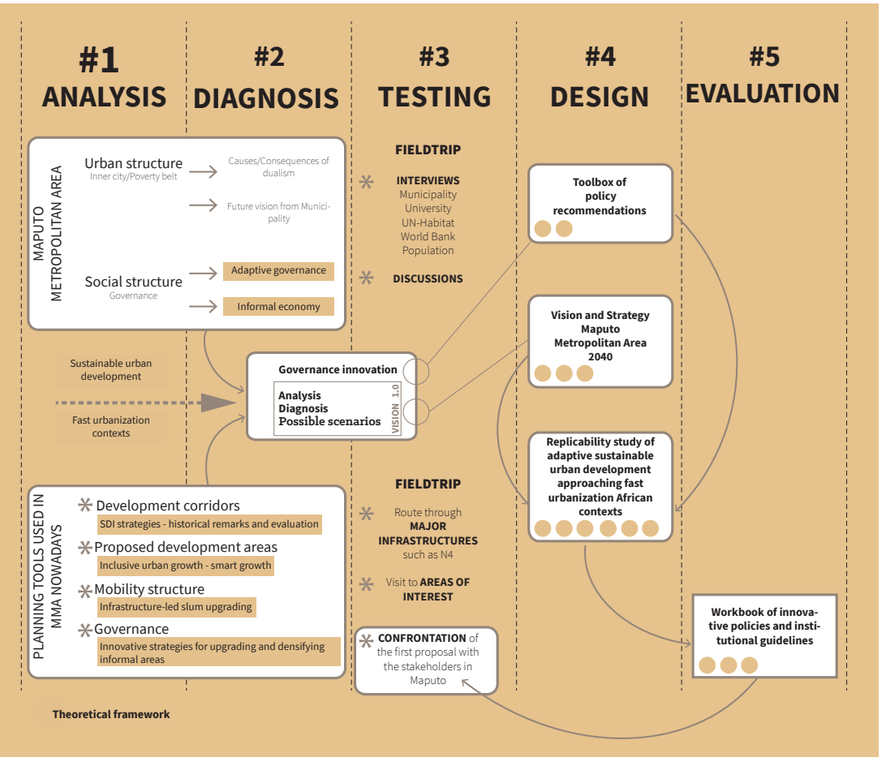


Image 39. Methodology - idea development
Source- diagram by author

METHODOLOGY PHASES

IDEA DEVELOPMENT

ITERATIVE PHASING

Development of the thesis idea to answer the subresearch questions

The thesis project will be divided into 5 iterative phases: **Analysis, Diagnosis, Testing, Design, Evaluation**. These phases aim to answer the 5 sub-research questions stated in the previous section. The methods to answer the different question will include steps in each of the phases.
At the same time, the theoretical framework is introduced as the back bone of the different steps to solidify the phases that are taking place in the process.

RELATION QUESTIONS - OBJECTIVES - METHODOLOGY - [METHODS]

RESEARCH QUESTION
How can contextualized planning strategies structure metropolitan growth in a fast urbanization context as the back bone of mobility based sustainable spatial urbanization? How can adaptive governance support the decision making in this strategy?

SUB RESEARCH QUESTIONS		SUB-RQ1 What does development corridor means for the population of Mozambique?	SUB-RQ2 What are the characteristics of the main urban corridors in the Maputo Metropolitan Area?	SUB-RQ3 What does sustainable urban development implies for the Maputo Metropolitan Area 2040?	SUB-RQ4 What are the characteristics of the fast urbanization context of Maputo Metropolitan Area?	SUB-RQ5 What is adaptive governance? How to implement it in the Maputo Metropolitan Area network of actors involved in the urban development?
OBJECTIVES		**1A.** Study the theory of urban Development Corridors **1B.** Define the characteristics to apply the theory of Development Corridors to Maputo Metropolitan Area	**2A.** Describe the main formation of corridors in Maputo and Matola. **2B.** Understand the spatial impact of the development corridors in the cities.	**3A.** Study the general definition of sustainable urban development. **3B.** Contextualize the specific characteristics of sustainable urban development in MMA.	**4A.** Contextualize the current urban development trends and growing statics. **4B.** Set the necessities of this growing speed and the spatial implications of it.	**5A.** Define the current governance structures in terms of urban development and future urban agenda. **5B.** Differentiate formal and informal current governance structures. Define the opportunities of unification. **5C.** Propose a new frame [adaptive governance] where there is a collaboration between the different stakeholders.
METHODOLOGY	ANALYSIS	**Main corridor strategies in MMA** GISmaps/ortophotos/literature.	**Definition of MMA. [Layers analysis]** GISmaps/ortophotos/literature/statistics	**Definition of Sustainable urban development.** Examples/literature	**Definition of this specific fast urbanization context. [Growth study]**/Examples/literature/statics	**Mapping of formal/informal urban governance networks** Statistics/examples/literature/interviews
	DIAGNOSIS	**Is this the best approach?** Literature/statics/interviews/scenario building/policy study	**Problematic. Causes and consequences [SWOT]** Literature/statics/interviews	**How to design a sustainable development in the context** Literature/statics/interviews	**How to manage the projections of population growth. [scenarios]**Literature statistics/interviews	**Highlight of unconnected-not involved actors** Literature/statistics/interviews
	TESTING	**Trip through major infrastructures** Field research/Photos-videos/Interviews	**Visit to areas of interest** Field research/Photos-videos/Interviews	**Visit to innovative sustainable strategies** Field research/Photos-videos/Interviews	**Visit to informal settlements of Maputo and Matola** Field research/Photos-videos/Interviews	**Interviews/ discussions & data collection** Field research/Photos-videos/Interviews
	DESIGN	**Vision&Strategy MMA 2040** GIS design/pictures/Policy study Interview-field research/ Literature reviews	**Vision&Strategy MMA 2040** GIS design/pictures/Policy study Interview-field research/ Literature reviews	**Vision&Strategy MMA 2040** GIS design/pictures/Policy study Interview-field research/ Literature reviews	**Vision&Strategy MMA 2040** GIS design/pictures/Policy study Interview-field research/ Literature reviews	**Toolbox of policy recommendations** Policy study/Interview-field research/Literature
	EVALUATION	**General method of adaptive sustainable urban development** Policy recommendation/GIS design/Literature study	**Replicability study of adaptive sustainable urban development** Policy recommendation/GIS design/Literature study	**Replicability study of adaptive sustainable urban development** Policy recommendation/GIS design/Literature study	**Replicability study of adaptive sustainable urban development** Policy recommendation/GIS design/Literature study	**Workbook of innovative policies** Literature study - examples/Stakeholder analysis
THEORETICAL FRAMEWORK		- Planning tools in African context - Infrastructure led urban development - Urban development trends in Mozambique	- People-centred development - Sustainable ndustrialization methods - Slum upgrading by densification	- Sustainable urban development - Densification strategies - Guided occupation - BRT strategies	- Fast growing theories: causes and consequences. - Informal economy	- Adaptive governance (ESSAY) -People-centred government -Policy recommendation methods

Image 35. Methodology in relation to questions and objectives
Source- diagram by author

#1. ANALYSIS. The analysis phase in developed in two parallel lines. In one hand, the analysis of the problematic of the Maputo Metropolitan area by the mapping and understanding of the dualism in the urban structure: poverty belt + inner city. Also, it is essential to map the network of actors involved in the urban development of the area; not only the formal institutions and organizations but also the informal vertical power structures and the relation between formal and informal networks that are already stated in literature (Boyd, Ensor, Castan Broto, & Juhola, 2014).
On the other hand, the analysis of the planning tools that are currently being used in the urban development of the area. In order to evaluate whether the approaches are successful and adapted to the context and propose alternatives to enhance the conditions of the MMA.
At the same time, in order to provide a further proper sustainable framework for urban development in fast urbanization contexts, it is essential to analyse these both aspects and understand the main conditions of the area.

#2. DIAGNOSIS. This phase still continues with the two parallel fields of research yet the first connections between them will start to appear.
It is essential to understand the causes and consequences of the current informal settlements of the area and mapping the future development in case there is no intervention in the area (How will be Maputo Metropolitan Area in 2040 with the current development trends?). At the same time, evaluate the current planning approaches and compare them to similar contexts.
These two different lines of reflection will lead to the starting point of the connections between the planning tools and their impact on the cities.
Also, the governance involved in the urban development of Maputo Metropolitan Area will be interrelated to build up an overview of the current involvement –or lack of it- of the whole variety of agents in the cities upgrading.
The main goal of this phase is to provide a first overview about **adaptive sustainable development in fast urbanization contexts.**

#3. TESTING. Once the first ideas about the Metropolitan Area are mapped, there will be a contact and test of the reality of the area on a field trip to Maputo.
The field trip took place from 7th to 22th of February 2018 to conduct interviews with my different contacts there (University, Municipality, UN-Habitat, World Bank, Architects and Inhabitants), visit the main areas of interest and drive through the majot infrastructures. The main objective was to understand the reality of the area and include data from local experts and sources that were not available from a distance research.
The different actors criticized the first mapping and ideas for a further implementation. This phased leaded to the implementation of analysis and diagnosis including the new sources and improved the reliability of the design.

#4. DESIGN. When the maps and ideas are tested and with the acknowledgment and recommendations of the contacts for further designs, it is the moment of proposing a simplified and clear vision and the strategy for Maputo Metropolitan Area 2040 which includes a innovative approach and new proposals.
At the same time, enforcing the theoretical framework in the different stages, the thesis will develop a replicability study to propose a sustainable urban development in fast urbanization contexts using contextualized approaches based on the spatial proposal for Maputo Metropolitan Area.

#5. EVALUATION. As final result, the spatial framework based on the planning proposal for a sustainable urban development of Maputo Metropolitan Area in 2040, will be accompanied by a framework of policies consistent on a summary of innovative policies, an evaluation of examples interesting for the strategy and different policy recommendations attached to the strategies.
The document will be directed to those who will continue with the study of the area and the different groups of actors involved in the development of the city: civil society, public and private sectors and international institutions.
This is complimented with a reflection of the innovative policies in the current planning theories and the most relevant examples used as reference for this project. This can be found in the Annex.

SOCIETAL RELEVANCE

HOW DOES THIS PROJECT INFLUENCE THE MOZAMBICAN SOCIETY?

Contextualizing the urban planning

04

The urban population in the world is growing without measurement. The biggest growing is in the Asian and African contexts (UN 2014) and, at the same time, it is there were there are less planning initiatives and procedures. From the urban planning perspective there is still a lot to be done and implemented in these areas and there is scope for urbanists to change the rules of the game and propose new approaches to one of the most complex realities.

In the case of Mozambique, the UN-Habitat country report of 2008 already stated the necessity of changing the perspective and involve the population in the planning process:

> "Although the planning dimension has gained more attention at a higher institutional level, there is a general lack of will to involve residents in the planning process, which often generates serious problems during the implementation phase. More needs to be done to ensure participatory physical planning mechanisms in Mozambique"

At the same time, from an international perspective, it is essential to think about new ways of approaching these realities from a top down initiative that take into account the whole variety of actors involved. There is an urgency in thinking on ways of improving the conditions of informal settlements in confrontation with the current government guidelines to demolish them (da Costa and Biza, 2012). Currently, there are disconnected interests between the state and private sector and the population living in these areas that need to be understood and valued with new perspectives and proposals.

The approach to the context from SDIs is a current urban discussion. The case study of the Maputo Development Corridor has been discussed for years and leaded to the development of a lot of similar strategies in the African context; being the third most important corridor in the Southern Africa region, institutions like UN-Habitat or the transport department of SADC are proposing new ways of improving it.

Because of the huge network of agents involved, the societal relevance of this thesis in not only focused on the spatial development but, at the same time, involves a second layer of governance and institutional relations in terms of policies proposal and multi-layer approaches.

The scientific relevance of this thesis relies not only in the further steps of urban planners in developing contexts, but also in the research opportunities that these contexts propose for further research in planning techniques.

There is an urgency for experts to focus on the African continent as location with lack of educational development. The researching and work should be connected with the training of the local population. It is essential to understand the variables of the context and analyze the local history without proposing European aligned approaches. There should be a testing of techniques and consult to local experts to understand how they result in these areas.

Although there has been discussion and dialogue about the different approaches to improve the precarious conditions in Mozambique, little has been translated as direct impact in the area. This can be perceived as a disconnection between the researchers, the policy makers and the reality of the area. There is an urgency to understand the whole variety of agents involved in this complex process and the different roles in the development of a city and enhance collaboration.

Thus, it is effective for policy makers and public institutions to propose new ways of connections and, at the same time, it is essential for international donor agencies to understand their role in the developing context and the necessity to enhance the participation of the population. Therefore, this proposal of new network connections and new spatial strategies for development in metropolitan scale from a collaborative perspective will be relevant in terms of scientific research.

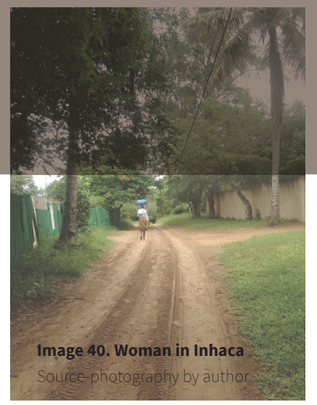


Image 40. Woman in Inhaca
Source: photography by author

SCIENTIFIC RELEVANCE

WHAT IS THE CONTRIBUTION OF THIS PROJECT TO THE SCIENTIFIC COMMUNITY?

Rethinking theories and strategies

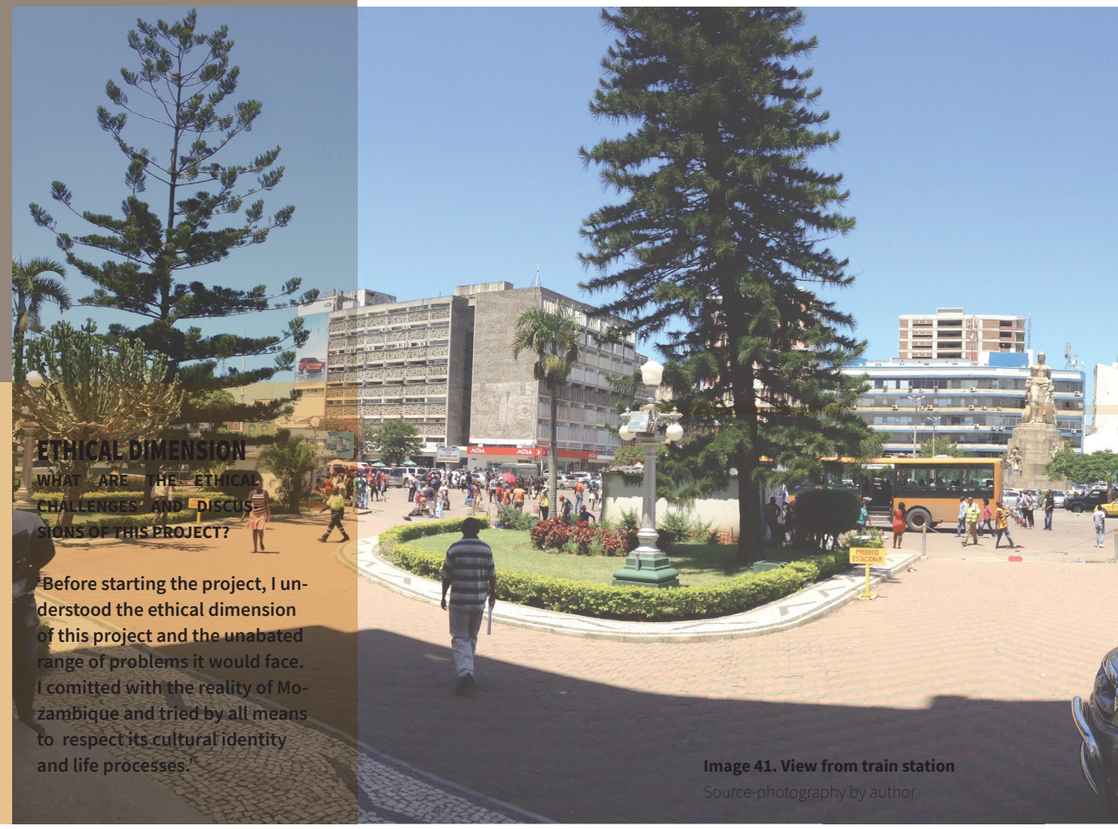


Image 41. View from train station
Source: photography by author

ETHICAL DIMENSION

WHAT ARE THE ETHICAL CHALLENGES AND DISCUSSIONS OF THIS PROJECT?

'Before starting the project, I understood the ethical dimension of this project and the unabated range of problems it would face. I comitted with the reality of Mozambique and tried by all means to respect its cultural identity and life processes.'

05

This research has a strong ethical dimension, because of its context in a rapid urbanization country that is currently not providing its population basic living conditions on its major urban area.

During my research, I will confront difficult situations in order to provide knowledge focused on an area that I am not completely familiar with. I understand the restrictions I am facing, mostly because I was born and lived my whole life within an accommodated environment in a European developed country.

However, I do believe that knowledge is universal and I am open to commit with the challenge and make a double effort to understand the reality and think of realistic approaches to develop a planning proposal.

At the same time, during my field trip, I received a glimpse of the reality of the context which helped me to develop further the proposal to frame it into the context. I perceived the environment and atmosphere of the urban development strategies of Maputo Metropolitan Area and, through conversations with different stakeholders, I could understand the different perspectives towards the future of the city. I introduced my work to different people and it was confronted with experts that were in agreement but also in disagreement with my approach. This allowed me to develop a critical mindset about my own work and the discussion it proposes and adjust a big part of it to the context reality.

The major ethical challenge this thesis is approaching is the fight for universal human rights. I am convinced that every person in the world deserves a proper living environment, safe and with the basic services covered.

Finally, we all should be committed with the dangerous reality that our planet is facing in terms of climate change; therefore, I understand that it is scope of every professional in this field to rethink the proposals and designs towards a more sustainable environment where the least damage possible is done to our planet.

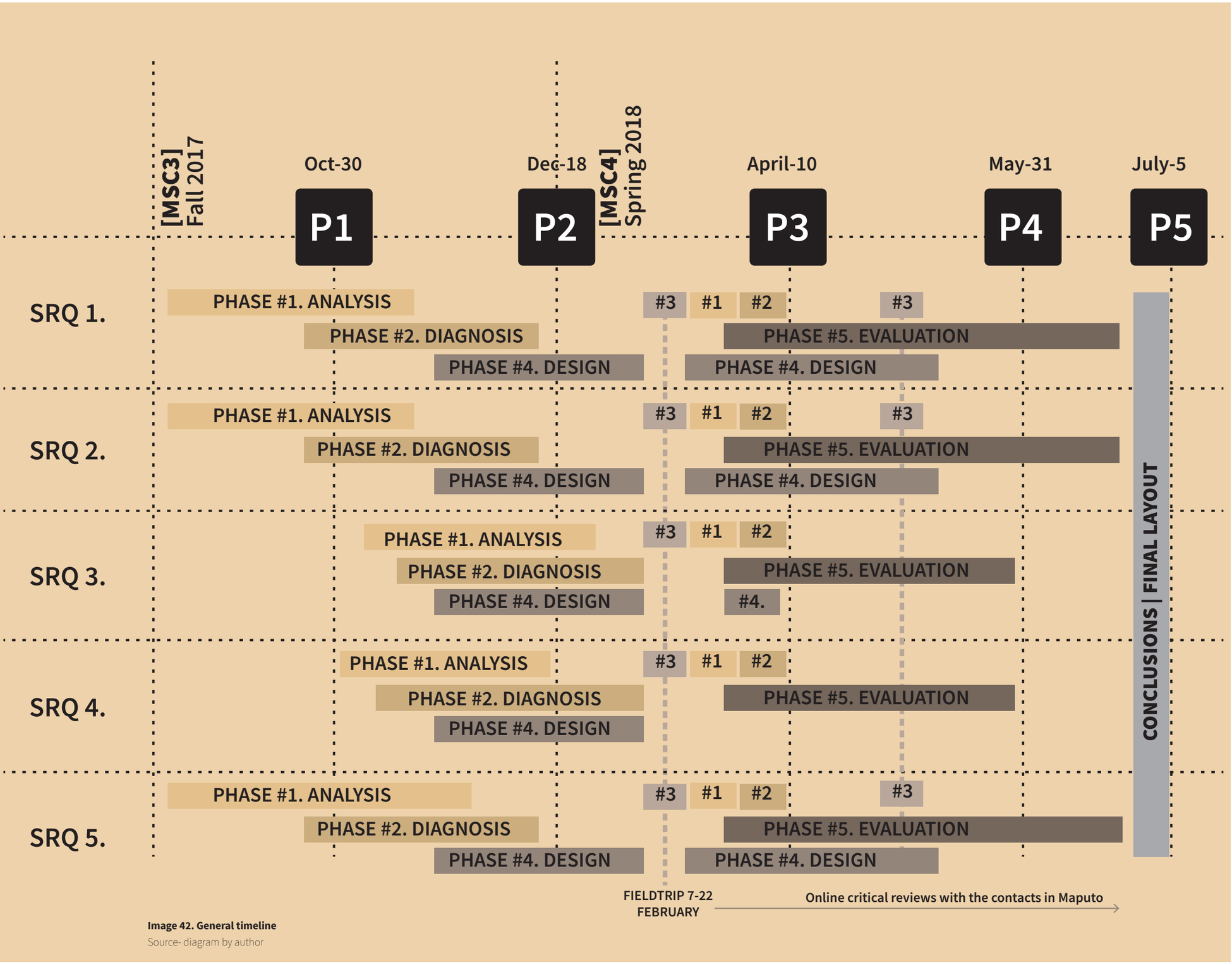


Image 42. General timeline
Source- diagram by author

TIMELINE

06 Time management description-

The time organization is divided around each one of the sub research questions. Organized in phases, that are iterative in time. Most of them happening in parallel.

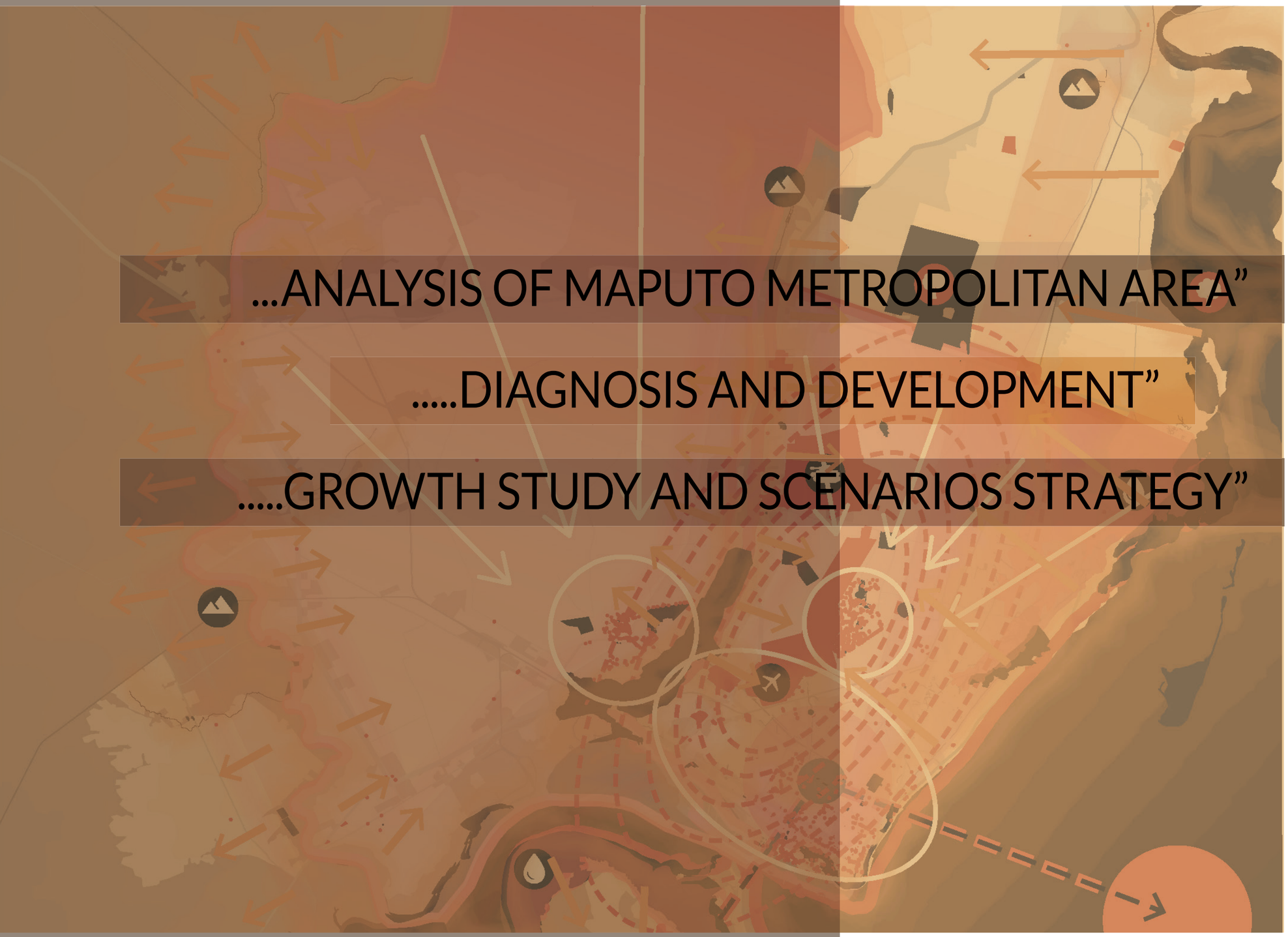
The SRQ1 and SRQ2 about the Maputo Metropolitan Area and the planning tools were merged with the SRQ3 and SRQ 4 about fast urbanization context and sustainable urban development to realize the Vision 1.0 that was presented during the fieldtrip in Maputo. At the same time, the literature review about the governance structures was develop prior to the fieldtrip and completed with the interviews to stakeholders. This, along with the workshops provided by the research group about planning, participation and stakeholders, consolidated the base for the development of the workbook of innovative policies.

Once been aware of the conditioning of the location and over the first draft of the vision, there was a confrontation of the ideas with the different stakeholders in the location. The general feedback was positive and the conclusions of the fieldtrip helped to completed the vision 2.0 and the development of the Strategy that was introduced in a general overview during P3 and developed in detail for P4.

Because of the interrelation between the different research questions to design a final deliverable that contains all of them, the design phase is happening at the same time in all the research questions.

The main conditioning of the project in reference of time management is the field trip, connected to the phase 3: testing. It happened in February (7th to 22th) because in January is the summer vacations time in Maputo. In terms of time management, for a proper development of the project, I started to design before the field trip to confront my ideas with the experts in the location. After the field trip, I extended my analysis and diagnosis about most of the questions and finalized the design, that was evaluated and closed for P5.

D - ANALYSIS AND DIAGNOSIS



map 12. SWOT analysis aspects to foster
Source- reference map XX. *SWOT conclusions - to implement*

D -

Overview of section- This section will present the work of analysis and diagnosis of the Maputo Metropolitan Area urban development.

In the process of formulating a vision for the area in 2040, there was a formal methodology developed to approach the context with an analysis and diagnosis prior to the fieldtrip and based only on literature review and GIS data analysis. This was complimented after the fieldtrip with data provided by UEM in Maputo. This process contained the following methods:

- Layers analysis of MMA
- SWOT analysis of MMA
- Growth Study, divided into Statistics study, Population Growth Profile and the Growth in Numbers.
- Development Scenarios
- Current policies Study in a municipal and country scale

These methods lead to the proposition of a first vision that was confronted during the fieldtrip with several stakeholders and reformulated after it, which will be discussed in the final section: Process of constructing the vision.

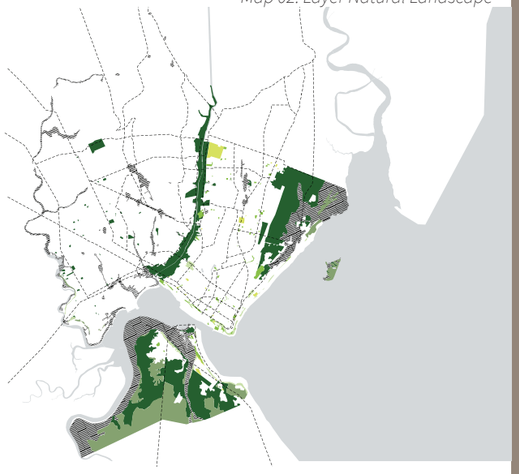
- 01. Layers and SWOT analysis
- 02. Diagnosis - conclusions of analysis
- 03. Growth study
- 04. Development scenarios
- 05. Current policies

01 LAYERS ANALYSIS

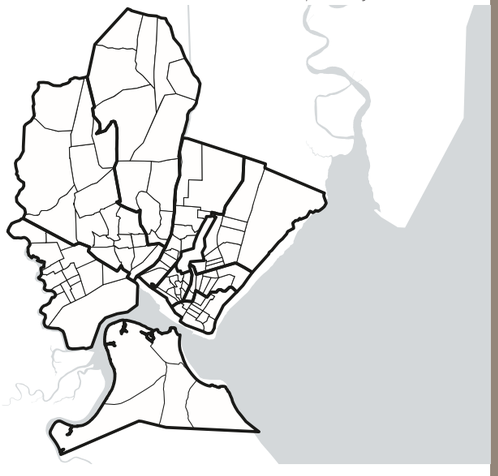
The layers approach is an analysis method defined by Gabriel Dupuy in 2008 on his book "Urban networks - Network urbanism". Its aim is to organize the different factors involved in the complexity of the urban tissue. He establishes networks that define the urbanism of the cities. These networks not only define the spatial elements of the cities but also the people's use of them and the dynamic routes within the urban extension.
In Dupuy's approach, there are three levels of network: the technical networks or physical elements (layer 1: landscape); the functional networks or connections (layer 2: governance; layer 3: mobility) and the services and people's movements (layer 4: production-consumption; layer 5: population). The different levels are interconnected and interdependent by linking activity places, spaces, services, desires and needs. In this model, the social and spatial aspects of the city are illustrated as fundamental qualities of the same system.

** For further insight, the maps are available in high resolution in the Atlas complementary to this booklet*

Map 02. Layer Natural Landscape



Map 03. Layer Governance



LAYER 1
NATURAL LANDSCAPE

The Maputo Metropolitan Areas is highly connected to its natural landscape. By its location of the Maputo bay, there is a high touristic population related to the beach resorts and attraction. At the same time, within the delta area and the river shores, there are natural reservations that needs to be preserved, not only from being flooding areas, but because of its natural richness.
Also, within the city extensions, it is essential to highlight the topography. The city of Maputo was built over an scarped topography in the north-south edge. The topography descent towards the western Infulene river valley that separates Maputo cidade from Matola city (Jenkins 2000); (Pestana Barros 2014). There are several flooding areas specially in the east coast line because of the low topography lines. This resulted in several flooding problems during the development of the city, specially in the year 2000.

LAYER 2
GOVERNANCE

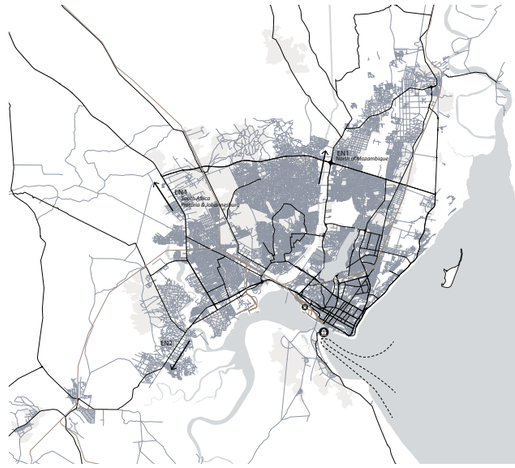
Maputo Metropolitan Area is constituted by the cities of Maputo and Matola, each one with its own districts and neighbourhoods.
Maputo is divided in 7 districts, separated in three different spatial zones: the city of Maputo, the area of Katembe and the island of Inhaca. Matola is constituted in three districts: Matola, the city centre; Machava, industrial area; and Infulene, area born to locate the extension residential areas of Maputo, linked to the industry of Machava.
The districts of the cities are divided in smaller scale administrative areas, named 'bairros' (neighbourhoods).
Maputo is divided in 56 neighbourhoods: 49 neighbourhoods within the city extension, apart from the area of the airport; 5 neighbourhood within the area of Katembe and one sole neighbourhood in the island extension.Matola is divided in 40 neighbourhoods: 14 neighbourhoods within the district of Matola, 11 within the area of Machava and the area of Infulene divided in 15 neighbourhoods.

LAYER 3
MOBILITY

In terms of mobility, Maputo Metropolitan Area relies on a multi-layer connection with maritime, train, plane and roads connection.

The most used ones are the roads, with a highlight of the EN4 that connects the area with the main cities of South Africa: Pretoria and Johannesburg and it is also named as Maputo Development Corridor. Main roads are also the EN1, connection to the North of Mozambique and the EN2 that presents an access to Swaziland and the Southern area of South Africa. The maritime port of Maputo and Matola is known as the closest water connection to Gauteng, the economical core of South Africa. This supposed historical relations between Mozambique and South Africa which are stablished nowadays. The maritime exchanges are supported by a railway infrastructure along the N4 and N1.

Map 04. Layer Mobility



LAYER 4
PRODUCTION - CONSUMPTION

The main productive activities in the Maputo Metropolitan Area are focused on the agriculture and industrial sectors.

Because of its humidity, the agriculture sector is related to the water sources and the peripherical areas where the agriculture is the main source of food due to the lack of proper connections with the main cities.

On the other hand, the main industrial areas are located in the area of Matola, cluster of industrial activities. There is a clear relation between industrial activities and main infrastructures lines.

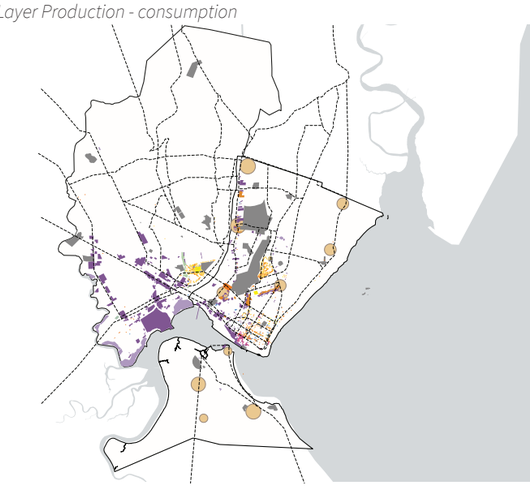
Finally, the productive nodes illustrate the most active parts of the cities, highlighting in both cases the current city centres of Maputo and Matola.

LAYER 5
POPULATION

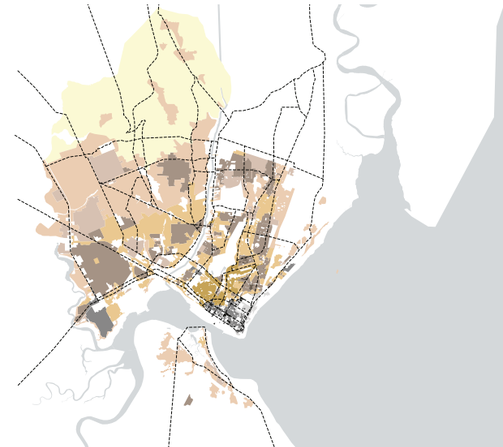
The population of Maputo Metropolitan Area is explained in detail and based on numbers from the Statistics Institute of Mozambique in the section of the Growth study of this report and the annexes.
As can be understood in the population map, the whole extension of the cities are occupied by residential areas on their majority.
The progressive urban growth had a north direction, having the southern city centres as focus of expansion. That is why in the Northern part of the cities, there is a less compact urban pattern.

**It is essential to highlight that the author of this report has doubts about the reliability of this data and the information of the reality of the current informal settlements urban extension that is available. There is need for contrasting this data but there is no other source in the moment.*

Map 05. Layer Production - consumption



Map 06. Layer Population



SWOT ANALYSIS

"SWOT analysis (strengths, weaknesses, opportunities and threats analysis) is a framework for identifying and analysing the internal and external factors that can have an impact on the viability of a project, product, place or person." (Rouse, M. 2017)

** For further insight, the maps are available in high resolution with a detailed explanation in the Atlas complementary to this booklet*

Map 07. SWOT strenghts



STRENGHTS

The strengths refer to internal attributes and resources that support a successful outcome. They are related with the current state of the area to explore.
The main strengths of the Maputo Metropolitan Area rely on its strategical location, close to natural resources and accessibility opportunities. At the same time, despite the precarious conditions of its current urban extension, there are several positive factors to foster.

· Centralization of industry
· Multimodality
· Metropolitan character
· Urban landscape and tourism

Map 08. SWOT weaknesses



WEAKNESSES

The weaknesses refer to internal attributes and resources that work against a successful outcome. They are related with the current state of the area to explore.
The weaknesses are defined by its current barriers and lack of services and connections. These are the main causes of the current precarious situation of the informal settlements in the extension of the city.

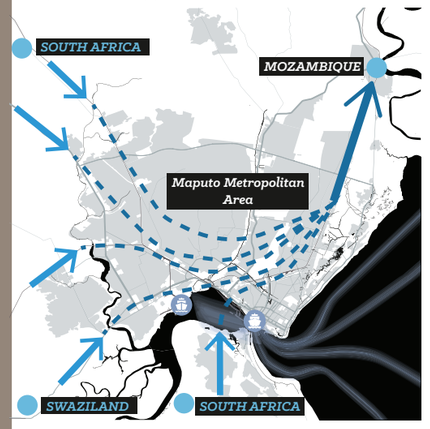
· Barriers
· Lack of facilities in most of the city extension
· Precarious conditions of informal settlements
· Lack of connection with Katembe and Inhaca
· Weak governance

OPPORTUNITIES

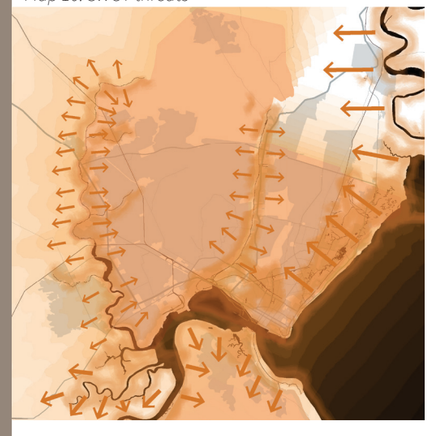
The opportunities refer to external factors that the area can capitalize on or use to its advantage. They are related with what the future state of the area could be.
In relation to the external qualities, the opportunities are focused on the possibility of upgrade the cross-border relations by maritime routes or with the surrounding countries.

· Cross-border connections
· Maritime international relations
· Front door for the whole country

Map 09. SWOT opportunities



Map 10. SWOT threats



THREATS

The threats refer to external factors that could jeopardize the entity's success. They are related with what the future state of the area could be.
Finally, the threats are linked to the global problems like climate change and its water level arise and the world population growth, that has a big impact in the African context.

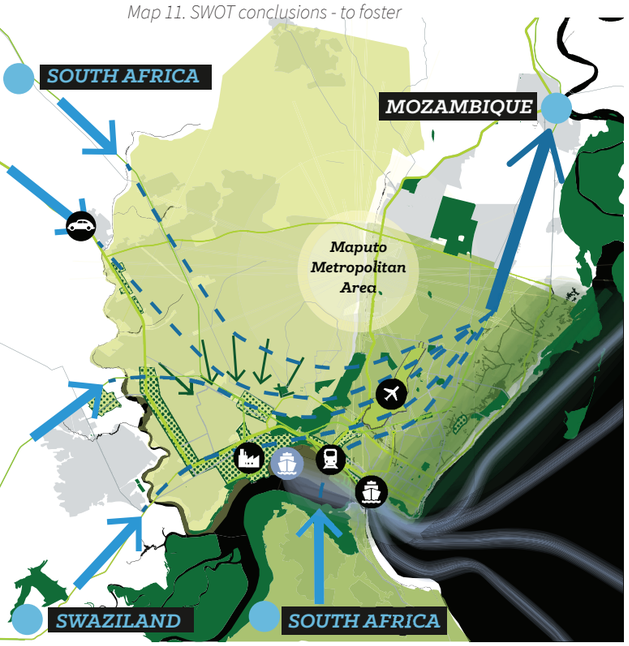
· Climate change - expected raise of sea level
· Future population growth

** For further insight, the maps are available in high resolution with a detailed explanation in the Atlas complementary to this booklet*

02 ANALYSIS

CONCLUSIONS

Map 11. SWOT conclusions - to foster



TO FOSTER

SWOT ANALYSIS

Strenghts + Opportunities

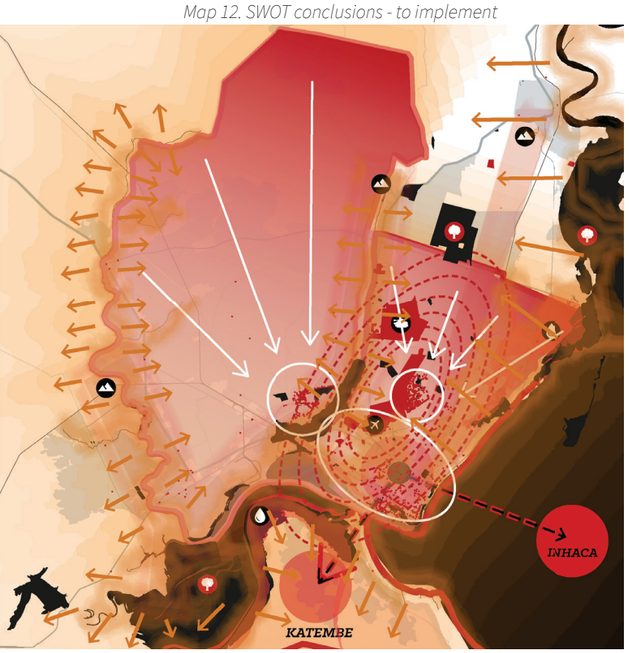
In order to apply the diagnosis from the SWOT analysis, it is essential to highlight the main positive conclusions.

This map illustrated the strategical location of the Maputo Port for the country and the opportunity of improving the multi modality mobilty to access the metropolitan area. and promote its international image This should be part of the future development proposed and strength the vision of the area by creating a Transport Oriented Development.

At the same time, the industrial areas lead a development into an industrialization process with an innovative sustainable approach that do not transform the industrial opportunities in threats.

Finally, the natural richness of the country is one of its most valorated qualities, these areas should be preserved and foster to increase the attraction prevent the urban extension over them.

Map 12. SWOT conclusions - to implement



TO IMPLEMENT

SWOT ANALYSIS

Weaknesses + Threats

In order to apply the diagnosis from the SWOT analysis, it is essential to highlight those aspects that suppose a negative influence for the development.

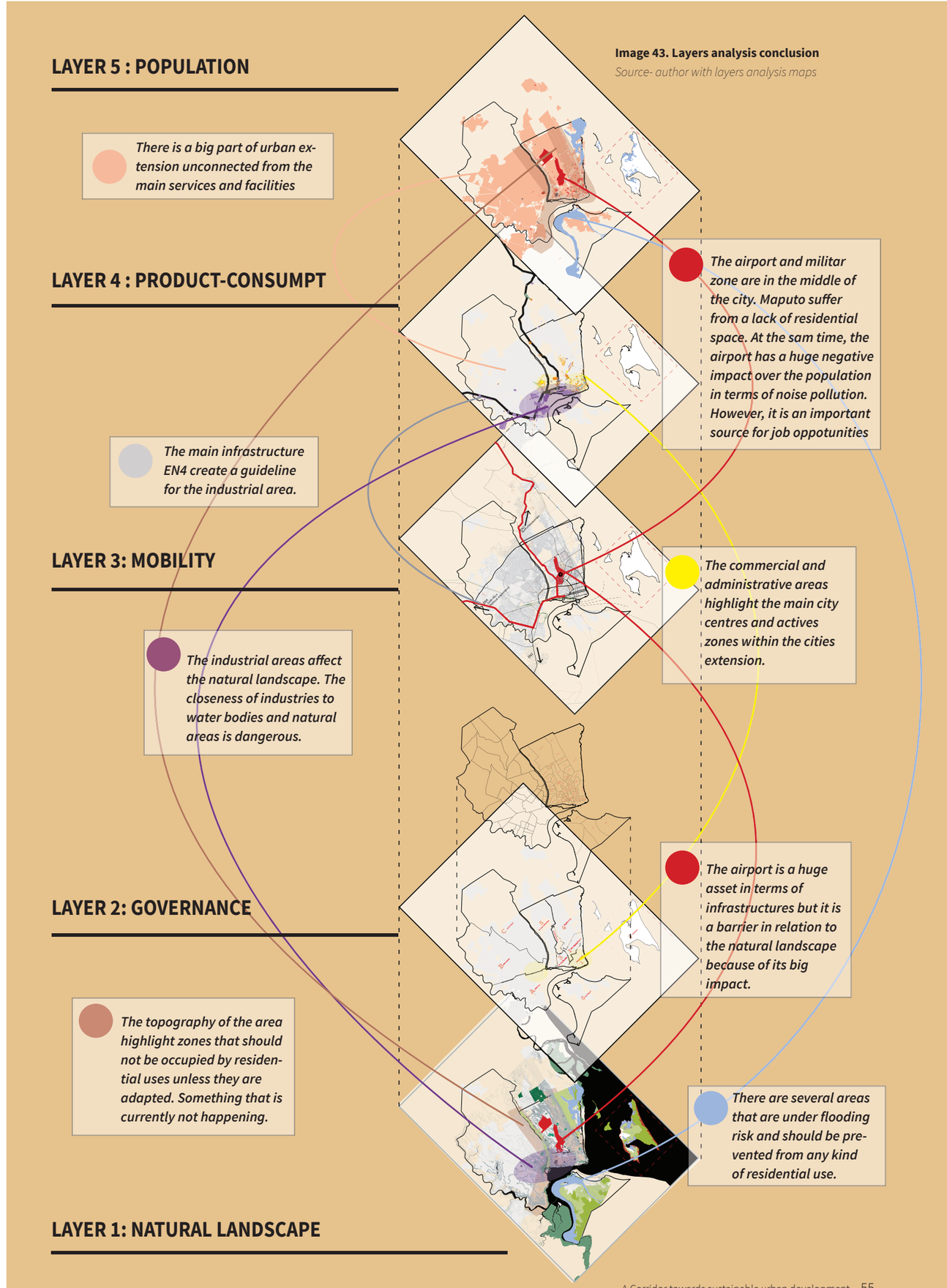
Summarizing the aspects to implement or transform, it is essential to release some pressure from the current city centres of Maputo and Matola. Therefore, an increasing of the services within the extensions of the city will introduce better conditions in the informal settlements.

At the same time, implementing the connections of the city with the annexed areas of Maputo (Inhaca and Katembe) and within the city extension.

Finally, to improve the living conditions by controlling the different barriers that currently suppose a negative factor for the cities.

Image 43. Layers analysis conclusion

Source- author with layers analysis maps



03 GROWTH STUDY



Historical remark - Maputo and Matola are the biggest cities in the country. Both are experimenting a continuous explosive growth. Matola is currently experiencing a bigger growth than Maputo. The causes of this are historical.

Image 44. Maputo people crowd
Source-http://www.korken.sk/cikkek/egyeb/2017/12/23/fold-oss-lakossaga-2018-elejen-eleri-76-milliard-fot

1960
Industrial boom in Matola
Residential urban architecture for the colonial burguesy



I45.

1960-1970
Colonial policy
Urban expansion for the colonial working classes with incentives to build your own house. Creation of new neighbourhoods



I46.

1960-1970
Industrial expansion in Matola and Machava
Suburban areas of Matola as dormitories of the industries.



I47.

1960-1970
Negative growth in Lourenço Marques
During the independence war, the Portuguese population returned to Portugal.



I48.

1970-1980
National independence. Shift in the urban population in Mozambique
Occupation of the abandoned colonial spaces. More evident in Matola where the suburban spaces grew to absorb the migration to Maputo



I49.

1980
Migration from rural to urban areas
Because of the civil war, the rural areas became unsafe. At the same time, several natural disasters leaded to a failure in the agricultural sector.



I50.

56 A Corridor towards sustainable urban development

GROWING POPULATION PROFILE
ACCORDING TO STATICS

People in working age
As represented in the growth study, the majority of the growth is centred between 20 and 55 years. This group of people represent the working age. This supposed a necessity to plan the development areas with work load to be hired and trained. A specific approach to generate income and job opportunities with a parallel trainership of the local workforce.

Majority of women
Within the comparison between genders, the data states that the women's growth will be higher than the men's one.
At the same time, the main age range is on fertile age, which will ensure the continuing of the growing trend.

Highest growth in Matola
Matola presents a big growing tendency in the represented statics. In the whole Maputo Metropolitan Area, the biggest growth will come from the current urban extension of the city.
On the other hand, the growth from Maputo, while still high, is not so prominent.

Change in the population pyramid
The ages between 0-24 years will be narrowed; mainly because of the negative growth experienced in the city of Maputo. Therefore, while the population is growing, the life expectancy will increase, and therefore, the precarious life conditions will remain.

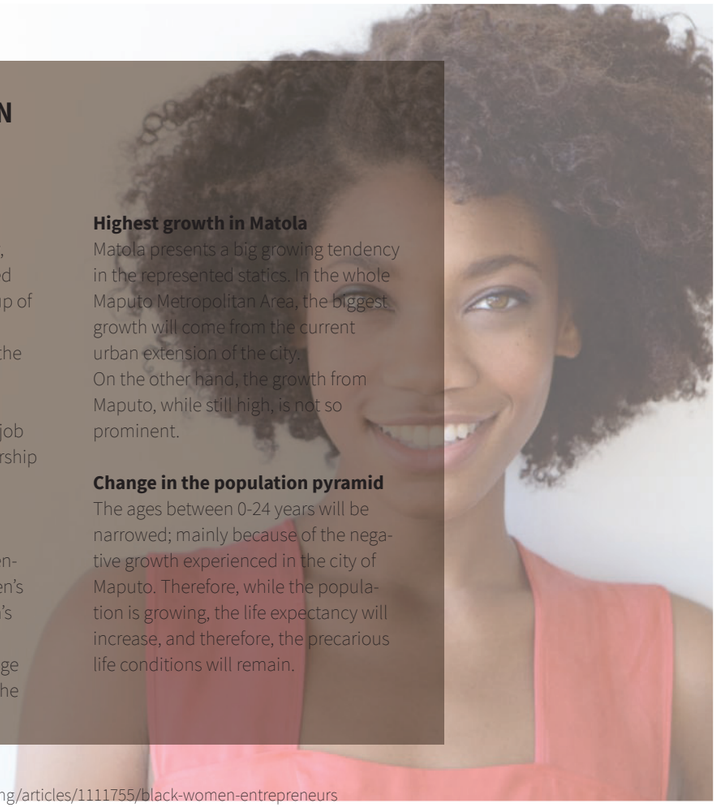
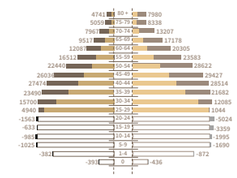


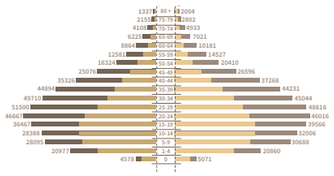
Image 51.Empowered woman
Source-http://www.sheknows.com/living/articles/1111755/black-women-entrepreneurs

** Population according to the 2017 census preliminary results. Surface according to National Institute of Statistics.*
There is a detailed growth study included in the Atlas annex maps 13 and 14.

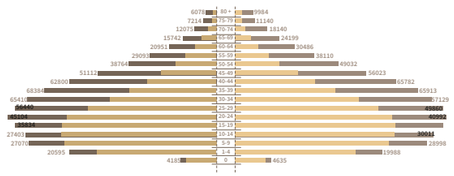
MAPUTO CITY 2017 - 2040



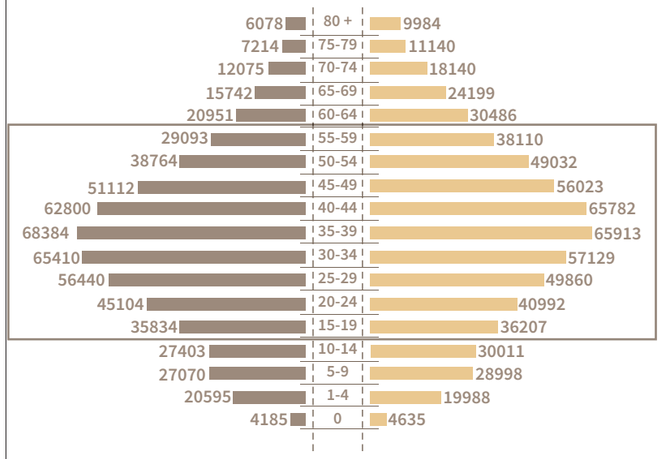
MATOLA CITY 2017- 2040



MAPUTO METROPOLITAN AREA 2017-2040



MAPUTO METROPOLITAN AREA GROWTH PYRAMID 2017 -2040

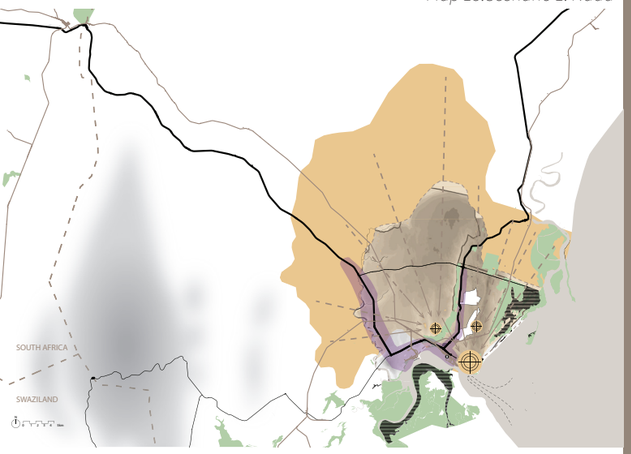


This data proposes an insight on the growth profile expected in MMA for 2040. The graph represents the growth pyramid of MMA where the majority of growth will be between the ages of 20 and 54 with an overall population growth bigger in the female gender.

04 DEVELOPMENT SCENARIOS

** For further insight, the maps are available in high resolution in the Atlas complementary to this booklet*

Map 15.Scenario 1. Nada



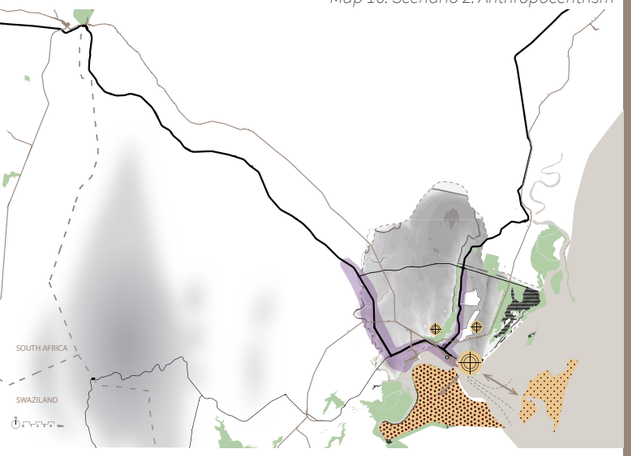
SCENARIO 1
NADA

Illustration of what would happen if the development continuous with the current urban trends of informal settlements and low density sprawl typologies.

PROS
- attached to the context
- informal settlements with initial guidelines
- easy trend to pursue

CONS
- low density: sprawl
- natural damage
- unconnection with current infrastructures
- increase precarious living conditions| slums
- periphery unsustainable > ecologically, socially and economically
- more pressure to current city centres

Map 16. Scenario 2. Anthropocentrism



SCENARIO 2
ANTHROPOCENTRISM

This scenario visualize what would happen if the natural reservoirs are forgotten and the urban sprawl conquer them for residential uses, something that has been proposed in some official urban plans in the country.

PROS
- within Maputo Metropolitan Area current area
- necessity of new connections with Katembe and Inhaca
-good natural quality in the possible new urban development

CONS
- destruction of natural spaces
-disconnection with current infrastructures
- more distance with surrounding countries
-increasing of flooding problems
- more pressure on Maputo city centre
- difficulties in goods' provision

Map 17. Scenario 3. Out of context



SCENARIO 3
OUT OF CONTEXT

This illustration reflects upon the application of European planning tools to the African location without being contextualized, such as new urban area gained to the water surface

PROS
- middle location between Maputo and Inhaca island
- ex-novo settlement : possibility of new urbanization with proper living conditions

CONS
- natural damage
- outside the current infrastructure network
- financially very expensive
- totally unconnected
- increasing the pressure in Maputo city centre

SCENARIO 4
INFRASTRUCTURES

Scenario that locates the growth following the main infrastructures of the area.

PROS
- enforcement of current infrastructures
- alleviate pressure on the city centres
- possibility of connection with the industrial tissue around the roads
- new urban areas: proper living conditions
- connection with other urban areas currently in low density precarious conditions

CONS
- outside current metropolitan area extension
- disconnected with sea and nature
- necessity to erase the current urban layer over the areas that would be ocuppied

SCENARIO 5
DENSIFICATION

Scenario focused on the densification of peripheries and improvement of the informal settlements and sprawl urban tendencies.

PROS
- within the metropolitan extension
- related to the context
- will improve the current conditions of the city
- will use the current extension and resources of the city on its maximum capacity

CONS
- add pressure to the current city centres
- necessity of dealing with the current urban layer
- need a parallel reinforcement of the infrastructures
- increasing of inequalities within the city
- more expensive than creating new areas
- difficulty in mediating with stakeholders

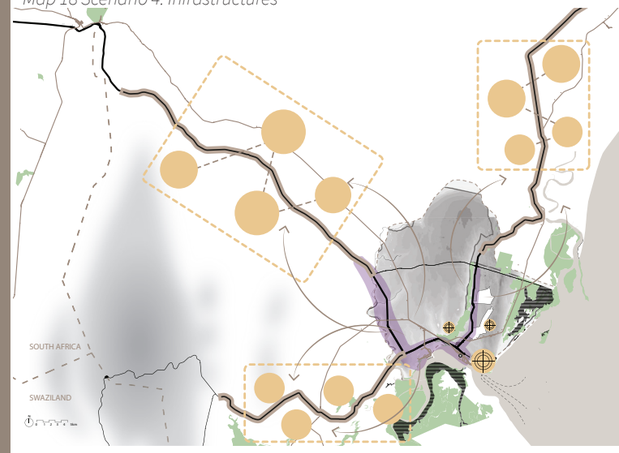
SCENARIO 6
THE MIDDLE AREAS

Proposal that locate new urban extensions in area in between currently built surface. Creating a second line of connections with the current infrastructures.

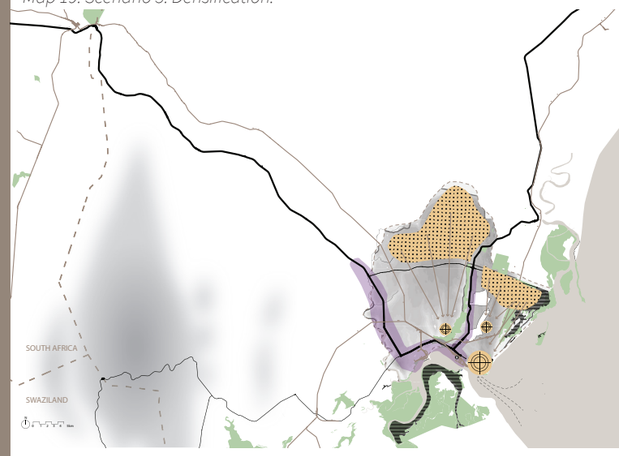
PROS
- creation of new urban areas in unused spaces without previous urban layer
- new urbanism: proper living conditions
- can be located in the most convenient area
- possibility of relation with surrounding countries

CONS
- necessity of create connections with the current infrastructures.
- disconnected from the cities
- natural impact
- difficult to relate to current industrial areas (no current infrastructures)

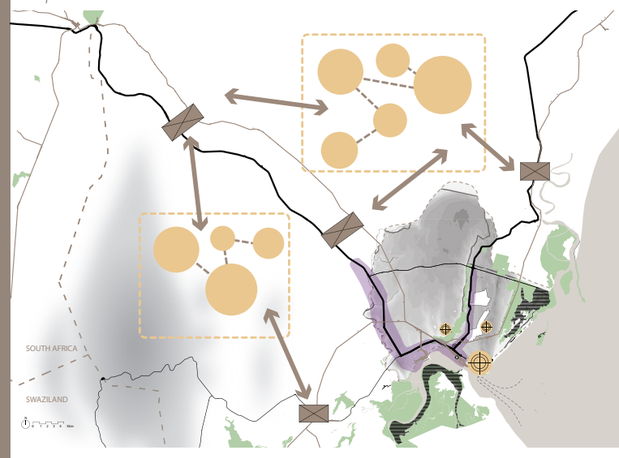
Map 18 Scenario 4. Infrastructures

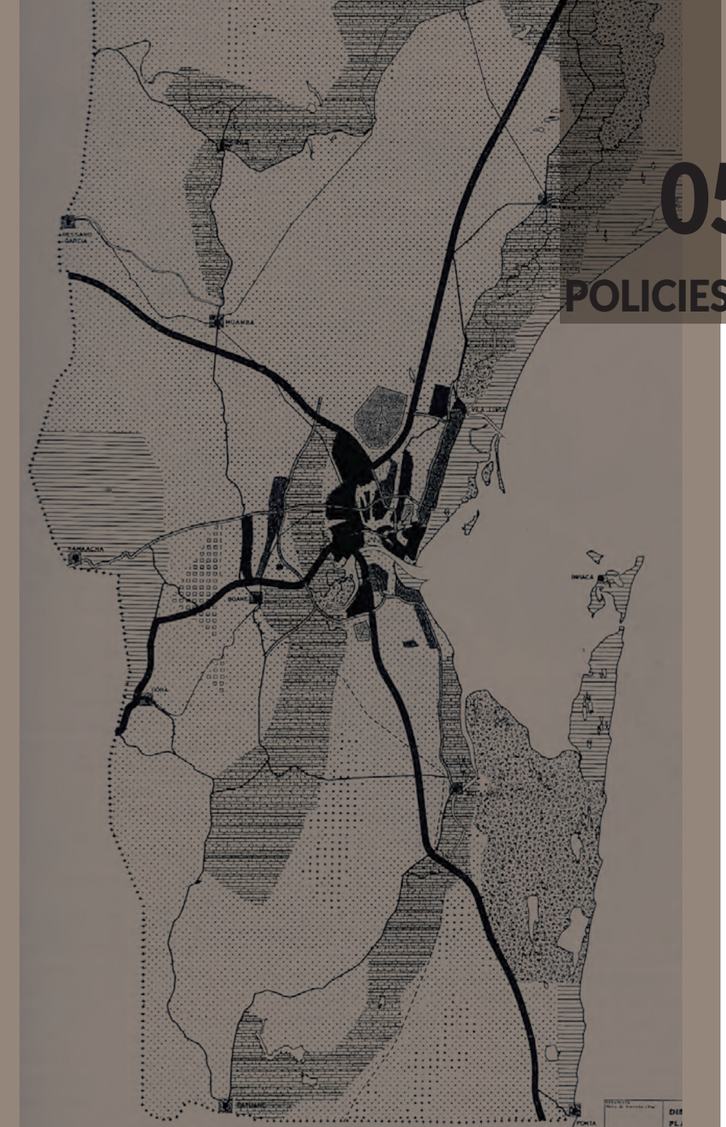


Map 19. Scenario 5. Densification.



Map 20. Scenario 6. Middle areas.





05
POLICIES STUDY

Image 52.PDULM 69 - enquadramento regional da cidade
Source-Revista do Centro de Estudos de Urbanismo e Habitação Engenheiro Duarte Pacheco 1970

NATIONAL DEVELOPMENT STRATEGY
MOZAMBIQUE 2015-2035

Central government of Mozambique
Country agenda for the next twenty years.

The National development strategy [ESTRATÉGIA NACIONAL DE DESENVOLVIMENTO 2015-2035. National Government, 2014] illustrates the main national guidelines of the country of Mozambique. The following key points are translated from Portuguese by the author and summarize the main guidelines that the national government are proposing for the future development of the country.

The main proposal to look at the future according to the national strategy is based on an industrialization process to increase productivity in Mozambique.

Vision *"Mozambique as a prosperous, competitive, sustainable, safe and inclusive country"*

Aim *"Promote the social and economical development towards integrated policies oriented to create richness and improve the life conditions of the population through a just distribution of the national performance"*

Main objective *"Upgrade the life conditions of the population through the structural transformation of the economy, the expansion and densification of the productive basis"*

Industrialization process The report proposes an industrialization process as principal guide for an inclusive and sustainable development model. The proposed industrialization process is fully described in the report in terms of aims and objectives but it presents a lack of practical approach. The base main industrialization pillars are: development of human capital, development of infrastructures, research innovation and technological development and organization of the institutions.

Strategies to accomplish the industrialization process
1- Appropriate technology
2- Training process of the national workforce
3- Extension of agro-ecological areas
4- New industrial areas along development corridors
5- New infrastructures and support services

PEUMM - PLANO DE ESTRUCTURA URBANA DE MUNICIPIO DE MAPUTO
MAPUTO MUNICIPAL PLAN FOR URBAN STRUCTURE, 2008.



1. Informal settlements
Requalification of informal or undeveloped neighbourhoods.
800.000 people living in slums, 3/4 of the city population.
The population growth is faster in the informal settlements than in the rest of the city.
"Per uma cidade sem slums"



2. Accessibility
Improvement of the accessibility to the city centre and the connection with the surrounding countries.
There are several problems in the movement to work places because of the distance and the insufficient public transport|Water transit connections
Location of the airport lead to high risks and negative impacts|Priority for public transport (bus and train)



3. Environment
Ecological balance. Environmental quality and sustainability.
Problems like the slipping of barriers, the maritime coast erosion and the air quality diminution
The causes are mainly the non sustainable interventions and the impact of global phenomenon like the global warming.



4. New nodes
New economic, social, cultural, leisure and administrative nodes
Currently only the Baixa relies on a proper equipment distribution.
New network of second order centres that will be nodes for the transport systems.
Improve the quality of the current centres.



5. Densification
Densification of the urban area to make profitable the infrastructures and urban services and increasing the social interaction among the inhabitants
No available space + fast growing trend.
Currently max 70 hab/ha (without the areas under reservation)
For the expected growth: 140 hab/ha



6. Infrastructures
Development of infrastructures and urban facilities.
Influence from the aspects 2, 4 and 5.
Sophistication of life conditions.
Proper tax payment will cover the process of upgrading the infrastructures.



7. New urban areas
Opening of new areas to absorb the population growth and including reserved areas of social housing
Because of the restrictions of the current urban area.
Alternatives methods of urban development.
Financially, these areas will be covered by the benefits of their urbanization.



8. Social housing
Investment in social housing.
These areas do not allow public auction
Careful process to avoid speculation
70% of the new urban areas destined to social housing: depending on the relation between the surface and the density. Maintaining a social balance.



9. Historical patrimony
Preservation of monumental qualities and historical and cultural patrimony that enrich and build up the collective memory of the city.
Currently mostly in the Baixa and some buildings in the informal city that belong to the history of the city.
Preservation of the natural landscape.

E - VISION & STRATEGY MMA 2040.
3MK - CBD [CONTEXT BASED DEVELOPMENT]

...MAPUTO METROPOLITAN AREA 2040”

.....VISION AND STRATEGY”

.....MMA 2040. AN INCLUSIVE AND SUSTAINABLE URBAN DEVELOPMENT”



Map 35. Strategy overview - general map

E -

Strategy Maputo Metropolitan Area 2040- This section introduces the plannng approach for Maputo Metropolitan Area 2040 reflected in the Vision and Strategy for MMA 2040.

3MK - CBD
Moamba-Maputo-Matola-Katembe
Context based development

It proposes an alternative planning approach to orientate the current fast urbanization context of MMA into an inclusive sustainable urban development based on principles of adaptive governance and non conventional housing policies.

- 01. Vision definition
- 02. Main principles of the vision
- 03. Evaluation of scenarios
- 04. Vision 3MK - CBD
- 05. Changes in perspective
- 06. Structural factors of the strategy
- 07. Sustainable development framework
- 08. Strategy development
- 09. Timeline - phasing
- 10. General strategy overview
    - 10A- Core initiatives
    - 10B- The Corridors strategy
        - B1. Definition of corridor
        - B2. Inclusive consolidation of informal nodes
        - B3. Connections
    - 10C- Moamba airport strategy
        - C1. Strategy definition
        - C2. Current airport development
        - C3. Hierarchy of roads
        - C4. Guided occupation
    - 10D- New Katembe strategy
        - D1. Evaluation of current proposal
        - D2. Concept proposal



01. VISION

What is the statement of this vision?
Main aim and objectives

Why the relevance of this vision and strategy?
Main purpose, relevance and values of the vision

Maputo Metropolitan Area 2040

VISION STATEMENT
Changing the plannign approach
Maputo Metropolitan Area 2040

Image 53.Maputo from the air
Source-https://commons.wikimedia.org/wiki/File:2010-10-18_10-55-44_Mozambique_Maputo_Chamanculo_"B".jpg

3MK - CBD. Context based development

"Maputo Metropolitan Area 2040. An inclusive and sustainable urban development"

Due to the current development trends of the MMA, it is essential to realize an accurate urban planning for the future of the area. This vision propose an approach that guide the development towards a sustainable outcome through a shift in the planning perspective done in the area until the moment.

The vision emphasizes on the improvement of the current precarious conditions of the informal city and the lack of proper mobility under a contextualized approach that respects the dynamics of the current city. Besides, it proposes a strenghten in the policies framework as basic framework.

3MK - CBD
[CONTEXT BASED DEVELOPMENT]

VISION MAIN PERCEPTIONS
RELEVANCE

This vision proposes an innovative approach for the Metropolitan Area of Maputo in the year 2040. In the context of Mozambique, the first innovation resides in the planning of a vision for a future scenario. There is no planning structure for the development of the cities, even though they are inmerse in a fast urbanization trend as it has been proved in the past section of this thesis.

Apart from this, there is scope for using the planning tools that has been tested in other contexts in the area of MMA. such as development corridors or new planning tools to develop informal settlements, something that can be perceived in the examples section of the Annex: 'Workbook of innovative policies'. However, it is essential to shape the theories into the contextualized reality that the area presents right now and foster those qualities that build the identity of the place.

Values of the vision Due to the context of this project, the vision proposes the introduction of several ethical values:

inclusive growth : *"Inclusive growth is economic growth that creates opportunity for all segments of the population and distributes the dividends of increased prosperity, both in monetary and non-monetary terms, fairly across society." (OECD, 2018)*

human rights : *"Human rights are rights inherent to all human beings, regardless of race, sex, nationality, ethnicity, language, religion, or any other status. Human rights include the right to life and liberty, freedom from slavery and torture, freedom of opinion and expression, the right to work and education, and many more. Everyone is entitled to these rights, without discrimination." (UN, 2018)*

sustainable development : *"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Bruntland Report for the World Commission on Environment and Development, 1992)*

African identity : Understood as those qualities that define the way of living in each specific African country. Built up from the specific cultural roots and city dynamics that can only been perceived in the case of Mozambique.

Main aim

To explore a shift in the metropolitan planning approaches in developing countries via a contextualized vision and strategy for Maputo Metropolitan Area 2040 that translates the expected growth of the area into a sustainable urban development introducing principles of adaptive governance and 'non conventional' housing policies.

Propose an alternative future for the current precarious situation that the MMA is facing with 70% of people living in informal settlements without much job opportunities or access to proper services. One of the main causes is the weak governance and a dangerous lack of future planning previsions.

The vision of Maputo Metropolitan Area deals with the expected 39% growing population for 2040 and illustrates a mobility based vision where new urban development strategies take place in collaboration with a transit oriented development. To support this, a policy improvement is recommended based on adaptive governance principles.

Main guidelines After a detailed analysis and diagnosis, the vision proposes an evaluation of the different scenarios by their confrontation with four different principles: the not slum, fostering the opporunities of MMA, sustainable urban development and adaptive planning.

The different principles are explained in the next chapter of this section and together they build up the concepts to define the vision reasoning.

Once the vision is sketched on its first draft, it is presented in Maputo to different stakeholders and simplified and clarified to the expression of the general idea in the vision 3MK-CBD. This building process is fully explained in the last section of this booklet.

Relevance In the case of MMA, a vision proposed from an international perception can provide new insights about planning tools, policies and methods that are being tested in other informal scenarios and can be shaped and applied to this one. It is essential to think beyond the current problematic of the area and use the future scenarios to avoid its deterioration.

At the same time, the policy annex to this document provides a valuable tool in the understanding of these relevant planning tools that have been applied to other countries. As well as giving an overview of whether those initiatives were successful in those specific cases.

02 VISION PRINCIPLES

The vision of Maputo Metropolitan Area for 2040 resides in the development of these four principles. Although broad enough to allow the proposal of a flexible vision and strategy, they represent the base of essential changes to be pursued in the region.

Image 54. Slum in Africa
Source:https://robertcowley.files.wordpress.com/2014/08/african-slum.jpg



Image 55. Maputo airview
Source:https://upload.wikimedia.org/wikipedia/commons/thumb/d/d8/2010-10-18_10-55-00_Mozambique_Maputo_Macamojpg/12000x-2010-10-18_10-55-00_Mozambique_Maputo_Macamo.jpg



#1. THE NOT SLUM

The proposed vision is based on changing the current urban trend of the area with 70% of slums. Therefore, can be defined as the "Not slum". The description of slum according to UN-Habitat, 2006 is:
"group of individuals living under the same roof in an urban area who lack one or more of the following:
1. Durable housing of a permanent nature that protects against extreme climate conditions.
2. Sufficient living space which means not more than three people sharing the same room.
3. Easy access to safe water in sufficient amounts at an affordable price.
4. Access to adequate sanitation in the form of a private or public toilet shared by a reasonable number of people.
5. Security of tenure that prevents forced evictions."
It introduces a new proposal of development where non conventional housing policies preserve the basic needs of those with the least resources.

#2. FOSTERING THE OPPORTUNITIES OF MMA.

As conclusion of the layers and SWOT analysis, the Metropolitan Areas presents a lot of opportunities to foster in the vision for 2040:

- **The context identity.** The African culture of MMA is what defined its extension, therefore the planning approach should be contextualized and tailor-made for the identity of the area. One of the main identities of the location is the informal tissue and the traditons that it entails.
- The touristic attraction of **natural landscapes and reservoirs**. One of the essential principles in the maintaining of the current natural extensions.
- Creation of gaps within the city extension to fill in with **new urban high density areas** like the airport or the military base in Maputo.
- **Sustainable industrialization*** of the area based on the principles of the industrialization process from the national policy (section D05)

#3. SUSTAINABLE URBAN DEVELOPMENT

In 1987, the Bruntland Commission published its report, Our Common Future, which provided the definition of sustainable development as *"development that meets the needs of the present without compromising the ability of future generations to meet their own needs"* (United Nations General Assembly, 1987, p. 43). This can be translated in the vision in several strategies to be implemented:

- Increase of the current average density
- Proper treatment of water, energy and waste cycles
- Transit Oriented Development
- Multi - modality Developments
There will be an specific definition of how sustainable urban development is defined in the strategy in the section [E07]

#4. ADAPTIVE PLANNING

The International Institute for Sustainable Development define adaptive planning as:

"Responding to the complexity and uncertainty of sustainable development through adaptive governance and policies." (IISD, 2017)

This will be implemented through the theory argumentation of adaptive governance and the study of the stakeholders network involved in the urban development of the Metropolitan Area.

This concept is fully explained in the adaptive governance section (theory paper) of the Annex: 'Workbook of innovative policies'.

Image 56. Sustainability
Source:https://conceptdraw.com/a2058c3/p1/preview/640/pict--venn-diagram-sustainable-development.png--diagram-flowchart-example.png

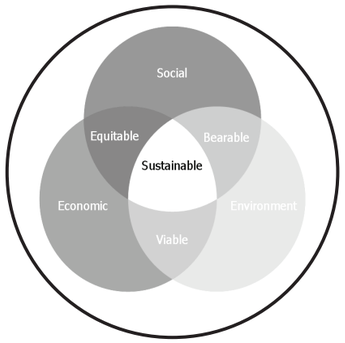


Image 57. MArch urban design
Source: https://www.ucl.ac.uk/bartlett/architecture/programmes/postgraduate/march-urban-design



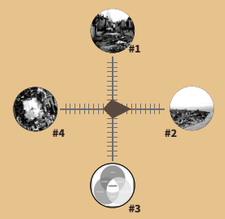
03 EVALUATION OF SCENARIOS

The following evaluation will test the scenarios proposed in the section D05 with the main principles of the vision.
#1. This factor reflects the **amount of difficulty to reach a "not slum"** situation
#2. Reflection of **how much the scenario foster the current opportunities** of the area and has the same directions that the current urban policies.
#3. Measurement of the **difficulty to establish a sustainable development** according to the current urban layer analysis.
#4. Factor that includes the **amount of stakeholders that will be involved in the urban developmen**t in an adaptive approach and if with the scenario they are going to be able to improve their current living conditions.

The conclusions reveal that the most balanced scenarios are the scenario 4 and the scenario 5. A combination of them will be used in the vision.

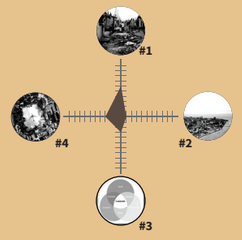
Image 58. Scenarios evaluation schemes
Source: executed by author in comparison of the scenarios with vision principles and values

SCENARIO 1: "NADA"



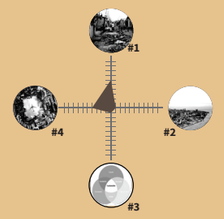
In terms of reaching a "not slum situation", this scenario reflects the continuation with the current sprawl low density urban trend that the Metropolitan Area currently presents, this suppose the continuation with high percentage of precarious conditions. At the same time, it won't foster the current opportunities of the area because of its high natural impact and the disconnection with the current main infrastructures. The growth will continue with the current north direction and therefore increase the distance with the opportunities that South Africa cross-border policy presents. There is currently a first layer of informal settlements even outside the Metropolitan Area, which will make difficult a sustainable development, apart from the increasing of pressure in the current city centres and the lack of services in the peripheries. Finally, in terms of stakeholders, the current urban trend presents a lack in collaboration between the different stakeholders and a disconnection government-citizens that will continue in this scenario.

SCENARIO 2: "ANTHROPOCENTRISM"



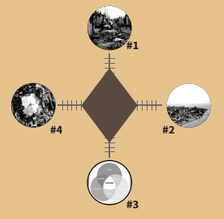
This scenario erase the current natural reservoirs of Katembe and Inhaca and propose the growth direction over these locations. There are better projections to create a "not slum" situation because of its condition of ex-novo settlement; although this would supposse a dangerous natural impact and decrease the current attractive of the area. Therefore, this would not present a sustainable development. At the same time, there won't be a lot of stakeholders involved because it does not deal with current urban tissue and it would need new inhabitants for these areas.

SCENARIO 3: "OUT OF CONTEXT"



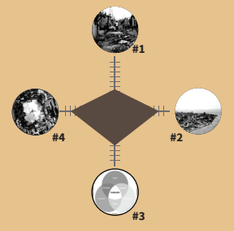
The location of the expected growth over a new development in the water would present a new development that can fulfil the conditions of not slum easily. However, it would suppose a huge natural impact and economically expensive process. These two factors counterbalance the principles of fostering the Metropolitan Area opportunities and the proposal of a sustainable development. In terms of adaptive governance, there can be an inclusive process but it won't deal with current precarious conditions.

SCENARIO 4: "INFRASTRUCTURES"



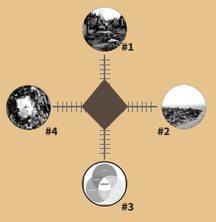
The proposal of enhancing the current infrastructures by organizing the expected urban development along them can provide a new urban extension under the conditions of a "not slum" and, at the same time, foster the current opportunities of the area. It can suppose (in the option B) a continuation of the industrial development direction and fulfil the main guidelines of the national and municipal policies. At the same time, with a proper planning strategy, it can provide a sustainable framework for urban development and involve different stakeholders: citizens, transport organizations, industrial sector, private sector, government and public institutions.
the combination for the vision.

SCENARIO 5: "Ddensification"



The densification of the low density urban areas within the Metropolitan extension is an essential part of the development process. It need to be included in the vision regarding its improvement of the current urban conditions and the fostering of the potential factors of the area. At the same time, it is a key aspect to propose a shift towards an adaptive governance.

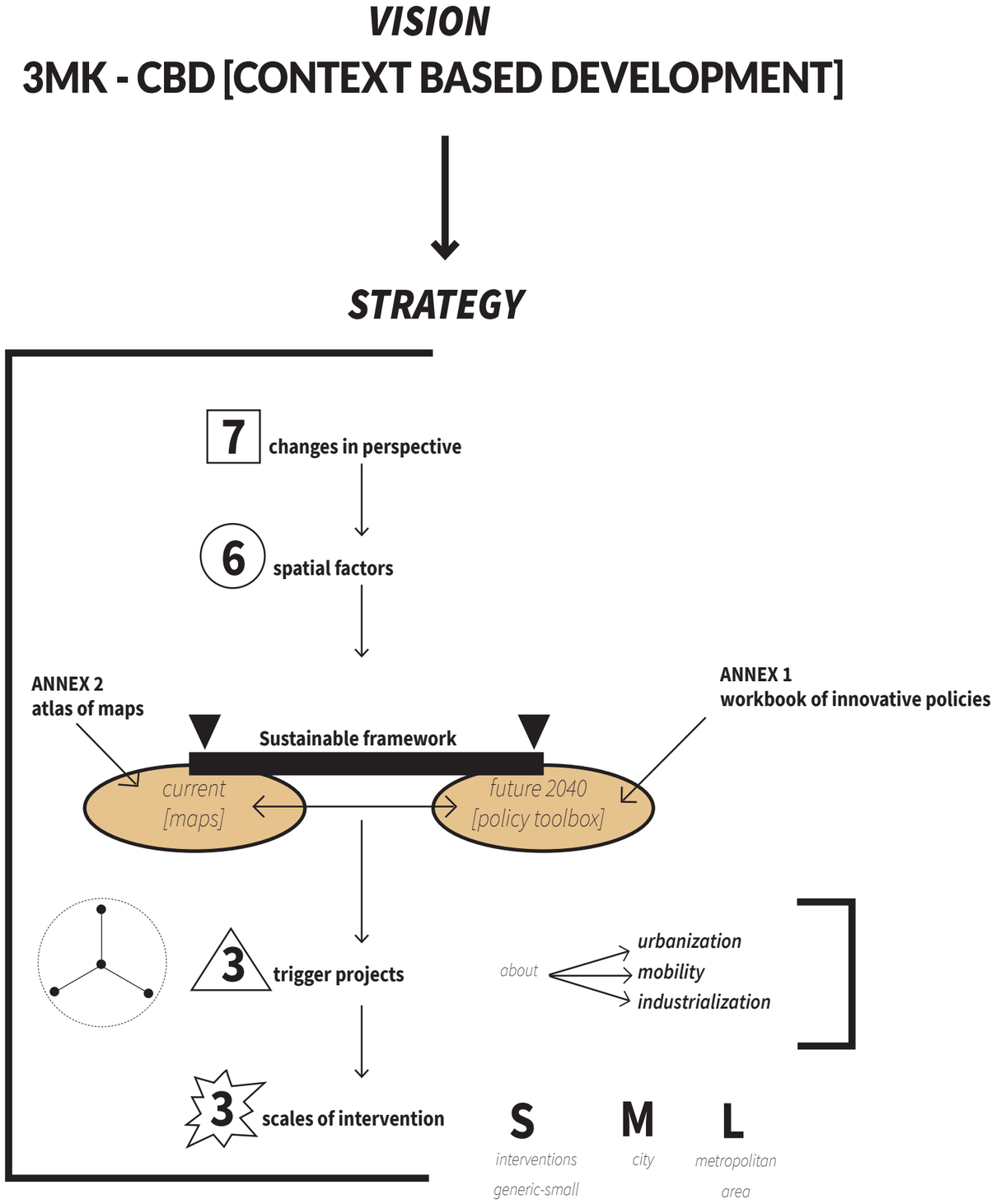
SCENARIO 6: "THE MIDDLE AREAS"



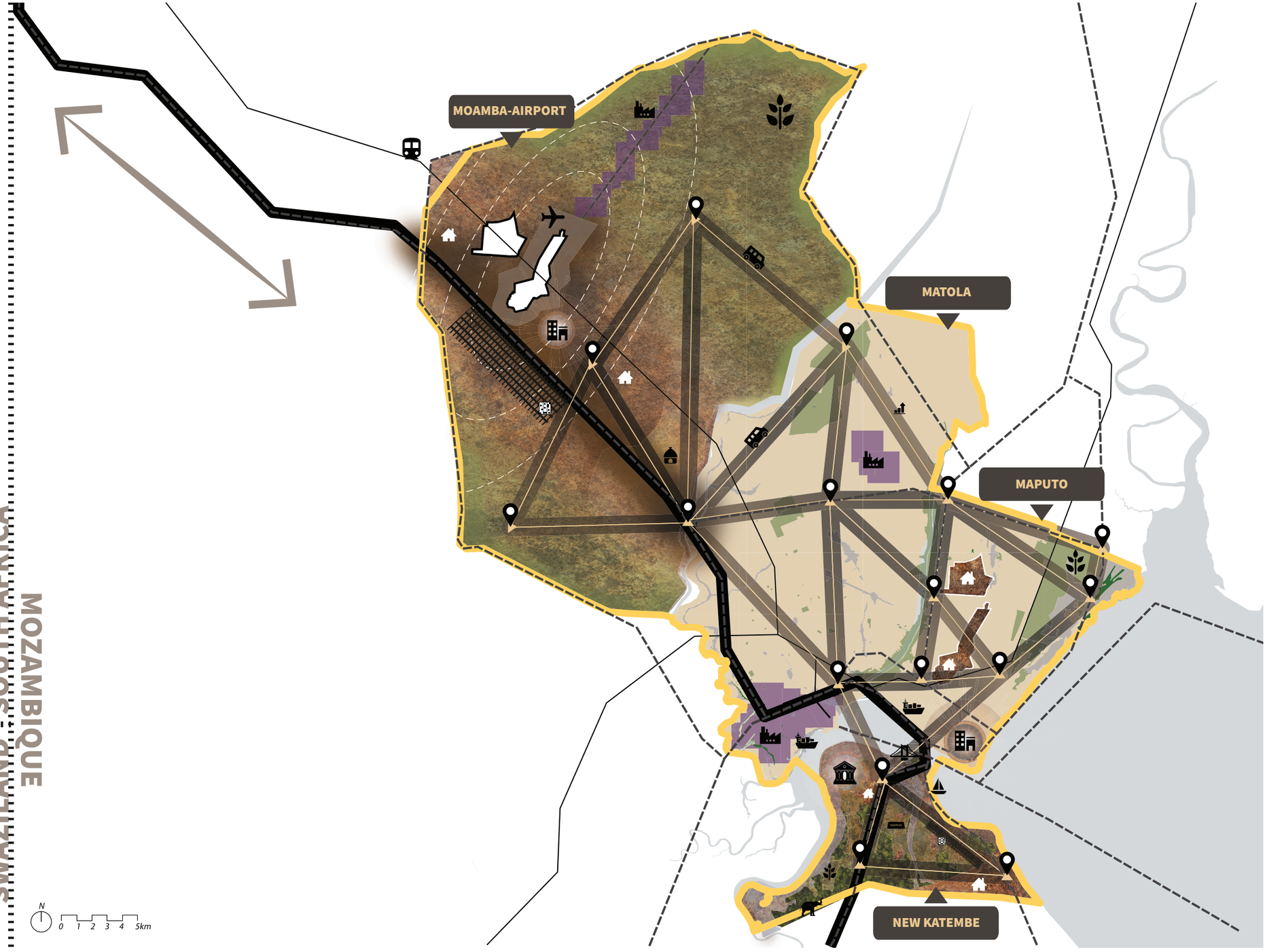
This scenario presents the same pros and cons than the scenario 4 because of its condition of ex-novo urban areas. However, it does not rely on the current infrastructure networks, using them on their maximum capacity. At the same time, it presents more flexibility on the location of the new urban areas, which increase the facility to locate then in the most beneficial situations.

STRATEGY "A CORRIDOR TOWARDS SUSTAINABLE URBAN DEVELOPMENT"
Development process

In the process of reaching the final strategy, there has been an academic progress and learning experience of building and evaluating the different planning theories and study their viability in the context.
By the analysis, diagnosis and scenarios proposal there was the proposition of the vision 1.0. This has been evaluated and confronted with the different stakeholders during the fieldtrip to reach different conclusions that leaded to the vision 3MK-CBD, closer to the reality of the area.(The description of the process to build the vsion can be found in the next chapter).
That vision is followed by the proposition of the 8 changes in perspectives introduced in the strategy by the main spatial factors.
The strategy is reflected in terms of the current application by mapping the changes and the future policy approach to the area that are inmersed in the definition of a sustainable urban development framework.
In terms of strategy division, there are three trigger projects that lead to secondary projects and approach the reality of MMA in terms of urbanization, mobility and industrialization. In order for these three projects to be implemented, there are core initiatives that should be accepted.
The integrated strategy is a multi-scale approach that propose a possible basis for reaching a sustainable urban development of MMA.



3MK - CBD [CONTEXT BASED DEVELOPMENT]

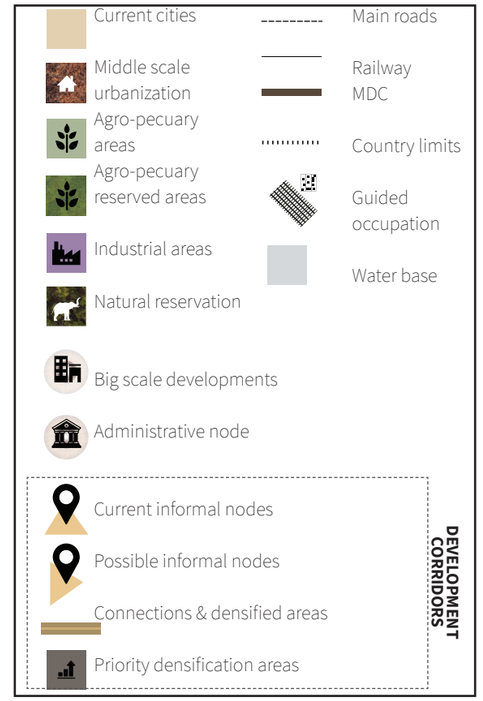


Map 22. Vision 3MK-CBD

04 -

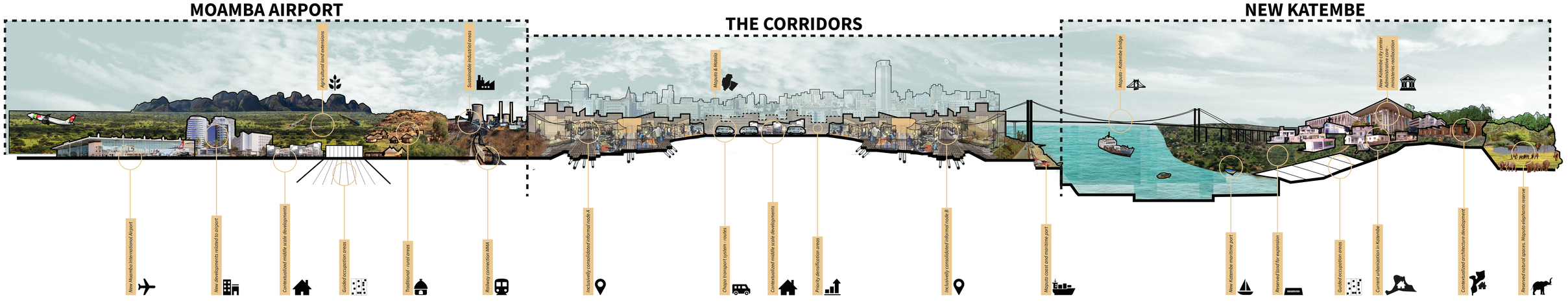
VISION 3MK -CBD
CONTEXT BASED DEVELOPMENT
Maputo Metropolitan Area 2040
"Merging formal and informal MMA. An inclusive and sustainable urban development"

The vision for MMA 2040 present the development of the cities of Maputo and Matola in the direction of Katembe, due to the finishing of the bridge to Maputo, and Moamba, in relation to the movement of the Maputo International airport. There is a proposal of specific areas of densification such as the old airport and military base within Maputo city or the area connected to the N4 at the new airport location (Moamba)
An improvement of the main mobility connections between the cities is proposed caused by the increasing of traffic flow related to the propostion of new centers.
At the same time, a second layer of connection within the city limits will give access to the current informal nodes and future ones. This second layer illustrates what Corridor means in the reality of the area and defines priority areas of densification in the cities.
Finally, the extension of sustainable industrial areas as planning tools for income generation and job creaton together with the trainning of local workforce.



* for further insight on the collage consult the Atlas annex

3MK - CBD [CONTEXT BASED DEVELOPMENT]



CHANGES IN PERSPECTIVE 05



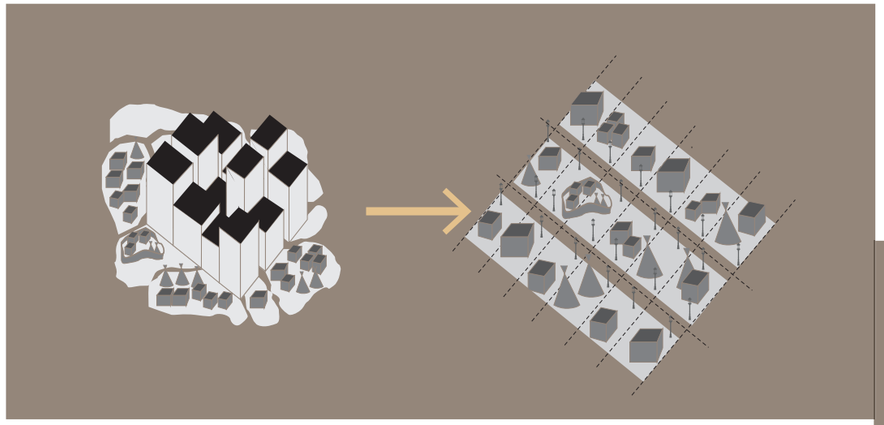
01-
FROM TRADITIONAL CENTERS TO INFORMAL NODES
FINDING THE REAL HUBS

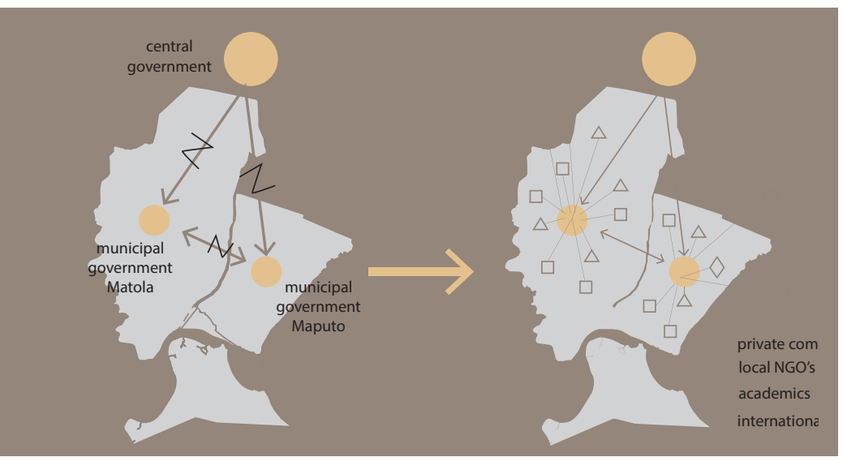
Understanding the city as it is.

Traditional centers
Focused on main touristic attractions or economical activities
Informal nodes
Spontaneous hubs to serve the necessities of unconnected residential areas.

02-
FROM FIXED URBAN DEVELOPMENT TO FLEXIBLE GUIDES FOR DEVELOPMENT
FOLLOWING NECESSITIES

Understanding the mechanism of population
Close urban development
Usually, plans are proposed as fixed design and programme where the change in time is under control
Flexible guides for development
In the case of Maputo Metropolitan Area, it is proved that the dynamism of the population entails decision making in parallel to the formal planning. Therefore, it is essential to embrace this trend and propose guidelines for the constant change.





03-
FROM A CENTRALIZED GOVERNMENT TO A COLLABORATIVE ADAPTIVE GOVERNANCE
INCLUSIVE DEVELOPMENT

Understanding who is involved

Centralized government
In Mozambique there is a centralized government assuming the control...
Collaborative adaptive governance
...however, there are several stakeholders to whom the urban development influence directly: inhabitants, private sector, NGO's or institutions that should be included in the decision making.

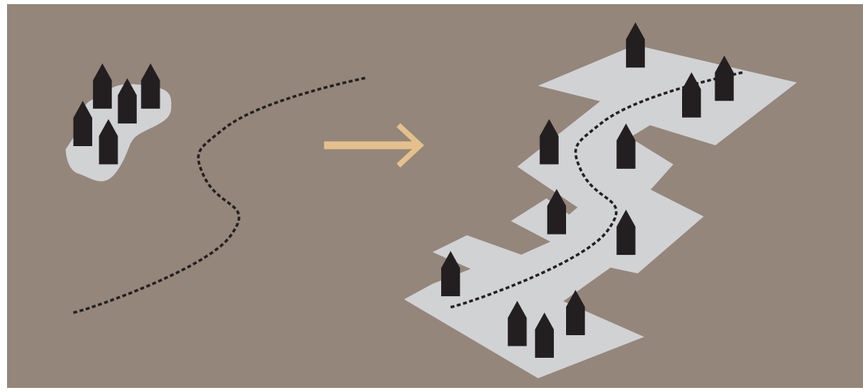


04-
FROM PRESERVATION OF NATURAL LANDSCAPE TO PRESERVATION THROUGH PROGRAMME
LIMITING THE SPRAWL

Understanding the values of the area
Lack of preservation of natural landscape
Most of the preservation techniques rely on bordering the protecting areas and separating them from any use...
Preservation through programme
...yet, the sprawl trends of the informal city are passing through these borders. In order to prevent that, locating certain uses in these areas will respect and preserve them.

05-
FROM INFRASTRUCTURES DISCONNECTED FROM URBAN DEVELOPMENT TO AN ALIGNMENT OF POLICIES
FINDING THE DISCONNECTIONS

Understanding new possibilities
Infrastructures disconnected from urban development
There is a lack of communication between those in charge of infrastructure development and urban development.
Alignment of policies
It is essential to understand the planning as a broader strategy where mobility and urban development are strongly related.



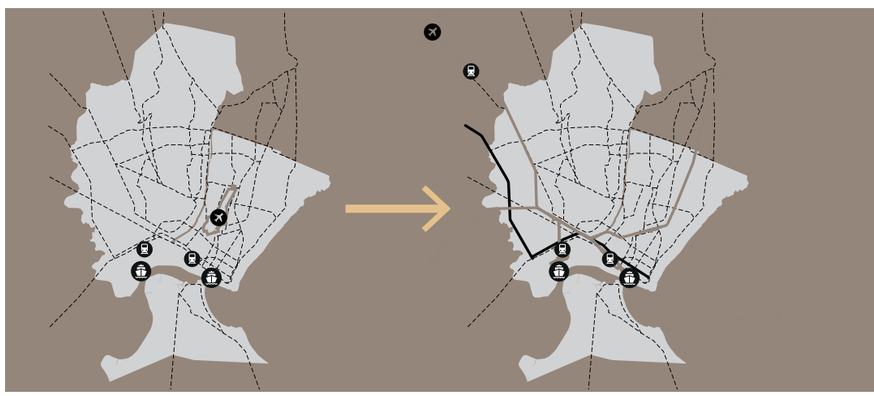


06-
FROM CAR ORIENTED TO TRANSIT ORIENTED
ROUTES OF THE MAJORITY

Understanding the flows in the city
Car oriented developments
The main developments in Africa have been focused in car transportation, including the corridor initiatives...
Public transport as a guideline
...although most of the population can not afford a private vehicle and travel in public transport like bus, chapas or mylove.

07-
MOBILITY FROM CAR FOCUSED TO MULTI-MODALITY ORIENTED
INTERNATIONALIZATION STRATEGY

Understanding the potential of MMA
Car focused mobility
Currently, the main mobility understanding is related to the improvement of road connections...
Multi-modality overview
...however, when proposing a broader strategy where plane, boat, trucks and train are related with the car as one multi-modality route, the potentials for MMA would explode.



The strategy for Maputo Metropolitan Area is based in six structural factors that will guide and influence the different initiatives proposed to achieve the main aim: a sustainable urban development.

STRUCTURAL FACTORS 06



F1.Natural conditions

F2.Mobility



F3.Density



F4.Informal economies



F5.Industry



F6.Growth

STRUCTURAL FACTORS

TO GUIDE THE STRATEGY

Based on the spatial elements of MMA

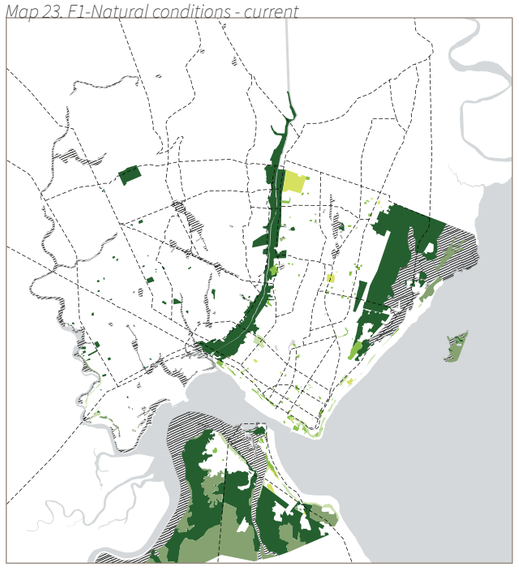
Prioritary guidelines for a sustainable urban development of the region



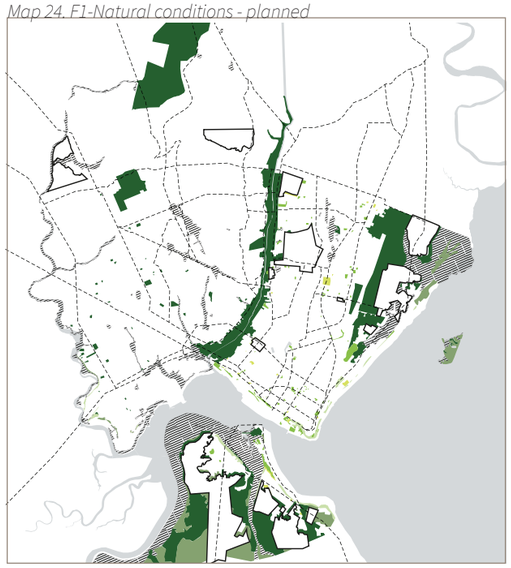
Image 59. First renovations in Polana Caniço informal settlement.

Source-photography by author on fieltrip

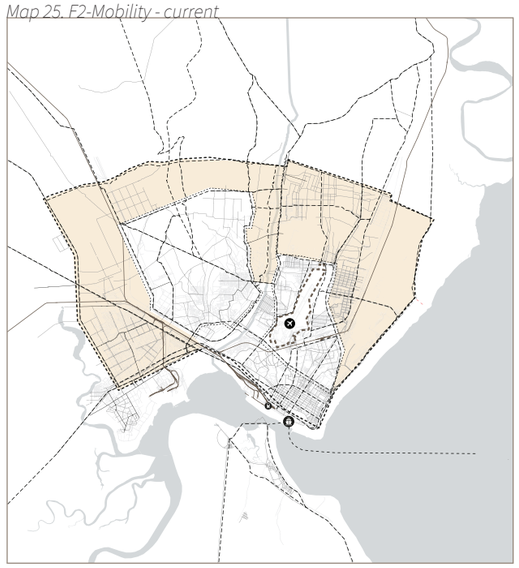
Map 23. F1-Natural conditions - current



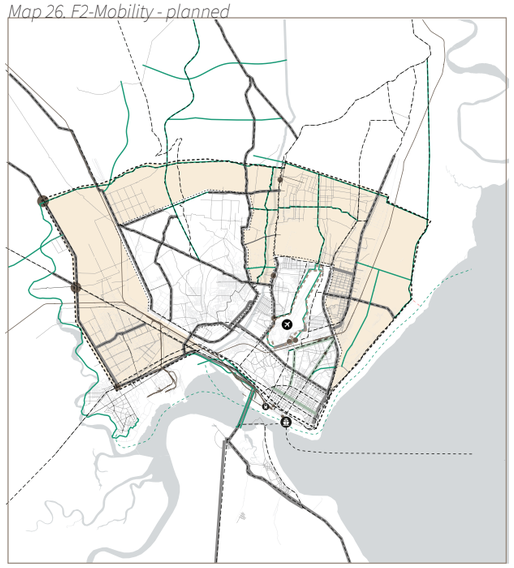
Map 24. F1-Natural conditions - planned



Map 25. F2-Mobility - current



Map 26. F2-Mobility - planned



NATURAL CONDITIONS

MAPUTO METROPOLITAN AREA

Current and planned

The natural landscape conditions will shape the strategical proposal

There are several natural factors to be taken into account when proposing the new strategy for the area. Starting by the flooding areas that are currently being occupied by some informal settlements in dangerous conditions or the plans currently proposed that locate new developments in these areas. These flooding areas should be treated with flooding control strategies and/or preservation laws.

At the same time, there are several natural spaces in need of being preserve from this urban sprawl. According to the location of new areas of expansion proposed by the latest urban plan of the municipalities, these areas will be used for residential programme. It is essential to preserve the current natural spaces as main touristic attractions and natural asset to the cities. In order to do so, in the strategy should be a programmatic reflection over these areas to enhance their use and value.

- Main roads
- Protected natural spaces
- Urban green parks and gardens
- Natural green areas - bushes
- Agro-pecuary areas
- Flooding areas
- Eventual flooding areas
- Water

Tourism - ecology
There is a natural landscape in the MMA worthy to preserve. It is a touristic attraction and part of the identity of the area.

Flooding is a problem
Even in the most developed areas, flooding is a problem during the rainy season.

Concerns on the topography
Due to the characteristic topography of the area, it is essential to include the differences in height in the planning proposal



Image 60. Inhaca island from the lighthouse
Source-photography by author on fieltrip

MOBILITY

MAPUTO METROPOLITAN AREA

Current and planned

The development of infrastructure will guide the strategical proposal

The mobility network function as a delimitation of the formal city and its separation of informal settlements. By the understanding of the circular roads, the peripherical areas of the city can be highlighted. There is a multi-modality mobility layout that can be foster in the area by the connection of strategies regarding car, truck, train, boat and plane transport. If there is a common strategy to connect them, there are possibilities for internationalization and open a broader overview of the area from an exterior point of view. However, the mobility nowadays is one of the main and biggest problematics of the MMA. It is essential to understand the current use of the general infrastructures network and create a realistic hierarchy among them with a renovation in phases to improve the accessibility and the conditions. There is a huge rate of mortality due to bad state of infrastructures in Maputo and Matola.

- Main roads
- Secondary roads
- Local roads
- Railway
- New roads PEUMM
- Prioritary infrastructures
- Periphery areas
- Transport nodes
- Water
- Airport

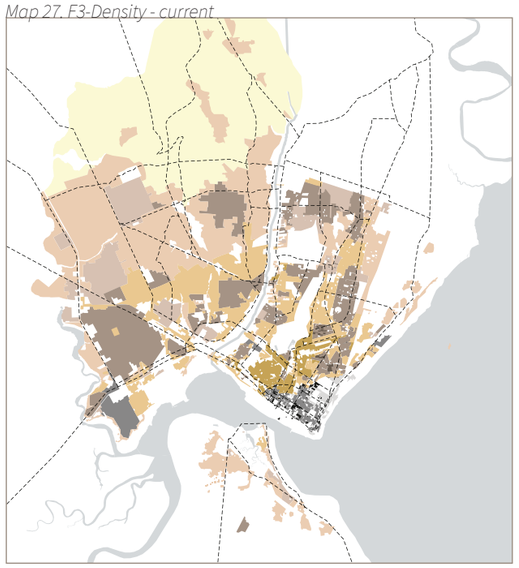
Multi-modality mobility
The specific location of the area allows to a mobility strategy based on different methods of transport. This presents an opportunity for internationalization and a broader strategical approach.

Hierarchy of infrastructures
Mobility is currently one of the biggest problematics of the area. Related with the bad state of the infrastructures and the lack of hierarchy between them, passing from big scale roads to unpaved paths.

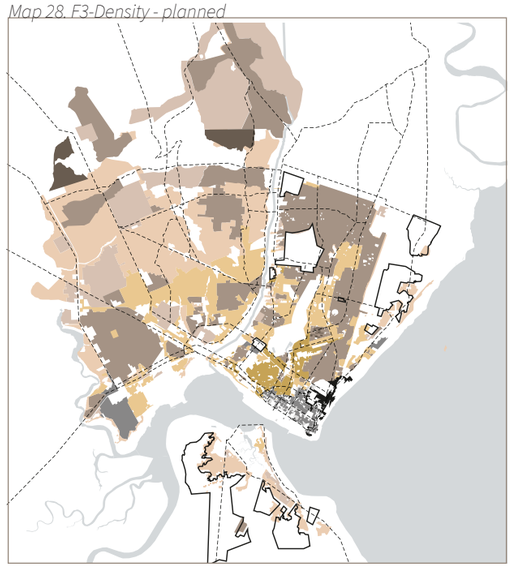


Image 61. N4 from Maputo to Matola
Source-photography by author on fieltrip

Map 27. F3-Density - current



Map 28. F3-Density - planned



Main roads

Consolidated residential areas

Low density (<20hab/ha)
Medium density
High density (>60hab/ha)

Planned residential areas

Low density (<20hab/ha)
Medium density
High density (>60hab/ha)

Non planned residential areas

Not occupied
Low density (<20hab/ha)
Medium density
High density (>60hab/ha)

DENSITY

MAPUTO METROPOLITAN AREA

Current and planned

The density of urban areas will illustrate the sustainable urban growth.

As illustrated in the maps, there is a predominance of informal non planned urban areas in the cities. In the PEUMM 2008, there is a proposal of formalizing part of it. However, little is explained about the methods of improvement.

The current densification is related to the location and how it will evolve will propose new hubs that should be interconnected. Something that is not clear in the proposal of PEUMM is the creation of new nodes and how they relate to the current city.
In order to densify, it is essential to propose new methods and study and understand the current densification intiatives happening in the peripheries.

Predominance of informal residential areas

The development of the city has been guided by the informal sprawl trends. This method originated the current tissue and it caused some of the living environment current problems. Therefore, it is essential to embrace the current trend and find alternatives to avoid part of the problematic attached to it.

New areas of densification

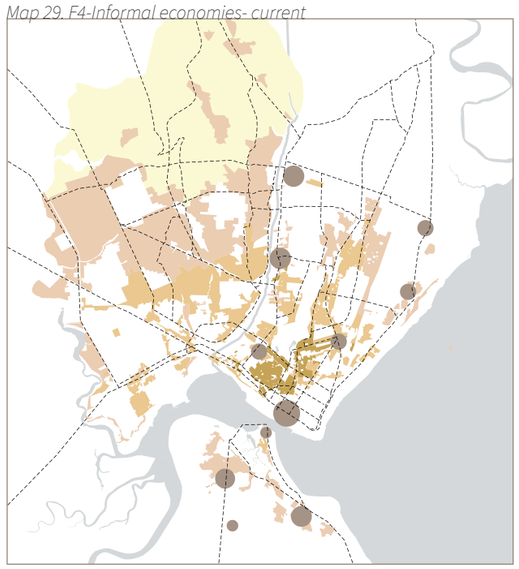
In the plan, there are proposals for densification areas. However, they are unconnected to the mobility improvement proposal. There is need for a new approach for this area of planning.

Image 62. Densities in ortophoto

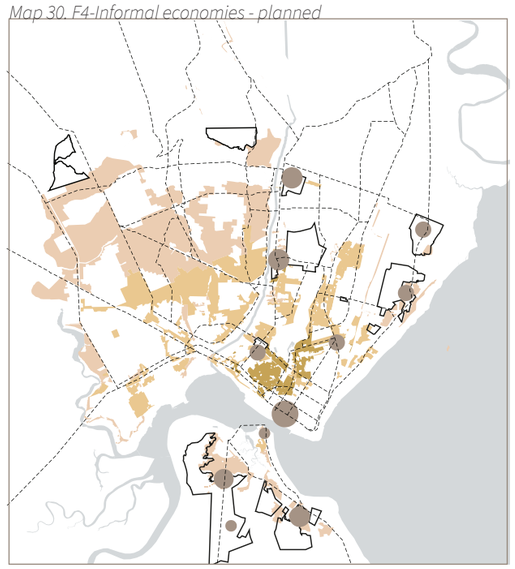
Source-photographies proposed in the PEUMM document



Map 29. F4-Informal economies- current



Map 30. F4-Informal economies - planned



Main roads

Non planned residential areas

Not occupied
Low density (<20hab/ha)
Medium density
High density (>60hab/ha)

Identified nodes of informal activities

planned areas of development

INFORMAL ECONOMIES

MAPUTO METROPOLITAN AREA

Current and planned

The informal economies lead the economical input of these cities population.

The informal economies are connected with the main roads of the cities. These connections are explained by the dynamics of the city and the flows of people through the areas of informal markets and activities. These activities are being,since time ago, the main guides for expansion in MMA.
The informal economies follow the neccessity of the inhabitants to reach selling points closer to their living areas.
At the same time, there are several market initiatives that understood the importance of the informality in the main cities. Therefore, some brands lattest strategies divide the distribution between located shops and 'agents'. This agents are people that move around the city selling specific products. This is the case of the lattest ATM update: M-Pesa. A strategy in which it is possible to withdraw money from any shop or agent by just updating it in a phone app. Informal activities encourage flexibility and innovation. New ways of reaching those that are not following the rules of the formal city and can not afford the transport of big distances.

Informal economies shape the city

Currently, 90% of the economy of Mozambique is based on informal economies. The population is taking the lead in adjusting the economy to their specific needs and locating the informal activities related to the main roads but close to living areas without formal commercial points.

Informality ask for flexibility and innovation

There are several advances in relating informal economy with the lattest technologies, as the use of mobile phone apps to withdraw money

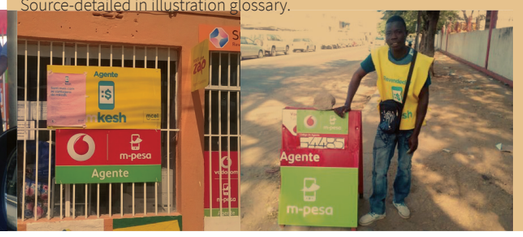
Image 64. ***M-pesa strategy in shops and agents***

Source-detailed in illustration glossary.

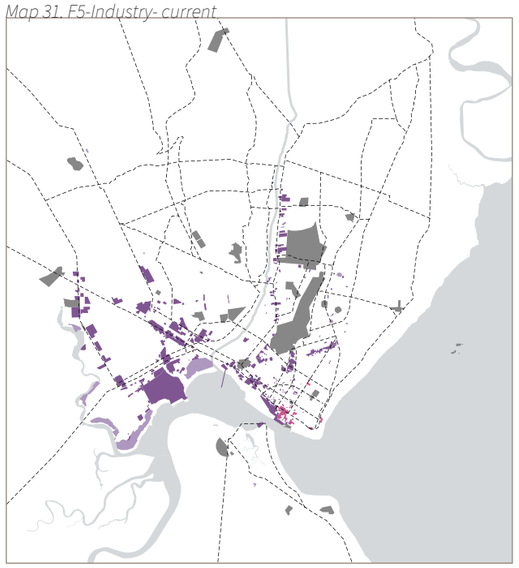


Image 63. Street vendors in maputo city

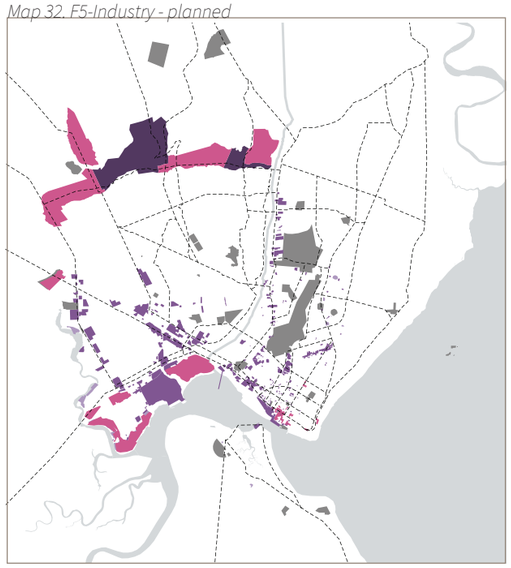
Source-photography by author on fieltrip



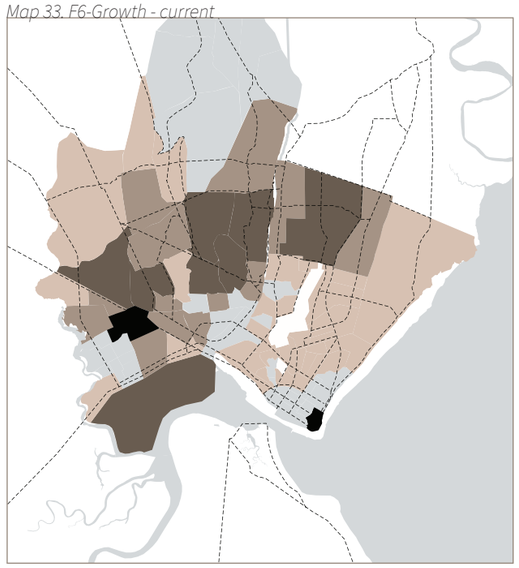
Map 31. F5-Industry- current



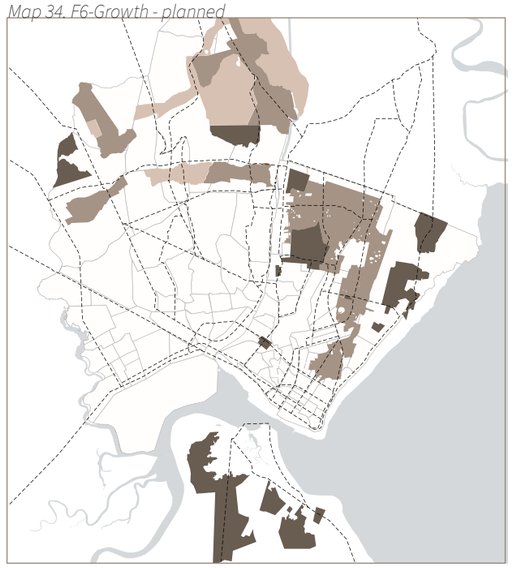
Map 32. F5-Industry - planned



Map 33. F6-Growth - current



Map 34. F6-Growth - planned



INDUSTRY

MAPUTO METROPOLITAN AREA

Current and planned

The industrialization is one of the main national strategies for future development

The industry is the main formal economical sector in Mozambique. Specially connected to railway and maritime routes, it is essential to trigger the mobility strategy in a broader picture of MMA.
In the plans proposed from the municipalities, there is a strong presence of multifunctional spaces and areas that will be dedicated to technological parks and industrial areas in the future. Therefore, there is a planning of industrial development of the cities. Something that is supported by the national development strategy of Mozambique.
As explained in the section of policies study, the industrialization process is linked to the improvement of main roads and train networks to reduce the trucks traffic and trains overflows.

- Main roads
- Extracting industry
- Stock and maintenance industry
- Areas for industrial parks
- Multifunctional areas
- Special uses areas

Main formal economy
There are several industrial tissues in the MMA, as can be perceived in the illustrations. Mozambique is an industrial country. It is essential to create a relation between the industral landscapes and the development of cities

Proposed development areas
In the plans from the municipalities, there are several areas proposed for industrial expansion.

Multi-modality mobility use
The proposed areas use to be connected with the different types of mobility that MMA presents. The industrial use will bind together the different methods of transport.

Image 65. Industrial tissues in ortophoto
Source-photographies proposed in the PEUMM document



GROWTH

MAPUTO METROPOLITAN AREA

Current and planned

The development of infrastructure will guide the strategical proposal

The growth of the MMA registers its highest rates in the peripherical areas. The residential areas related to the current city centers present high rental prices and, due to the public ownership of the registered land, there are several difficulties to make this change. Therefore, the population have been forced to find empty land to occupy the peripheries of the cities, leading to a sprawl trend based on low density and precarious living conditions. Apart from this, the growth is not supported by infrastructures, which affects the living conditions in a negative way by the lack of proper connections.
Finally, there is a strong connection between the growth and the lack of job opportunities. The main formal jobs are in the city centers, which supposse a barrier for those living in the farthest peripheries. They do not have access to the formal city and need to find jobs in the informal economies that work as spontaneous centers in the middle distance.

- Main roads
- Strong decrease of people
- Soft decrease of people
- Soft increase of people
- Medium increase of people
- Strong increase of people

The growth is in the peripheries and unconnected
As illustrated in the maps, the main growth rates are located in the peripheries. This is not supported by a proper infrastructures network.

Link growth - informal economies
Because of the location of a big part of the population in the peripherical areas, there are new informal economy nodes in the middle way between these locations and the formal city centers. Complementary to the factor 4: informal economies.



Image 66. Maputo from the port.
Source-photography by author on fieltrip

07
SUSTAINABLE DEVELOPMENT

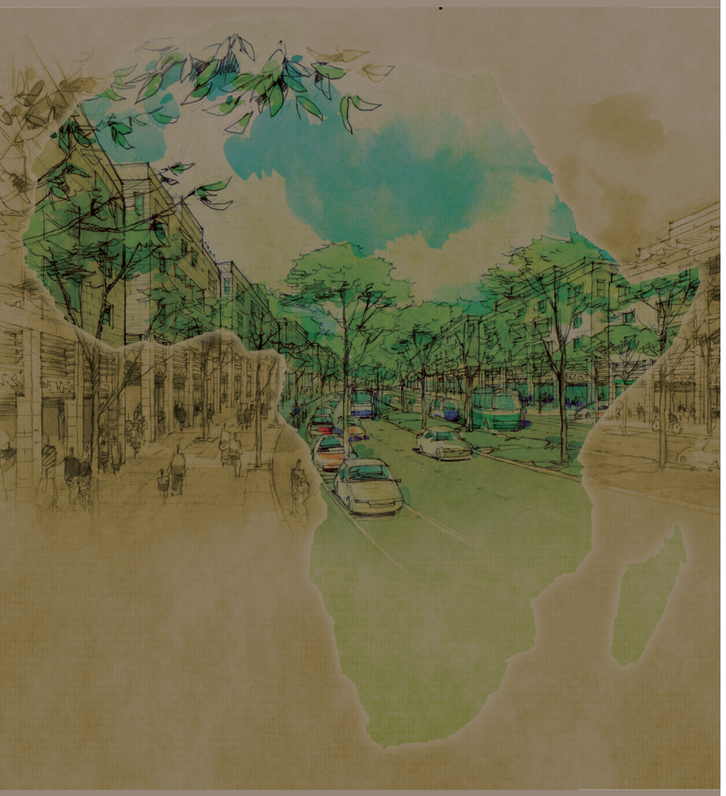


Image 67.Sustainable development in Africa
Source-UN-Habitat (2015). Sustainable urban development in Africa. Africa Urban Agenda. Nairobi, United Nations.

According to the standard definition introduced by the Bruntland Commission in 1987, Sustainable development is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” It is introduced as a balance between the economic, social and environmental profile of the location, shaped into a triangle.

However, when applied to developing countries, the unbalanced situation is so extensive that further definition needs to be framed.

When defining the proposal of a sustainable urban development strategy, it is essential to realize a basic analysis and diagnosis of the area and propose a first approach for it. However, when contrasting this approach with the feedback from stakeholders in location, there is a strong barrier against the implementation of any sustainable objective in MMA. The empowerment of the government is such that the weak governance presented in the area is stopping the urban development from reaching any sustainable guidelines. Therefore, there is need to include a new perspective to approach the weak governance situation in the definition of sustainable urban development introducing **adaptive governance**. The triangle of sustainable urban development is shaped into a prism where it is essential to achieve a collaborative governance in order to reach sustainable implementations.

SUSTAINABLE DEVELOPMENT FRAMEWORK
MAPUTO METROPOLITAN AREA 2040
A Corridor towards sustainable urban development

This was partially introduced in the report *“Sustainable Urban Development in Africa”* presented in 2015 by UN-Habitat within the Africa urban agenda programme. In this document the definition of ‘The three pronged approach’ is introduced. It is further detailed in the ‘Workbook of innovative policies’ annexed to this document. In a general overview, the approach seeks for achieving sustainable urban development through the emphasis on three principles: urban legislation, urban planning and design, and urban finance and economy:

“These three principles are seen as levers for transforming cities and human settlements into centers of greater environmental, economic and social sustainability.”

In the case of MMA, there are several strategies implemented in this project and all of them have as major objective the consecution of a sustainable framework. In the final conclusion of this document, the different strategies will be evaluated in relation to the sustainable framework introduced in the diagram.

In the definition of sustainable urban development, it is essential to highlight the qualities involved in each profile of MMA: economic, environmental and social; as well as the stakeholders involved in the urban development that need to work in a collaborative manner to change the current unsustainable urban development trend.
A sustainable profile of MMA in terms of social aspects would be a metropolitan area where there is an inclusive urban development that reduces the current social inequalities. An equalitarian Metropolitan Area where there is scope for collaborative approaches between the stakeholders involved in the urban development.
In the same way, the economic profile of a sustainable MMA defines a prosperous Metropolitan Area where the current precarious living conditions of the 70% of the population living in slums are solved and there is an affordable live in a daily basis relating the daily expenses and the salaries of the majority of the population. In order to do that, it is essential to seek for a reactivation of the country’s economy with income generation strategies and training initiatives to increase the local working force within the MMA extension.
Finally, it is essential to preserve the rich environmental profile of the MMA through strategies that ensure the resilience of the city to adapt to the daily changes that its complexity entails as well as seek for maintaining the natural landscape to increase the prosperity and liveability.
There are several stakeholders currently involved in the urban development of MMA who will be immersed in the collaborative process that the adaptive governance approach entails. If there is necessity for a sustainable development, it can only be achieve with the division of roles and powers in the governance structure and the release of certain public aspects. In MMA the majority of the basic resources are public, including the land and the designation of DUATs. The DUAT is a land tenure permit and in order to obtain it, the dweller needs to follow such a difficult process that it seems to be impossible. There are several strategies proposed in the city to accelerate the DUAT obtaining –essential aspect for the consecution of a sustainable urban development- so the population seeks for a formalization of their dwellings. Currently, because of the lack of safe tenure, there is no investment in the dwelling in most of the informal settlements, which leads to precarious living conditions.

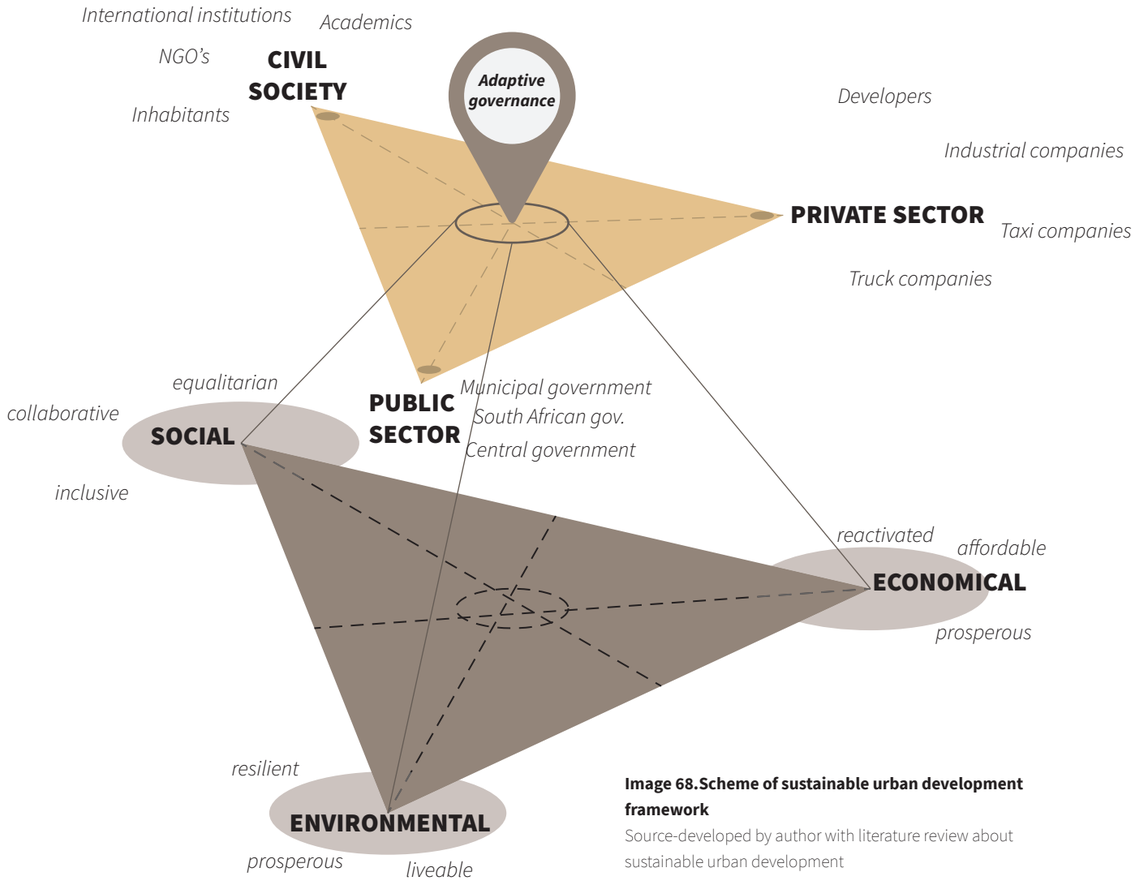


Image 68.Scheme of sustainable urban development framework
Source-developed by author with literature review about sustainable urban development

08

STRATEGY **DEVELOPMENT**

MAPUTO METROPOLITAN AREA
Strategy for 2040
Sustainable urban development

The strategy for Maputo Metropolitan Area 2040 is based on three trigger projects that introduce new approaches in terms of urbanization, mobility and industrialization of the area in three different scales.
The integrated strategy is based on three core initiatives that are essential for all the projects to take place: creation of limits by programmatic natural spaces, organization of common institution infrastructures-urban development and privatization of certain resources, currently public.
In first place, the proposition of new limits will prevent the growth of uncontrolled sprawl by the creation of programmed natural spaces that do not allow new residential areas on them. At the same time, the strategy proposes changes in the current policy related to the urban development of the area; starting by the unification of institutions built for the mobility and urbanization policies.
Finally, the strategy proposes the efficiency in the management of certain resources, only if the private sector is proposing an investment in order to introduce advances in terms of sustainability such as the privatization of the garbage system for the creation of recycling industries that can extract energy from the burning garbage. These processes require expensive facilities that only the private sector can provide in this moment due to the current situation of the city.
In terms of specific projects, the strategy concerns three trigger projects that lead to secondary projects. These trigger projects are: THE CORRIDORS (reactivation of informal nodes), MOAMBA AIRPORT and Katembe BRIDGE.
These projects will be explained in detail during the development of this section. However, it is prioritary to identify the different scales of the MMA that they approach. The projects of Moamba airport and Katembe bridge develop strategies in <u>LARGE SCALE</u> with objectives in a metropolitan scale. The case of The Corridors is different, approach the cities of Maputo and Matola in <u>MEDIUM SCALE</u> attached to the direct relation with the cities. Finally, in all the projects there are strategies planned for a <u>SMALL SCALE</u> in relation with innovative techniques of development or approaching the specific reality of MMA.

THIS SECTION WILL PROVIDE A DEEPER INSIGHT OF EACH ONE OF THE PROJECTS WITH SPECIFICATION OF THE SCALES (S.M.L). HOWEVER, IT IS ESSENTIAL TO HIGHLIGHT THAT THE MAIN PURPOSE OF THIS THESIS RELIES ON THE GENERAL IDEA OF THE INTEGRATED STRATEGY MORE THAN THE SPECIFIC INITIATIVES. THEY ARE JUST ONE POSSIBLE METHOD TO REACH THE MAIN GOAL, WHAT MEANS THAT
<u>IT IS NOT THE ONLY ONE.</u>

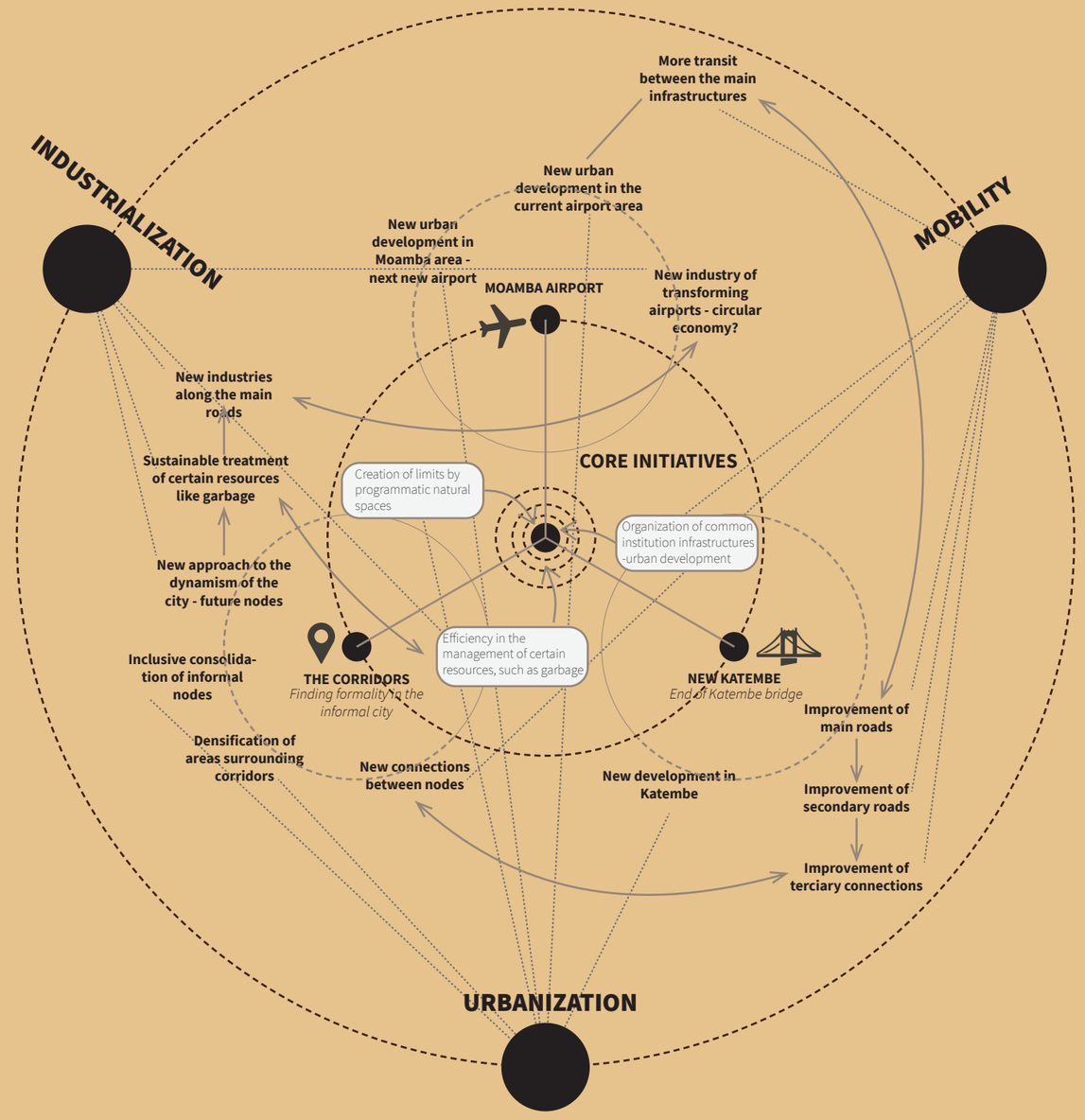


Image 69.General overview of integrated strategy
Source-made by author

Image 70.General timeline-phasing
Source-made by author

POLICY RECOMMENDATIONS
UNIFICATION
Creation of common institution to plan infrastructures and urban development

MOBILITY
MULTI-MODALITY I
End of Katembe bridge

URBANIZATION
ESTABLISHED LIMITS
Improvement of natural limits. Preservation through programme

URBANIZATION
KATEMBE
New private investments within the area of Katembe limited by natural reservoirs.

MOBILITY
MULTI-MODALITY II
Extension of maritime routes from Maputo and Matola

INDUSTRIALIZATION
JOB CREATION
Industrial programme inmersed in the peripheries and related to the new urband evelopment next to Moamba

POLICY RECOMMENDATIONS
UNIFICATION II
Common committee MMA. Maputo (+Katembe), Matola and the new Moamba-airport city

MOBILITY
MULTI-MODALITY III
Moving airport and militar base to Moamba

URBANIZATION
MOAMBA
New guided occupation and urban development next to the airport in Moamba. Middle city Maputo-South Africa

URBANIZATION
REFILL
Guided occupation and urban development in the old airport and military base areas within Maputo extension

2018

2020

2025

2030

2035

2040

URBANIZATION
INDUSTRIALIZATION
GARBAGE-ENERGY
Privatization of garbage systems
New industry (recycle)
Export of burnt garbage as energy

MOBILITY
HIERARCHY OF ROADS I
Connection of main roads and railway
MDC - Katembe
N1
N2

MOBILITY
HIERARCHY OF ROADS IImprovement of secondary connections

MOBILITY
HIERARCHY OF ROADS III
Improvement of terciary connections

MOBILITY
MULTI-MODALITY IV
Cable car to connect the nodes and new developments.
*only if there have been developments in the method to make it affordable in daily basis

URBANIZATION
THE CORRIDORS
PHASE I. INCLUSIVE CONSOLIDATION - STRATEGY S
Identification of current informal economy nodes within the peripheries of Maputo and Matola

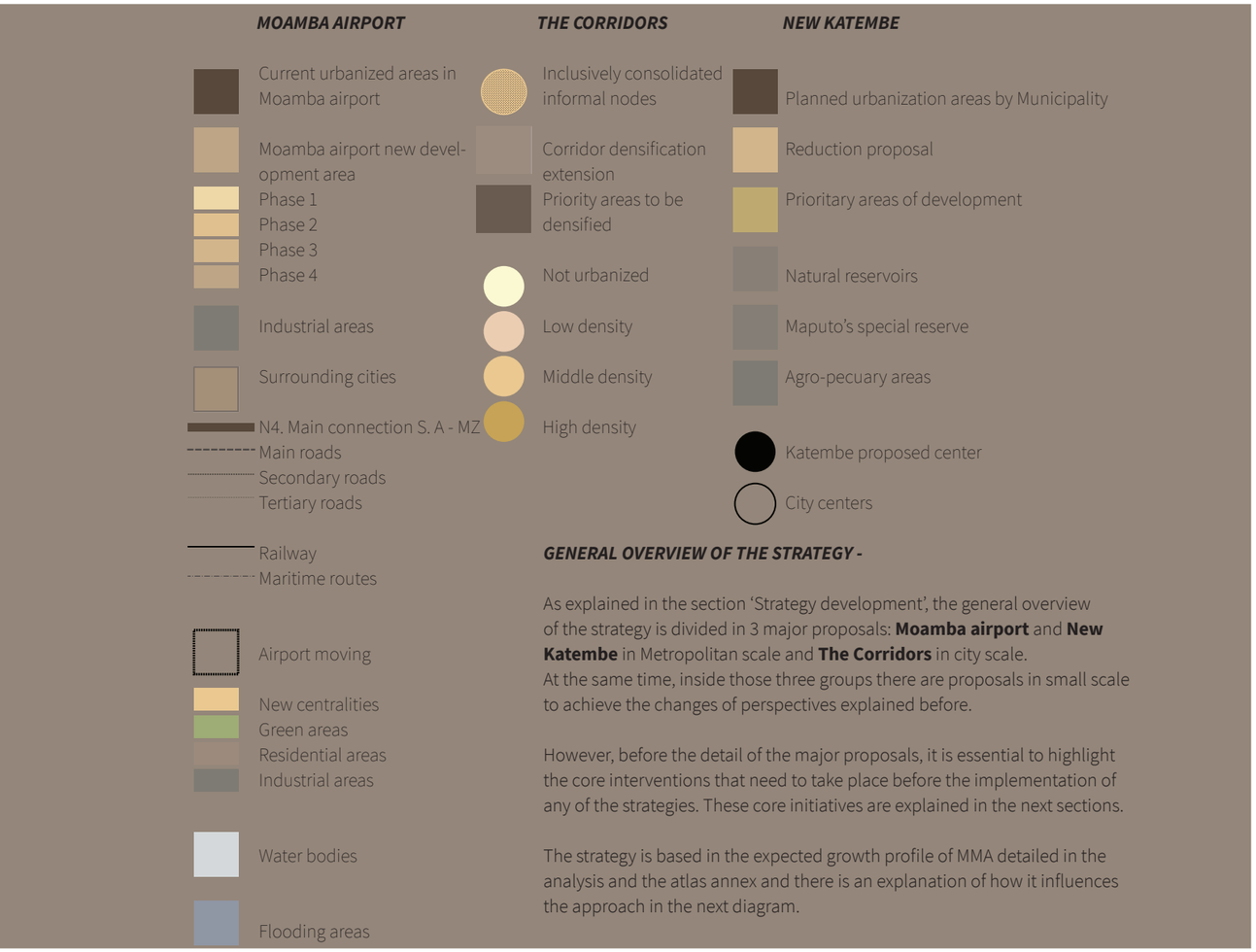
MOBILITY
THE CORRIDORS
PHASE II. ADJUSTMENT
Adjustment and improvement of public transport routes between nodes.

URBANIZATION
THE CORRIDORS
PHASE III. DENSIFICATION
Incentives to densify areas 1 km surrounding the corridors. 1,5 km surrounding the nodes

URBANIZATION
THE CORRIDORS
PHASE IV. UPDATE
Control and map of new informal nodes and essential connections

MOBILITY
THE CORRIDORS
PHASE V. BROADER CONNECTION
Connection of corridors with the bigger scale strategy.

10 GENERAL STRATEGY



GENERAL OVERVIEW OF THE STRATEGY -

As explained in the section 'Strategy development', the general overview of the strategy is divided in 3 major proposals: **Moamba airport** and **New Katembe** in Metropolitan scale and **The Corridors** in city scale.
At the same time, inside those three groups there are proposals in small scale to achieve the changes of perspectives explained before.

However, before the detail of the major proposals, it is essential to highlight the core interventions that need to take place before the implementation of any of the strategies. These core initiatives are explained in the next sections.

The strategy is based in the expected growth profile of MMA detailed in the analysis and the atlas annex and there is an explanation of how it influences the approach in the next diagram.

'NON CONVENTIONAL' HOUSING POLICIES OF THE STRATEGY -

Following the theoretical background introduced in the section B04, the strategy introduces the implementation of `non conventional housing policies' to approach the informal reality of the MMA.

These housing policies are proposed in all the strategies, however, the character of 'The Corridors' is different than the other two strategies for being an improvement of an existent situation. That is why there is a formulation of a regularization - legally and physically - of the current informal economies and their introduction in the formal tissue via an inclusive consolidation and densification.

On the other hand, in terms of the new developments or ex-novo proposals, they approach the informal development trend by the implementation of guided occupation strategies in a percentage of the new development areas.

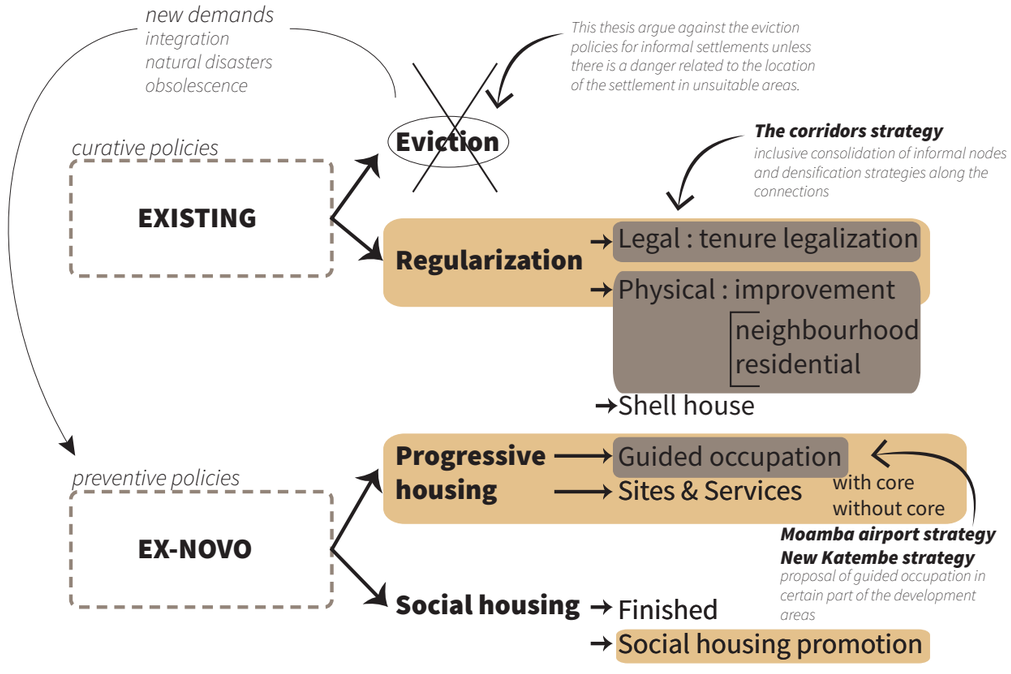


Image 71. Relation of strategies with theoretical base
Source-made by author

map 35. Strategy overview - general map



MOAMBA-AIRPORT

MATOLA

MAPUTO

KATEMBE

SWAZILAND

SOUTH AFRICA

MOZAMBIQUE

N

0 1 2 3 4 5km

GROWTH PROFILE GUIDELINES



Main growth from Matola

The strategy presents the bigger extension next to the city of Matola, together with an strenghtening of the connection of this city with South Africa by providing direct connections.
At the same time, due to the moving of the airport, there will be need for an urbanization in the area of Moamba related to the creation of a new city center related to the airport. This area is planned to be occupied by the expected growing population of Matola.





Majority of female population

There is a strong connection between the informal activites and the women. Most of the time there is a female leadership in the families withn the informal city. Leadership in terms of finding the resources to survive.

"In the territorial distribution of the population by gender in the cities of Maputo and Matola, it is illustrated that the female populaton presence is diminished as soon as it gets to the city centers. This can mean that the urban development makes the access to the different formal urban activities more difficult for women than for men. This should be analyzed deeper through case studies, as well as introduced in the future visions and agendas about the urban growth. One of the main aspects to highlight is the marginalization of the female gender in the urban phenomenon for 'poverty feminization' causes, as well as the gender differences in terms of accessibility to resources and goods" (Mendes de Araújo, M. G. 2006)

Therefore, the strategy of The Corridors aims to present the nodes where the women work as new hubs and enhance the accessibility to them and their interconnection. It is a proposal to visualize the value of the female activities and support it.
At the same time, through the integration of low income neighbourhoods in the proposals via guided occupation, there is a new hearachy of accessibility to city centers.

*Note: the role of the women in the future growth of MMA should be further research but it has not been include in this thesis due to lack of time. Not due to lack of urgency or interest.



Mostly people in working age

It is essential to compliment the strategy with initiatives for income generation such as the introduction of sustainable industry approaches. At the same time, there is an urgent need for trainning the local population and preparing a reliable workforce to deal with the expected urbanization of the areas. There should be policies to prepare the local workers instead of bringing external experts.

10A

CORE INITIATIVES

Before introducing the strategy proposed for the MMA, it is essential to present the Core initiatives. The Core initiatives are implementations over the current situation that need to take place before the possibility of recommendation of any strategies and conform the basic framework to allow the pursuit of the strategies. They are big scale interventions related to the framework of policies and need to be implemented from the public sector.

The main character of these strategies is related to the proposal of a new way of understanding the governance by the collaboration of the different stakeholders involved in the urban development (adaptive governance). These core initiatives propose a release of certain aspects that are currently in control of the central government in order to approach them with priority.

These core initiatives are the following:

1. Creation of limits by programmatic natural spaces

2. Efficiency in the management of certain resources, currently public such as garbage

3. Organization of a common institution that entails the management of mobility structure and urban development.

1- Creation of limits by programmatic natural spaces.

Already introduced as one of the major changes in perspective proposed in the strategy, this core initiative seeks the maintaining of the current natural spaces of the area by the definition of a programme on them that prevent the urban sprawl over their extension. The natural qualities are one of the major opportunities of MMA and main touristic attraction. Therefore, it is essential to seek for its preservation.

However, the usual method to preserve an area lead to fences and walls to prevent the entrance. Otherwise, there are natural areas that should be preserved because of their natural qualities and are just forgotten without any specific normative.
This initiative seeks for the planning of natural areas before realizing the planning of the urban areas.

With this approach, there will be an specific use for each one of the areas and they will be included in the development plan of the city; something that did not happen in the New Katembe masterplan, where the major natural reservoir 'Reserva Especial de Maputo' was highlighted but not the natural spaces within the extension of the future city of Katembe, which extension was reduced to extend the urban areas.

Some of the proposed uses are related to the accessibility to the parks with specific routes that will respect the natural space but at the same time highlight its potential. Same is the case of the proposal of certain sports that do not damage the environment and allows its utilization. Such as kayaking, trekking or climbing.

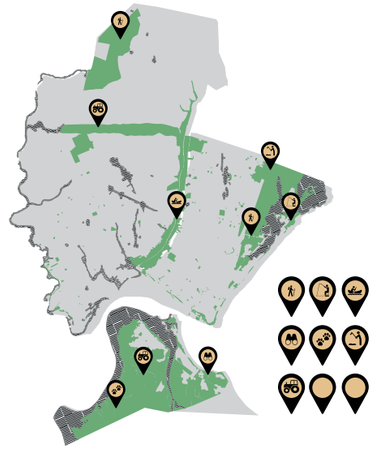




Image 72. Current access to Maputo's special reserve
Source-https://www.tripadvisor.com/LocationPhotoDirectLink-g293819-d479027-i63063486-Maputo_Elephant_Reserve_Reserva_Especial_de_Maputo-Maputo_Maputo_Province.html

2- Efficiency in the management of certain resources, currently public such as garbage

As explained in the conclusions of the feedback after the fieldtrip, the current management of basic resources is in a dangerous situation. Since last February, there have been several water shortages in Maputo city due to the lack of water sources. At the same time, there is a major problematic related to the rainy season and the enormous damages caused by the flooding. Anytime it rains even the formal city of Maputo, most developed area of MMA suffers from severe flooding. There is a lack of proper sewage even in the formal city and, of course, in the informal settlements. Finally, in terms of garbage, there are several landfills in the city that are being occupied by informal settlers that do not have other locations to live. This leads to dangerous situations for the population, as the one lived in Maputo last February when 17 people died after a 30m high landfill collapsed on top of an informal settlement.
Due to the weak character of the governance in MMA and the lack of investments in resources management, there is an urgency for introducing changes. The current government is assuming the control of the majority of resources and there is not any visible change to implement the access of public resources in the informal settlements.

There are several examples of implementation that took place in other locations that could be imitated in MMA but there is a lack of investment potential. This is something that a collaboration between a private company and the government can pursue.
There are major technological advances in managing basic resources, something that is fully studied in TU Delft and whose most innovative strategy leads to circular economy terms. This core initiative proposes the sharing of certain management of resources to those stakeholders that propose an innovative vision for reaching a more environmentally sustainable approach. A collaborative approach for a sustainable future.

For example, in the case of the garbage, there are several technical innovations to recycle the garbage and turn it into energy. In the case of the Netherlands, this is managed by a private company that achieve the current situation when there are no landfills in the country. This type of committed management of resources can sustain the privatization, at least temporarily.

3- Organization of a common institution that entails the management of mobility structure and urban development.

One of the major disadvantages of the planning approach of MMA is the lack of connection between the mobility structures and the urban development plans. This is caused by a lack of communication between the government departments in charge of each one of these decisions. Apart from the lack of continuation and relation between the urban mobility strategies of Maputo and Matola that ask for a common planning system.

The UN-Habitat 2009 report of "Planning sustainable cities" dedicated one whole chapter - Contemporary approaches to linking spatial planning to urban infrastructure* - to approach the strategies to connect urban development and mobility. In the report, it is stated that:

"While the detailed and static land-use planning associated with traditional master planning has generally been discredited, and there are questions as to the relevance, feasibility and possible influence of large-scale city-wide spatial planning, strategic spatial planning that is able to give direction to major infrastructure development is an important part of the new approach to planning."

*They are explained in detail in the "Workbook of innovative policies"annexed to this booklet.

Therefore, in order to succeed in the development of the strategies proposed in this thesis, it is essential to create a common organization where the decision making of Maputo and Matola in terms of mobility and urban development are reunited and propose a common, combined strategy. Not only those involved from the government but all the stakeholders involved.

Although this seems difficult to pursue, it is something that took place in the plan proposed for the neighbour city of Johannesburg:

"Struggles by civic and political organisations from the 1980s for a 'one city' approach, which would allow finances and resources to be shared across the city, resulted eventually in the formation of a Central Witwatersrand Metropolitan Chamber - A negotiating forum comprising stakeholders from all sides, including political parties, civic organizations, unions, business, NGOs and others.- in the transitional period of the early 1990s, and in the reorganisation of local government in the post-apartheid period. […] Spatial planning by the Metropolitan Chamber responded to the 'one city' concept, and also reflected the ideas of restructuringthe city towards greater integration and compaction, which were current in anti-apartheid planning circles at the time(Harrison, Todes, & Watson, 2008). These ideas were the basis for the normative dimensions of planning legislation passed in the early post-apartheid period: the 1995 Development Facilitation Act and the 2000 White Paper on Spatial Planning and Land Use Management" (Todes, 2006).

This common organisation give some positive insight in the possibility of strengthening connections between the different stakeholders of the mobility and urban development.

10B

THE CORRIDORS

Strategy in city scale that presents the concept of corridor applied to the context of MMA, the direct application of a mobility theory in the specific case of the context of Mozambique.
A rethinking of what corridor supposes for the 70% of the population living in the informal cities of Maputo and Matola. Its aim is to highlight the reality of the cities and propose a first step for urban densification in prioritary areas.

Main infrastructures

Secondary roads

Terciary roads

Railway

Extension public transport-proposed

Public transport (chapa) lines

Corridors connections

Corridor nodes

Corridor densification extension

Prioritary areas to be densifies

NON PLANNED

not urbanized

low density

middle density

high density

PLANNED

low density

middle density

Extension limits - programmed natural spaces

The corridor in MMA, following the current city dymanics, is defined by the connection of informal economy nodes via public transportation. This project aims to discover the second face of the cities, the informal one, that supposses the representation of 70% of Maputo and Matola inhabitants. It introduces growth by the densification of the priority areas defined in 1km extension next to the corridors. There is an identification of the current low and middle density areas in MMA, with a highlight of those inside the priority areas. At the same time, there is an identification of the current chapa[1] routes in the map[2] and a proposition of relation of them with the designed connections between the informal nodes identified.

THE CORRIDORS

General map.

Notes

[1] chapa: informal method of transport that is starting to rely on organization. It is cheaper than the bus and supposses the main method of transport in MMA.
[2]the mapping of the chapa routes have been done by the author through the information provided by Joaquin Romero in the map of chapas. (https://chapasproject.wordpress.com/)

Map 36. Strategy M. The Corridor



B1 DEFINITION OF CORRIDOR



An urban development corridor is redefined in the case of MMA into a connection between two informal nodes by public transportation. The corridor propose the guidelines for a densification strategy in the area of 1 km along the connection and the informal nodes.

Image 73. Maputo street commerce
Source-http://www.dw.com/pt-002/setor-informal-deve-pagar-impostos-em-moçambique/a-19413222

DEFINING WHAT CORRIDOR MEANS -

An urban development corridor is redefined in the case of MMA into a connection between two informal nodes by public transportation. The corridor propose the guidelines for a densification strategy in the area of 1 km along the connection and the informal nodes.
It presents a strategy that follows the current dynamism of the cities and respect how the majority of their population use it and move through it. The formal economy represents 10% of the economy in MMA and its population use the public transport, specifically the Chapas, in a daily basis.

THE INFORMAL NODES

Informal node define those areas where there is an agglomeration of informal activities in a constant daily basis. It entails those hubs where there is a service to the community next to it as middle point market location for those who do not have the opportunity to reach the formal city and need a closer access to daily goods.
The strategy proposes the identification of the current bigger informal nodes and the inclusive consolidation of them by improving their conditions in close collaboration with those who are participating in the creation of informal nodes.
There are several examples of informal nodes that have been formalized in the shape of a market and without communication with the sellers and they ended up being transformed into a formal market and creating a duplication of the original informal node in a different location to cover the initial service.
As explained in detailed in the Strategy of consolidation of informal nodes, it is an initiative where public and private sector collaborate with the sellers, organized in a common voice.

THE CONNECTIONS

Between two informal nodes there is a direct public transport line (BRT) and an improvement of the road quality.
At the same time, new policies are proposed to demand a densification of the areas 1 km next to the corridors with different densification techniques, such as the explained in the conclusions from the fieldtrip (section F04). Corridors understood as the informal nodes and the conection between them.
It is recommended to create a department especially to ensure the maintaining of these connections in terms of road quality and accessibility characteristics.

THE PRIORITY AREAS OF DENSIFICATION

The current low and medium density areas identified within the 1km priority area will be defined as priority development areas.

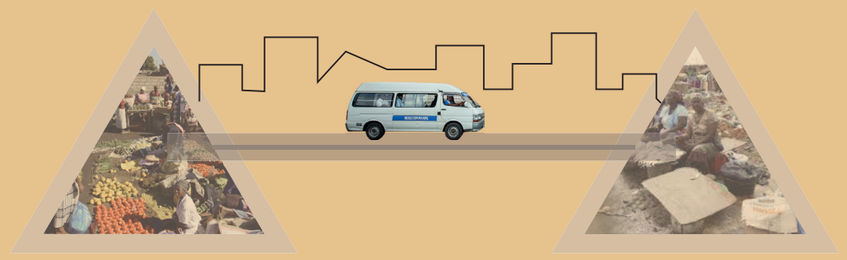
The areas surrounding the corridors will be densified by the investment of public and private institutions. This suppossed a new policy proposal that is explained in detail in the workbook of policy recommendations.

The policies are based on incentives and the creation of facilities to increase the density in these areas, apart from technical help and trainning to the population living there. Especially if they are connected with the informal nodes.

It is expected that in the future the densification areas will be expanded to reach a point that supposes an overall densification in the city.

THE CORRIDOR
DEFINITION

CONTEXTUALIZED CORRIDOR
Two informal nodes connected by a route of Chapas, surrounded by densified areas.



“The urban informal workforce is here to stay” (Chen, M. 2007)

“the informal economies are building up the cities in Mozambique”

“The informal sector, generally associated to the economy, can be understood as the dynamic group of people that act in innumerable activities that are not regulated by a contract or a law. It’s a series of activities (generally income generators or producers) that do not follow the institutional rules and are not protected by them, in opposition to the formal activity that operated inside the established procedures” (Gesto, B. 2015)

Image 74. Maputo corridor definition
Source-made by author

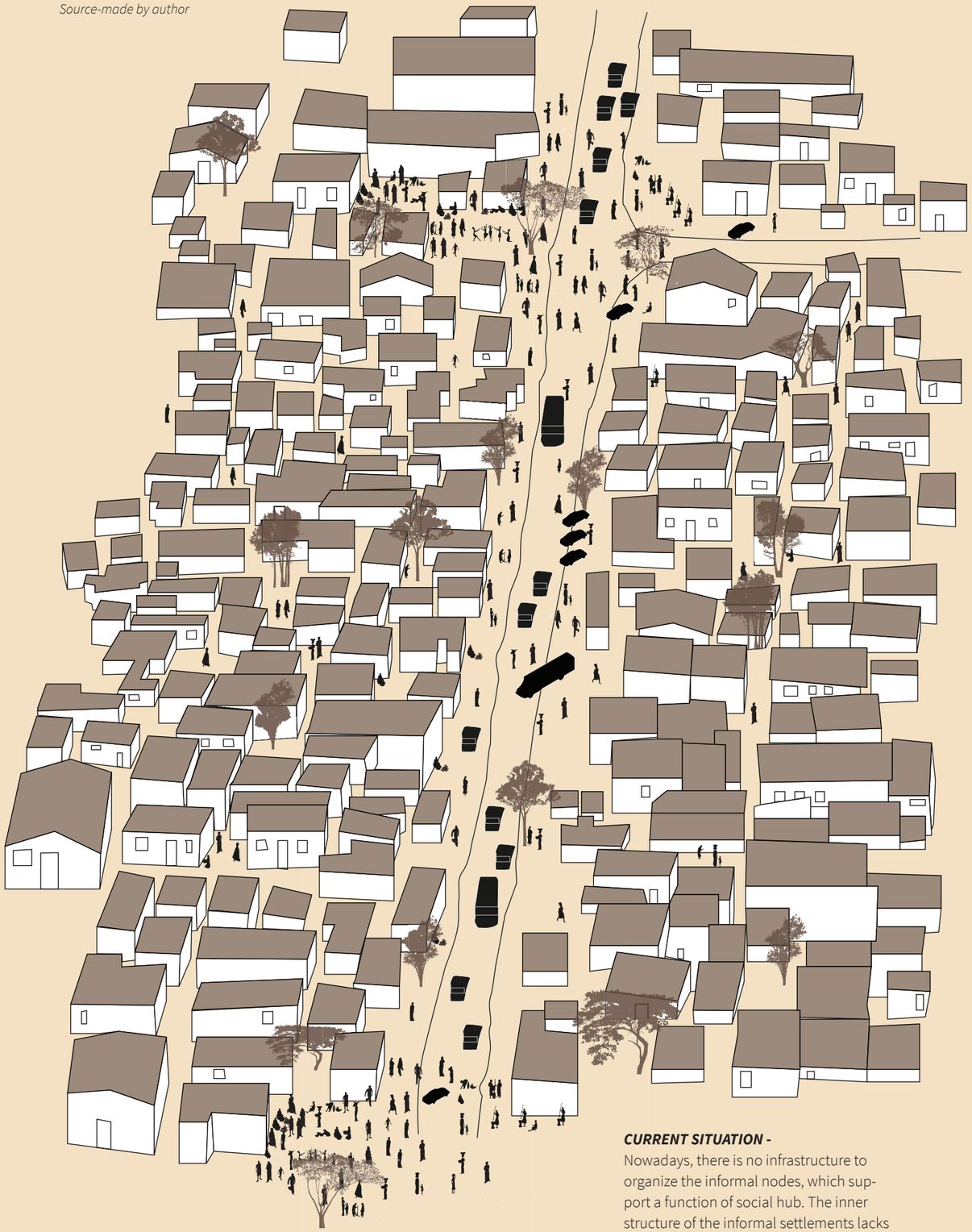
THE FUTURE CORRIDORS

Due to the spontaneous origin of the informal nodes, the prediction of new informal nodes, although estimated, can not be fully guaranteed. Therefore, the strategy presents the initiative of changing the mindset about the current perception of informal nodes as dangerous for the city and understand their value and service to the current economy.

As stated by Chen, M in 2007:
“Urban planners and municipal officials should acknowledge that the urban informal workforce is here to stay, that it contributes to the city economy in many ways (creates employment, produces and distributes goods and services at affordable prices), and that reducing urban poverty is not possible without supporting the working poor in the informal economy. Second, they should promote inclusive urban planning, including participatory planning processes, to address the key constraints and needs of different categories of urban informal workers. Third, they should recognise the right of urban in- formal workers to live in central urban areas and provide basic infrastructure.”

It is essential to recognize that the informal economies are building up the cities in Mozambique and work in collaboration with their agents to develop in a sustainable and inclusive approach.

Image 75. Current state of the corridors
Source-made by author



CURRENT SITUATION -
Nowadays, there is no infrastructure to organize the informal nodes, which support a function of social hub. The inner structure of the informal settlements lacks from a hierarchization and conditions.

PROPOSAL -
The proposal introduces the identification and consolidation of the informal nodes and the improvement of connections between them, which entails a progressive densification of the areas next to 'The Corridors'

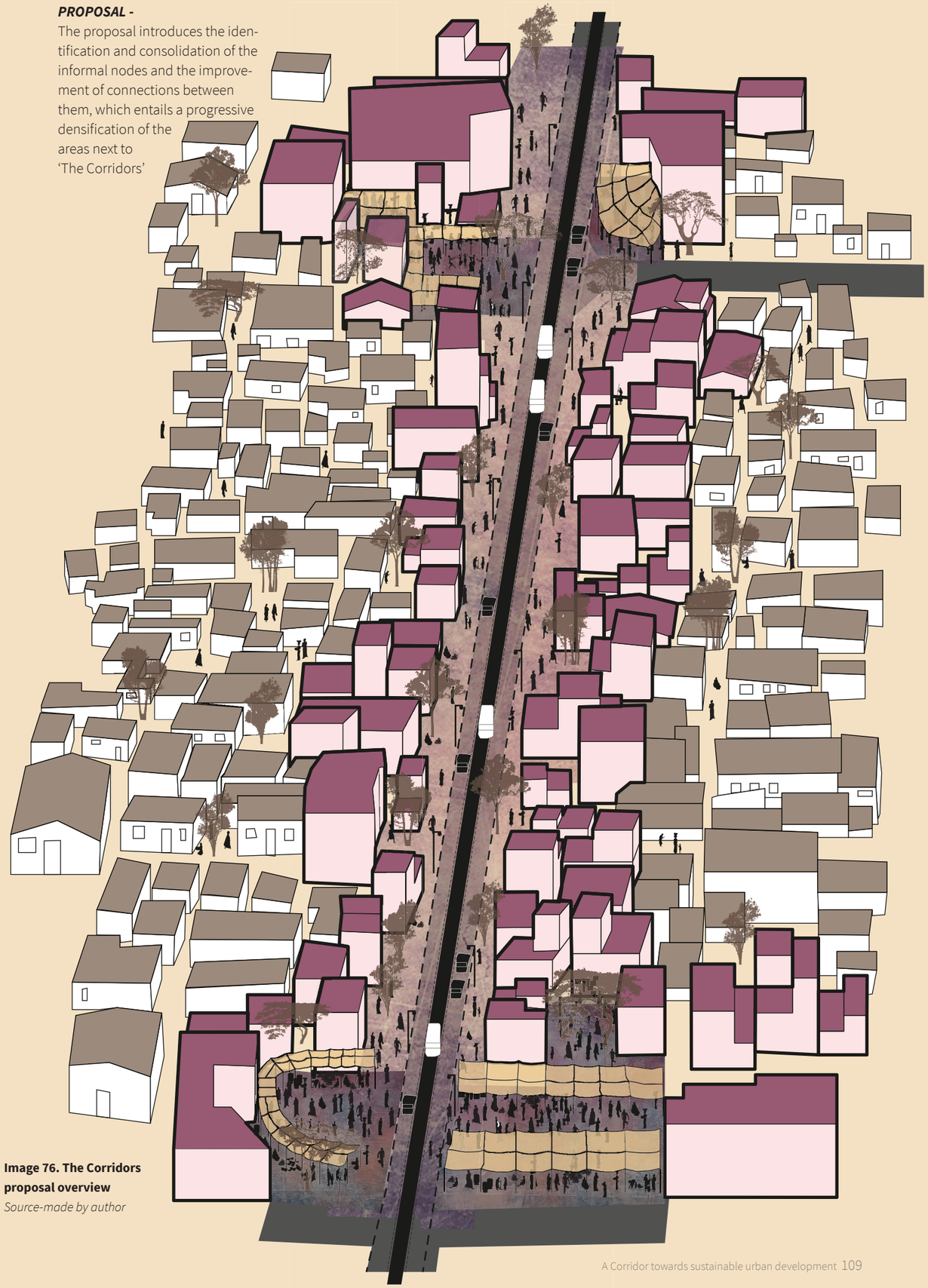


Image 76. The Corridors proposal overview
Source-made by author

GUIDES FOR THE DEVELOPMENT -

Introducing a hierarchy of connections by understanding the main points to connect will establish a base for the progressive development of basic infrastructures on the current informal settlements. At the same time that there is an improvement of connectivitiy in a metropolitan scale by creating a network of nodes.

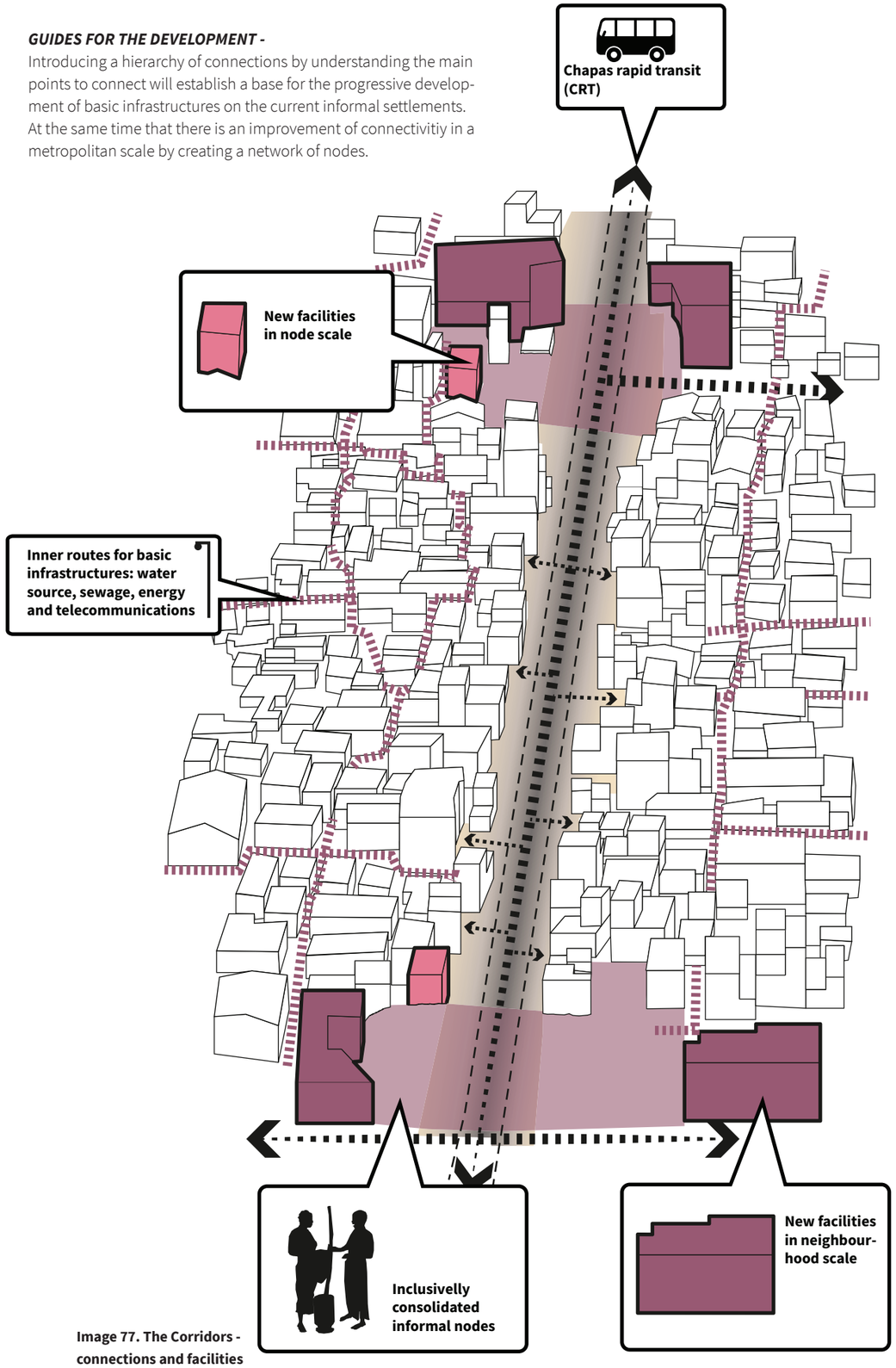


Image 77. The Corridors - connections and facilities
Source-made by author

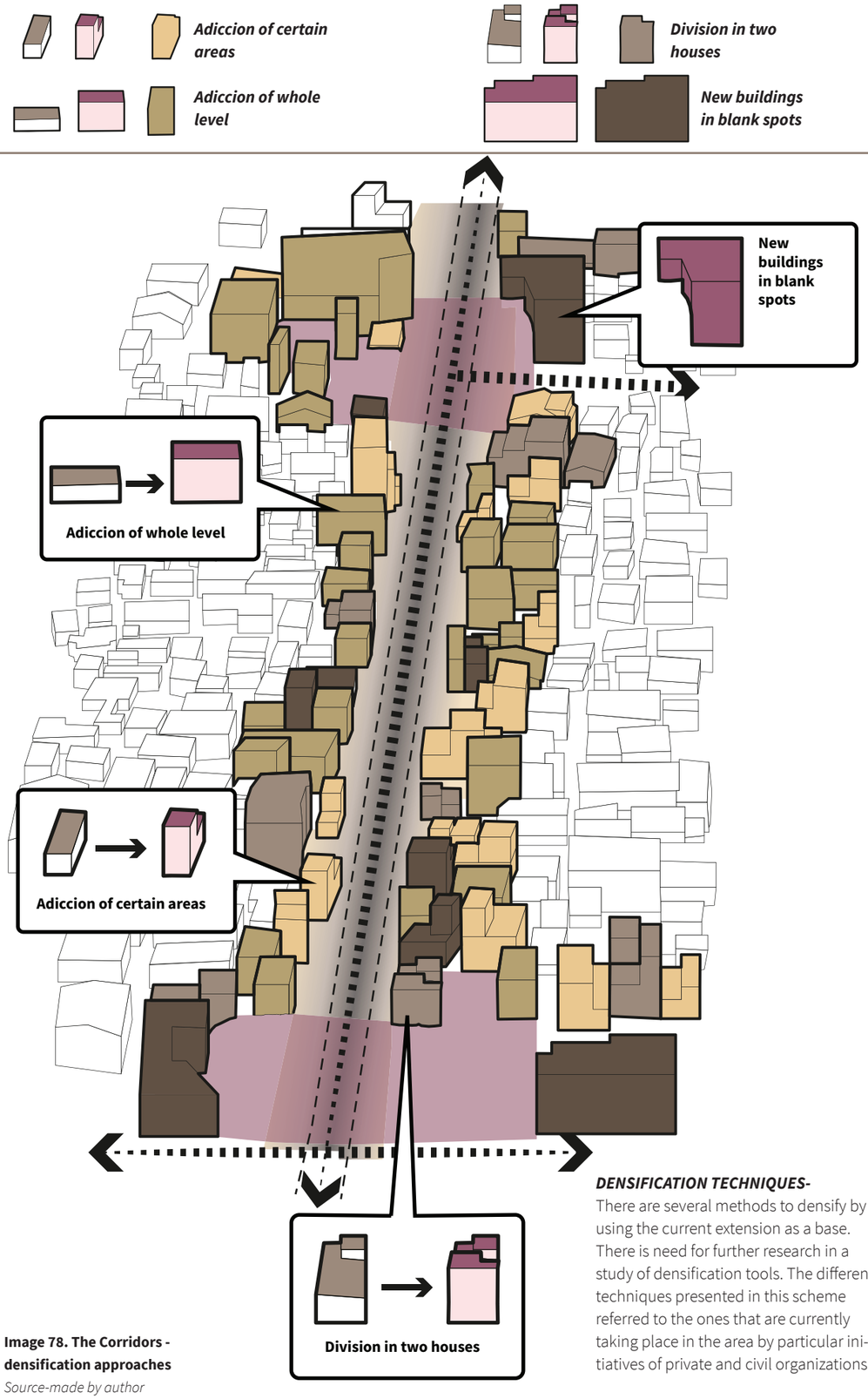


Image 78. The Corridors - densification approaches
Source-made by author

DENSIFICATION TECHNIQUES-

There are several methods to densify by using the current extension as a base. There is need for further research in a study of densification tools. The different techniques presented in this scheme referred to the ones that are currently taking place in the area by particular initiatives of private and civil organizations.

POLICIES RECOMMENDATIONS FOR THE CORRIDORS STRATEGY -

This strategy introduced a statement against the usual procedure to consolidate the informal economy nodes –as the case of Xipamanine market explained in the annex: 'Workbook of innovative policies- and the approaches that consider this economy a problem instead of understanding its value in the economy of the country. The policy recommendations for this strategy will be based on the definition of corridor proposed in the strategy

INFORMAL NODES

The informal nodes will be consolidated in an inclusive way and by the collaboration of stakeholders from public, private and civil society sectors looking for an adaptive governance approach.	The main agents in the inclusive consolidation are the informal seller, who have the right to be trained to organize themselves and create their own method of consolidation. Every informal node is different and deeply attached to the people working on it.	The government should recognize the essential role of these informal nodes in the MMA local community and provide support for their introduction in the formal city with respect and adaptive planning. Otherwise, the nodes will be replicated in a different location, as can be learnt from former examples of non adaptive consolidation.	The city should develop a strategy to recognize future informal nodes and follow the same consolidation initiative with them, using the evaluation of inclusive consolidations until the moment to help the improvement of decision making. In order to do it. the recommendation is the creation of an organism where there are delegates from the government, private sector involved, priority NGO's and institutions and delegates from other informal nodes. This organization can be convenient to understand the dynamic of the city and provide a proper frame for new informal nodes by understanding where are they going to happen and use 'non conventional' housing policies to reserve the space.

CONNECTIONS

If the connections between nodes already exist, it is essential to ensure its quality and maintenance.	If there is need for new connections, mobility analysis and proposals should be conducted with a basis of adaptive governance approach.	It is recommended to define a department within the mobility-urban development new organization dedicated to the connections design and maintenance	There will be a Chapa Rapid Transit (CRT) lane in every connection to ensure the priority of this method of transport and the maintenance of an open line between informal nodes. This CRT lane will be complimented with several covered stops to facilitate its use.

PRIORITY DENSIFICATION AREAS

New policies are proposed for those areas. Such as a limited high of 4 heights for being the maximum where there is no necessity of elevator. The rules need to be adapted to the current reality of the neighbors and improve their living conditions by the use of the least economic resources possible	For those living in the priority areas for more than 5 years, there is a direct access to the DUATs, tenancy permit in MMA – which is currently really difficult to obtain -. The introduction of basic infrastructures should be contrasted with the local chefs of 10 casas, as well as the owner period in the neighbourhood.	The private development of plots by a developer is not allowed, the plots should be developed in individual initiatives to prevent market movements in relation to these areas. The owners in the moment of the corridor definition should remain owners and inhabitants at least for other 10 years.	The population will be trained in densification techniques and offer technical support for the renovation and improvement of their houses. There is further research needed for the specification of those techniques, however there are already some taking place in the area than can be studies in depth and evaluated.	The densification entails the support with proper infrastructures (energy, water, gas, sewage and communication) that will be facilitated in a public investment.	The priority densification areas are linked to the facilities dotation proposed in the inclusive consolidation of informal nodes and they will provide the basic services in neighborhood scale.	In the future, the 1km densified area will be extended. However, there should be policies to focus the densification in these areas until there is an extension of the mobility infrastructure plan to connect new densification areas to these ones.

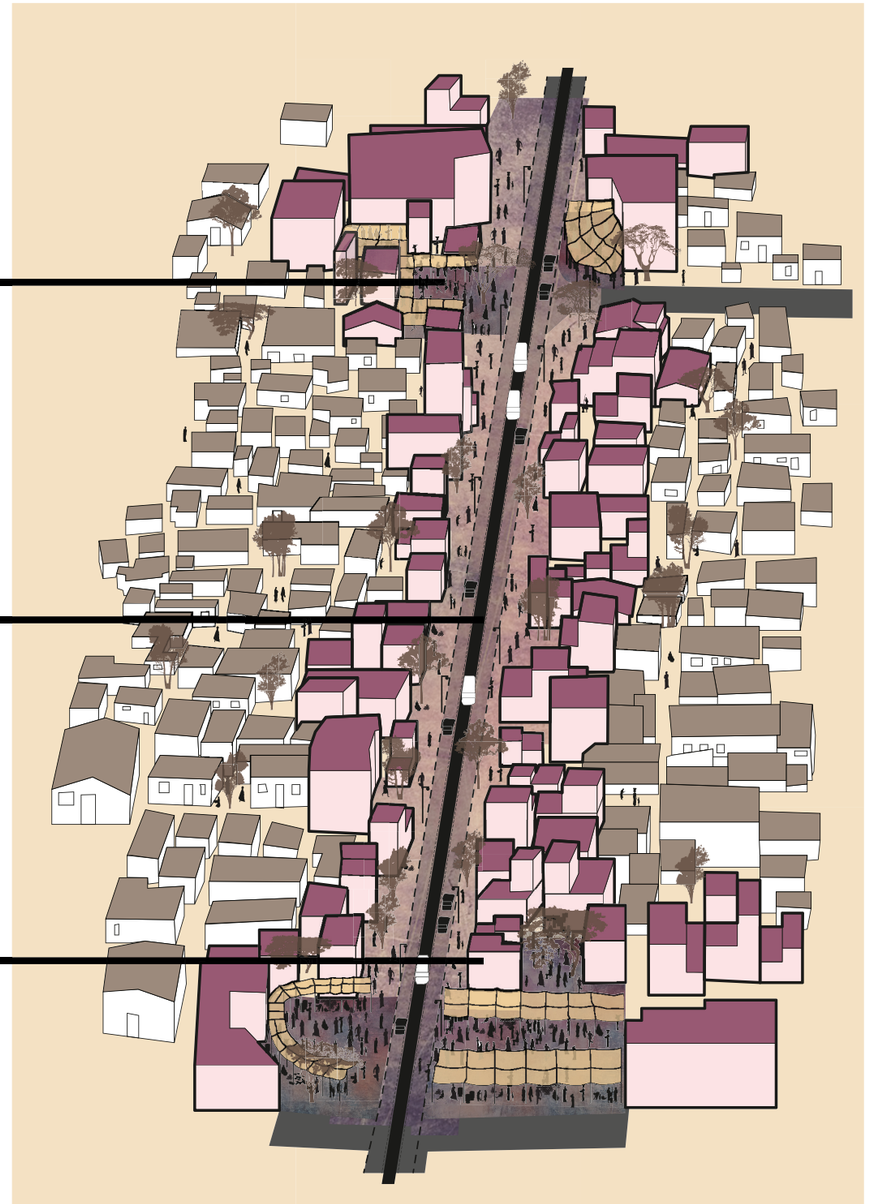


Image 79. The Corridors - policy recommendations
Source-made by author



1. IDENTIFICATION

The first step is finding those spots where there is a regular agglomeration of informal sellers. Those locations that passed to be part of the neighbourhoods surrounding them and provide a daily service to the city, bringing the goods closer to the inhabitants of the peripheries.

B2 STRATEGY S. INFORMAL NODES INCLUSIVE CONSOLIDATION.

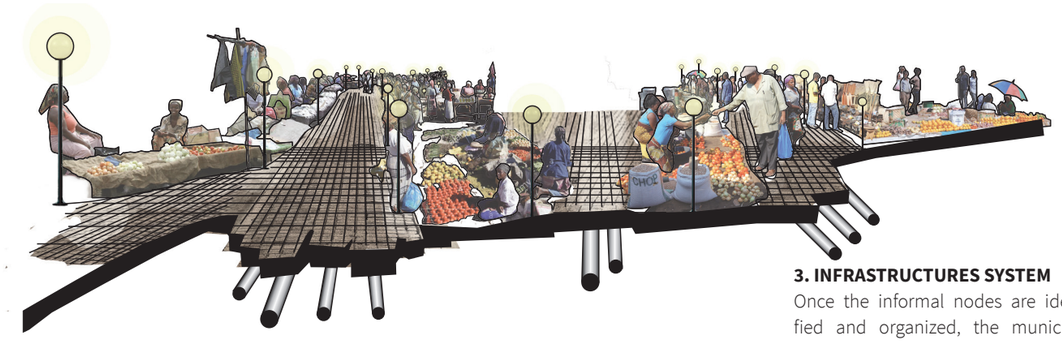




2. CONSOLIDATION APPROPRIATION

Recognition of the services provided by the sellers by the attribution of certain rights over the land.

In order to establish certain order, it is necessary a basic organization proposed by the sellers with experts help and a basic rules approved by all of them.



3. INFRASTRUCTURES SYSTEM

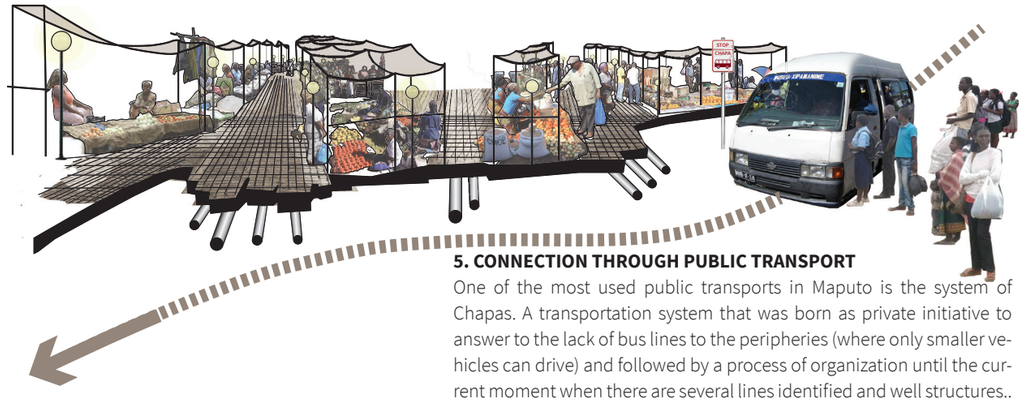
Once the informal nodes are identified and organized, the municipality provides the basic infrastructures necessary for the development of the activities that take place there. Such as lighting, sewage, water sources and garbage collection. Apart from a proper floor.



4. COVERTURE

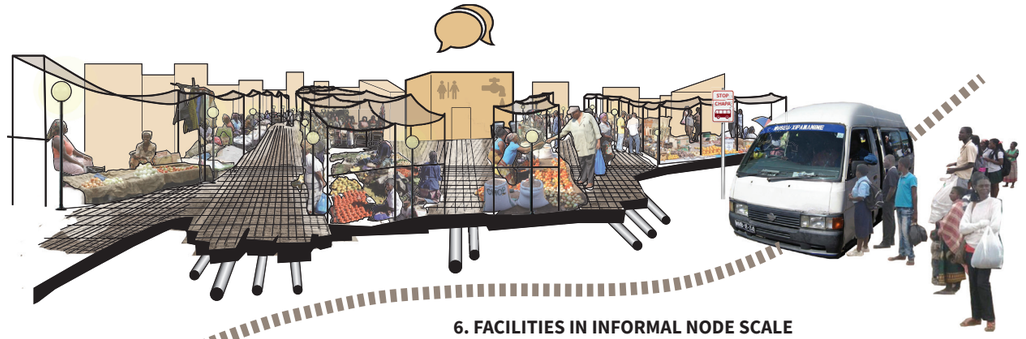
The next step for a proper accomodation of the area of informal node, is the coverture with basic structures in order to be able to continue with the activities during the raining season.

The coverture can be provided either by the public or private sector, regarding the interests of each point.



5. CONNECTION THROUGH PUBLIC TRANSPORT

One of the most used public transports in Maputo is the system of Chapas. A transportation system that was born as private initiative to answer to the lack of bus lines to the peripheries (where only smaller vehicles can drive) and followed by a process of organization until the current moment when there are several lines identified and well structures..



6. FACILITIES IN INFORMAL NODE SCALE

In order to consolidate the necessities of each one of the nodes, it is essential to complete them with facilities related to the provision of public toilets and spaces for community reunion and main water sources.

This provision should be built with a collaborative inversion public-private and with part of the inversion from the sellers, to improve the commitment of the community with the informal node.

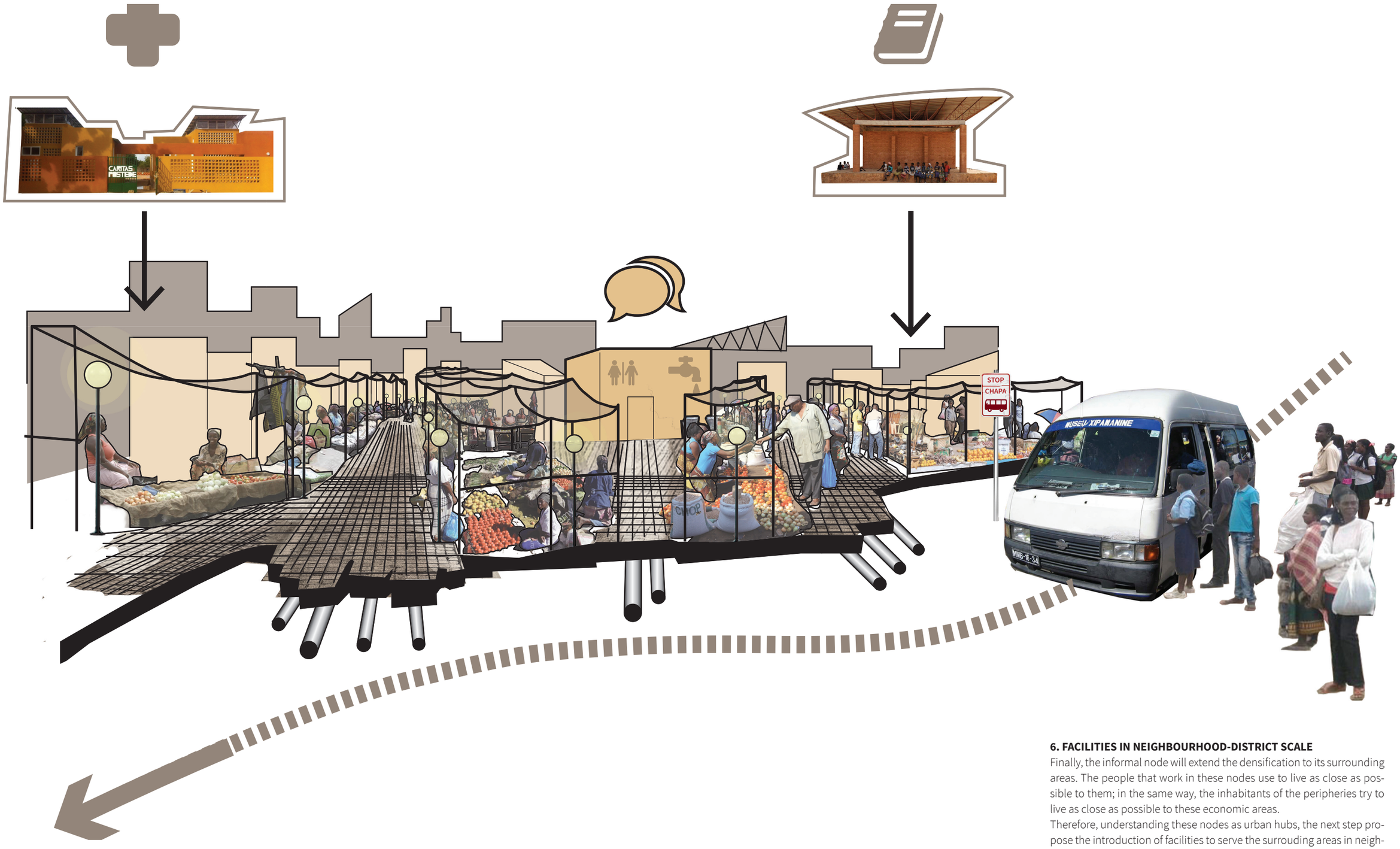


Image 80. Inclusive consolidation of informal nodes
Source-Photocollage with hand drawings. Made by author.

6. FACILITIES IN NEIGHBOURHOOD-DISTRICT SCALE

Finally, the informal node will extend the densification to its surrounding areas. The people that work in these nodes use to live as close as possible to them; in the same way, the inhabitants of the peripheries try to live as close as possible to these economic areas.

Therefore, understanding these nodes as urban hubs, the next step propose the introduction of facilities to serve the surrouding areas in neighbourhood scale such as schools or medical centers.

It is recommended to seek for an affordable sustainable architecture commited with the context and the reality of the country.

B3

CONNECTIONS

The strategy of connections define the direct lines between the informal economy nodes.
It introduces a new fast line for public transport (BRT) and proposes a density increase in an area of 1 km in both sides of the road.

For its development, the public-private investment is essential and the participation of the population living in the surroundings who will be trainned and offered technical support about densification techniques.

This strategy introduces priority areas of development inside the cities of Maputo and Matola by the identification of current medium and low density areas. From them, the ones inside the area of priority will be developed first supporting the new connections.



Image 81. Image of road in Maputo
Source-Photography by author during fieldtrip

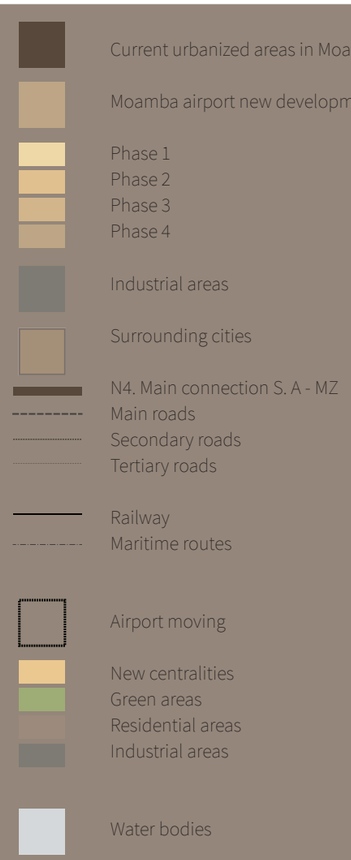


Image 82. Photocollage of the connections
Source-Photocollage with hand drawings made by author.

10C

MOAMBA AIRPORT

Strategy in Metropolitan scale related to enhance the relation between Mozambique and South Africa by moving the airport to a middle point, next to the current city of Moamba.
This will lead to a restructuring of the mobility network of the area and improve the connections between the cities of Maputo, Matola and Moamba to generate a common urban extension.



The moving of the airport next to the city of Moamba will change the dynamics of the MMA in terms of economic interests, development and public transport. By increasing the attention in Moamba, there will be a diminishing of the city centers pressure and a new development focus.
The proposal integrates the current layer of urbanization by introducing densification of the current urban areas[1] in between Moamba and Matola.
At the same time, when approaching the development of the new airport urban extension, there is a proposal of an urbanization in phases.
Finally, the change in the metropolitan dynamic will lead to an increase of traffic and mobility in a multi-modality level with an extension of railway flows, maritime routes and port facilities, development of new roads and maintaining of the current ones[2].
*The strategy of the new urban area in the current airport location is detailed in the next section.

MOAMBA AIRPORT

General map.

Notes

[1] the urban areas have been identified by a google earth ortophoto and, as it can be perceived, they present a really low density.
[2]the selection of roads and classification in levels of priority has been development by the GIS basic data and information extracted from google maps and its identification of main roads.

Map 37. Strategy L. Moamba airport

C1

STRATEGY DEFINITION

MOAMBA AIRPORT

STRATEGY L.

Removing pressure from the current city centers while strenghtening connections betwen Mozambique and South Africa

The strategy seeks the integration of several objectives in different scales.

On one side, the current location of the airport supposses an environmental and acustic danger to the majority of Maputo city, besides being in an attractive location to introduce a density graft in the current sprawl trend of the city.
Despite its improvement in 2007 under Chinese investments, the possible reallocation of the airport will provide a new urban center for the MMA to release the overpressure over the current city centers. This will decrease the current overpressure of Maputo city center. The new center in Moamba airport, developed in different phases, will catalyze the densification of the existent rural low density layer.

The Maputo International Airport is nowadays the most important airgate to the country. In the case of its reallocation, it entails a daily flow of people and traffic and, therefore, it will lead to the prioritary reorganization of the mobility structure in the MMA. Because of the international interest of a proper accessibility and facilities in the airport, this strategy will attract international investments to the region.

At the same time, in a city scale, the current neighbourhoods surrounding the airport built up an economy in relation to the existance of this hub. Therefore, in the case of its reallocation, it is essential to guarantee the substitution by another specific big scale activity which attract a certain flow of people and traffic in a daily basis.



Image 84. Maputo Metropolitan Area ortophoto
Source-Google earth

Image 83. Moamba airport area ortophoto
Source-Google earth





Image 85. Maputo international airport area
Source-Google earth

C2

CURRENT AIRPORT

DEVELOPMENT STRATEGY

Maputo airport and military base

Connectivity, natural spaces
and reprogramming of the area

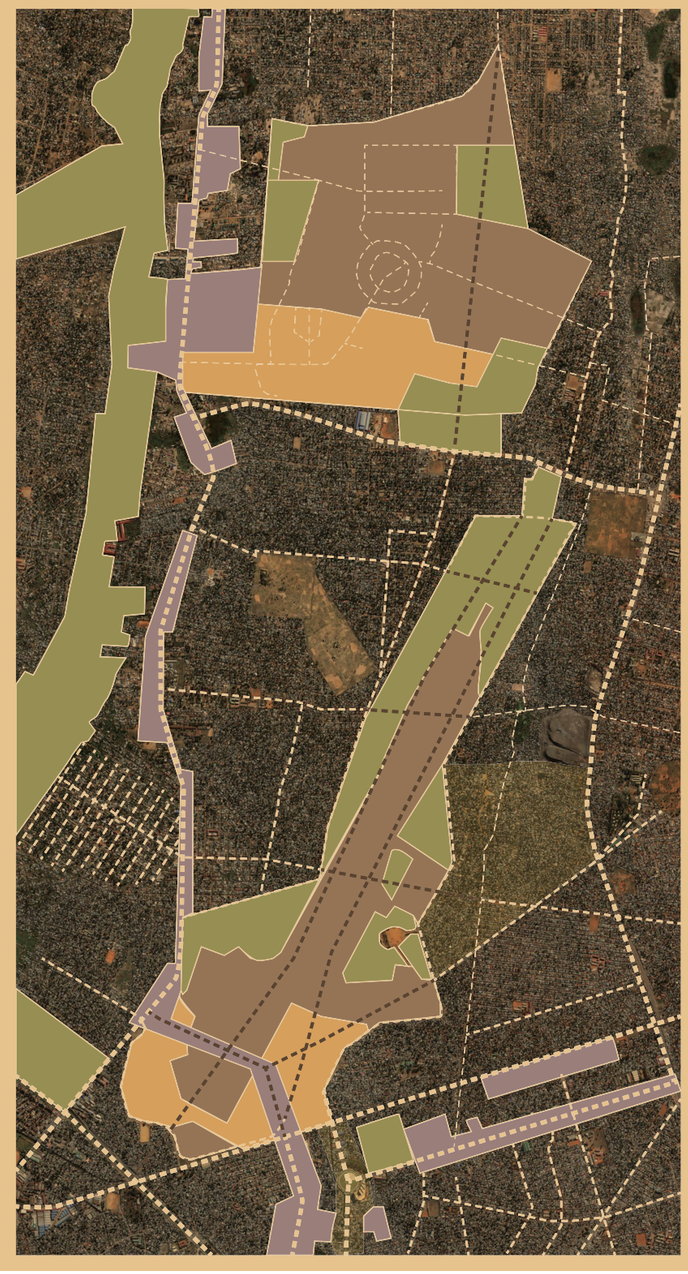
Currently, the Maputo International airport acts as an attraction of a daily flow of people, which suppose an income generator for the people that live surrounding it and work in relation to this flow: selling goods in the roads or carrying luggage in the airport door, for example.
Therefore, the strategy seeks the creation of a different focus of attraction in the area by the re utilisation of the current airport facilities. After an analysis of some of the future visions for the city, there are propositions of creating new university campus, technological parks or industrial parks. In any case, the existence of a new focus that entails a daily flux of population.

Due to its location, there is scope for preserving part of the current natural landscapes inside the airport limit, to increase the green areas in the neighbourhoods surrounding the airport which currently present a majority of informal characteristics.

In the same way, the current airport facilities create a barrier in the connection East - West in the city of Maputo, there is scope for reconnecting the neighbourhoods at both sides of the airport by creating new infrastructures.

Finally, the area will present an urban development leaded by a private development - maintaining a percentage of social housing - and following certain policy recommendations attached in the POLICY ANNEX of this document. It is essential to highlight that this strategy will be used to finance the investments in “The Corridors” strategy.

** As stated in the conclusions, there is further research needed in order to propose a concret approach for the optime aiport area distribution.*



Proposed special activities
Residential areas
Green areas
Industrial strip
Current commercial activities
Main roads
Secondary roads
Terciary roads
Proposed connections

Map 38. Strategy S. Maputo airport

C3

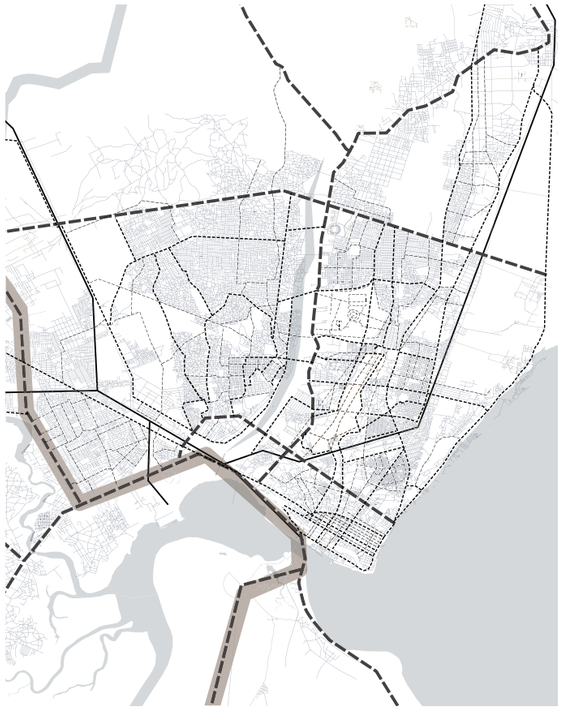
HIERARCHY OF ROADS

Mobility system restructuring

During the sessions with stakeholders in the fieldtrip there were several discussions about the precarious situation of the mobility system nowadays and the major traffic situations that take place in a daily basis in the main roads, especially in the routes of connection with ports with high presence of trucks.

At the same time, there were several academics proposing an approach were the strategy was directed towards the organization of the current infrastructure system instead of the planning and construction of new roads.

Within this new hierarchy of roads, there is scope for introducing a vision for the expansion of the traffic flows by maritime, railway or truck routes. It is essential to organize the multi-modality opportunity of the area and create a combined strategy that upgrade the MMA into an accessible position in an international sphere.



Map 39. Strategy M. Hierarchy of roads

SOURCES AND LEVELS

For the mapping of the current infrastructures, several techniques were used. Firstly, data from Open Street Map was extracted, read and adapted through QGIS. At the same time, there has been a lecture of the lattest master plan of both municipalities of Maputo and Matola and the data of priority roads has been contrasted with the prior GIS data.
Finally, in order to obtain the lattest information in relation to the current hierarchy of roads, the tools of google earth and google maps have been used and compared to the prior mapping.

As consequence, the current infrastructures have been divided into three different levels such as main roads, secondary roads and tertiary roads. The map introduces the exception of the N4, main roads of connection with South Africa and priority access to the new development area Moamba Airport either from Maputo, Matola or South Africa.

At the same time, the basic pattern of the cities is recognize by a basic layer of roads that defines the lowest level of infrastructures that can be perceived by car. The last layer of informal paths is not illustrated in the map due to the lack of reliable data available and the temporary character of the paths.

The hierarchy of roads strategy is focus in the cities of Maputo and Matola due to the lack of detail in the proposed strategy of Moamba airport. Although further research is needed in the connection of this new area in a secondary level with these cities. What is clear is the direct accessibility to the area through the N4 road and the railway connection directly to Maputo, Matola and South Africa, as well as the respective maritime ports.

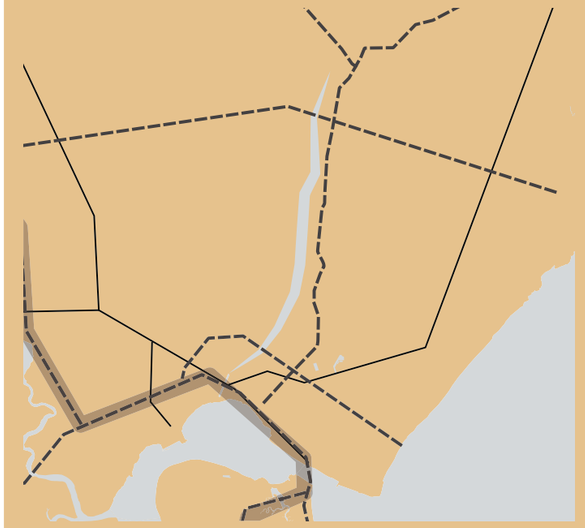


Image 86. Main roads
Source- map 39. Hierarchy of roads.

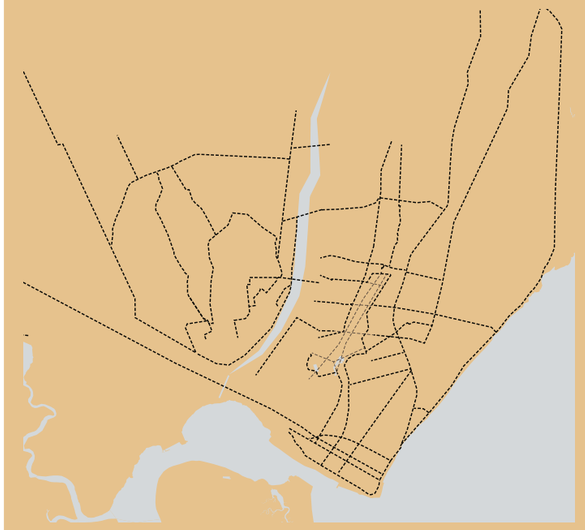
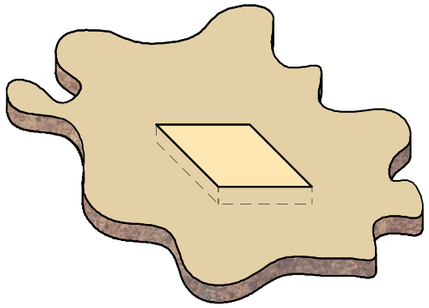


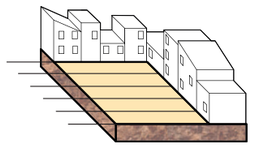
Image 87. Secondary roads
Source- map 39. Hierarchy of roads.



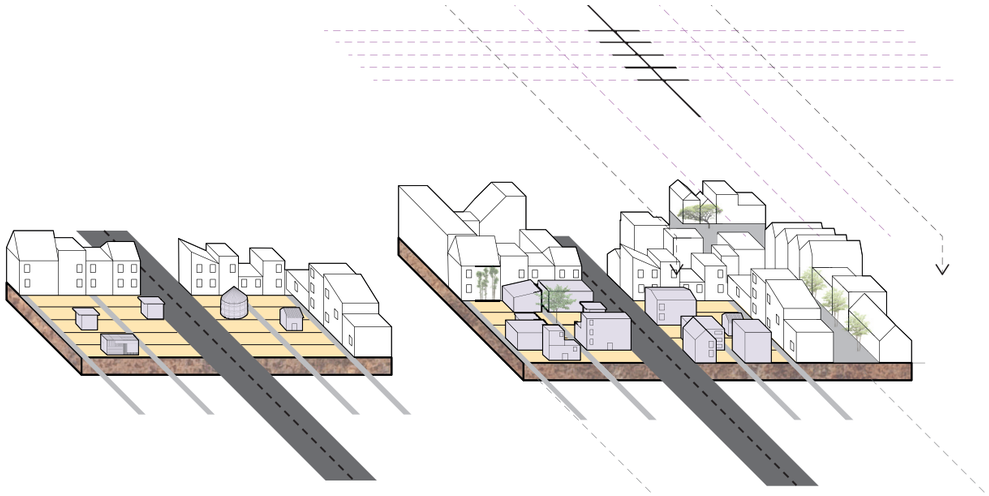
Image 88. Tertiary roads
Source- map 39. Hierarchy of roads.



1 - There is a portion of the development area reserved for the process of guided occupation.

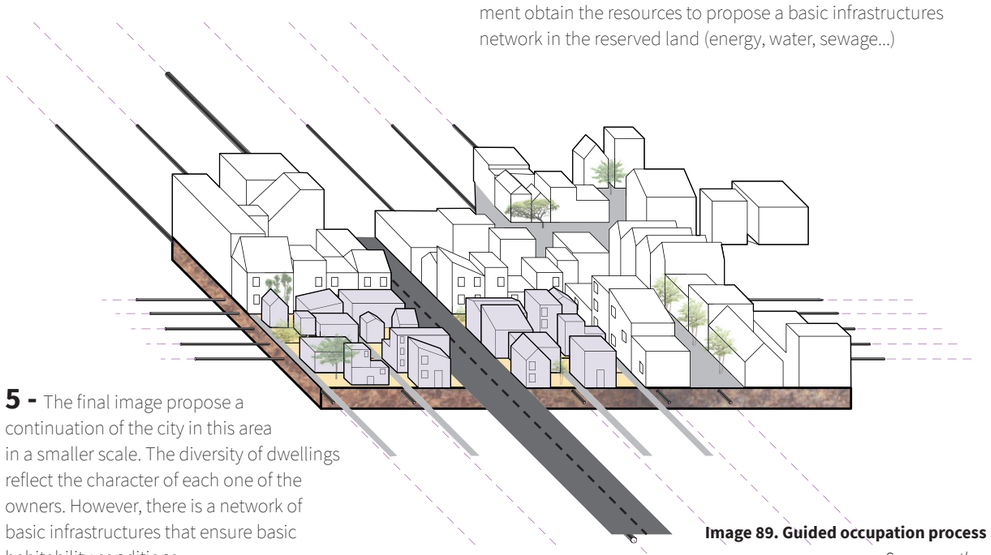


2 - The development process of the city around the area starts and this land is divided in parcels.



3 - The first occupations take place with basic dwellings which construction entails small investment

4 - The dwellings evolve when the owners have the means to invest on them. The city keeps developing and the government obtain the resources to propose a basic infrastructures network in the reserved land (energy, water, sewage...)



5 - The final image propose a continuation of the city in this area in a smaller scale. The diversity of dwellings reflect the character of each one of the owners. However, there is a network of basic infrastructures that ensure basic habitability conditions.

Image 89. Guided occupation process
Source- author

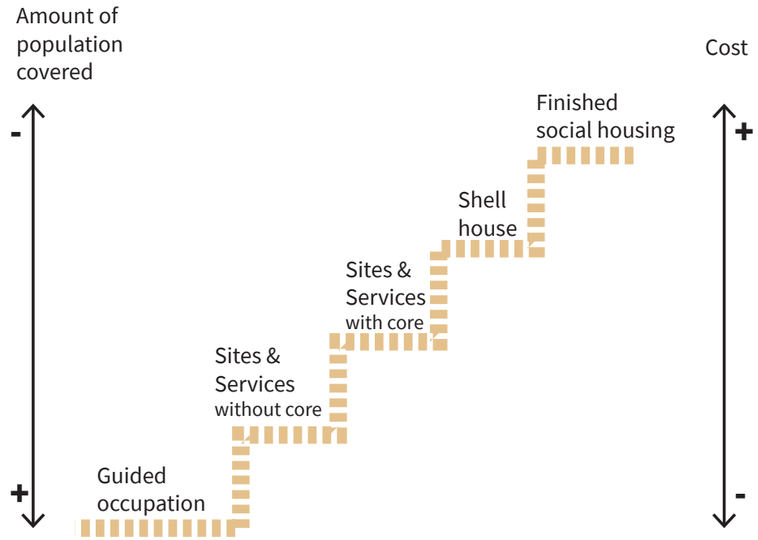


Image 90. Development staircase of non conventional housing policies
Source- Gesto, b. (2015). LOS PROGRAMAS MUNICIPALES DE OCUPACIÓN GUIADA: INSTRUMENTOS PREFERENTES DE HABITABILIDAD BÁSICA VERSUS LA URBANIZACIÓN INFORMAL FUTURA. El caso de Trujillo (Perú). http://oa.upm.es/39714/.

GUIDED OCCUPATION C4

Within the context of 'non conventional' housing policies, there are those which prevent the spread of the informal urbanization trend in new developments within the context of developing countries. The progressive housing strategies present a low first investment profile and allow the gradual development as soon as the agents involved acquire the economic profile needed.

The Moamba airport strategy introduce approaches of guided occupation, which suppose the lowest step in terms of initial costs and the one that covers a bigger amount of population. This strategy is defined by Gesto, B (2015) as:

"A Guided occupation is a housing policy in which the population gain access to plots without services in an organized way, where they will build their own dwelling in a progressive way, as well as the gradual access to the infrastructures and services, according to the economic capacity of the different agents involved, especially the inhabitants and the public sector. It relies on a previous planning by a local or estate authority, even if during the occupation there can be a lack of services and infrastructures. It belongs to the named 'progressive housing policies' that understand the dwelling as a process instead of an object."

The value of this strategy relies on the approach of prevent the creation of new informal settlements in those contexts where there is a clear trend of informal urbanization. It's a strategy that looks into the future of the area understanding the current reality of the area.

This approach has been successfully implemented in South American contexts such as Trujillo or Huascar in Peru. These examples and a further explanation of these theories is introduced in the annex: "Workbook of policy recommendations."

10D NEW KATEMBE

Strategy in Metropolitan scale related to the urban development of the MMA, especially Maputo area towards the district of Katembe.
The development is possible due to the construction of a bridge between Katembe area and the city center of Maputo, which enhance the connections and open a new variety of possibilities in the area.

- Planned urbanization areas by Municipality
- Reduction proposal
- Prioritary areas of development
- Natural reservoirs
- Maputo's special reserve
- Agro-pecuary areas
- N4. Main connection S. A - MZ
- Main roads
- Secondary roads
- Tertiary roads
- Railway
- Maritime routes
- Natural base - water bodies
- Flooding areas
- Katembe proposed center
- City centers

The strategy of New Katembe is based on the proposed development plan for the area that will be implemented as soon as the Katembe bridge is finished (explained in the B03 of this booklet).
The strategy evaluates the current plan and proposes some changes to adjust the general idea to the context of Mozambique.
The main principles of readjustments are related to the preservation of natural spaces, the organization of a hierarchy with a center and secondary areas, the adaptation to human scales, the respect to the current urbanization layer and the introduction of some flexibility for the occupation of land by the part of the population with low income. Inclusive development by collaborative decision making.

KATEMBE

Inhaca

Porto Henrique

Bela vista

Maputo's special reserve

Elephants reservoir

Connection with Ponta do Ouro

Map 40. Strategy L. New Katembe.

D1

EVALUATION OF THE PLAN

Aspects to avoid and foster:

The current urban plan proposed for Katembe in the close future presents several interesting qualities:
- Connectivity improvement with Ponta do Ouro
- New connection with South Africa through the N4
- Rapid access to Maputo through the bridge
- Basic infrastructure dotation for the area. Aim for a proper urban planning.
- Acknowledgement of the touristic potential of the area.
- Phasing approach
- Extension of the Katembe port linked to Maputo port

However, there are several aspects to think about that could be interesting to include in the proposal in order to enhance its final outcome and its sustainable profile. These have been added to the evaluation map although further research must be conducted to propose a final urban plan for the area that fully commits with the aspects that need to be implemented:

-Respect the current natural spaces, as reflected in the core interventions of the general strategy. They will receive a specific programme to avoid their categorization as areas where the urbanization is allowed, as well as the informal sprawl occupation on them.

- Represent the dynamics of the area with the hierarchy of roads and the creation of a city center. The ministries will be moved to Katembe from Maputo and located in the city center. It is essential to define the future role of Katembe in relation to the city of Maputo. Is it going to be a dormitory area or a parallel node?

- Include as an active part the current population of Katembe. In the decision process and the spatial design of the plan.

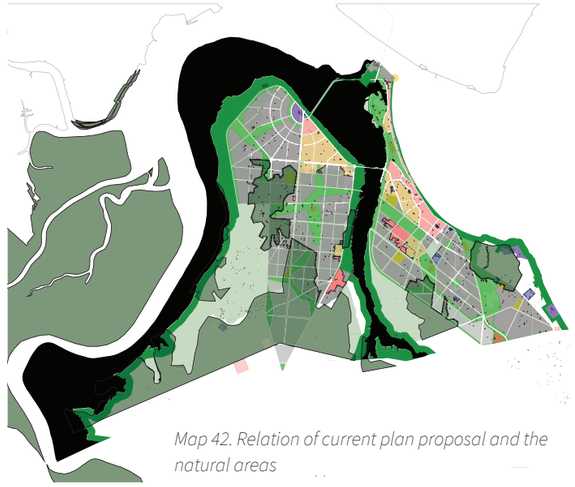
- Increase the touristic potential of the area by the use of natural spaces and the urbanization related to the coasts and the maritime port.

- Incentive the industry in relation with the new connections but locating them in areas where the natural spaces can not be damaged.

- Reduce the scale of intervention by prioritizing the public transport which demand higher densities (keeping the 4 floors height maximum to prevent the necessity of elevators that require maintenance).

- Understand the informal trend of urbanization that guided the urban development of Maputo and Matola and propose areas preserved where a guided occupation can take place. As well as facilitate spaces for informal economy activities. “The Corridors” strategy might be applied in the area of Katembe as well when the informal growth of the city take place. Under the approach of guided occupation (explained in the previous section E10. C4) there is scope for separating the informal city from precarious living conditions and introducing a new way of development.





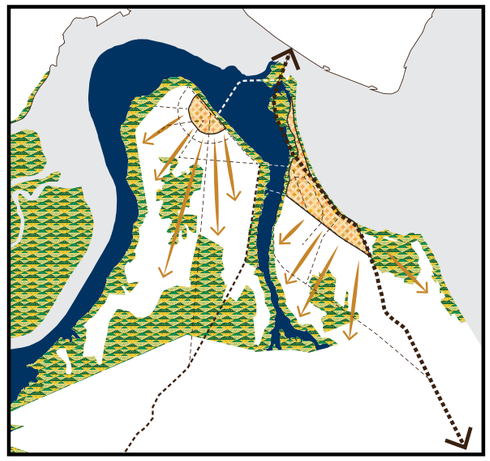
Map 42. Relation of current plan proposal and the natural areas

Map 41. Strategy M. New Katembe plan evaluation.

- Flooding areas
- Natural spaces
- Agro-pecuary areas
- Current Katembe urban plan to avoid
- Current Katembe urban plan to maintain
- Industrial areas
- Proposed city center
- Proposed maritime port extension
- Main connections
- Priority development areas
- Current urban layer - current dwellings.

D2

CONCEPT PROPOSAL



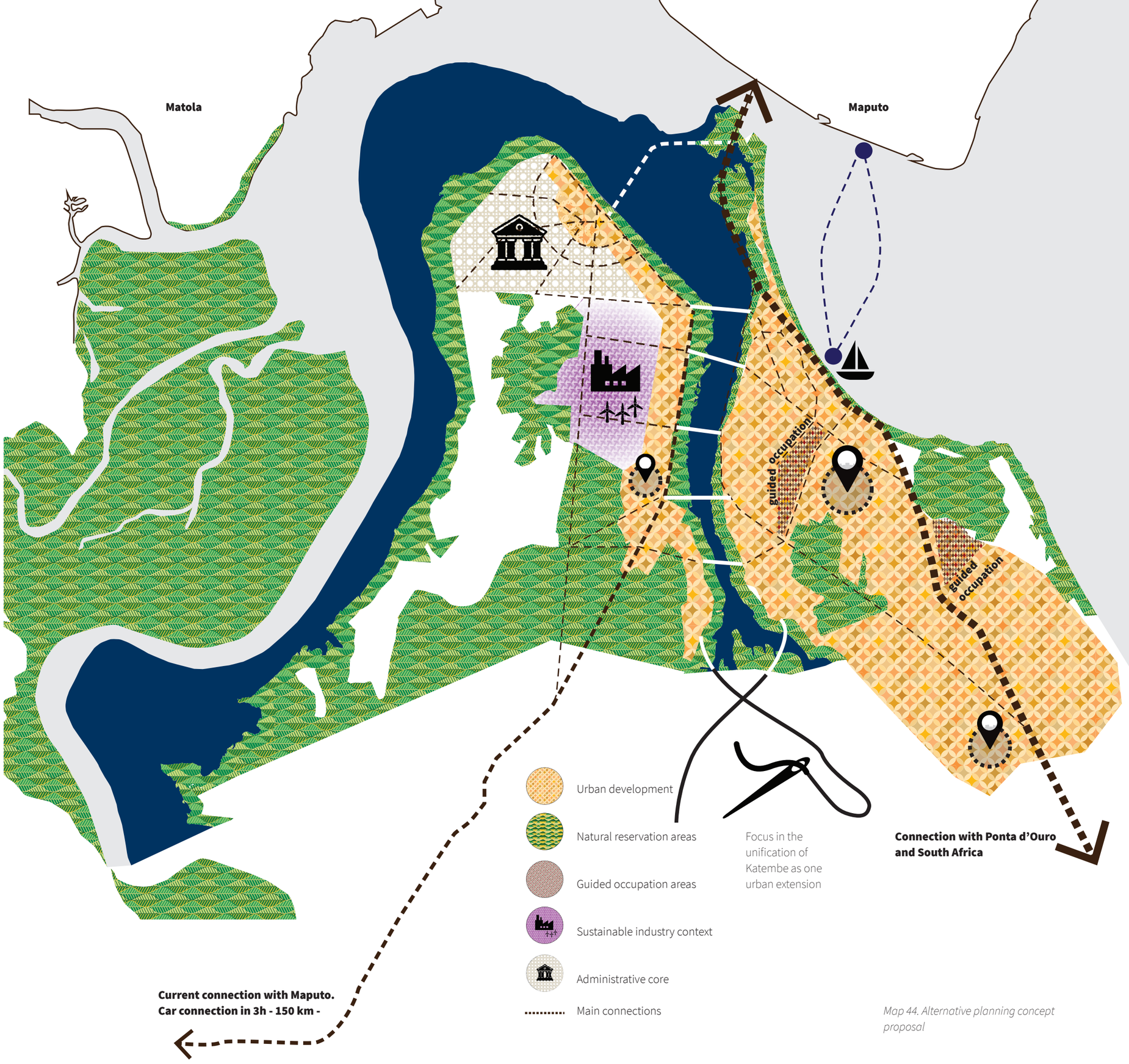
Map 43. Current situation of Katembe area

The proposed concept introduce an alternative approach for the area of New Katembe and related to its current situation. Nowadays, there are two densified nodes that are triggering the extension in the area. By using these two nodes as base, the proposal present a compliment of the expected future administrative core for Maputo (due to the moving of ministeries).

There is a secondary urban extension that works as a new Katembe residential-economical center and release pressure from the current Maputo city. However, the proposal introduces the parallelism with the proposed informal nodes, understanding that from now on, the idea of city center changed to an inclusive social dynamic in which the different stakeholders find a place in the city center.

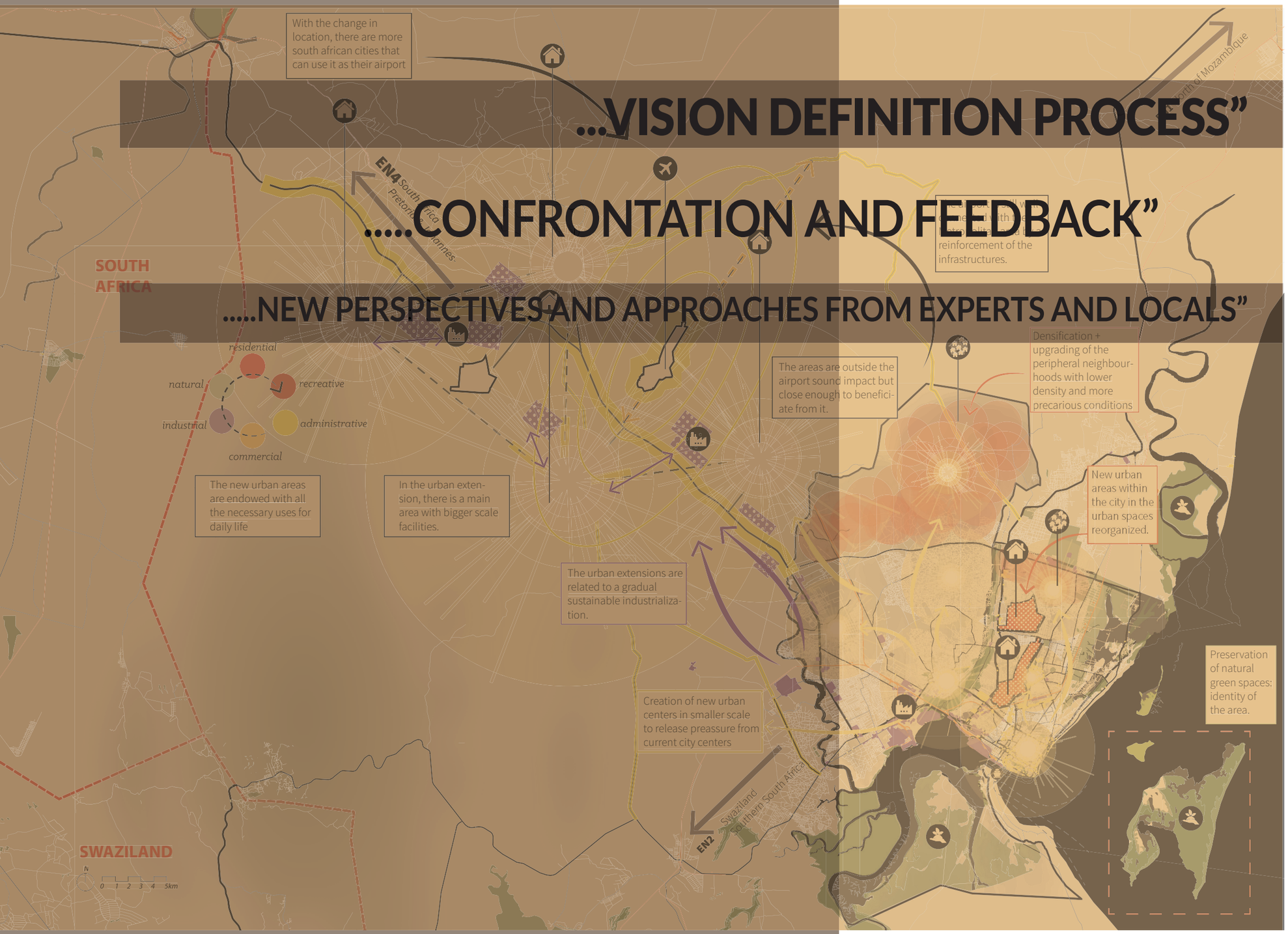
At the same time, there is special attention to the connections with South Africa and the interconnections between the administrative core and the urban extension.

Finally, the concept is complimented with the extension of the Maputo port to Katembe which will facilitate the relation Maputo - Katembe also by maritime routes in ferry.



Map 44. Alternative planning concept proposal

F - PROCESS OF CONSTRUCTING A VISION



Map 21.Vision 1.0

...VISION DEFINITION PROCESS"

.....CONFRONTATION AND FEEDBACK"

.....NEW PERSPECTIVES AND APPROACHES FROM EXPERTS AND LOCALS"

F -

Process of construction of VISION MMA 2040-

The process of construction of the vision passed through the consultation with local experts and change of perceptions during the fieldtrip to Maputo.

In order to be able to stablish a table of dis-cussion during the visiting to different stake-holders, before the trip there was a Vision 1.0 proposed using the analysis and diagnosis as base and evaluating the scenarios through the stablishment of four basic principles.

Therefore, the vision 1.0 is based on GIS data and literature with personal conclusions and assumptions. It is essential to highlight that there is a problematic lack of access to data about the reality of the country from internet. Being in the fieldtrip, one of the professors clarified this as: *"This university is not in internet, there is a lot of work done that will never be used because we are not able to keep the information online" (Lage, 2018)* This statement illustrates their awareness of lack of internationalization in terms of knowledge and data. Although there is a long way to improve this situation, there is wil to do it.

The process of shape, confrontation and readjustment of the vision follows these 8 steps:

- 01. Vision 1.0 (prior to fieldtrip)
- 02. Main discussion with stakeholders
- 03. Feedback summary
- 04. Conclusions
- 05. Final vision. 3MK-CBD

01
VISION 1.0

With the change in location, there are more south african cities that can use it as their airport

EN4 South Africa Pretoria & Johannes-

EN1 North of Mozambique

SOUTH AFRICA

The airport is still well connected with the Metropolitan area by a reinforcement of the infrastructures.

The areas are outside the airport sound impact but close enough to beneficiate from it.

Densification + upgrading of the peripheral neighbourhoods with lower density and more precarious conditions

residential
natural
recreative
industrial
administrative
commercial

The new urban areas are endowed with all the necessary uses for daily life

In the urban extension, there is a main area with bigger scale facilities.

New urban areas within the city in the urban spaces reorganized.

The urban extensions are related to a gradual sustainable industrialization.

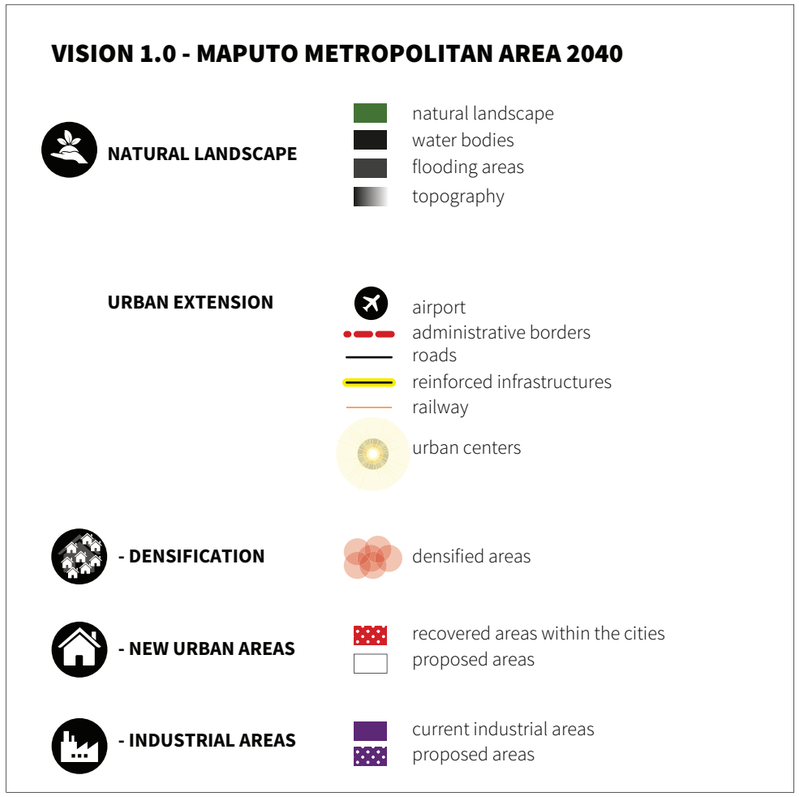
Preservation of natural green spaces: identity of the area.

Creation of new urban centers in smaller scale to release preassure from current city centers

EN2 Swaziland Southern South Africa

SWAZILAND

N
0 1 2 3 4 5km



Map 21. Vision Maputo Metropolitan Area 2040 1.0

02 DISCUSSION WITH STAKEHOLDERS

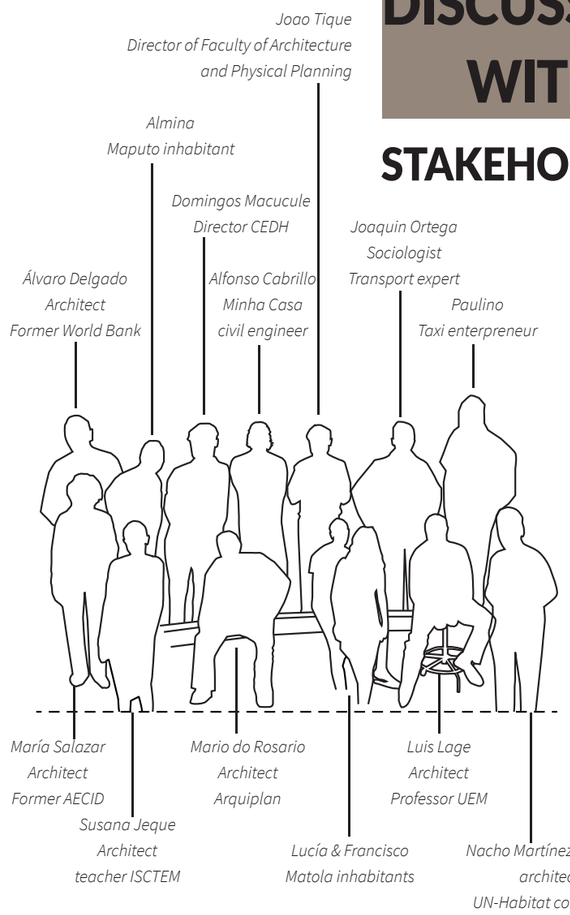


Image 91. Stakeholders silouette
Source: executed by author from images of the stakeholders.

DISCUSSIONS WITH STAKEHOLDERS
MAPUTO, FEBRUARY 2018

Fieldtrip
Confrontation of prior ideas and first designs

The field trip to Maputo took place in the month of February, from 7th to 22th. It was funded by the Faculty of Architecture of TU Delft, the Urbanism department of the faculty of Architecture of TU Delft, the Universiteitfunds and TU Delft Global. During this time, the author of the thesis was invited as researcher in the Eduardo Mondlane University of Maputo, where there were several interviews conducted to confront the designs proposed until the moment that were illustrated in the vision 1.0
There were several opinions about it and an open table for discussion, these are the main topics that were reflected about.

1. Social network involved in the urban development.
- Who is involved in the whole process?
- Does the population count on any participation?
- Who has the final yes?
- Are the plans developed by institutions being implemented?

2. Urban characteristics of the city
- What about moving the airport?
- What is the density/urban typology used in the usual urban development approach?
- What is the use of the Maputo Development Corridor?
- How can I know the status of formal - informal areas?

3. The future of the city
- How do you imagine the area in 2040? With more or less people? closer to Maputo or Matola? how is going to be the development of the informal situation?
- Is there any urban plan proposed for the expected urban growth?
- What are the main guidelines in urban development right now? Which are the areas of interest for growing?

03 FEEDBACK SUMMARY

Image 92. Feedback summary

Source: scheme by author

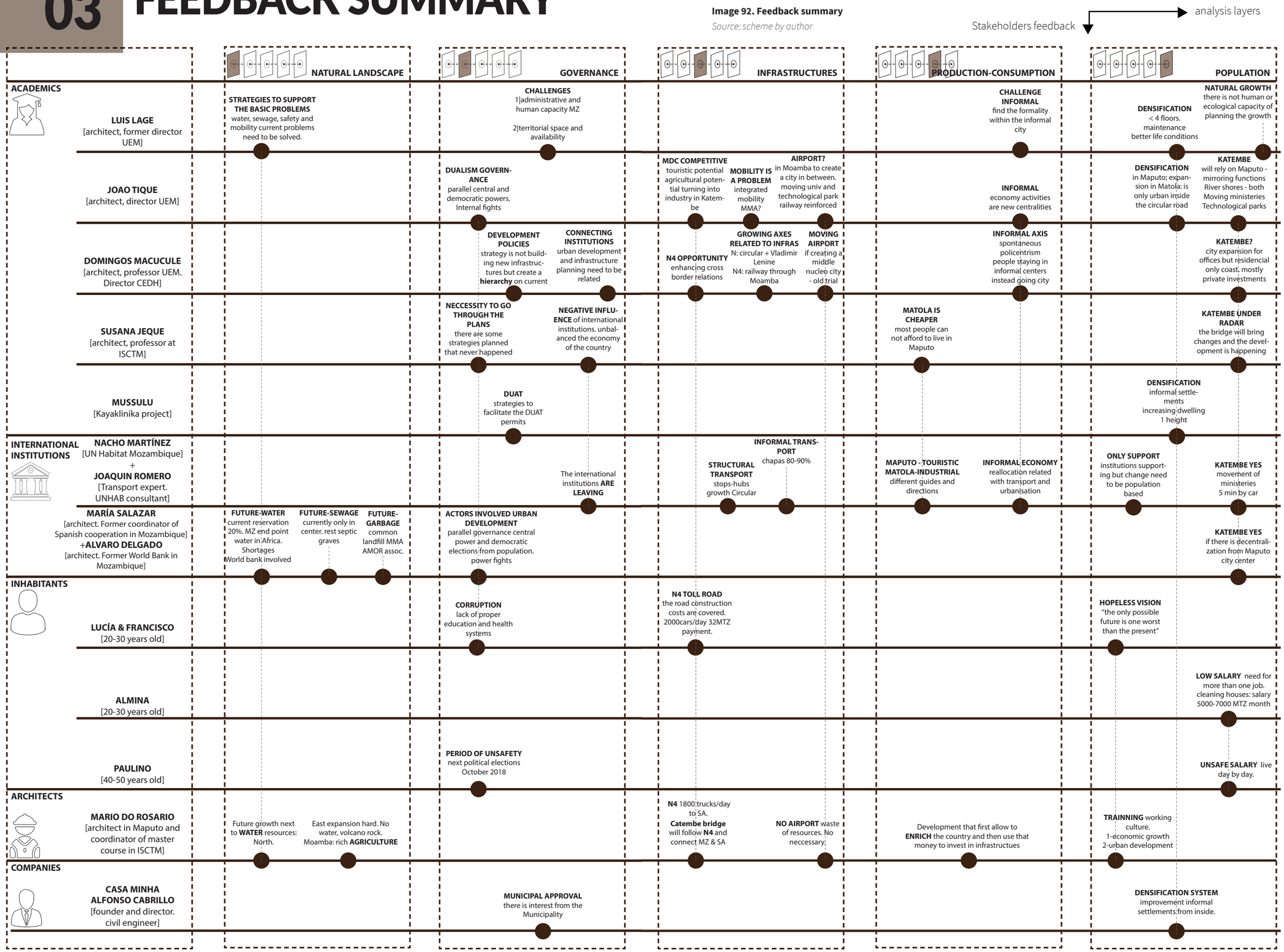






Image 93. Katembe bridge from sea
Source: Collage over photography from author

Image 94. Plan for Katembe 2030
Source: Maputo Municipality, T., Betar, G., & Maputo Sul, E. (2017). A nova Katembe - Uma cidade para o futuro.

2- FIND THE FORMALITY WITHIN THE INFORMAL CITY

One of the main conclusions from the discussion is the essential role of the informal city of Maputo. The informality in the residential areas and the different activities that are outside the formal market and represent the majority of the economy in the city. Although it might seem completely informal, it does not mean unorganized. It is essential to find out the structure within the informal city and include it in the strategy.





Image 95. identification of informality
Source: Photography by author during fieldtrip

04
CONCLUSIONS

3- DENSIFYING IS A SOLUTION...HAPPENING!

During the field trip there were visits to initiatives that are currently proposing methods to densify the informal settlements in the peripheries.

A - CASA MINHA
The example of Casa Minha propose the division of each plot in two different dwellings with proper living conditions. It is further explained in: https://www.casaminha.co

B - KAYA CLINICA
This project aim to increase the basic habitability conditions of the houses in the informal settlements by the expanding of one floor the high of the dwellings.
It is leaded by the UEM in coordination with the AECID and the municipal government and it is being implemented in the George Dimitrov neighbourhood.



Image 96. Densification methods
Source: Photography by author during fieldtrip

4- MOVING THE AIRPORT IS A DISCUSSION

There are several newspapers articles about the construction of the current airport that was finished in 2007 with a Chinese inversion of 75 million dollars. It is a discussion.
The possibility of moving the airport was proposed in Moamba some years ago but because of external interests it was discharged.
However, due to the finishing of the Katembe bridge, there is a reactivation of the N4 connection with South Africa which will support the urban development around Moamba as middle city between South Africa and Maputo. As complementary strategy to the Katembe extension, the airport moving is feasible.

5 - THE FUTURE GROWTH WILL HAVE AN IMPACT IN WATER, GARBAGE AND SEWAGE

Next to its neighbour South Africa, Maputo is presenting water problems as shortages of 40% of water flow past February 2018 (https://www.moz.life/abastecimento-de-agua-em-maputo-devera-ser-cortado-em-40/).
Next to it, the precarious situation of the garbage collection system is reaching dangerous limits causing deads in collaboration with the flooding (http://www.bbc.com/news/world-africa-43117116).
The precarious current situation of the main resources need to be included in the growth strategy to prevent a worst future.

6- NECESSITY OF POLICY RETHINKING

The major current problematic is connected to the lack of tools to implement the different plans proposed and the weak governance in terms of communication and collaboration between organism such as the mobility and urban development departments or the central and municipal governments.
There is an urgent need for a policy rethinking into a collaborative and constructive way of planning to go forward.



Map 22. Vision 3MK-CBD

05 -

FINAL VISION

As can be perceived in the process the role of the local experts was essential. The conclusions and recommendations were included in the final vision, such as the extension towards Katembe that reactivates the mobility network or the need of including the informal city in the planning approach.

G - CONCLUSIONS & REFLECTION

...CONCLUSIONS"

.....RELATED TO RESEARCH QUESTION"

.....REFLECTION"



Image 97. Dynamics of Maputo - View from the railway station
Source - made by author during fieldtrip

G -

The conclusions of this thesis evaluate whether its main question has been researched, explained and answer by the analysis, diagnosis and design of the Vision and Strategy for Maputo Metropolitan Area 2040. The research question of this thesis, explained in the second section of this booklet was the following:

How can contextualized planning strategies structure metropolitan growth in a fast urbanization context as the back bone of mobility based sustainable spatial urbanization? How can adaptive governance support the decision making in this strategy?

In order to evaluate wheter the research question has been answered, this section will provide an overview of main conclusions an specific answers to the different subresearch questions:

1- What does development corridor mean for the population of Mozambique?
2- What are the characteristics of the main urban corridors in the Maputo Metropolitan Area?
3- Whast does sustainable urban development implies for the MMA 2040?
4- What are the characteristics of the fast urbanization context of MMA?
5- What is adaptive governance? How to implement it in the MMA network of actors involved in the urban development?

As final conclusion, there is a study of which parts of the proposal could be repeated in different contexts and which ones are too attached to the location to be repeated.

01

GENERAL CONCLUSION

This thesis approach a complex situation. Located in the most urbanized area of Mozambique, it aimed to reflect about the fast growing and urbanization trend that the country is involved in.However, due to the current reality of the Metropolitan area, the essential role of the informal city in the extensions of Maputo and Matola cannot be overlooked. That is why, the final result of this thesis is focused on presenting a sustainable way of balancing the urban development. A development where both formal developers and informal dwellers obtain a role both in the spatial development of the area and in the decision making process.

The introduction of adaptive governance is essential to make the implementation of the strategy possible. The current weak governance is one of the strongest causes of the current dangerous poverty situation of the country. Therefore, the approach of this thesis is based on the introduction of a shift in the way the decision making is understood. The thesis proposes a collaborative frame where the different stakeholders involved in the urban development obtain a different role in the decision making and there is a shared power to plan the future of the Metropolitan Area.

At the same time, the thesis aims to open a discussion about how the planning tools are applied to the African contexts. As reaction to the big amount of European style projects that have been implemented in the continent with no successful consecution. Most of the times, these failures increased the informal settlements next to them. The lack of adapted measurements to the economic situation of the population arises the inequalities in the context similar to MMA and increase the difficulties in balance the social atmosphere in the future into a sustainable living environment.

? This project has been a process of learning where there have been several challenges to be addressed. Most of them are related to the situation of reflecting upon a foreign context with no personal relation. As well as the lack of successful planning approaches and references to base the research. This highlights the necessity of building up an academic archive of research in the African context and reorient the focus of a bigger part of the academic body to this lack of information and contextualized planning theories.

X The main limitations are related to the individual approach of the thesis that supposed to realize the fieldtrip alone and build up the network of contacts in an individual way. As well as the lack of prior contact between TU Delft and urban projects in Mozambique. In the same way, there was a strong limitation in the lack of full understanding of the language, although this was solved with the knowledge of Spanish. Finally, the different time frames and deadlines imposed during this process helped to add pressure to the work process but also contributed to fasten the production times and the presentation of unfinished works (that were finished for the next deadline).

! The main recommendations are directed towards the orientation of graduation projects in African contexts in a group basis. Which helps for the moments of uncertainty, the networking and the fieldtrip experience. They are also related to strengthening the contact with locals and keep a periodical consultation, confrontation and redesign of the ideas. As well as developing the whole policy framework in a collaborative atmosphere with local stakeholders and institutions.

→ Finally, there are several opportunities for further research from the aspects studied in this thesis. In a general overview about planning approaches, it would be really interesting to study further the implementation of non-conventional housing policies to solve the informality situation in fast urbanization trends. As well as study the role of the corridors in these contexts or contextualized planning approaches for these areas. Finally, in the location, there is scope to study the viability of the Moamba aiport strategy, the delta landscape of New Katembe or an alternative urban design for the future city of New Katembe. Also, the impact of the future growth of MMA in the basic resources shortages of the area.

CHALLENGES

?

Foreign perspective. Location outside of personal implications.	Lack of successful initiatives in the context - Lack of references in the location	Uncontextualized planning theories and tools. Necessity of thinking beyond theories	Necessity of a fieldtrip to Africa in an individual project

LIMITATIONS

X

Lack of reliable data available online	Time schedule - Deadlines. Necessity of produce in certan time frames	Not complete understanding of the language in the country of study (Portuguese)	Lack of prior strong contacts from the University + Student project -lack of budget.

RECOMMENDATIONS

!

I would have enjoyed more this experience as part of a group project, specially for the fieldtrip	The time in the fieldtrip should be at least three weeks to be able to obtain more results	Start with personal interviews since the beginning (online). It is the most reliable source of data	The strategy should be confronted several times
The policy recommendations should be part of a collaborative thinking process with locals	Projects in foreign context are trial and error examples that should be tested several times		

FURTHER RESEARCH

→

Implementation of non conventional housing policies in Mozambique	Further extension of innovative policies in African contexts study. Contextualized planning.	Study the role of corridors in the development of African contexts	Future situation of informal city in Maputo Metropolitan Area
Alternative design approach for New Katembe to the proposed for 2018	Delta landscape approach in New Katembe	Viability of Moamba airport strategy. External interests and economic factors	Impact of the MMA growth for the basic resources of the area

02

ANSWERING THE SRQ

In the third section of this thesis, there is a description of the main aim, research question and objectives of the work. In a nutshell, the starting aim of this project was:

To explore a shift in the metropolitan planning approaches in developing countries via a contextualized vision and strategy for Maputo Metropolitan Area 2040 that translates the expected growth of the area into a sustainable urban development introducing principles of adaptive governance and 'non conventional' housing policies.

This aim was the answer to the research question:

How can contextualized planning strategies structure metropolitan growth in a fast urbanization context as the back bone of mobility based sustainable spatial urbanization? How can adaptive governance support the decision making in this strategy?

When answering the main research question of this thesis, the mobility based sustainable spatial reorganization is achieve by an integrated strategy that approach the fast urbanization context of the Maputo Metropolitan Area in different scales and under a sustainable urban development framework. The contextualized corridors are essential to commit with the location and propose an inclusive yet multi-scale approach. In this approach the definition of corridor change from the merely mobility linked perspective that is historically attached to a corridor towards an integrated vision where mobility and urbanization –in new areas or densification of areas- are planned and develop together. This vision and strategy can only be pursued if there is an adaptive governance approach that allows the collaboration and power sharing among the different stakeholders involved. They will work together in a common organization for planning both the mobility structure and the urbanization of the area. In summary, an organization to provide a sustainable development to absorb the population growth expected for the area in 2040.
Due to the complexity of the research question, it was divided into different sub-research question that will help to provide a deeper conclusion for this academic project:

1- What does development corridor means for the population of Mozambique?
2- What are the characteristics of the main urban corridors in the Maputo Metropolitan Area?
3- What does sustainable urban development implies for the MMA 2040?
4- What are the characteristics of the fast urbanization context of MMA?
5- What is adaptive governance? How to implement it in the MMA network of actors involved in the urban development?

02.1. What does development corridor means for the population of Mozambique?

This subresearch question aimed to reflect about the real impact of Western inspired planning tools for the context of Mozambique. The study of the Maputo Metropolitan Corridor presented in the section B- of this booklet illustrates the unsuccessful outcomes of uncontextualized planning strategies. In the case of the Maputo Development Corridor, the creation of the direct infrastructure to connect Maputo con Gauteng entailed a mobility development but it did not prevent the mobility to become a problem as it is nowadays. This connection is stuck in traffic most of the days and there are several accidents due to the lack of proper state of the roads and vehicles. There is a lack of maintenance, even though there is still a toll payment.

At the same time, the development strategy did not proposed a parallel urban development next to the infrastructures construction, which leaded to a lack of connection between the living environment and the mobility network. This undermined the possible role of the Maputo Development Corridor and the spontaneous/informal development of the cities took place in another direction –North direction-.

This thesis reflects towards the reality of the cities and what is the actual definition of corridor in MMA. Understanding the flows of people within the cities extension, the main movement can be understood between the peripheries and the city centers. However, within the informal city there is a secondary structure that entails the daily life of those who do not have the chance to work in the formal MMA. This flow of people moves between the different informal nodes that spontaneously appear in the cities. These informal nodes cover the daily needs of the peripheries and prevent the people of having to walk long distances to the city centers.

02.2. What are the characteristics of the main urban corridors in the Maputo Metropolitan Area?

This thesis proposes an alternative definition of how urban development corridor can be interpreted in the case of MMA due to the lack of success of the Western understood development corridors –such as the Maputo Development Corridor- in the context. The definition of urban corridors is

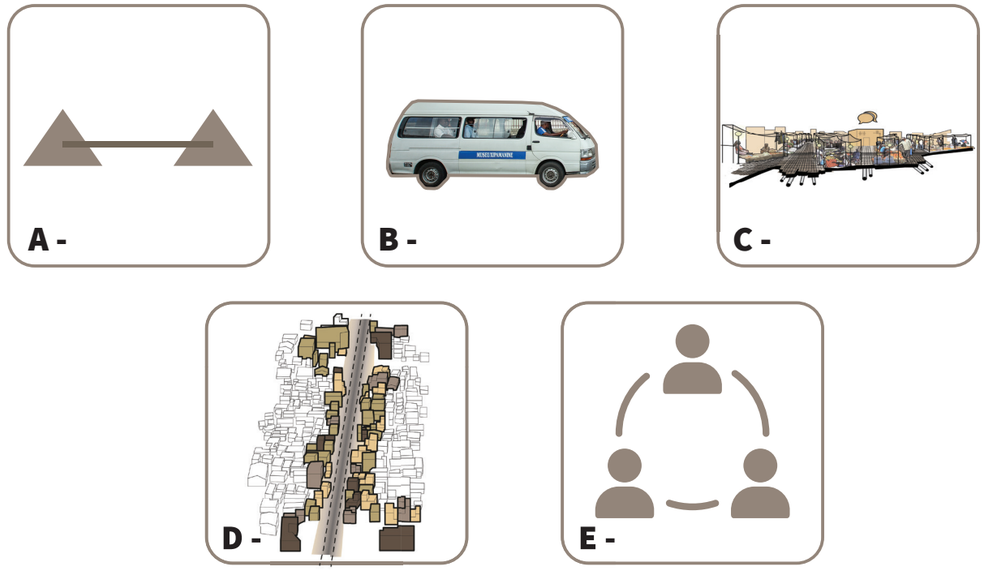


Image 98. Reflection scheme about corridor factors
Source - made by author

established in 'The Corridors' strategy as:
An urban development corridor is redefined in the case of MMA into a connection between two informal nodes by public transportation. The corridor propose the guidelines for a densification strategy in the area of 1 km along the connection and the informal nodes. It presents a strategy that follows the current dynamism of the cities and respect how the majority of their population use it and move through it. The formal economy represents 10% of the economy in MMA and its population use the public transport, specifically the Chapas, in a daily basis.

Therefore, the characteristics of the main urban corridors of MMA according to the proposed strategy are the following:

A - Connection between informal nodes
B - Public transport rapid transit infrastructures (Chapas)
C - Inclusive consolidated informal nodes as solid ending points of the corridors
D - Progressive densification base on collaborative policies along the corridors with a parallel improvement of the basic infrastructures networks
E - Creation of a common institution to ensure the maintenance of the proposed corridors and the identification of future informal nodes and connections.

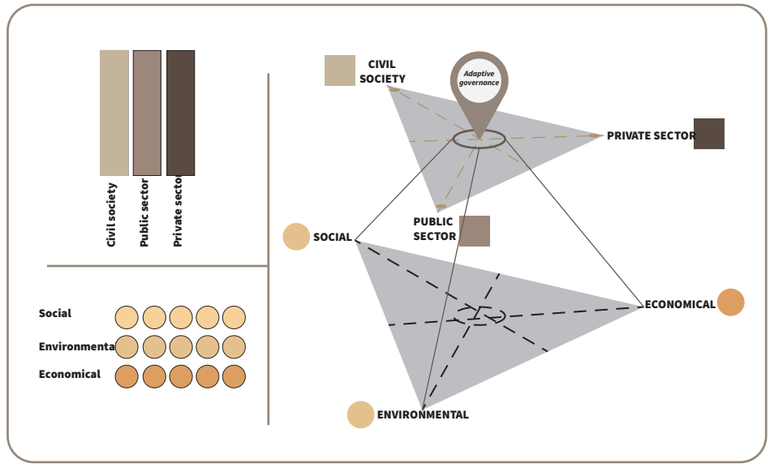
02.3. What does sustainable urban development implies for the MMA 2040?

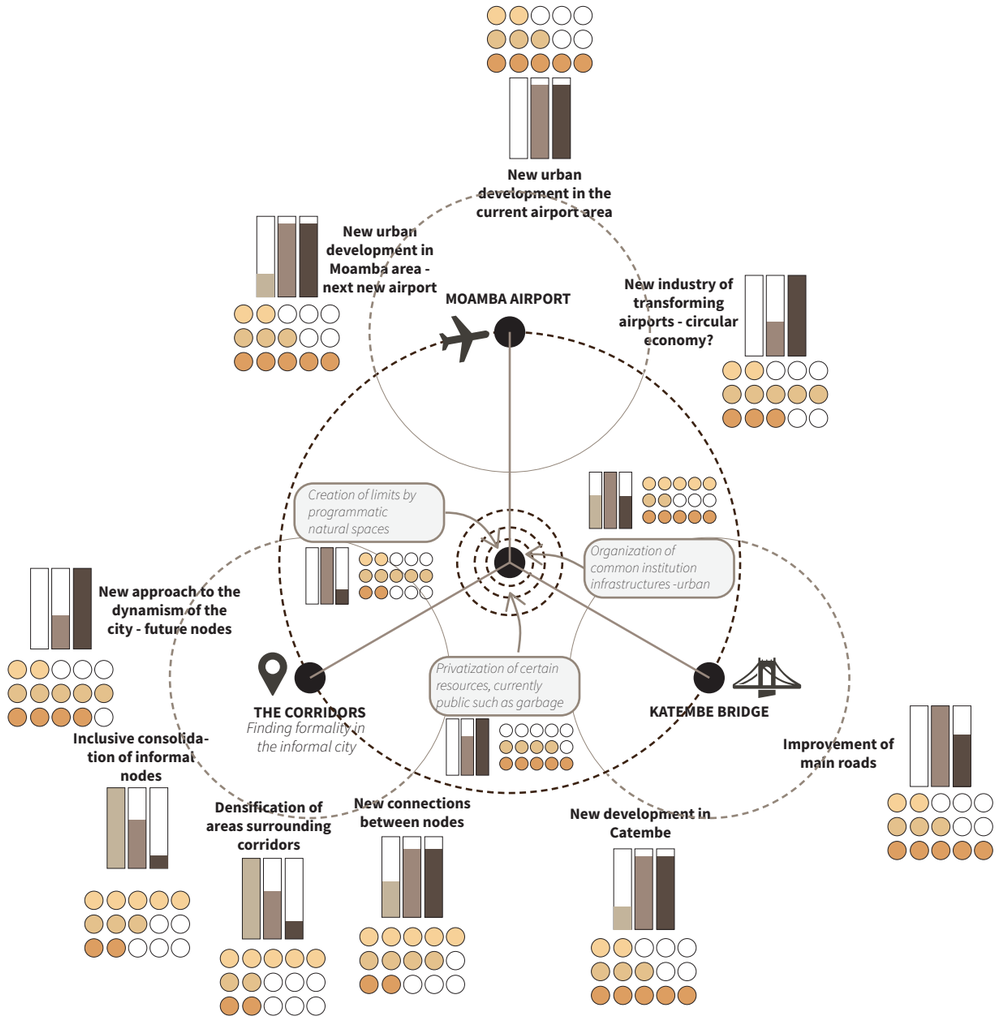
In order to develop an evaluation of whether the proposal is a mobility based sustainable reorganization, the different strategies proposed have been tested under the sustainable development framework explained in the section E07 of this booklet. This sustainable framework proposed a combined diagram where the balance between social, economic and environmental sustainability are considered in parallel to the possibility of an adaptive governance.
Therefore, there is a study on whether the different strategies help to implement the economic, social and environmental profile of the MMA area to approach it to the definition of a sustainable urban development.
At the same time, there is an evaluation of the grade of involvement of the different stakeholders in each one of the strategies and whether there is scope for strengthening a collaboration between them. The stakeholders are divided in private, public sector and civil society. The latter one will be focused on the 70% of the total population. Therefore, when referring to civil society in these conclusions, there is a focus on those who live and/or work in the informal city.
It is essential to highlight that the MMA 2040 vision and strategy is an integrated approach where the different initiatives and strategies balance to each other to reach a sustainable point.

Therefore, in terms of involvement of the different stakeholders, it is clear that the civil society is more involved in 'The Corridors' strategy due to the approach of inclusively consolidate the informal nodes, as well of the densification approach where the dwellers are trained in densification techniques. However, in order to reach this inclusive framework, there is need for a public-private investment and a public land tenure rethinking. These investments are balanced with the benefits that the private developers obtained with their participation in the other two strategies: Moamba airport and New Katembe.
This balance is why there is a priority for private-public alliances in Moamba airport and New Katembe strategies where the civil society character is inserted in the proposal by reserving a percentage of the new development for the strategy of guided occupation.
At the same time, in terms of the mobility strategy, the inclusion of civil society is only partially possible in the middle scale strategies. It is more difficult in bigger scales strategies, as appointed by Elinor Ostrom on her book 'Institutional Incentives and Sustainable Development. Infrastructure policies in perspective. ' written in 1993, where there are several recommendations for incentive the sustainable development through infrastructures strategies. These recommendations are fully detailed in the 'Workbook of innovative policies' annexed to this booklet. In the case of the strategy propose, with the pursue of the core initiative that recommends the creation of a common institution, there is scope for collaboration between the different stakeholders in the whole variety of scales.

Finally, in terms of the aim for reaching a sustainable profile, the different strategies guide the development towards certain aspects. Although the three profiles (economic, environmental and social) are not pursue in the same grade in all of the strategies, there is a balanced when understanding the integrated vision and strategy MMA 2040. 3MK -CBD.
In a general overview, the social aspect is leaded by 'The Corridors' strategy: the environmental one especially by the core strategies and the new industrialization proposed and the economic one by the new developments both 'Moamba airport' and 'New Katembe'.

Image 99. Evaluation of strategy in sustainable urban development framework.
Source - made by author





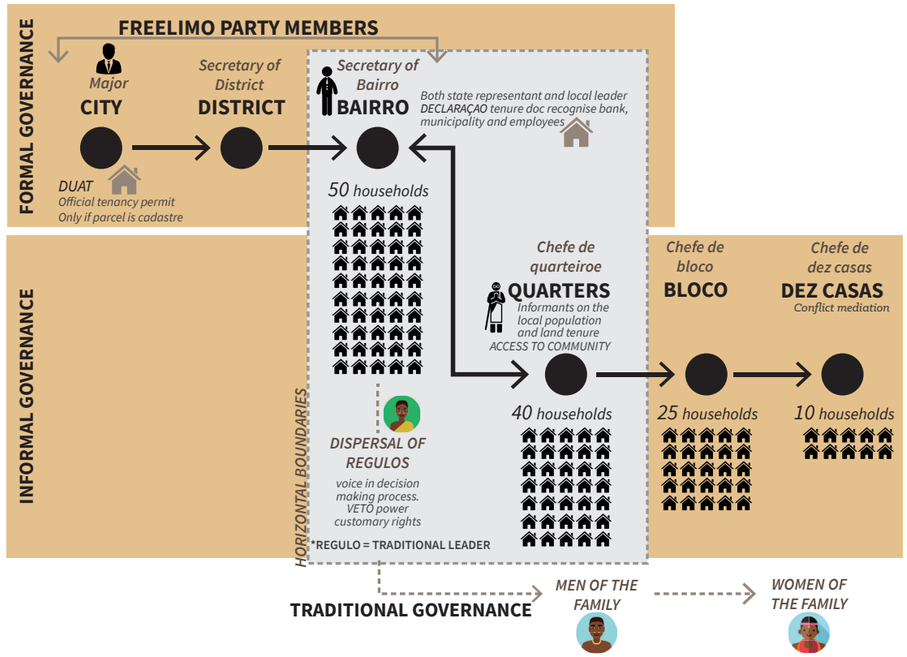


Image 100. Current social network
Source- developed by author based on theory of Jenkins, P. 2000; Boyd et al. 2014; Barros et al. 2014

02.4 What are the characteristics of the fast urbanization context of MMA?

As illustrated in the Section A- 'Understanding the context', the fast urbanization context is reflected in the current informal city sprawl development trend of 70% of the extension of the MMA. This development trend entails precarious living conditions, lack of healthy urban conditions and poverty due to the lack of education or job opportunities. The fast urbanization context is a reality that cannot be changed. However, there is scope for improving the development proposals to include those who are not able to afford the current housing market. That is why this proposal introduces the approach of non-conventional housing policies and the understanding of the house as a process of living.

At the same time, within the study of the fast urbanization trend of the MMA there is a highlight of the lack of proper governance strategies that allow the development of un-contextualized projects as an answer for the dangerous growing situation of 54% for 2040. This can be perceived in the proposed plan for New Katembe that reflects the current urban trends in the MMA approved by the government.

In order to provide scope for success for the strategies proposed which answer the current fast urbanization trend, this thesis introduced the concept of adaptive governance as theoretical framework for a collaborative approach where the different stakeholders involved in the urban development obtain a role in the decision making process and the planning proposals receive an adaptation into the reality of the context.

02.5 What is adaptive governance? How to implement it in the MMA network of actors involved in the urban development?

The term of adaptive governance define a group of several stakeholders involved in a collaborative and equalitarian approach. It includes not only good governance and citizen's participation but a collaboration among the different stakeholders involved in the urban development, understanding their own role and promoting the power distribution. The concept raises from the assumption that the changes are going to exist in the complex reality of informal cities and they should be understood as an opportunity for renewal and reorganization. It introduces the relation between a changing reality and the necessity of a flexible policy framework where there is scope for responding to shifting circumstances.

In a general overview, the concept of adaptive governance is defined by the following principles:

- New governance management
- Flexible policies open to change
- Collaboration of different stakeholders
- Shared power – division of power
- Definition of the different roles of each stakeholder

This concept is really difficult to be achieved in the current government situation. However, there is scope for asking for alternatives solutions and, furthermore, there is a need for raising awareness about the current situation by proposing a shifting to a collaborative approach.
Understanding the complexity of the current social network has been one of the main interests of this thesis. As illustrated in the scheme, there are three different networks within the city structure: the formal network related to the current government party, the informal network based on the distribution within the informal settlements of the cities and the traditional leaders hierarchy, descendent of the African historical identity.

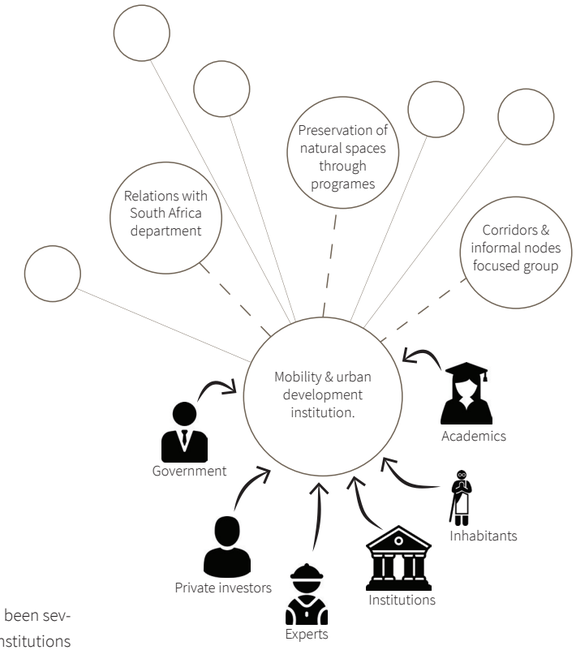


Image 101. Introduction of stakeholders and new institutions.
Source - made by author

At the same time, within the strategy proposed, there have been several groups of stakeholders involved such as academics, institutions and NGOs, professionals of architecture and urbanism, private companies and inhabitants. All of them should participate in the same process of decision making when proposing a future plan for MMA.
The thesis proposes the organization of an institution to control the mobility and urban development of the MMA and where there is a collaboration between the different stakeholders that would obtain different roles. From this institution there will be smaller focus groups regarding the different strategies of the proposal.
There are several roles that could be assumed by each group of stakeholders. However, it is important to remember that the final objective is the collaboration of all of them and, therefore, the specific role should not be so relevant. What it is clear is the different general position that each one of the stakeholders have:

Government: their position is related with the public condition of the land in Mozambique, which makes the government entitled to distribute it. At the same time, there is a necessity of opening the decision making to the rest of stakeholders and understanding the possibility of collaboration.

Private investors: they have an important role in the urban development of MMA and it is essential for them to understand the necessity of contextualize the different interventions in the area to prevent the further spread of informal settlements. At the same time, there is need for social investment related to the improve of education levels and the training of the population to create a work force able to work in the sustainable industry proposed in the strategy.

Experts: there is need for adapting the current proposals to the reality of the area. Their position will be related to the proposition of alternative solutions for the current reality and the work force to develop planning strategies and urban plans.

Institutions and NGOs: they are the main relation to the international context and the ones that are introducing small scale work for the improvement of the informal settlements. They have international financing, which can be an asset but also a barrier that could guide the development to external interests. The institutions and NGOs should acquire the position of consultants or small interventions but the policies and strategies should not rely on external financing.

Inhabitants: their inclusion is one of the fundamental aspects of the adaptive governance perspectives. They introduce insights about the complexity of the MMA and they are the ones that can lead the development to prevent the increasing of informal settlements. With a proper understanding of the main interests of the population, there can be an adaptation of the planning tools to propose alternatives where the inhabitants are not force to create their own survival based solution.

Academics: their main role is related to the necessity of raising awareness about the value of the informal city. The main projects of regularization of informal settlements or inclusive growth are born in the academic atmosphere. Therefore, their role is essential to understand the reality of the context and propose alternatives according to it. At the same time, they would probably be the most prepared to lead the shift in the governance structure and administrate the collaboration and role division.

03

REPLICABILITY SCOPE

MMA 2040.
3MK - CBD
CONTEXT BASED DEVELOPMENT

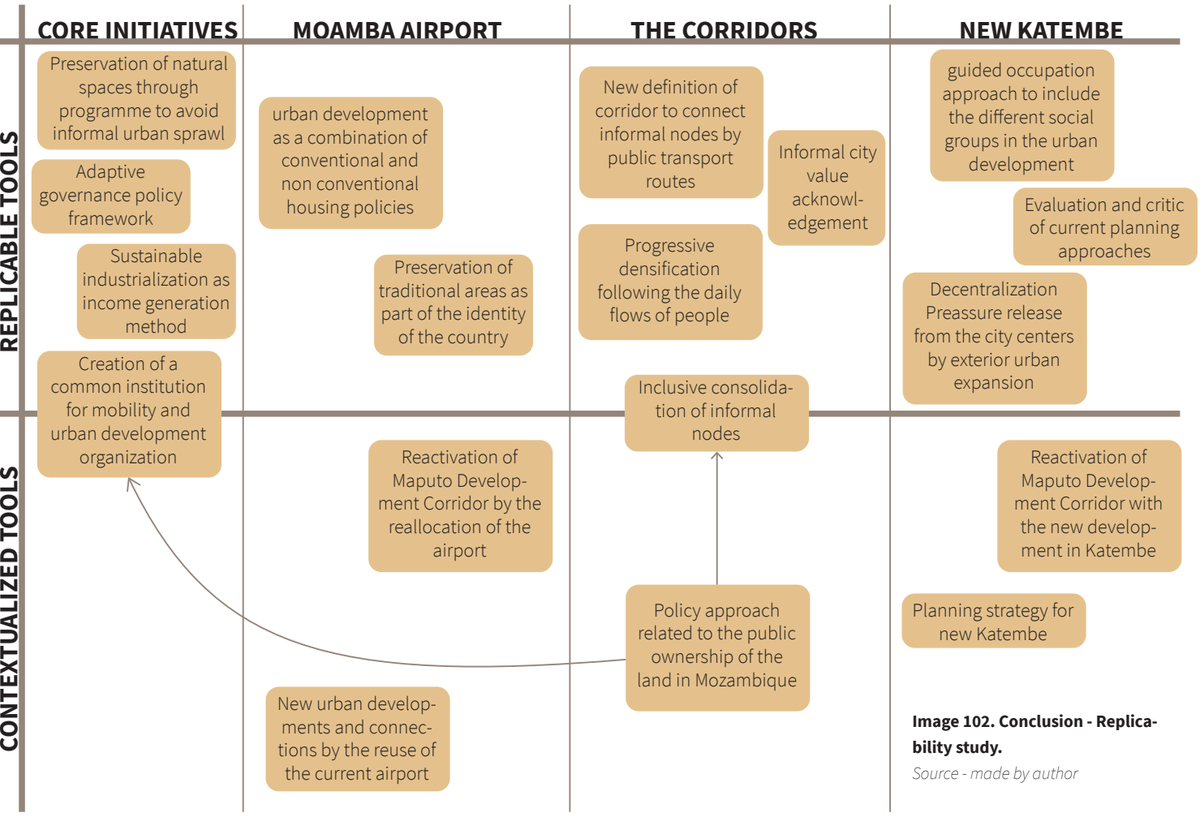


Image 102. Conclusion - Replicability study.
Source - made by author

This thesis proposes a wide range of planning tools with the common aim of building an alternative planning approach that leads to an inclusive and sustainable urban development for 2040.

Among these tools there is an extensive number of them that can be replicated in similar contexts and used to create a general method to approach the complexity of locations like MMA.

However, at the same time, there are some tools attached to the context that rely on specific characteristics of the location and which replicability might be more difficult.
What is certain is that, even the replicable tools, have been proposed as an aswer for the current reality of the area.

Some characteristics of the MMA dynamics can be found in other countries -specially African countries -. It is essential to highlight that there are big differences in each one of the African contexts and, therefore, the planning strategies need to be shaped and contextualized, even coming from a general method.

> "It is a mistake to talk about Africa in general terms. Africa is not one homogeneous geographical unit. There are several differences that architects should take into consideration: the climate is not the same in Western or Eastern Africa, there are social and cultural differences between the states...Thus there is no one Africa" (Yacobi, H. 2010) Architect Zalman Enav interview in 2009

04

RELATION TO SUSTAINABLE DEVELOPMENT GOALS

In 2015, United Nations published the 17th sustainable goals as commitment of countries to end poverty, protect the planet and ensure prosperity for all as part of a new sustainable development agenda. It proposes a time frame of 15 years where there are specific problematics to be addressed. (https://www.un.org/sustainabledevelopment/sustainable-development-goals/)This thesis follows two of the seventeen Sustainable Development Goals of UN:

Goal 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation.
Goal 11: Make cities inclusive, safe, resilient and sustainable

Although it is indirectly related to other goals such as:
Goal 3: Ensure healthy lives and promote well-being for all at all ages
Goal 6: Ensure access to water and sanitation for all
Goal 8: Promote inclusive and sustainable economic growth, employment and decent work for all
Goal 10: Reduce inequality within and among countries

Goal 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation.

This goal highlights the necessity of investments in infrastructure to achieve a sustainable development. It also recommend the use of infrastructures as a tool to empower communities in many countries and acknowledge their relation to the increase in productivity and incomes and improvements in health and education. At the same time, it seeks the inclusive and sustainable industrial development as main source of development in the sense of income generation that leads to an increase of living standards.
This sustainable goal is introduced in the hierarchy of the different networks in the MMA and the improve of connections between Mozambique and South Africa. The mobility is the back bone of the integrated strategy and it is indeed used as a tool to include a collaboration between the different stakeholders. At the same time, the sustainable industrialization is one of the core initiatives and provides a framework for improving the economic and ecological profile of the Metropolitan area.

Goal 11: Make cities inclusive, safe, resilient and sustainable

This goal recognize the complexity of cities and the scope for planning cities that enable people to move forward socially and economically. It seeks the proposition of answers to the current challenges of the cities such as congestion, lack of funds to provide basic services, a shortage of adequate housing or declining infrastructure. There is need for thinking in the future of cities from a perspective that proposes alternatives to alleviate these problems and proposes inclusive cities with opportunities for all.
This goal reflects the background of this thesis, it started with the aim of raising awareness about the necessity of thinking about the future Maputo Metropolitan Area for 2040 and overcoming the current problematics in the future planning. This thesis acknowledges the enormous complexity of the context and provides inclusive– alternatives for a more sustainable future. At the same time, with the proposition of an adaptive planning framework, it aims to provide an inclusive and resilient possible policy shift that open the decision making to a collaborative atmosphere.

05

REFLECTION

This research represents an ethical challenge. It is a breakthrough in the context of Mozambique, something that can help to open the mind-set in the Mozambican planning system. At the same time, it is introduced by a foreigner, which supposes a new perspective. Possibly more open due to the lack of the author's personal relation to the context. However, at the same time, it might not be so clear and sharp as one proposed by a local expert. That is why, this thesis has been developed in as much contact as possible with local advisors and building up a proposition that answers to the current reality of the area from a humble position with the final aim of leaning.

It is essential to highlight that the author is aware that there can be found several approaches to the problematic presented and this is just one of them, as well as the priority necessity of adapting the approach to the context reality. The main aim of this thesis started in raising the awareness about the fast growing trend of the country and the requirement of thinking about how the future can aggravate the current poverty situation.

At the same time, it has been an exceptional opportunity to merge the knowledge and theories learnt in TU Delft with the perceptions and local knowledge of The Eduardo Mondlane University in Maputo, Mozambique. This opportunity is what represents the main relevance of the project. It goes beyond its academic innovation, it states a new communication line between these two institutions and the professionals and experts working on them. At the same time, it introduces an innovative scientific approach tailor-made for the complexity of the informal city, it opens a new line of thinking in the context of Maputo Metropolitan Area where there is no urban planning researches, proposals or material of study about the future growth scenario.

During the process of research, it has been at all times priority the relation to the context and the shaping and adaption of theories to the reality of the area, introducing a strong policy section and looking for alternative ways to propose a development based on past successes or failures in planning proposals within the African context. Therefore, there is a strong connection between the research and design in the proposal with the application of certain innovative theories but complimented with the use of the context to frame the design.

The major inflexion point of this research was the fieldtrip to Maputo. The methodology and methods used prior to the fieldtrip were based on literature review and GIS mapping. They were oriented towards the confrontation with stakeholders to confirm their reliability.

Confronting the prior advances on the research with local stakeholders introduces two different approaches: On one side, it highlighted the outstanding complexity of the location. Maputo is facing an incredible difficult poverty situation that is aggravated by a weak governance. On the other side, the attempt of discussing about the future of planning and urban development of the Metropolitan Area has triggered controversial reactions in the different stakeholders.
There was a group of experts defending the extreme current situation and denying the possibility of looking further in the future. With a lack of perception about the direct link between thinking in the future situation to improve the current one. This opposite perceptions supposed a strong barrier to overcome in order to present the idea of the project: to use the present problems to develop further to propose a framework to start a recovery process. Such as the case of using the informal nodes to guide the densification of the cities.

At the same time, the fewer, dedicated to study this idea, illustrated incredible innovating ideas and perceptions and complemented the vision proposed with the creative yet complex situation of informality and dynamism of Maputo. There are several development strategies taking place in the moment – most of them following European planning systems- and it is essential to propose alternatives and complementary ideas.

At the same time, the prior work presented in Maputo during the fieldtrip to around 20 people was well validated by experts due to the inexistence of any of the maps of this research project –developed by using Open Street maps GIS data and adding literature review and statistics-. The technical tools used in this project are opening new ways of representation for those who work in the field in Maputo and they are already waiting for the project to be finished to use the material. This is an extra motivation and a validation of the work to be used in further researches outside the merely academic field. It also presents a responsibility to validate the data and improve the maps by providing reliable material.

This thesis represents a statement to encourage the country to look forward and seek for alternative ideas to solve the current situation. Yet, be aware of the dangerous situation ahead of the fast growing trend which will aggravate even more the current problems. It is a reflection about the empowerment of the African population through the informal economy, nowadays representing the job of almost 90% of the Mozambican population.

The biggest challenge of this thesis is the existence and spread of the informal city in Maputo Metropolitan Area. It is a challenge on its lack of basic infrastructures that leads to precarious conditions in the living environment or in the lack of proper rights and regulations for the employees of the informal economy activities, which receive an unfair salary for too many hours of working on improper conditions. However, the flexibility of the informal city with blurry laws also encourage creative measurements. This states that, maybe, this African city will not follow the traditional process of development and will propose its own processes and rules that might not be even written yet. The way this Metropolitan Area is informally developing supposes a statement against the weak government and governance structures and, even though it might seem the opposite, in this city it is the population who decide the rules and the development strategies and they should be included in the decision making so there is just one line of planning.

> "In addition, as they go about their daily struggles, urban dwellers develop their own 'governance rules' beyond the purview of the authorities, rendering the informal sphere virtually opaque to state surveillance. In their growing numbers, they quietly encroach and appropriate urban space, and fundamentally remap the city, posing a threat to urban propertied groups." (Kamete, A. Y. & Lindell, I. 2010)

The necessity of survival creates a new layer of "doing what needs to be done" that introduces alternative ways of living. The Mozambican population might not reflect their identity by raising their voices against the injustices but they show themselves by surviving and creating a whole informal layer introduced in different scales within the mobility, commerce, tourism or housing areas. However, the proposed vision and strategies can not be implemented unless there is a shift in the governance structure. The author is aware of the difficulty this changing perspective entails but it is essential to introduce alternatives in the future agenda of the Metropolitan Area in order to raise awareness of the current inefficiencies and barriers.

This project suits the main interest of the research group of Complex City due to its strong connection with the Global South main problematic and the approach by using the planning tools in an inclusive and contextualized manner. At the same time, it includes the knowledge of the Urban Design research group by its treatment of mobility infrastructures and smaller scale strategies. Both groups worked together through the mentor's advices to build up a combined initiative. This project aims to start a process of approaching the urbanism in Mozambique from the academic perspective of TU Delft and there is still a lot to be further research for other students. Starting by improving the reliability of the maps and data and confronting the guidelines of this thesis with other approaches in a metropolitan scale. At the same time, there is scope for detailing the planning approach in any of the three strategies (Moamba airport, The Corridors or New Katembe) in deeper scale and improving the framework of innovative policies by increasing the list of examples and summary of innovative policies. This thesis just opened the discussion about developing trends in Mozambique, an open debate table that should be complimented and further research.

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Source - World Population Prospects. The 2012 Revision, (2013) UNDESA, NY, http://esa.un.org/wpp/Excel-Data/population.htm, last accessed 25 October 2017
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Source- World urbanization Prospects. The 2011 Revision, (2012) UNDESA, NY
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source - illustration by author
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source - World Population Prospects. The 2011 Revision, (2012) UNDESA, NY,
Image 11. Maputo province.
Illustration by author from GIS data
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source - Pacheco Melo, V. (2013) "Urbanismo português na cidade de Maputo: passado, presente e futuro" Brazilian Journal of Urban Management, 5(1), 71-86
Image 13. Semi-formal city.

Source - http://i.vimeocdn.com /video/536221920_1280x720.
Image 14. Urban pattern - Semi-formal city.

source: Pacheco Melo, V. (2013) "Urbanismo português na cidade de Maputo: passado, presente e futuro" Brazilian Journal of Urban Management, 5(1), 71-88
Image 15. Semi-formal city.

source: Conselho Municipal de Maputo. (2011) "Requalificação Urbana"
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source: Pacheco Melo, V. (2013) "Urbanismo português na cidade de Maputo: passado, presente e futuro" Brazilian Journal of Urban Management, 5(1), 71-88
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source: Conselho Municipal de Maputo. (2011) "Requalificação Urbana"
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source: Archive of Pretoria University.
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Source-https://upload.wikimedia.org/wikipedia/commons/thumb/6/65/Maputo_seen_from_southeast_-_October_2006.jpg/1200px-Maputo_seen_from_southeast_-_October_2006.jpg
mage 20. Matola lifestyle overview
source - http://casamozambique.co.mz/en/neighborhoods/matola/843898392
Image 21. Matola coastline
source - https://www.vesselfinder.com/ports/MATOLA-MOZAMBIQUE-11817
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Source-http://www.portmaputo.com/matola-bulk-terminal/
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Source-http://www.portmaputo.com/maputo-cargo-terminal/
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Source-http://housesofmaputo.blogspot.nl/2016/11/companhia-industrial-da-matola-e-as.html
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Source- Maputo Municipality, T., Betar, G., & Maputo Sul, E. (2017). A nova Katembe - Uma cidade para o futuro. Retrieved from Eduardo Mondlane University repository
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Source-Author from Google Maps information.
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Source-Author from Google Maps information and base map from Eduardo Mondlane University.
Image 29. Road corridors capacity in Southern Africa region.
Source-"Regional Infrastructure Development Masterplan. Transport Sector Plan" (2012) SADC report.
Image 30. A nova Katembe plan
Source- Maputo Municipality, T., Betar, G., & Maputo Sul, E. (2017). A nova Katembe - Uma cidade para o futuro. Retrieved from Eduardo Mondlane University repository
Image 31. General image of Katembe development project.
Source- Maputo Municipality, T., Betar, G., & Maputo Sul, E. (2017). A nova Katembe - Uma cidade para o futuro. Retrieved from Eduardo Mondlane University repository
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Source- Maputo Municipality, T., Betar, G., & Maputo Sul, E. (2017). A nova Katembe - Uma cidade para o futuro. Retrieved from Eduardo Mondlane University repository
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Source- Gesto, B. (2015)
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Source- Graph translated by author from the theory of Gesto, b. (2015). LOS PROGRAMAS MUNICIPALES DE OCUPACIÓN GUIADA: INSTRUMENTOS PREFERENTES DE HABITABILIDAD BÁSICA VERSUS LA URBANIZACIÓN INFORMAL FUTURA. El caso de Trujillo (Perú). http://oa.upm.es/39714/.
Image 35. Methodology in relation with questions and objectives
Source- diagram by author
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Source-http://www.africaprogresspanel.org/oxfam-inequality-report-adds-to-groundswell-of-public-opinion/
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Source - http://housesofmaputo.blogspot.nl/2017/04/fabricas-principais-da-matola-ligamo-em.html
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Source - https://delagoabayworld.wordpress.com/category/lugares/nampula-vista-aerea/
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Source - http://www.technoserve.org/blog/photo-of-the-week-an-industry-revived-in-mozambique
Image 48. Farewell of the tropes.
Source - https://daysonwar.blogspot.nl/2014/07/portugal-en-la-primera-guerra-mundial.html
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Source-http://www.sheknows.com/living/articles/1111755/black-women-entrepreneurs
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Source-Revista do Centro de Estudos de Urbanismo e Habitação Engenheiro Duarte Pacheco 1970
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Source-https://commons.wikimedia.org/wiki/File:2010-10-18_10-55-44_Mozambique_Maputo_Chamanculo_"B".jpg
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Source-http://59minutedevelopment.blogspot.nl/2015/04/can-mobile-money-reach-remote.html
http://beta.networkcontacto.com/visaocontacto/FotosC21/Forms/DispForm.aspx?ID=518&RootFolder=%2Fvisaocontacto%2FFotosC21%2FAna%20Rita%20Carvalho
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Source-UN-Habitat (2015). Sustainable urban development in Africa. Africa Urban Agenda. Nairobi, United Nations.
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Source-https://www.tripadvisor.com/LocationPhotoDirect-Link-g293819-d479027-i63063486-Maputo_Elephant_Reserve_Reserva_Especial_de_Maputo-Maputo_Maputo_Province.html
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Source-http://www.dw.com/pt-002/setor-informal-deve-pagar-impostos-em-moçambique/a-19413222
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Source: executed by author from images of the stakeholders.
Image 92. Feedback summary
Source: scheme by author
Image 93. Katembe bridge from sea
Source: Collage over photography from author
Image 94. Plan for Katembe 2030
Source: Maputo Municipality, T., Betar, G., & Maputo Sul, E. (2017). A nova Katembe - Uma cidade para o futuro.
Image 95. identification of informality
Source: Photography by author during fieldtrip
Image 96. Densification methods
Source: Photography by author during fieldtrip
Image 97. Dynamics of Maputo - View from the railway station
Source - made by author during fieldtrip
Image 98. Reflection scheme about corridor factors
Source - made by author
Image 99. Evaluation of strategy in sustainable urban development framework.
Source - made by author
Image 100. Current social network
Source- developed by author based on theory of Jenkins, P. 2000; Boyd et al. 2014; Barros et al. 2014
Image 101. Introduction of stakeholders and new institutions.
Source - made by author
Image 102. Conclusion- replicability study
Source - made by author

- REFERENCES

Alexander, A. (2012). 'A disciplining method for holding standards down': how the World Bank planned Africa's slums. Review of African Political Economy, 39(134), 590-613.

Alfers, L., Xulu, P., & Dobson, R. (2016). Promoting workplace health and safety in urban public space: reflections from Durban, South Africa. Environment & Urbanization, 1-14.

Alterman, R. (1988). Adaptive Planning. Cognitive Science, 12(3), 393-421.

Arimah, B. C. (2001). SLUMS AS EXPRESSIONS OF SOCIAL EXCLUSION: EXPLAINING THE PREVALENCE OF SLUMS IN AFRICAN COUNTRIES. ResearchGate. Retrieved from https://www.researchgate.net/publication/228856797_Slums_As_Expressions_of_Social_Exclusion_Explaining_The_Prevalence_of_Slums_in_African_Countries

Bailo Esteve, M. (2015). Urban Catalyst. Barcelona: Actar Publishers.

Birkmann, J., Garschagen, M., Kraas, F., & Nguyen, Q. (2010). Adaptive urban governance: new challenges for the second generation of urban adaptation strategies to climate change. Sustainability Science, 5(2), 185-206. doi:10.1007/s11625-010-0111-3

Boyd, E., Ensor, J., Broto, V. C., & Juhola, S. (2014). Environmentalities of urban climate governance in Maputo, Mozambique. Global Environmental Change-Human and Policy Dimensions, 26, 140-151. doi:10.1016/j.gloenvcha.2014.03.012

Brooks, N., Adger, W. N., & Kelly, P. M. (2005). The determinants of vulnerability and adaptive capacity at the national level and the implications for adaptation. Global Environmental Change-Human and Policy Dimensions, 15(2), 151-163. doi:10.1016/j.gloenvcha.2004.12.006

Bruntland Commission, T. (1987). Our common future. Retrieved from Brynard, P. A., & Musitha, M. E. (2011). The role of traditional authorities in the implementation of Integrated Development Planning Policy (IDP) in Vhembe District Municipality, Limpopo Province. Pretoria University. Pretoria University online repository.

Busquets i Grau, J. (1999). La urbanización marginal. Barcelona: Edicions UPC.

Byiers, B., & Vanheukelom, J. (2014). What drives regional economic integration? Lessons from the Maputo Development Corridor and the North-South Corridor. European Centre for Development Policy Management, 157.

Camaiora, A. L. (2007). Legalizing property rights - unleashing the economic potential of the urban poor. Habitat Debate, 13(2), 8.
Cambridge Dictionary, T. (2018). Dictionary. Retrieved from https://dictionary.cambridge.org/dictionary/english/park

Campbell, M., Maritz, J., & Hauptfleisch, D. THE IMPACT OF THE MAPUTO DEVELOPMENT CORRIDOR ON WEALTH CREATION WITHIN THE REGION IT SERVES. Retrieved from https://www.researchgate.net/publication/237360666_THE_IMPACT_OF_THE_MAPUTO_DEVELOPMENT_CORRIDOR_ON_WEALTH_CREATION_WITHIN_THE_REGION_IT_SERVES_Authors

Cash, D. W., Adger, W. N., Berkes, F., Garden, P., Lebel, L., Olsson, P., . . . Young, O. (2006). Scale and cross-scale dynamics: Governance and information in a multilevel world. Ecology and Society, 11(2), 8.

Castán Broto, V., Boyd, E., & Ensor, J. (2015). Participatory urban planning for climate change adaptation in coastal cities: lessons from a pilot experience in Maputo, Mozambique. Current Opinion in Environmental Sustainability, 13, 11-18.

Chakravarty, S. (2008). Is Public Space A Public Good? A Structure/Agency View of Narrative of Loss. Working Paper USC Lusk Center for Real Estate, 8527.

CitiesNetwork, S. A. (2016). The People's guide. Retrieved from
Comité de Conselheros. (2003). Agenda 2025. Visao e Estratégias da Naçao.

Crona, B. I., & Parker, J. N. (2012). Learning in Support of Governance: Theories, Methods, and a Framework to Assess How Bridging Organizations Contribute to Adaptive Resource Governance. Ecology and Society, 17(1), 32. doi:Artn 3210.5751/Es-04534-170132

Crook, R. C., & Booth, D. (2011). Conclusion: Rethinking African Governance and Development. IDS Bulletin, 42(2).

Cunguara, B., & Hanlon, J. (2012). Whose Wealth Is It Anyway? Mozambique's Outstanding Economic Growth with Worsening Rural Poverty. Development and Change, 43(3), 623-647.

de Beer, G. R. M., Mmatli, R. A., Mahumane, A. C., Nyathi, S. C., & Soares, F. H. (1999). The future development of the Southern African Borderlands. Journal of Borderlands Studies, 14(2), 47-66.

de Pacheco Melo, V. (2012). URBANIZATION PROCESSES IN THE EXPANSION AREAS OF LUANDA, MAPUTO AND JOHANNESBURG: URBAN PLANNING AND EVERYDAY PRACTICES. Paper presented at the 15th INTERNATIONAL PLANNING HISTORY SOCIETY CONFERENCE, Sao Paulo, Brazil.

Dino, A. (2012). Magia en el camino. Retrieved from http://magiaenelcamino.com.ar/postales-de-maputo.html

Dolby, N. (2006). Popular Culture and Public Space in Africa: The Possibilities of Cultural Citizenship. African Studies Review, 49(3), 31-47.
DPU University College London, D. P. U. (2008). Urbanisation and Municipal Development in Mozambique: Urban Poverty and Rural-Urban Linkages. Final report.

Driver, A., & de Barros, J. G. (2000). The impact of the Maputo Development Corridor on freight flows: An initial investigation. Development Policy Research Unit in Cape Town. University of Cape Town
.
Duit, A., & Galaz, V. (2008). Governance and complexity - Emerging issues for governance theory. Governance-an International Journal of Policy Administration and Institutions, 21(3), 311-335. doi:DOI 10.1111/j.1468-0491.2008.00402.x

Dupuy, G. (2008). Urban networks - network urbanism. Amsterdam.
Durance, P., & Godet, M. (2010). Scenario building: Uses and abuses. Technological forecasting & Social change, 77, 1488-1492.

Dzumbira, W., Geyer Jr, H., & Geyer, H. (2017). Measuring the spatial economic impact of the Maputo Development Corridor. Development Southern Africa, 1-17.

Estatística, I. N. d. (2014). Moçambique em Números. http://www.ine.gov.mz.

ESTATÍSTICA, I. N. D. (2017). DIVULGAÇÃO OS RESULTADOS PRELIMINARES CENSO 2017. Retrieved from Maputo, Mozambique:

Farrington, C. (2009). Putting good governance intro practice. Progress in Development Studies, 9(3), 249-255.

Folke, C., Carpenter, S., Elmqvist, T., Gunderson, L., Holling, C. S., & Walker, B. (2002). Resilience and sustainable development: building adaptive capacity in a world of transformations. Ambio, 31(5), 437-440.

Folke, C., Hahn, T., Olsson, P., & Norberg, J. (2005). Adaptive governance of social-ecological systems. Annual Review of Environment and Resources, 30, 441-473. doi:10.1146/annurev.energy.30.050504.144511

Fraser, A. (2014). Rethinking Urban Risk and Adaptation: The Politics of Vulnerability in Informal Urban Settlements. Doctor of Philosophy, London. The London School of Economics and Political Science.
Department for International Development.

Freire, M., Lall, S., & Leipziger, D. (2014). Africa's urbanisation: challenges and opportunities. Retrieved from http://www.dannyleipziger.com/documents/GD_WP7.pdf

Gesto, b. (2015). LOS PROGRAMAS MUNICIPALES DE OCUPACIÓN GUIADA: INSTRUMENTOS PREFERENTES DE HABITABILIDAD BÁSICA VERSUS LA URBANIZACIÓN INFORMAL FUTURA. El caso de Trujillo (Perú). http://oa.upm.es/39714/.

Hendrick-Wong, Y., & Angelopulo, G. (2011). The Challenges of Urbanization in Sub-Saharan Africa: A Tale of Three Cities. Retrieved from
Holling, C. S. (1973). Resilience and stability of ecological systems. Annual Review of Ecology and Systematics, 4, 1-23.

IISD. (2017). International Institute for Sustainable Development. Topics - Adaptive Planning. Retrieved from https://www.iisd.org/topics
INE. (2010). Projeccoes anuais de populaçao total, urbana e rural, 2007-2040.

International Labour Organization, T. (2016). Mozambique joins Portuguese-speaking countries to address transition to formal economy. Informal Economy. Retrieved from http://www.ilo.org/addisababa/countries-covered/zambia/WCMS_462681/lang--en/index.htm

Jenkins, P. (2000). City profile - Maputo. CITIES, 17(3), 207-218. doi:Doi 10.1016/S0264-2751(00)00002-0

Jenkins, P., & Wilkinson, P. (2002). Assessing the Growing Impact of the Global Economy on Urban Development in Southern African Cities. CITIES, 19(1), 33-47.

Kamete, A. Y., & Lindell, I. (2010). The politics of "non-planning" interventions in African cities: unravelling the international and local dimensions in Harare and Maputo. Journal of Southern African Studies, 36(4), 889-912.

Karpouzoglou, T., Dewulf, A., & Clark, J. (2016). Advancing adaptive governance of social-ecological systems through theoretical multiplicity. Environmental Science & Policy, 57, 1-9. doi:10.1016/j.envsci.2015.11.011

Karyeija, G. K. (2011). The impact of culture on performance appraisal reforms in Africa. The case of Uganda's Civil Service. Pretoria University repository.

Kassa, C. B. (2011). The challenges and prospects of civil service reform and good governance in Ethiopia. Pretoria University. Pretoria University repository.

Khoza, C., & Willemse, L. (2013). Socio-economic performance of municipalities along the Maputo Development Corridor (MDC): Implications for the National Development Plan (NDP) of 2011. SSB/TRP/MDM, 63.

Kirshner, J., & Power, M. (2015). Mining and extractive urbanism: Post-development in a Mozambican boomtown. Geoforum, 61, 67-78.

Lagae, J. (2014). Maputo, Open City. Investigations on an African Capital. The Journal of Architecture, 19(3), 454-456.

Landman, K. (2006). Privatising public space in post.apartheid South African cities through neighbourhood enclosures. GeoJournal, 66, 133-146.

Leite Viana, D. (2009). African Cities: towards a new paradigm – 'chameleonic' urbanism for hybrid cities. Paper presented at the AFRICAN PERSPECTIVES 2009.

Lindell, I. (2008). The Multiple Sites od Urban Governance: Insights from an African City. Urban Studies, 45(9), 1879-1901.

Loorbach, D. (2010). Transition Management for Sustainable Development: A Prescriptive, Complexity-Based Governance Framework-gove_1471 161..18. Governance: An International Journal of Policy, Administration, and Institutions, 23(1), 161-183.

Maputo Municipality, T., Betar, G., & Maputo Sul, E. (2017). A nova Katembe - Uma cidade para o futuro.

Matos, E. D. (2009). Post-Colonial Portuguese Migration to Mozambique: An examination of causes, effects and future implications for development. International Migration, 47(3).

Mendes de Araújo, M. G. (1999). Cidade de Maputo. Espaços contrastantes: do urbano ao rural. Finisterra, 36(67-68), 175-190.

Mendes de Araújo, M. G. (2003). OS ESPAÇOS URBANOS EM MOÇAMBIQUE. GEOUSP Espaço e Tempo, 14, 165-182.

Mendes de Araújo, M. G. (2006). Espaço Urbano Demograficamente Multifacetado: As cidades de Maputo e da Matola. Retrieved from apdemografia.pt/files/1853187958.pdf

Mitchell, D. (1995). The End of Public Space? People's Park, Definitions of the Public, and Democracy. Annals of the Association of American Geographers, 85(1), 108-133.

Mitchell, J. (1998). The Maputo Development Corridor: A case study of the SDI process in Mpumalanga. Development Southern Africa, 15(5), 757-769.

Mozambique government. (2014). ESTRATÉGIA NACIONAL DE DESENVOLVIMENTO (2015-2035).

Mozambique, I. (2012). Projeccoes anuais da populaçao total, urbana e rural, dos distritos da cidade de Maputo 2007-2040.

Mule, H. (2001). Challenges to African Governance and Civil Society. public administration and development, 21, 71-76.

Municipality of Maputo, T. (2008). Plano de Estrutura Urbana Do Município de Maputo.

Myers, G. A. (2008). Sustainable Development and Environmental Justice in African Cities. Geography Compass, 2(3), 695-708.

Naude, W. A., & Krugell, W. F. (2003). Are South Africa's cities too small? CITIES, 20(3), 175-180.

Neto, F., Ha, Y., & Weliwita, A. (2007). The urban informal economy - new policy approaches. Habitat Debate, 13(2), 8.

Nhatuguês de Mendoça, I. (2014). Mobilidade urbana na área metropolitana de Maputo: análise dos órgaos de gestao do planeamiento e mobilidade urbana, arranjos institucionais e insumos para a sua efectiva articulaçao. Journal of Transport Literature, 8(2), 244-270.

Nielsen, M. (2011). Inverse governmentality: The paradoxical production of peri-urban planning in Maputo, Mozambique. Critique of Antropology, 31(4), 329-358.

Nunes Silva, C. (2014). Maputo, cidade aberta. Investigação sobre uma capital Africana/Maputo, open city. Investigations on an African capital. Planning perspectives, 29(3), 421-422.

Odendaal, N. (2012). Reality check: Planning education in the African urban century. CITIES, 29, 174-182.

OECD. (2018). Inclusive growth. Retrieved from http://www.oecd.org/inclusive-growth/

Osbahr, H., Twyman, C., Adger, W. N., & Thomas, D. S. G. (2010). Evaluating Successful Livelihood Adaptation to Climate Variability and Change in Southern Africa. Ecology and Society, 15(2), 27.

Ostrom, E., Schroeder, L., & Wynne, S. (1993). Institutional Incentives and Sustainable Development. Infrastructure policies in perspective. United States of America: Westview Press.

Paasche, T. F., & Sidaway, J. D. (2010). Transecting security and space in Maputo. Environment and Planning, 42, 1555-1576.

Pahl-Wostl, C. (2009). A conceptual framework for analysing adaptive capacity and multi-level learning processes in resource governance regimes. Global Environmental Change-Human and Policy Dimensions, 19(3), 354-365. doi:10.1016/j.gloenvcha.2009.06.001

Pereira, L. M., & Ruysenaar, S. (2012). Moving from traditional government to new adaptive governance: the changing face of food security responses in South Africa. Food Security, 4(1), 41-58. doi:10.1007/s12571-012-0164-5

Pestana Barros, C., Chibangue, A., & Samagaio, A. (2014). Urban dynamics in Maputo, Mozambique. CITIES(36), 74-82.

Pius Kulipossa, F. (2006). Mozambique. IDS Bulletin, 37(2).

Platzky, L. (1998). Can South Africa's New Spatial Development Initiatives turn Cumulative Disadvantages into Competitive Advantages? Saint Mary's College.

Quembo, C. (2014). How perceptions matter: urban mobility and settlement in Maputo and Matola (Mozambique) since independence. SearchGate. Retrieved from https://www.researchgate.net/publication/259975126

Ramírez, R. (2002). Evaluación social de políticas y programas de vivienda: un análisis en la contribución de la vivienda. Boletín del Instituto de la Vivienda, 17(45), 11-59.

Rijke, J., Brown, R., Zevenbergen, C., Ashley, R., Farrelly, M., Morison, P., & van Herk, S. (2012). Fit-for-purpose governance: A framework to make adaptive governance operational. Environmental Science & Policy, 22, 73-84. doi:10.1016/j.envsci.2012.06.010

Rogerson, C. M. (2000). Spatial development initiatives in Southern Africa: The Maputo Development Corridor. Royal Dutch Geographical Society KNAG, 92(3), 324-346.

Rogerson, C. M. (2000). Road construction and small enterprise development: The experience of the N4 Maputo corridor. Development Southern Africa, 17(4), 536-566.

Rogerson, C. M. (2001). TOURISM AND SPATIAL DEVELOPMENT INITIATIVES: THE CASE OF THE MAPUTO DEVELOPMENT CORRIDOR. South African Geographical Journal, 83(2), 124-136.

Roodt, M. J. (2008). The impact of regional integration initiatives and investment in a southern African cross- border region: The Maputo Development Corridor. African Sociological Review, 12(1), 88-102.
Rouse, M. (2017). SWOT analysis (strengths, weaknesses, opportunities and threats analysis). Retrieved from http://searchcio.techtarget.com/definition/SWOT-analysis-strengths-weaknesses-opportunities-and-threats-analysis

SADC. (2012). Regional Infrastructure Development Masterplan. Transport Sector Plan.

Schutte, I. C. (2005). MAPUTO DEVELOPMENT CORRIDOR: EVALUATION OF FIRST PHASE. Paper presented at the 24th Southern African Transport Conference, Pretoria, South Africa.

Seeliger, L., & Turok, I. (2013). Averting a downward spiral: building resilience in informal urban settlements through adaptive governance. Environment & Urbanization, 26(1), 184-199.

Sepulveda Ocampo, R. (1999). Formulación y Evaluación de Políticas y Programas sociohabitacionales.

Sequeira, S., Hartmann, O., & Kunaka, C. (2014). Reviving Trade Routes. Evidence from the Maputo Corridor. Retrieved from
Silva, J. A. (2007). Trade and Income Inequality in a Less Developed Country: The Case of Mozambique. Economic Geography, 83(2), 111-136.

Sliuzas, R. (2002). Opportunities for enhancing communication in settlement upgrading with geographic information technology-based support tools. Habitat International, 27, 613-628.

Söderbaum, F. (2001). Institutional Aspects of the Maputo Development Corridor. University of Cape Town.

Söderbaum, F., & Taylor, I. (2001). Transmission belt for transnational capital or facilitator for development? Problematising the role of the state in the Maputo Development Corridor. Modern African Studies, 39(4), 675-695.

Söderbaum, F., & Taylor, I. (2008). AFRO-REGIONS. THE DYNAMICS OF CROSS-BORDER MICRO-REGIONALISM IN AFRICA
South African CitiesNetwork. (2016). State of South African Cities Report. Retrieved from

Taylor, I. (2002). The Maputo Development Corridor: Whose Corridor? Whose development? S. H. Breslin, Microregionalism and World Order, 144-165.

Termeer, C. J. A. M., Dewulf, A., & van Lieshout, M. (2010). Disentangling Scale Approaches in Governance Research: Comparing Monocentric, Multilevel, and Adaptive Governance. Ecology and Society, 15(4), 29.

Todes, A. (2012). Urban growth and strategic spatial planning in Johannesburg, South Africa. CITIES, 29, 158-165.

Turner, J. F. C. (1968). Uncontrolled urban settlement: problems & policies. International social development review, 1.

UN. (2014). World Urbanization Prospects.

UN. (2018). Human Rights. Global issues. Retrieved from http://www.un.org/en/sections/issues-depth/human-rights/

UN-Habitat. (2003). The Challenge of slums.
UN-Habitat. (2006). Slums: Some definitions. Retrieved from Nairobi:
UN-Habitat. (2006). Innovative Policies for the Urban Informal Economy. Retrieved from Nairobi:

UN-Habitat. (2008). Country Programme Document 2008-2009 Mozambique. Retrieved from Nairobi:

UN-Habitat. (2008). MOZAMBIQUE URBAN SECTOR PROFILE. Retrieved from Nairobi, Kenia:

UN-Habitat. (2009). Planning Sustainable Cities: Global Report on Human Settlements 2009. Retrieved from Nairobi:

UN-Habitat. (2010). The state of African cities: Governance, Inequality and Urban Land Markets.

UN-Habitat. (2010). MOZAMBIQUE CITIES PROFILE. MAPUTO, NACALA AND MANICA.

UN-Habitat. (2012). The State of Planning in Africa.

UN-Habitat. (2014). The State of African Cities.

UNDP. (2004). Governance Indicators: a user's guide. Retrieved from https://www.un.org/ruleoflaw/files/Governance%20Indicators_A%20Users%20Guide.pdf

UNPI. (2016). Africa's cities of the future. AfricaRenewal.
van Resburg, R. J., & Da Costa, M.-A. (2008). Space as ritual: contesting the fixed interpretation of space in the African city. SAJAH, 23(3), 30-42.

Viana, D. (2009). African City: towards a new paradigm – "chameleonic" urbanism for hybrid cities. Paper presented at the The African Inner City: [Re]sourced. African Perspectives, Pretoria.

Vieira Mario, T. (2014). Agenda 2025 – 25 Perguntas e Respostas sobre o Futuro de Moçambique.

Vletter, F. (2007). Migration and development in Mozambique: poverty, inequality and survival. Development Southern Africa, 24(1), 137-153.
Wakhungu, J., Huggins, C., Nyukuri, E., & Lumumba, J. (2010). APPROACHES TO INFORMAL URBAN SETTLEMENTS IN AFRICA: EXPERIENCES FROM KIGALI AND NAIROBI. Retrieved from

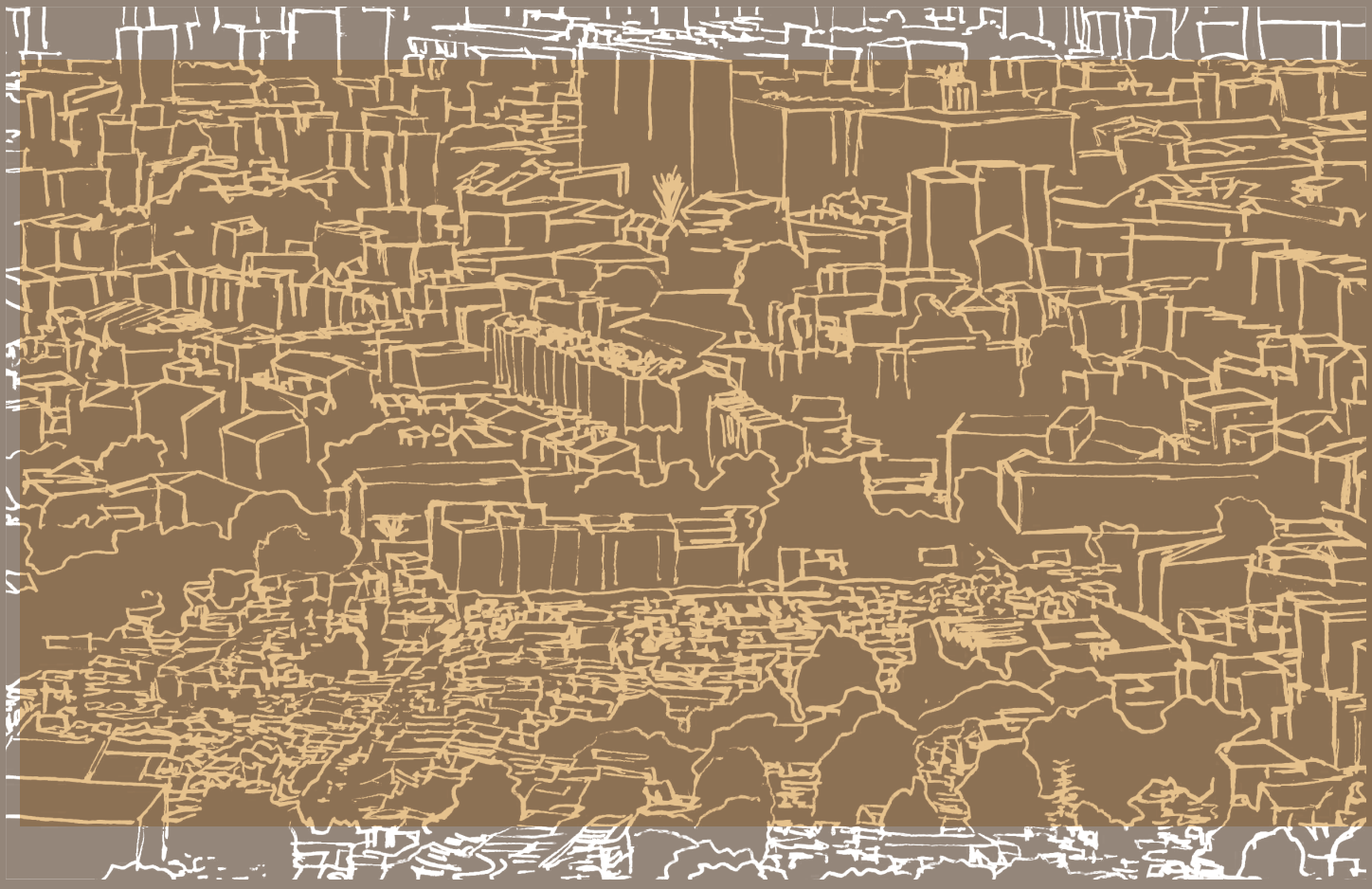
Wang, C., Medaglia, R., & Zheng, L. (2017). Towards a typology of adaptive governance in the digital government context: The role of decision-making and accountability. Government Information Quarterly. doi:10.1016/j.giq.2017.08.003

Wanjiku Kihato, C., Royston, L., Raimundo, J. A., & Raimundo, I. M. (2013). Multiple Land Regimes: Rethinking Land Governance in Maputo's Peri-urban Spaces. Urban Forum, 24, 65-83.

Warnich, S., & Verster, B. (2005). THE ANSWER IS: CORRIDOR DEVELOPMENT, BUT WHAT IS THE QUESTION? Paper presented at the 24th Southern Africa Transport Conference, Pretoria, South Africa.
World Bank, T. (2014). Data World bank.

World Bank, T. (2014). World Bank Development Indicators-Population living in slums. Retrieved from http://wdi.worldbank.org/table/WV.3
World Bank, T. (2017). The World Bank data.
World Bank, T. (2017). UNdata - World Development Indicators.

Yacobi, H. (2010). The Architecture of Foreign Policy. OASE, 82.



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