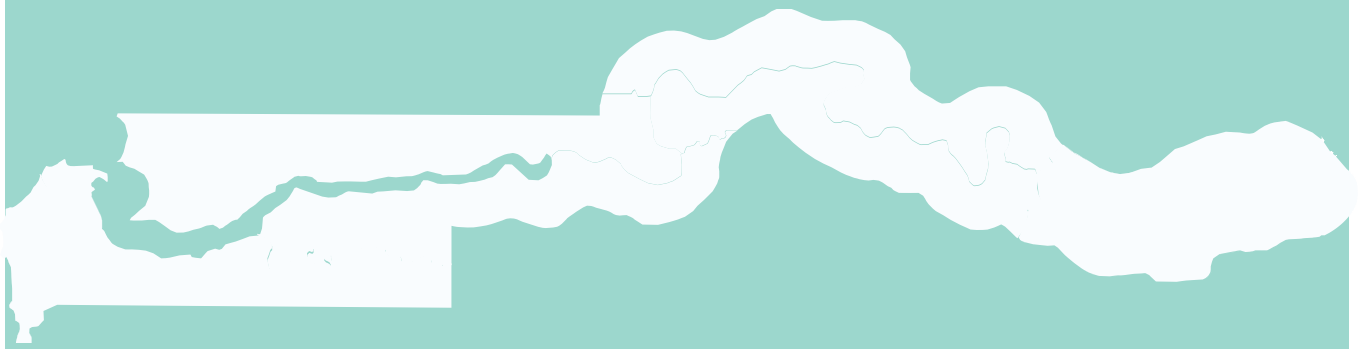


GREEN SPACES FOR A HEALTHY LIVING

A FOCUS ON THE LACK OF
GREEN SPACES IN URBAN GAMBIA (KMC)



ACKNOWLEDGMENT

The successful completion of this thesis results from hard work and dedication, guidance from the studio advisor **Christoph Ibele**, external advisor **Erica Lynsay** and most importantly, **family and friends**.

ACRONYMS

KMC

Kanifinf Municipal Council

GI

Green Infrastructure

FIG

Figure

INTRODUCTION

Green spaces play quite a unique role in improving our health and mental well-being. Although it is testing for Gambian to associate architecture with green spaces, it is at the forefront of promoting health and well-being through design. It helps enrich our health and mental well-being and promotes spaces that are beneficial to humans and the environment.

This thesis attempts to contribute ideas that serve an existing overcrowded urban population in dire need of green spaces. It also identifies other pressing issues people deal with daily that take focus away from the urgent need for green spaces in the Kanifing Municipal Council. These “distractions,” as I call them, are the bare urban essentials required for any functioning urban settlement. These essential are but not limited to Basic urban service, urban safety and disaster management, environmental and economic development.

This thesis combines the findings of the lack of will of the authorities and the lack of space in KMC to create any large-scale intervention to ask: How can green spaces be added to an already existing overcrowded urban settlement whose inhabitants are preoccupied with other pressing issues? The answers to the question came about through various methods ranging from interviews, survey questionnaires, online resources, and knowledge of the place gathered over the years. It looked at precedent from Medellin, Columbia to see how they were able to tackle the same situation and try to utilize the same ideas and tailor them to fit the needs of KMC.

It is prudent to indicate that the thesis started with the mindset of providing a large-scale intervention that will have immediate benefits to the people of KMC and other communities. A top-down approach where the authorities would take the lead. However, this thesis recommends the bottom-up approach as the best way forward based on the research findings. A bottom-up approach in the sense that residents will take matters in their hands to plant trees to deal with the lack of green spaces until a comprehensive plan is drawn by the authorities

QUOTE

“hey community! I see this need (green spaces), i know we cannot get there right now but here is an opportunity that could get you there”

Erika Lindsay

ABSTRACT

The urbanization of human society has important implications for health and well-being. On the one hand, dense urban populations may have more access to health care and amenities that promote healthy lifestyles. On the other hand, urban environments cultivate various environmental (e.g., pollution, sanitation concerns) and social (e.g., segregation, socio-economic disparities) stressors that make them more susceptible to health problems. This idea is never more evident than in the design of urban environments predominantly in African countries (Lincoln R Larson, Veniece Jennings, Scott A Cloutier) ..

Most people in KMC have no access to green spaces like parks, woods, lakesides, and gardens due to rapid urbanization and lack of planning. This thesis will aim to explore and identify the role of architecture, governing authorities, and citizens alike in the process of revitalizing the loss or lack of greenery in KMC. It also aims to identify the bare minimum individuals can do as they wait for rescue from authorities.

THESIS STATEMENT

Urban environments in Africa are mostly charged with housing the good schools, good healthcare, jobs, and most government offices, thereby making urbanization and overcrowding inevitable. This thesis explores how architecture influencing our behaviors affects our health and mental well-being.

It attempts to break down the causes of lack of greens spaces in urban Gambia (KMC) as well as the effects it has on the people. It promotes designs or ideas that has a good understanding of the users situation and act to attribute their particular challenges. Showing that architecture can play an active role in helping enrich our health and mental well-being.

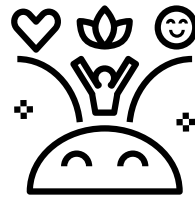
The purpose of this work is to acknowledge the realities of urbanization and overcrowding in Africa, The Gambia in particular, and provide relative solutions through green spaces to continue to enrich people's health and mental well-being regardless of the situation.

DEFINITIONS



Green space







An incorporated space within an overcrowded urban corridors/areas with plant life and other natural environmental elements that help protect, manage, and restore natural or modified ecosystems. A place that addresses societal challenges effectively and adaptively, simultaneously providing [human well-being](#).



Human well-being

A state of enriched health, social, environmental, psychological, and economic benefits that are derived from the built environment (green spaces).

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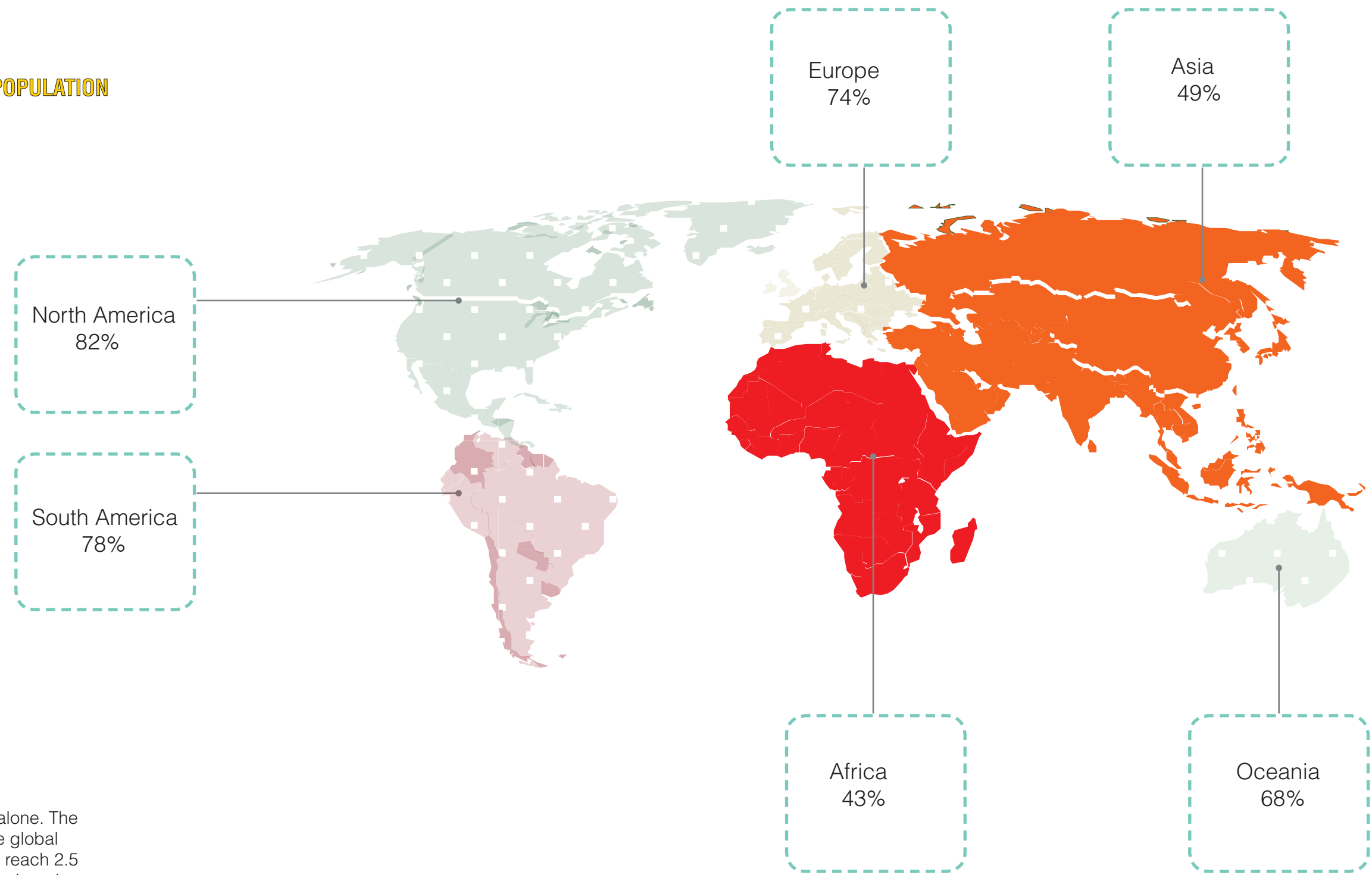
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01



WHY GREEN SPACES?

WORLD'S URBAN POPULATION



Urbanization is not particular to African alone. The UN expected that the global urban population will reach 2.5 billion in the next four decade, 90% of this increase will occur in Asia and Africa.

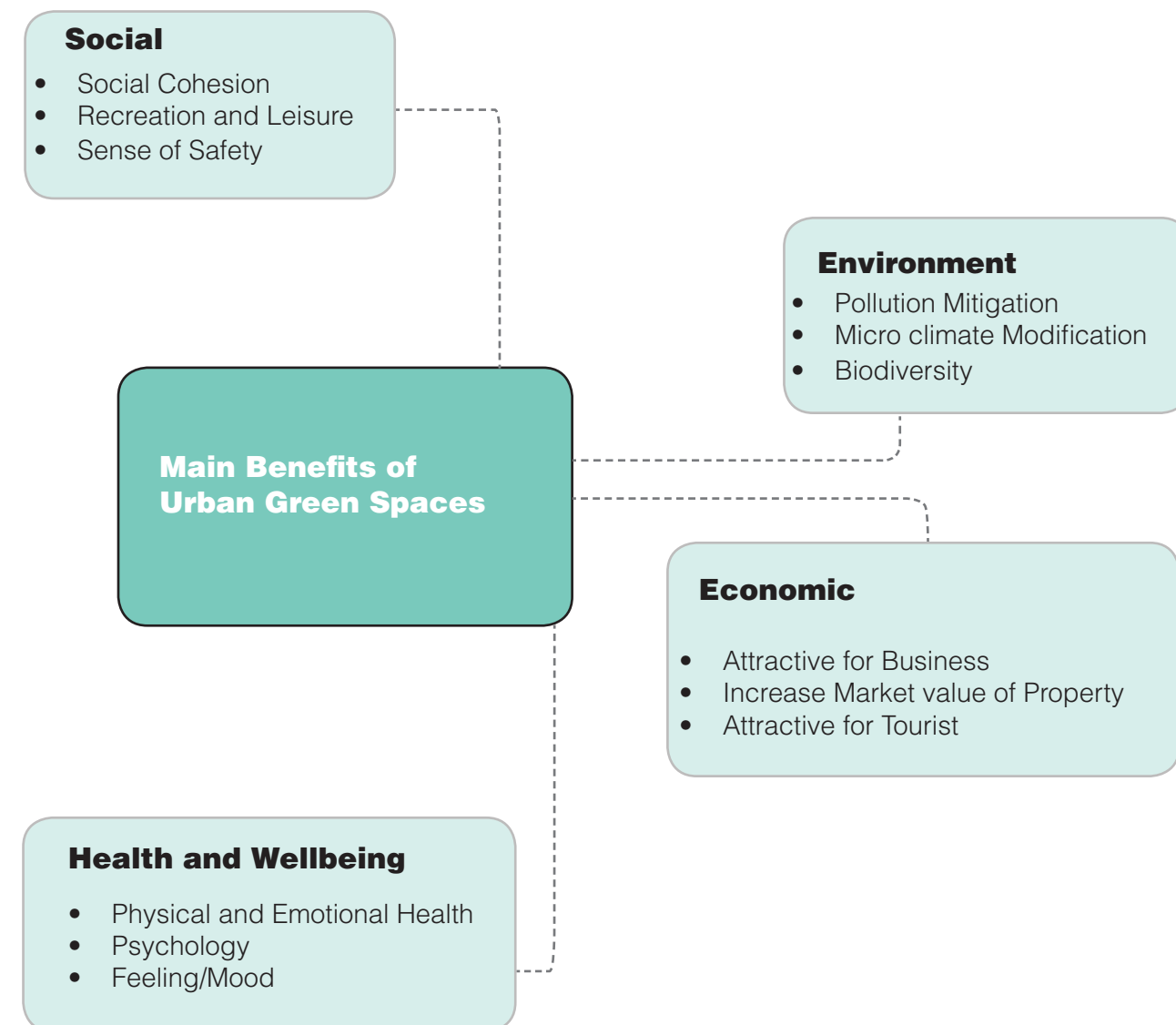
knoema. (n.d.). Gambia Urban population1960-2019. Retrieved 11 06, 2020, from knoema: <https://knoema.com/atlas/Gambia/Urban-population>

WHY GREEN SPACES?

Urban green spaces such as parks, sports fields, woods, lakesides, and gardens give people the space for physical activity, relaxation, peace, and an escape from the heat. Multiple studies have shown that these spaces reduce stress and boost mental and physical health (Templeton, 2019). Green spaces also mitigate pollution and reduce trapped heat in built-up areas. This generation of heat is mainly by the lack of green spaces in an urban area and people, narrow streets, concrete structures, and the case of The Gambia, trash burning.

The rising population around the world is inevitable, especially in urban areas. One of the ways of maintaining and improving people's health and well-being is through green space. Not only do green spaces have health benefits, but they also come along with other benefits such as social, environmental, and economic benefits.

Providing access to green spaces is an essential goal of a health-oriented urban policy that is if reversing the loss of greenery done by urbanization is the priority. Studies have shown that green spaces are suitable for preventing premature death in cities. The researchers found that for every 0.1 increments in vegetative score within 500 meters of a person's home, there was a 4% reduction in premature mortality. These results show just how important green space is when strategizing public health. "This study, set apart by its magnitude, was prompted by the WHO's need to develop a health impact assessment tool for green interventions in cities" Dr. Mark Nieuwenhuijsen (Templeton, 2019)



02

THE GAMBIA & KMC

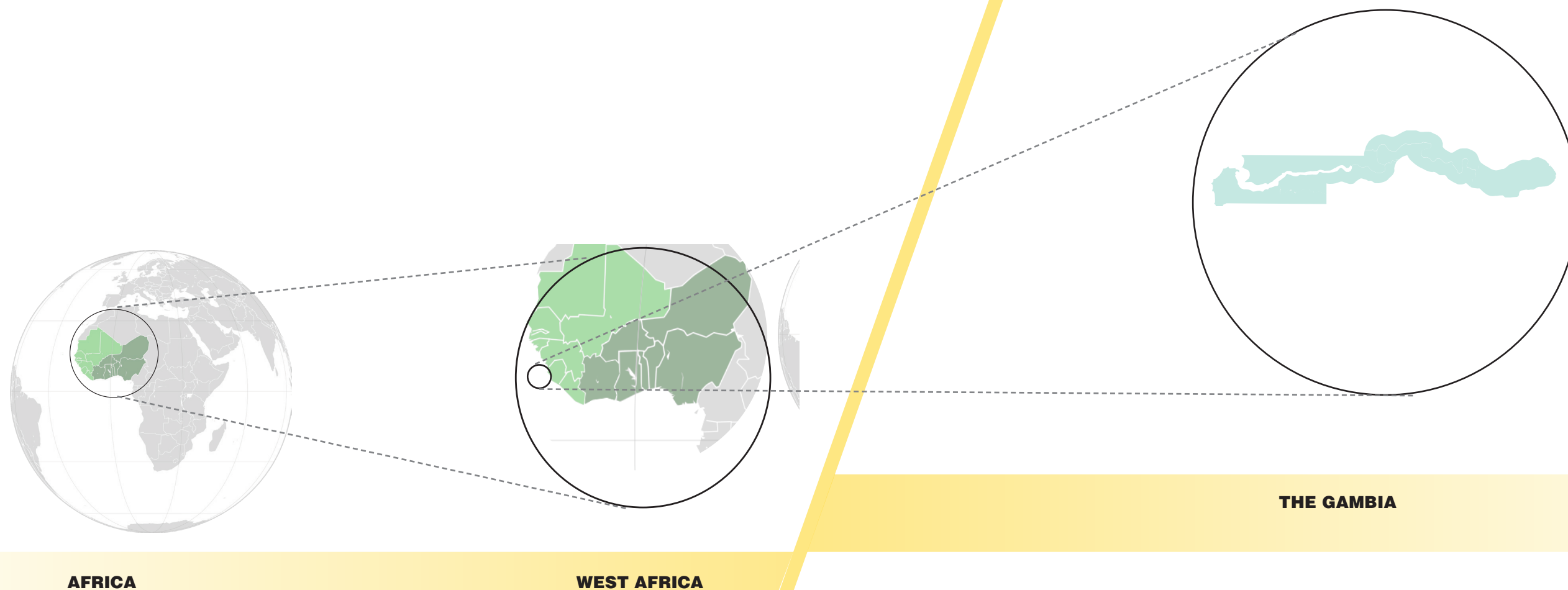


Arch 22 Banjul, The Gambia

THE GAMBIA AND KMC

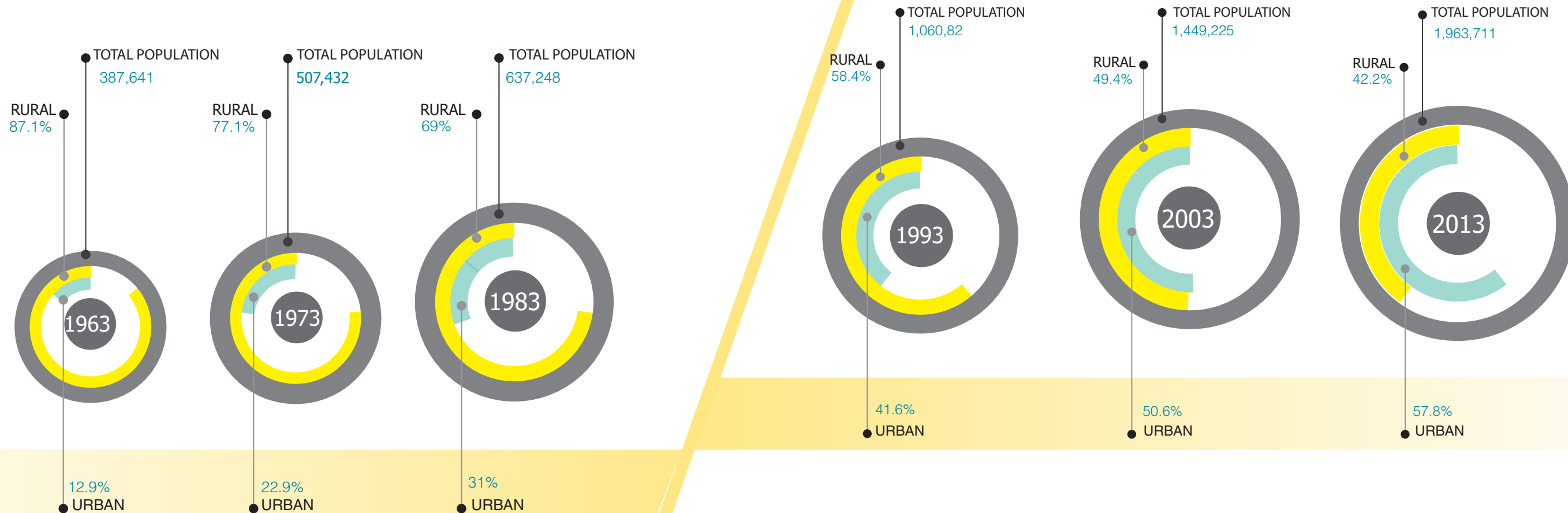
THE GAMBIA

The Gambia is the smallest country in main land Africa. Located in West Africa to be precise, it is surrounded on three sides by Senegal except the West which is the Atlantic Ocean. The population is around 2.3 million inhabitants on a 4,361 square miles land space as of 2019.



GAMBIA'S URBAN POPULATION SINCE 1963

The total population of the Gambia before independence in 1963 was almost 400,000 with 87% of them living in the rural areas and 13% living in the urban areas near the capital city Banjul. As time went on, we saw the rapid rise in the population and the number of people in the urban area became 41.6% of a population of just over 1 million in 1993 and these movements were mostly for economic reasons, access to good healthcare and good schools.



As of 2019, the population has risen to over 2.3 million with 62% living in urban areas (knoema). The rapid rising population has been attributed to many factors ranging for high birth rate, low death rate among others.

Data
knoema. (n.d.). Gambia Urban population 1960-2019. Retrieved 11 06, 2020, from knoema: <https://knoema.com/atlas/Gambia/Urban-population>

THE GAMBIA'S URBAN POPULATION VS NEIGHBORING COUNTRIES

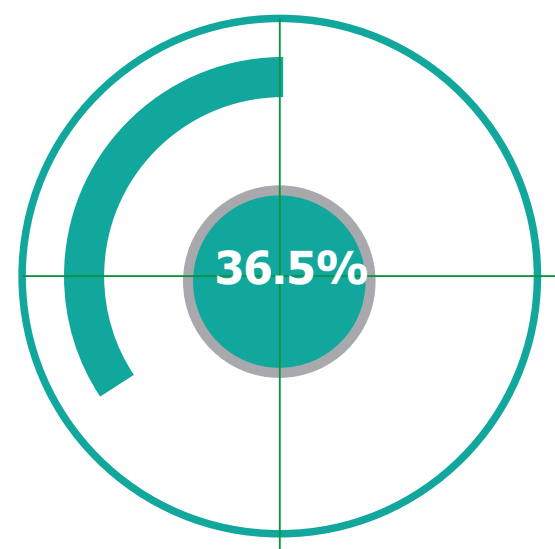


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knoema. (n.d.). Gambia Urban population 1960-2019. Retrieved 11 06, 2020, from knoema: <https://knoema.com/atlas/Gambia/Urban-population>



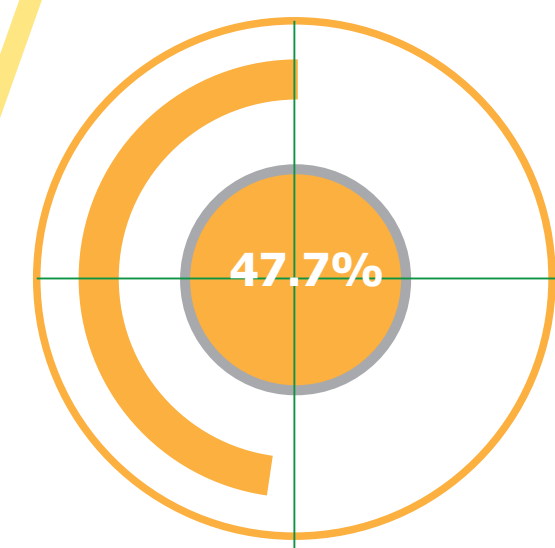
THE GAMBIA

In 2019, urban population for Gambia was 61.9 %. Urban population of Gambia increased from 19.5 % in 1970 to 61.9 % in 2019 growing at an average annual rate of 2.39%. rate of 1.71%.annual rate of 0.95%



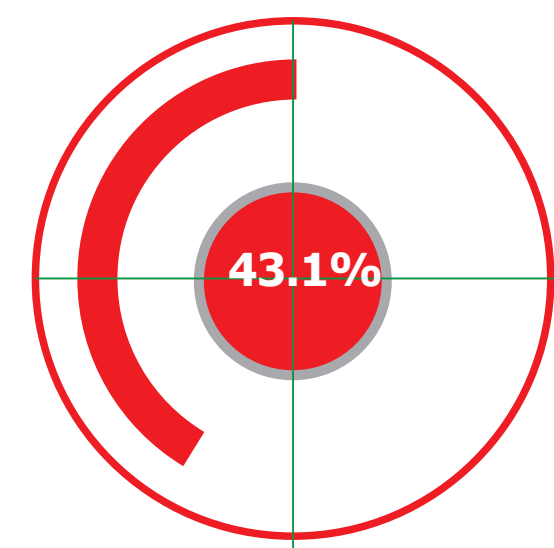
GUINEA

In 2019, urban population for Guinea was 36.5 %. Urban population of Guinea increased from 16 % in 1970 to 36.5 % in 2019 growing at an average annual rate of 1.71%.annual rate of 0.95%



SENEGAL

In 2019, urban population for Senegal was 47.7 %. Urban population of Senegal increased from 30 % in 1970 to 47.7 % in 2019 growing at an average annual rate of 0.95%W



MALI

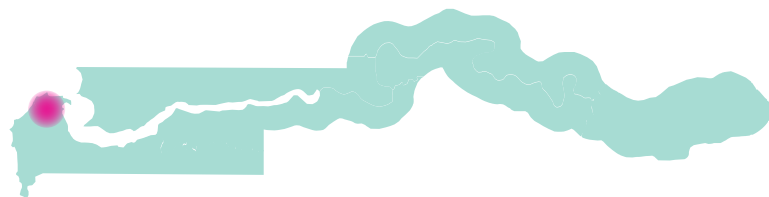
In 2019, urban population for Mali was 43.1 %. Over the last 50 years, urban population of Mali grew substantially from 14.3 to 43.1 % rising at an increasing annual rate that reached a maximum of 2.68% in 1978 and then decreased to 1.84% in 2019.annual rate of 0.95%

FOCUS MUNICIPALITY

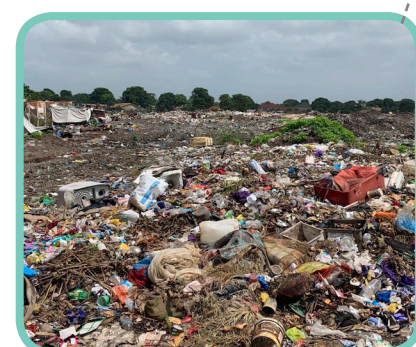
KANIFING MUNICIPAL COUNCIL (KMC)

Kanifing is one of eight Local Government Areas in The Gambia. The municipality has the largest population of any of the administrative districts in The Gambia and lies immediately west of Banjul. The other administrative areas are; Banjul, Brikama, Kerewan, Mansakonko, Janjabureh, Kaur and Basse.

KMC could be a model that the other administrative areas could copy once a comprehensive policy is design to introduce green spaces in its already overcrowded urban settlement. All the other administrative districts seem to be repeating the same mistakes that have happened in KMC. Green spaces are not given priority in the planning of these administrative districts. Real estate developers are most interested in maximizing profits, while Alkalo's, traditionally the founders of a particular community and responsible for selling land, pay no attention to the planning of these communities. Choosing KMC as an area of study could not have been more strategic, especially when looking at the trajectory of the other administrative districts that are bound to suffer the same faith.



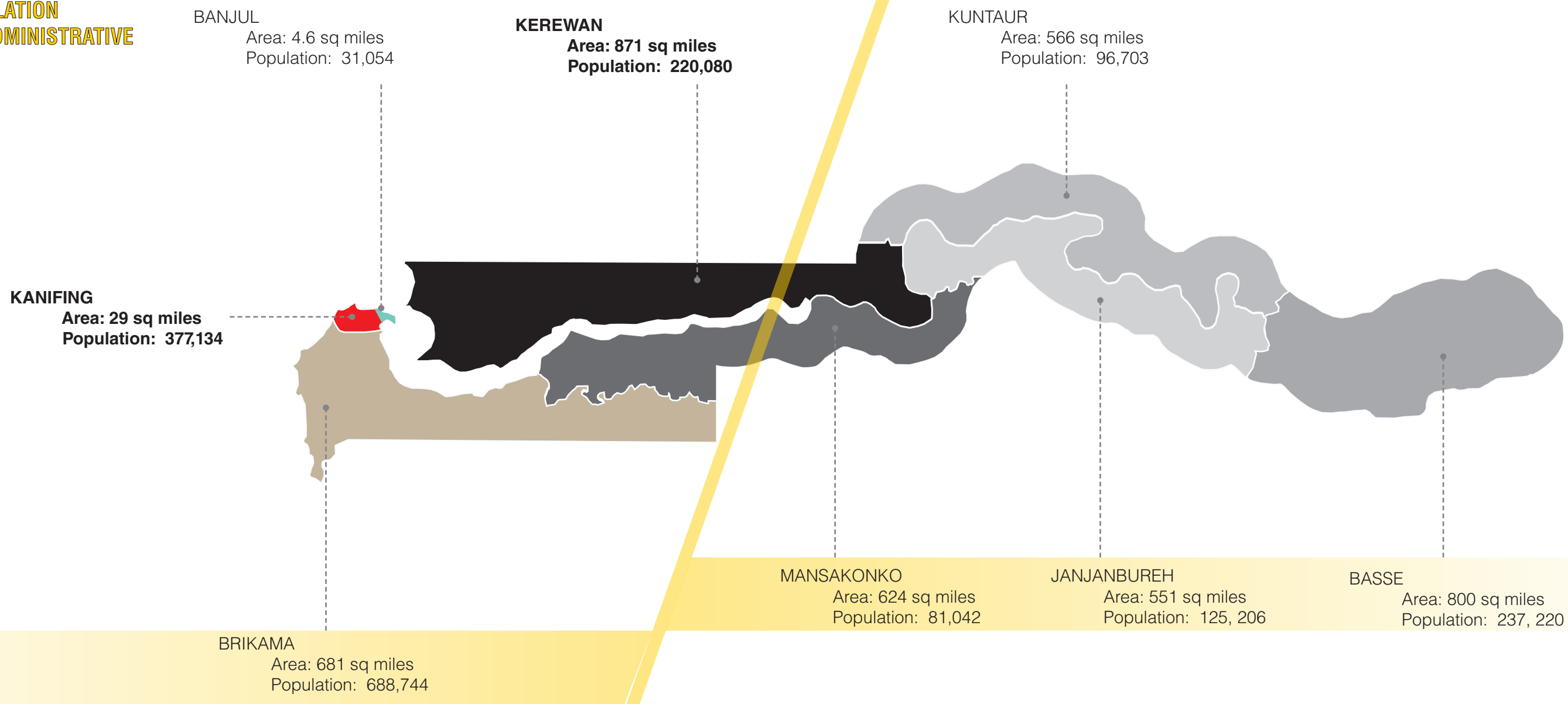
Area: 29 sq miles
Population: 377,134



Map of KMC



KMC's POPULATION VS OTHER ADMINISTRATIVE AREAS



URBAN SETTLEMENT IN KANIFING MUNICIPAL COUNCIL



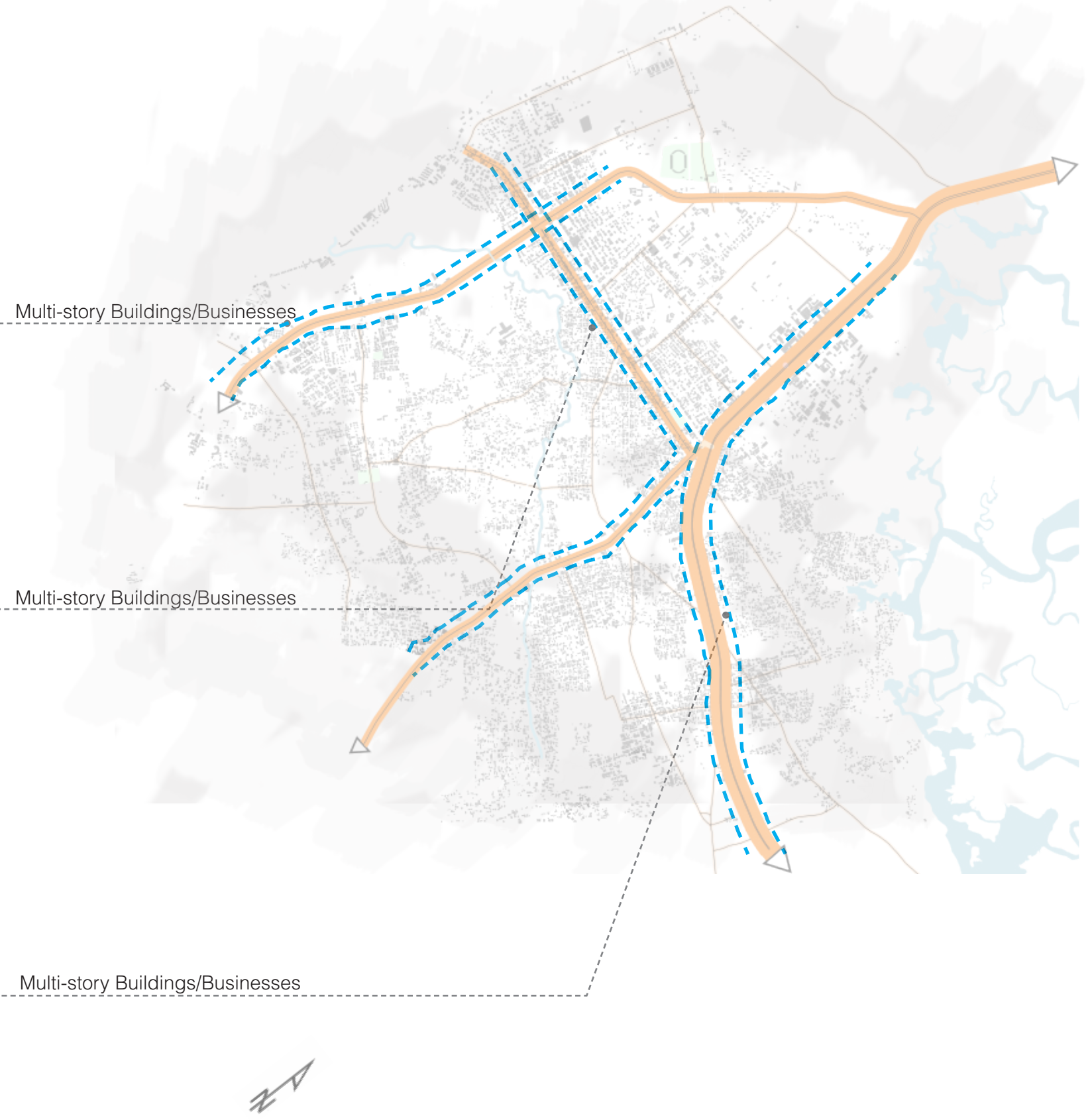
Multi-story Buildings/Businesses



Multi-story Buildings/Businesses



Multi-story Buildings/Businesses



Map of KMC

FIG 1.0

**URBAN SETTLEMENT
IN KANIFING
MUNICIPAL COUNCIL**

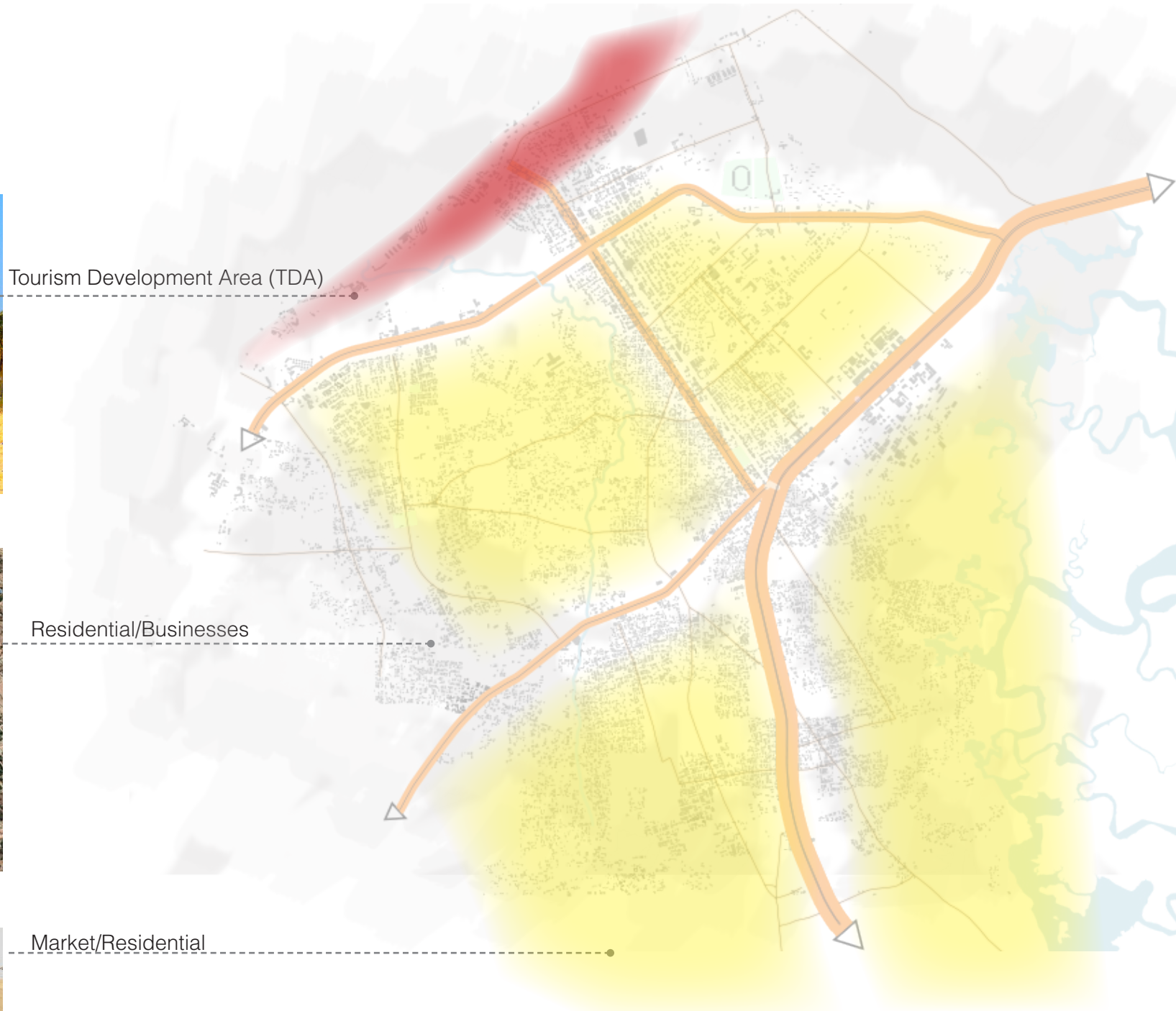
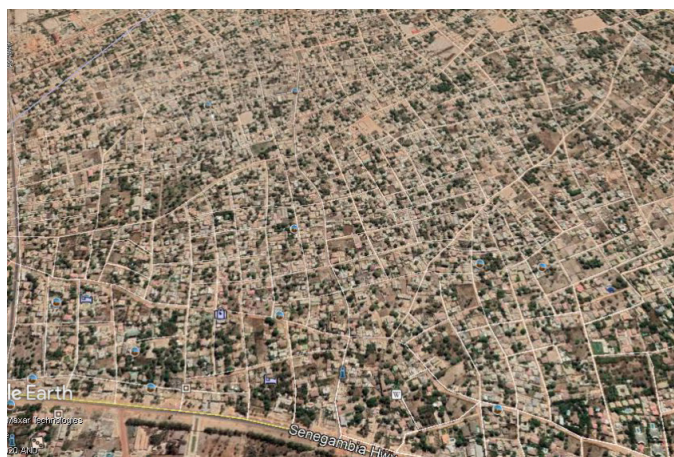
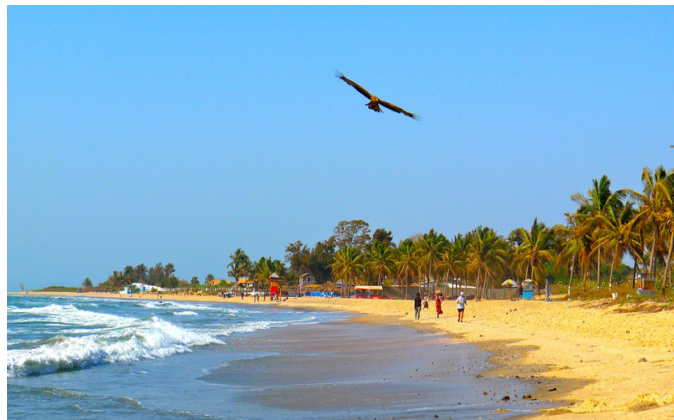


FIG 1.1

Map of KMC

REASON FOR FAST POPULATION GROWTH AND OVERCROWDING

The distribution of The Gambia's population has been greatly influenced by access to the city of Banjul and subsequently to

- education
- employment
- modern living amenities.
- good health care services

As the center for government, commerce, trade, access to Banjul is an important factor for population distribution in The Gambia (UNhabit, 2010).

The limited monitoring and evaluation of the private estate developers by Department of Physical Planning and Housing (DPPH). (UNI HABIT, 2015)

The existing master plans are well outdated and people are not well sensitized with regard to land registration and land acquisition. Land became uncontrollable, even though there is a State Lands Act (UNhabit, 2011).



REASON FOR FAST POPULATION GROWTH AND OVERCROWDING

Population	2,347,706 persons
Population aged 0-14 years	43%
Population aged 15-64 years	53%
Population aged 65 years & above	53%
Urban population	61.9%
Urban growth rate	2.9%
Fertility rate	5.2 birth per woman
Death rate	7.7 per 1000 people



FIG 1.2

03

DISTRACTIONS



Kotu Dumpsite, The Gambia

DISTRACTIONS

DISTRACTIONS

The provisions of green spaces are rarely seen or recognized as an essential component of a livability of cities/ neighborhoods in The Gambia. Urban green infrastructures are infrequently prioritized in planning and development in Africa in general. It is not only the lack of planning and the lack of awareness of the benefits of green spaces, but there is a deeper problem affecting people in the Gambia that are more important to them, and sometimes these issues are a matter of life and death.

These things are issues they deal with daily and sometimes seasonally. With the rampant urbanization and overcrowding in urban areas in The Gambia, urban green spaces are not part of most Gambian priorities. Talking to people, it feels like there is no support or concern from people when green spaces come up. It is not as if they do not know the green spaces deficiency in KMC and the country at large, but there are more significant and more tangible daily problems that they want solutions to first. These distractions include and are not limited to essential Urban services, urban safety, and disaster management, and economics. These distractions are concerning and need attention.



FIG 1.3



URBAN SAFETY & DISASTER MANAGEMENT

- Limited hydrants within the municipality.
- Limited mobility to enable immediate staff response to disasters.
- Poor settlement planning.



■ Fire Station ■ Police Station

Map of KMC

ENVIRONMENT

- Inadequate dumping sites
- Insufficient refuse collection trucks
- Poor maintenance of sewage & drainage pipes



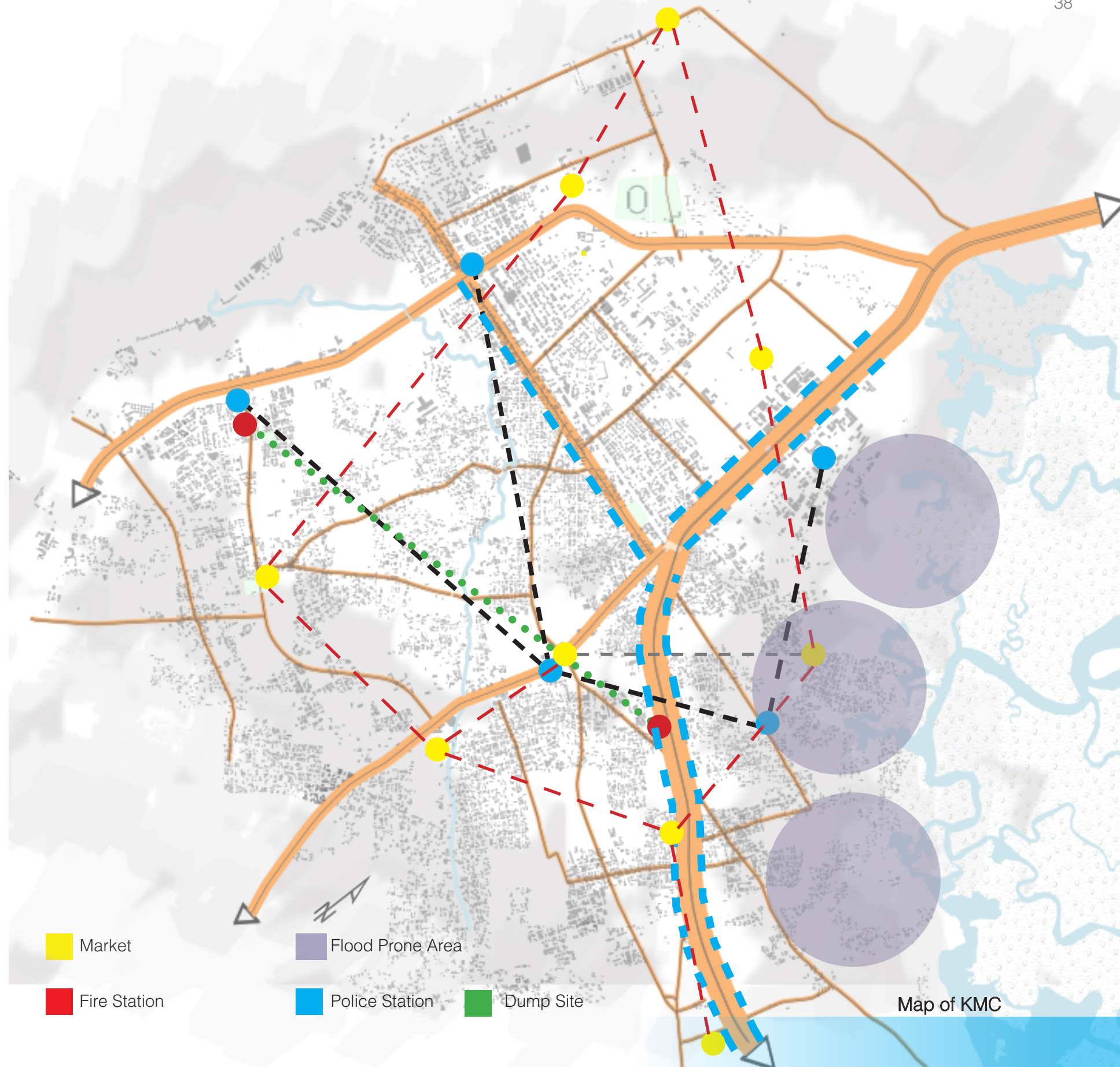
LOCAL ECONOMIC DEVELOPMENT

- Bureaucracy.
- Inadequate market outlets.
- High interest on loans making them inaccessible to the poor.
- Misuse and mismanagement of funds



BASIC URBAN SERVICES

- Poor electricity and water supply.
- Demand for basic urban services exceeds the supply.
- Inaccessibility of certain areas due to poor road network



DISTRACTIONS

The Government of The Gambia has strict legislation against drug production, drug trafficking, and money laundering, whether associated with the drug trade, terrorism, or other illicit activity. Incidences of drug-related offenses are still relatively low in the country (UN-HABIT). However, things have changed a bit since unemployment is skyrocketing and most of the youth are unemployed, leading them to result in arm robbery and drugs. To make it worse, police stations are usually not equipped with vehicles to respond to crimes rapidly. There are limited fire hydrants within the municipality, making it difficult for the fire service to deal with fire outbreaks effectively. There are reports that fire service trucks sometimes show up without water in their tanks at a fire outbreak. The capacity to anticipate and assess possible disaster threats is a prerequisite for prudent decision-making and effective action. However, even practical early warning will not ensure successful preventive action unless there is a fundamental change of attitude towards disaster perceptions. An integrated approach that brings together the effort (UN-HABIT).

A considerable amount of waste is generated in the municipalities daily. KMC does not have the resources to effectively handle the waste generated, which is on the rise daily (UN-HABIT). There is a need for refuse to be stored appropriately and promptly collected for disposal to prevent the waste from becoming a health hazard. As it is made clear in the survey done, pollution is the number one health issue people are dealing with daily.

The Kotu dumpsite is located within a residential area, causing havoc daily with the smoke coming from the location due to it catching fire regularly. The rising urban population deals a massive blow to the available markets in the municipality; they are overcrowded, forcing people to put up stalls on the main roads adding to the business and lack of spaces for one to walk on. The construction of a well-equipped multipurpose center and markets giving every willing business person to participate will help in this situation. There is also a need for skills development and the requisite capacities to reduce poverty and dependence (UN-HABIT).

04

LITERATURE &
PRECEDENT



Medellin, Columbia

REPORT & PRECEDENT

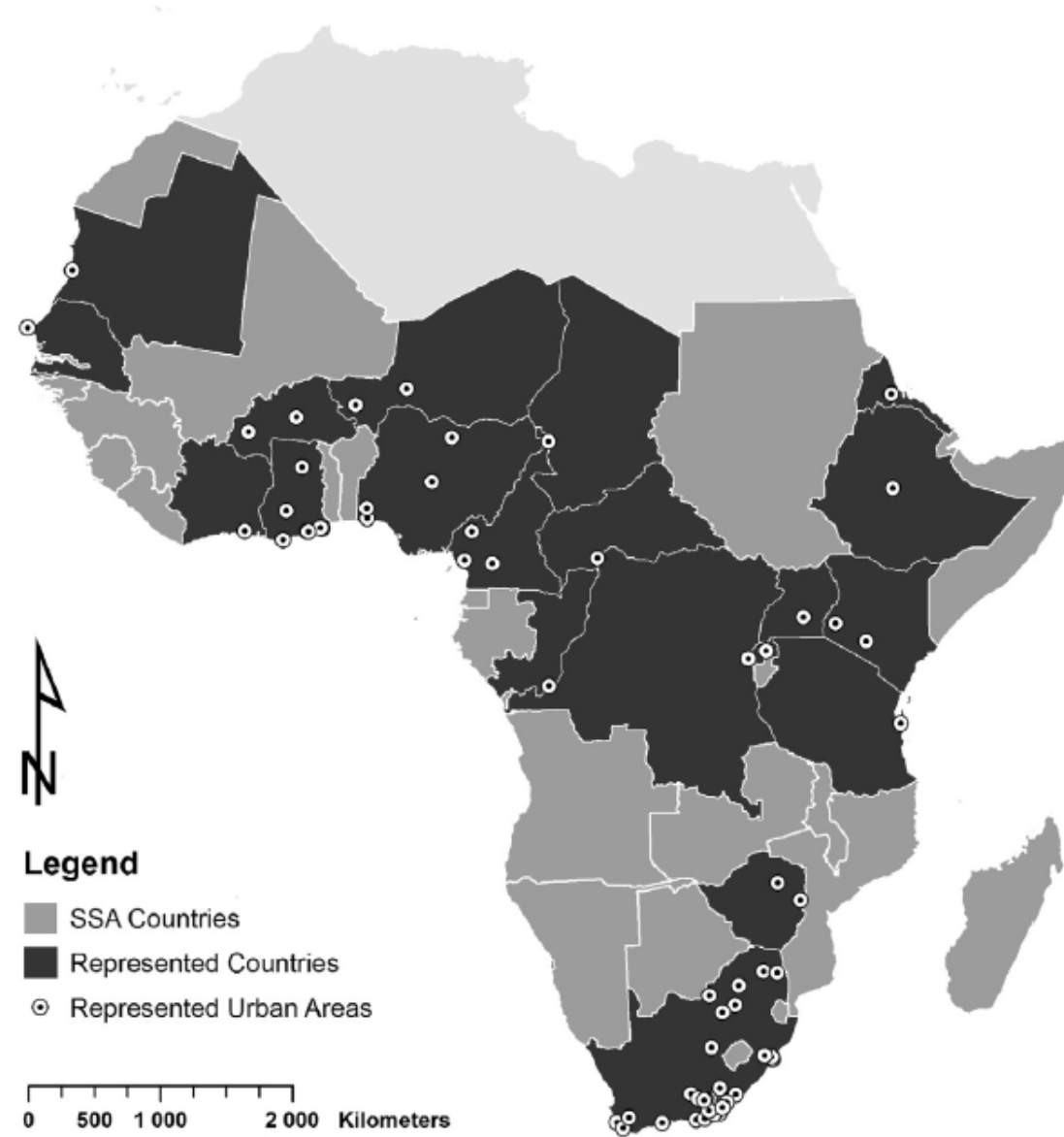
URBAN GREEN INFRASTRUCTURE AND ECOSYSTEM SERVICE IN SUB-SAHARAN AFRICA

Green Infrastructure (GI): Is the network of multi-functional green spaces, newly identified or existing, that is supporting natural and ecological processes.

Green spaces are not prioritize in Africa

- The cost and benefits of urban green infrastructure are rarely considered in expanding cities.
- Urban green infrastructure is infrequently prioritized in planning and development process
- As cities expand, lack of planning forces new arrivals to settle in unsuitable landscapes and these occupied areas can be sensitive to environmental change.
- Urban GI is disappearing in an alarming rate in African cities and the provision of high quality accessible green spaces in cities is rarely recognize as essential component of livability of cities

FIG 1.4



du Toit, M.J., Kotze, D.J., Cilliers, S.S.

MEDELLIN, COLUMBIA

Medellín's has a population of 2.5 millions inhabitants, is the second largest city in Colombia. Also, has particular characteristics due to its geographical location, surrounded by mountains and crossed by the Aburrá River, where the expansion space of the city is limited and generates challenges such as the protection of local ecosystems and the implementation of public spaces (Restrepo)

After enduring years of high crime and violence, Medellín faces a new threat – rising urban Temperatures, driven by climate change. The city's response brings people together, planting vegetation to create a better environment for everyone

Although Medellín is in different continent to The Gambia, they share the same conditions when it comes to overcrowding, lack of green spaces and lack of planning. Green space are incorporated in the already chaotic situation they found them self in. Recent study shows that each Inhabitant has only to 39 square feet of public space like: parks, squares and green areas. According to World Health Organization it is recommended to have 108-161 square feet per habitant, that means Medellín has deficit (Restrepo) and I believe the residence of KMC find them self in the same situation.

- Medellín put significant monetary investments into its poorer communities in an attempt to transform itself from one of the most notoriously violent places in the world into an innovative city of the future.
- Policies involved significant governmental investment in infrastructure and improved services for the poor, including cable cars, urban escalators, and the transformation of a rubbish dump into a garden. This ambitious approach has been credited with the city's rebirth.

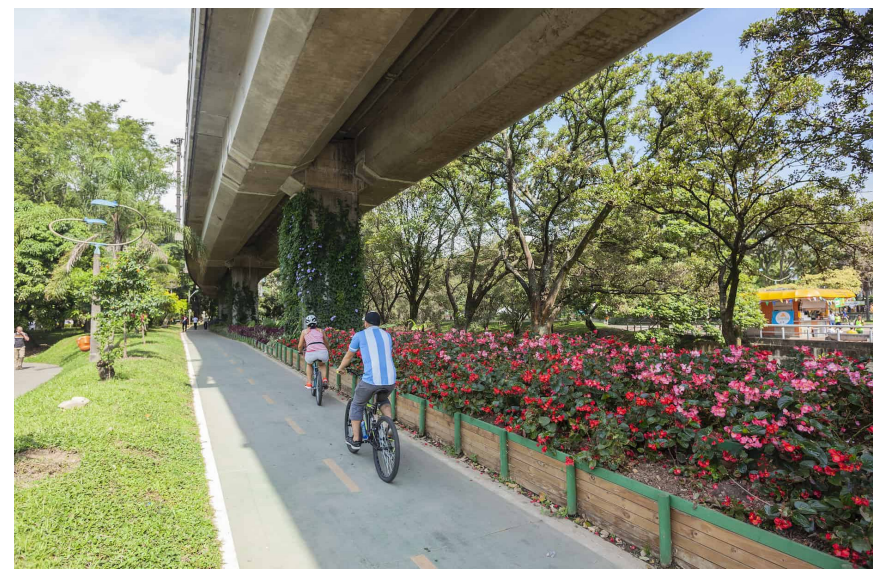


FIG 1.5

With the Green Corridor project, which won the 2019 Ashden Award for Cooling by Nature Award, Medellín's city authorities transformed the verges of 18 roads and 12 waterways into a green paradise that reduces the impact of the heat by 2 degrees.

It was also voted Most innovative city in the world during 2012 by the Wall Street Journal and Citibank through a governmental experiment in social urbanism.

SIMILARITIES BETWEEN KMC AND MEDELLIN



Area: 147 sq miles
Population: 2.2 million

Medellin, Columbia

- Green space deficiency
- Lack of planning
- Poverty
- Faces rising temperatures , worsened by the urbanization
- Air pollution
- Lack of space
- Overcrowding
- Distractions (Basic urban needs and services)

SIMILARITIES BETWEEN KMC AND MEDELLIN



Area: 29 sq miles
Population: 377,134

KMC, The Gambia

- Green space deficiency
- Lack of planning
- Poverty
- Faces rising temperatures , worsened by the urbanization
- Air pollution
- Lack of space
- Overcrowding
- Distractions (Basic urban needs and services)

05

SURVEY DATA ANALYSIS



Market in The Gambia.
Google Image

SURVEY DATA ANALYSIS

SURVEY DATA ANALYSIS

The purpose of this survey was to gain an understanding of the impacts of flooding, overcrowding, and the high heat index in Kanifing Municipal Council (KMC) and to know the solutions in place if there are any. Also to learn about social patterns related to health and well-being and how they are affected by these environmental issues.

The survey consisted of twenty questions focused on the existence of these problems, their effects on people's livelihoods, existing solutions, and suggestions from the survey takers. Seventy-seven people took part in the survey. It was also important to identify two main categories to narrow the questions. Three benefits of green spaces and three urban problems specific to The Gambia. The three benefits of green areas identified were (sense of community belonging, mental health and well-being, and economic benefits) and the three urban problems identified were (Flooding, high heat index, and air pollution). These three problems were identified based on a previous research about what people found to be the most pressing issues they deal with seasonally and on a regular base.

KMC, located west of the capital city Banjul, an island; most people in other administrative districts have some experience with KMC because it is on their way to the capital, where most government activities are concentrated. As it is clear by now, KMC is suffering from green space deficiency, and the only open spaces available are mostly soccer fields where there are hardly any greens. People travel miles to beaches just for ordinary picnics, and the only known park is now a market.

The line of questions began with flooding, and the question asked was (Does flooding occur in the KMC area during the wettest months of the year?) 75% of the responders agreed that flooding indeed does happen during this period. It was essential to understand the most significant impact people face regarding flooding; 49.4% indicated commute problems, 26% stated water contamination, 23.4% stated power outage, and 1.3% said all of the above mentioned happens when a flood occurs.

Many people depend on their daily earnings to be able to provide for their families every day. It was essential to determine if flooding affects the economy in KMC, and 97.4% of the responders said yes, it does. To further understand how it affects the economy, known economic areas were listed for the responders to choose.

76.6% agreed that Taxis and buses are unwilling to go to certain areas, 10.4% agreed that people stay at home, 7.8% agreed that businesses are close. The rest were lost household items and all of the above-mentioned economic problems.

Taxi drivers will reject passengers because they are scared of getting stuck in areas with poor road networks, and most people will stay home because they will not want to get in contact with the contaminated water when they go out, leading to health issues. By people staying home, most businesses do close because they infrequently see anyone to do business with them.

It is individual who take matters into their own hands to cope with flooding by trying their best to make sure that the water move. During heavy rains, they would go out to create swales for the water to move from their stagnant positions. It is also individuals who also spent their own money to fill up land depressions with lose stone, earth or sometimes gravel to prevent stagnation.

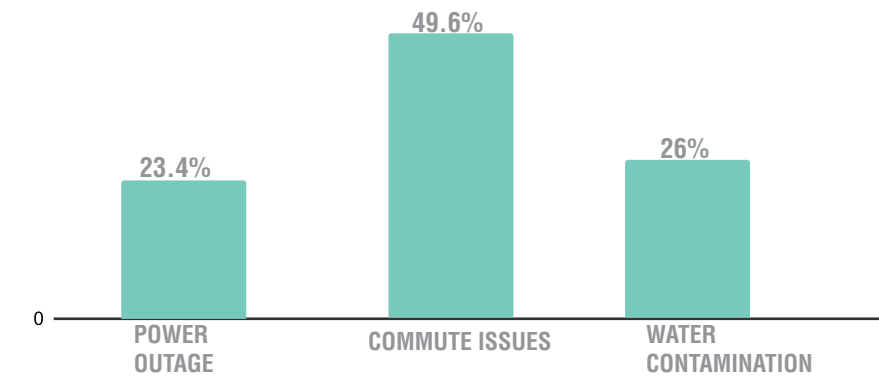
SURVEY DATA ANALYSIS

Finding out if KMC has any mitigating solutions for flooding in the area, the question was; (If there exist any mitigating solutions for flooding in the area?), and 62.3% percent said yes, while 37.7% said no. This result was somewhat surprising because it is clear that they would not be dealing with yearly flooding if there were any working solutions. In anticipation of their responses, a follow up question was asked to choose from the most popular solutions available from the choices provided. 81.4% said drainage systems, 13.6% said retention ponds, 28.8% said wastewater management systems, and the remaining said all of the above. The understanding gathered is that most if not all of those who answered this question thought the question was about what solution KMC should provide for the flooding.

There are few open drainages, mainly on the main roads, and most of them are clogged. People throw debris in them, thereby reducing their effectiveness. There are no known of such anywhere within the municipality regarding retention ponds and wastewater management systems.

As highlighted from the inception of this project, KMC is overpopulated and overcrowded, with most people moving to the urban areas for economic reasons, good healthcare, and better schools. KMC is the closest municipality to the capital. The majority of the government offices are centered between these two locations, making motorways very busy during morning and afternoon rush hours. It is overcrowded in the sense that there are so many people, cars and compounds that are seemingly placed randomly, thereby creating a negative impact on the mental health and well-being.

WHAT IS THE BIGGEST IMPACT OF FLOODING YOU FACE ON A DAILY BASIS IN KMC?



SURVEY DATA ANALYSIS

Not only are motorways busy and overcrowded, but every other place also seemed to be crowded. The question was; (Do you experience overcrowding in the KMC area?). 97.4% said yes as expected. Some preconceived locations were identified for them to locate where they feel overcrowded mostly. 6.5% stated highway, 6.5% stated in the city, 9.1% said taxis and buses, 36.4% said market, and the majority, 41.6%, said everywhere. Be that as it may, people still go on with their daily businesses, seemingly ignoring the circumstance they find themselves in.

It was also prudent to ask (Has overcrowding affected them emotionally?), 90% said yes. Furthermore, to prove the hypothesis set forth that KMC is overcrowded, it needed to be validated. (Are there any solutions that exist that they know of in KMC that deals with overcrowding?), 68.8% said no. In comparison, 30% said yes, and a few chipped in with what they think should be done and said: "expansion of roads will help in the overcrowding."

A city that is not well planned well, a city where zoning and planning regulations are not adhered to, a city where authorities do not punish lawbreakers of the zoning and planning laws is bound to be overcrowded. Especially when new settlers are left to built-in unsuitable lands, tearing apart the only greenery available unknowingly lifting one of the protectors saving them from so many artificial and natural phenomena, then disaster is bound to happen.

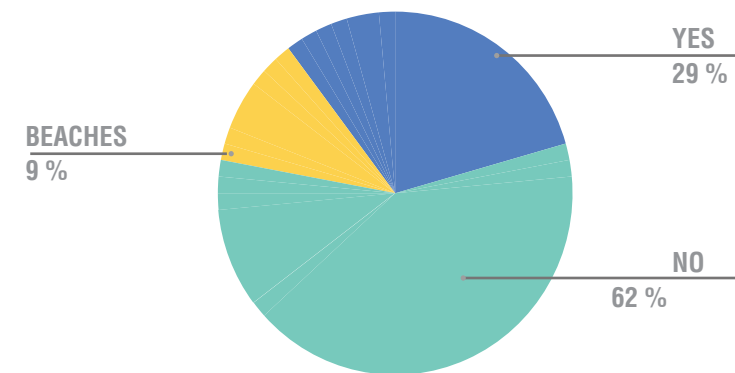
SURVEY DATA ANALYSIS

To further understand the impact of lack of rubbish collection, the rubbish burning at the Bakoteh dumpsite located within the municipality surrounded by residences, schools and businesses have on the inhabitant; the question was; (Do you experience air pollution in KMC?). Overwhelmingly 94.8% said yes, they experience air pollution in KMC. Furthermore, 79.3% said air pollution impacts their lives daily in various ways. The ways air pollution affects their lives are; 75.3% said breathing issues, 57% said terrible smell, 20.8% said visibility issues, and the rest said all of the above. There could be many causes of air pollution, but in KMC, 75.3% said trash burning is the primary cause of air pollution in the area. People burn trash within their properties because there are not enough refuse collection trucks.

However, the official dumping site located within a residential neighborhood catches fire all the time, thereby contributing constantly to air pollution. Cars came in second as the primary contributor at 57%, factories at 10.4%, and the rest said all of the above.

Finding out if there exists a solution for air pollution in the KMC area, it was asked (Are there any mitigating solutions for air pollution in KMC?), 53.2% said no, and 45% said yes. However, it is hard to pinpoint what those solutions are from the 45% who said yes, there are solutions. That said, the survey takers proposed a few answers. Limit trash burning, proper waste management, and recycling were some of their suggestions.

ARE THERE ANY PUBLIC PLACES IN YOUR COMMUNITY WHERE PEOPLE OF ALL AGES & GENDER CAN EXERCISE



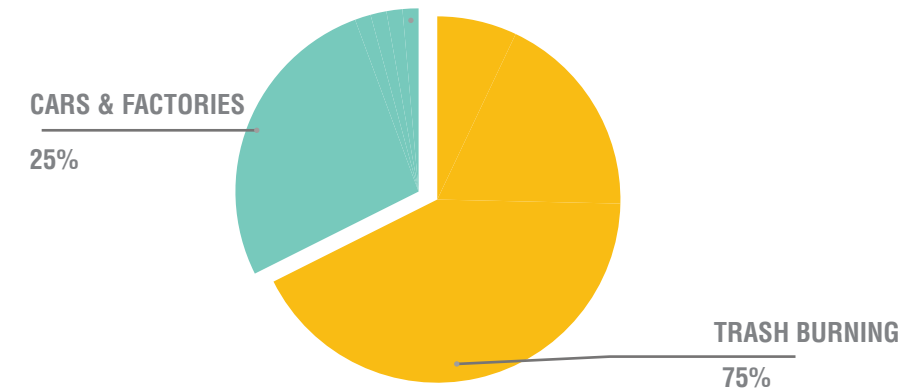
SURVEY DATA ANALYSIS

The Gambia has a tropical climate with distinct dry and rainy seasons. There is uninterrupted dry weather from November to mid-May, with temperatures as low as 18 °C (64.4 °F) in Banjul and surrounding areas during the night. Hot, humid weather predominates the rest of the year, with a rainy season from June to October; during this period, temperatures may rise as high as 43 °C (109.4 °F) but are usually lower near the sea (Wikipedia). With this temperature in mind, the question asked was; (Where do you relax outside of your homes and workplaces to deal with the high heat index in KMC?), 54.5% said beaches, 44% said there are no such places, 5.2% said parks, and 2.6% said home. As mentioned earlier, people travel miles to go to beaches for picnics, and sometimes they are not allowed to use some of these beaches because of the tourist. The most unfortunate thing about this question's responses is that almost half of the responders believe there are no such places in the KMC area where people can deal with high heat index outside of their workplaces and homes.

Green spaces are good for our health and mental well-being, and their deficiency can increase or worsen them. Taking walks at parks or exercising within greenery can improve our health and mental well-being. With this in mind, the question was; (What do you do to cope with mental health and stress?), 51.4% said isolation, 35% said sleep, 5.4% said smoke, 2.7% said nothing, 4% said to hang out with friends, and the rest of the answers were exercising, listening to music and keeping engaged. It is regrettable to see that half of the responders isolate themselves to deal with mental health and stress because such places do not exist.

There are many soccer fields within the municipality, and they only cater specifically to young, energetic, and primarily male users. Appropriately, It was asked (Are there any public places in your community where people of all ages and genders can exercise for their physical well-being?), 62.3% said no, 37.7% said yes.

WHAT ARE SOME OF THE CAUSES OF AIR POLLUTION IN KMC?



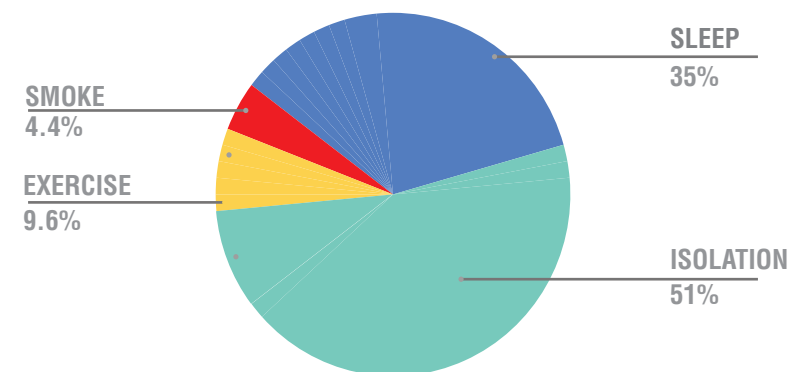
SURVEY DATA ANALYSIS

The places identified were beaches that require a long drive and the Buffer Zone, which is now a market. Equally, the question was; (Are there any places in KMC that people go-to for the release of stress?), 63.6% said no, 35% said yes. The locations identified in this case too were beaches, the Buffer Zone, clubs, and restaurants. Meaning the beach is the most popular place for people to hang out to release stress and exercise for their physical and mental well-being. Lastly, it had to be determined if any private businesses offer people of KMC to exercise for their physical well-being. 54.5% said yes, and 40.3% said no, and the places listed were gyms and football fields.

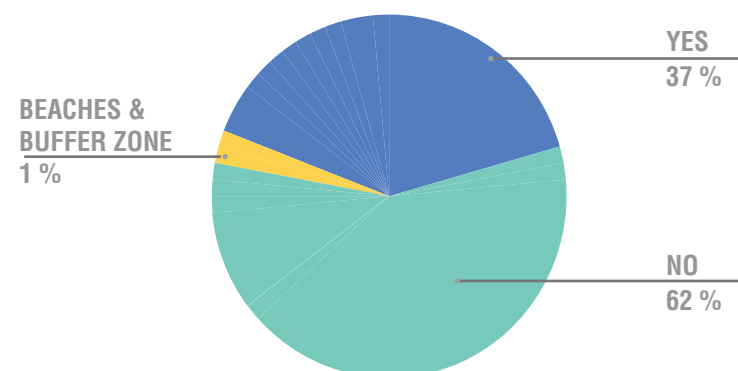
With all this information, it is safe to say that KMC's problems are much bigger than just green space deficiency. The interventions will solve some of these issues (flooding, mental health and well-being, pollution, and social gathering for all). As suggested, the distractions that the people of KMC are facing from lack these basic urban needs, good roads, and flooding. It is hard for them to think about green spaces, which are needed but not a priority when dealing with other pressing issues.

It will require educating people on the importance of green spaces, how it impacts their health and mental well-being, and the environment at large for people to buy into the idea that green spaces are an emergency need for people of KMC.

WHAT DO YOU DO TO COPE WITH MENTAL HEALTH AND STRESS?



ARE THER ANY PLACES IN KMC THAT YOU GO TO FOR THE RELEASE OF STRESS?



06



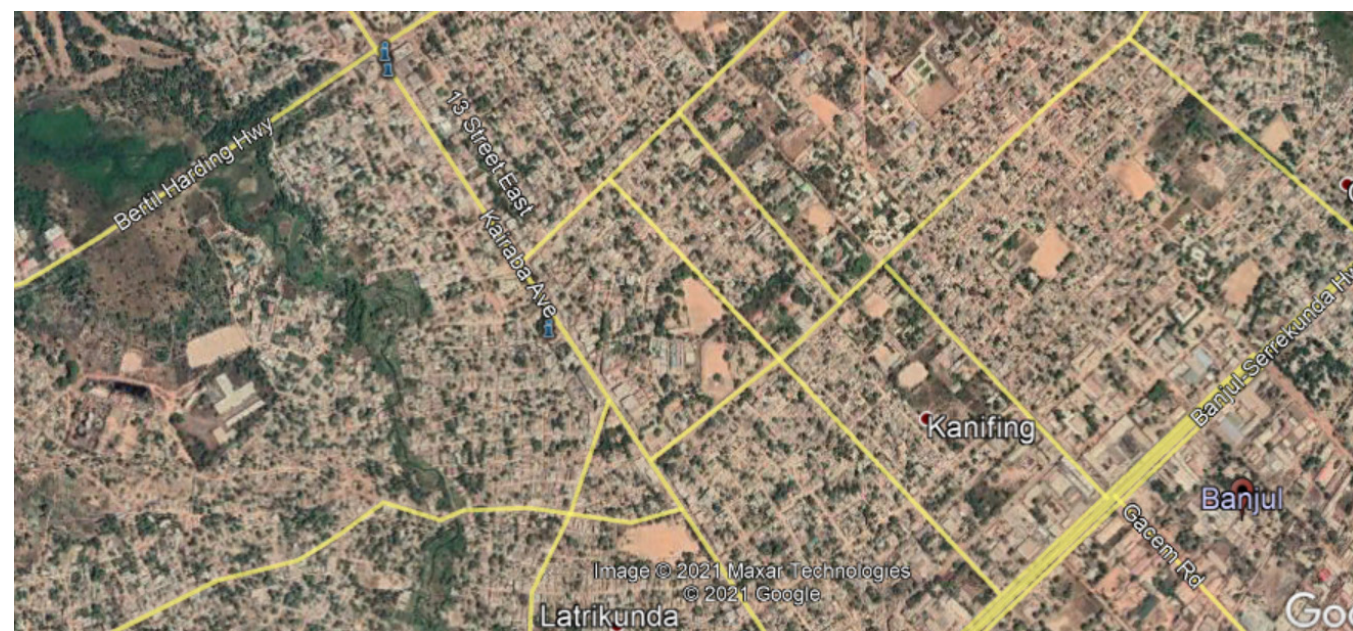
GREEN REVOLUTION

NO POLICY FOR GREEN SPACES IN KMC

The municipality has no set policies for green spaces, as the deputy director of planning was spoken to in January 2021. They are dealing with the lack of spaces for creating such and the challenges of acquiring land from individuals. Being the most populous area in the country, expanding public facilities becomes necessary as the demand for such increases with urbanization. Expanding markets, for instance, becomes necessary with demands for new stalls and the overcrowding increased in the markets around the municipality. An example the deputy director of planning gave was that they intended to expand a particular market within the municipality, but they encountered hike in prices from the properties' owners close to the market.

These property owners had intended to sell their compounds because of the proximity and the noise coming from the market disturbing their livelihoods, but as soon as they heard that the municipality wanted to buy to expand the markets, they raised their asking prices.

The municipality does not own land and is not involved in managing land apart from maintaining a property register for rating purposes. Consequently, municipal authorities cannot embark on poverty alleviation projects such as low-cost housing schemes without allocating such land by the State (UNHABIT, 2011).



Ariel view-KMC



- KMC lacks space for expansion
- There are only two estates (properly demarcated neighborhoods)
- KMC has only one functioning park
- KMC has to buy land to do new development
- They have NO policy in place to introduce green spaces in the municipality
- KMC is not independent from central government
- Faces difficulties buying land for development

EFFECTS OF GREEN SPACES TO OUR EMOTIONS

The green initiatives shown in these pictures located in the municipality's downtown area were not from any set policies that are studied. They were just out of a whim to beautify the area. The initiative started at a location around a roundabout and pictures posted online, and it brought about a reaction of appreciation from the public, encouraging them to do more of such. These encouragements made them expand from the roundabout to the other areas within that downtown area. It shows that even though people rarely talk about green spaces because of the distractions, once they experience it through passing by daily. It brings some connection between their brains and the environment. It brings a sense of appreciation. However, it is hard to say if the municipality intends to expand such beautification to other areas apart from downtown or develop policies for the whole municipality.

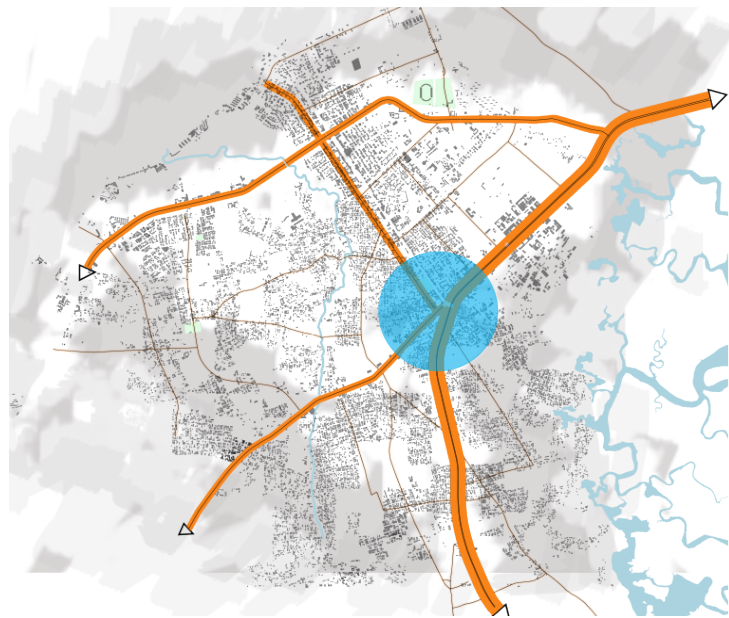


FIG 1.6



BOTTOM UP APPROACH

From this point on, a change of approach is the way to go after realizing that the “top-down” approach that was anticipated where the authorities (KMC) will come in and try to elevate the burden that its residents are dealing with when it comes to the lack of green spaces are no longer tenable. A “bottom-up” approach is what is needed to provide relief for the residence of KMC. As the saying goes, “there should be no taxation without ,” but there are times when governments’ do not extend these efforts in certain areas, and sometimes there is a lack of will from the authorities (KMC). Residents of KMC have been taking care of their problems since anyone could remember, especially when it comes to flooding. They have taken the matter into their own hands by using their own money or their human resources to deal with such issues. The bottom-up approach is not to add another burden on their already difficult situation, but a way of showing them what is possible, giving them an alternative to what was at the beginning.

A revolution is needed, not a political revolution per se but a green revolution that revolutionizes the administrative district through the efforts of the ordinary people. Through this approach, the attention of the authorities will be put to the forefront of the growing need for green infrastructures in Kanifing, and it could lead to them(KMC) wanting to play a part in the revolution.

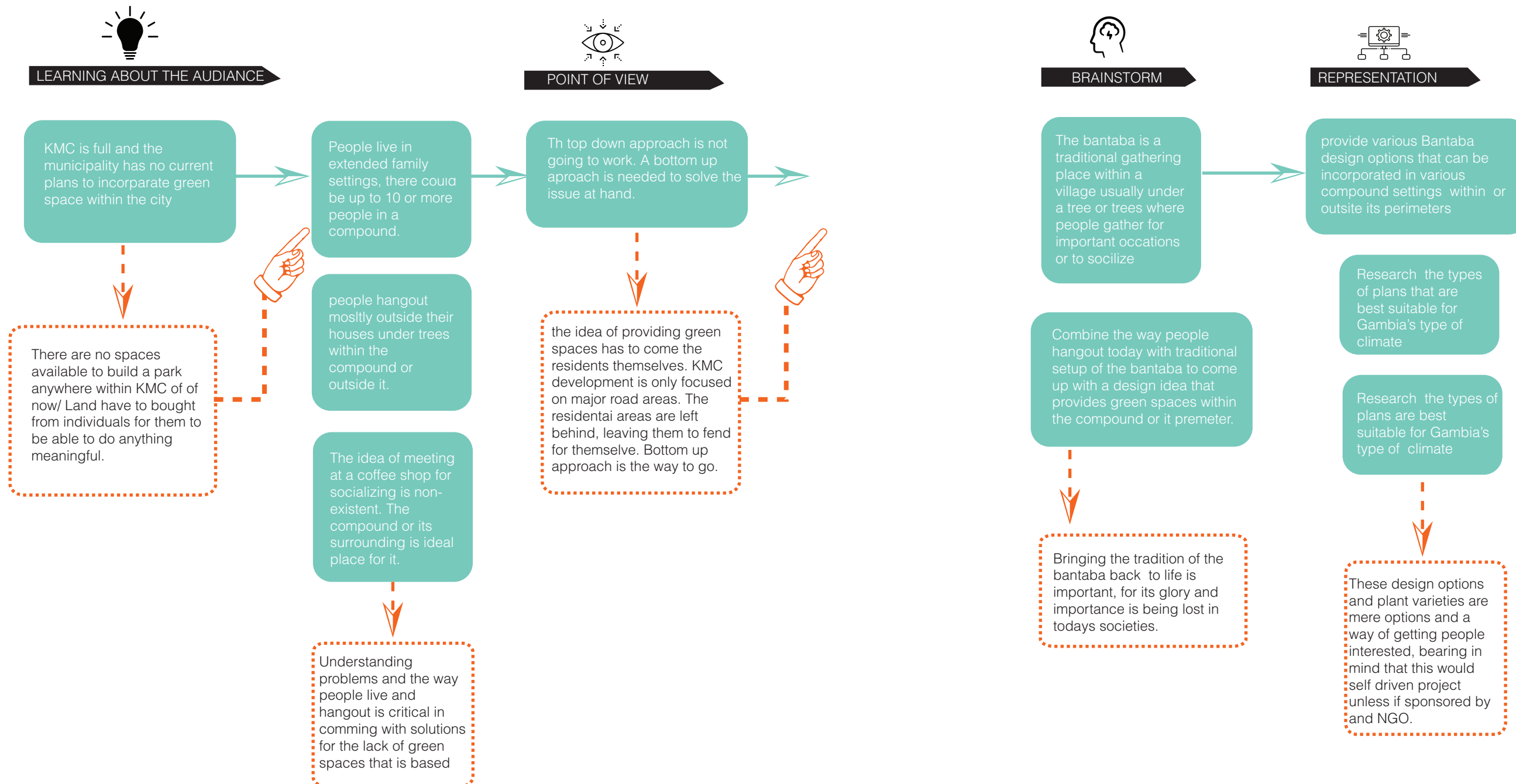
Top Down



Bottom Up



FRAME WORE - DESIGN PROCESS



THE BANTABA

Early in Gambian history, a giant tree formed the basis and foundation of the village. Due to its natural shade, it became a prominent meeting place for men to get out of their huts and the stifling sun and heat during the day. They discussed issues pertinent to the village, such as ceremonies or communal works (Accessgambia). Bantabas were almost very close to the compound of the village's founder, which makes it easy for any visitors visiting the village to be easily directed by the village head (Alkalo/Alkali) to the correct compound they intend to visit.

Nowadays, Bantabas are rarely in urban areas. As for KMC, most places that used to be bantabas still keep the name, but the actual bantaba and its functions are not in existence anymore. The tree or trees and the spaces that made up the Bantaba are no longer available; the lands have been used for something else by the community, or the people who own them have built stores or houses in those spaces. Today, Bantabas are only in villages and other administrative areas that have kept that tradition

FIG 1.7



FIG 1.8



THE BANTABA SET UP

Today, it is used to describe any wooden or cement construct which is located within the confines of a family compound or other property with a roof made of grass or corrugated iron sheets with pillars made of wood/ bamboo or concrete (Accessgambia).

Ngerr Village, Google Earth

FIG 1.9



FIG 1.10

COMPOUND LAYOUTS & STREETS



Most families in KMC live in an extended family setup, where parents live with their children, their in-laws, and grandchildren. For the whole family to hang out together, an outdoor setup is usually required. Mostly fenced, All compounds have six to eight feet cmu walls. These fences are sometimes given designs or painted to give them an appealing look. As one walks on streets, multiple hangout spots can be visible outside fenced compound walls.

Other than electric and telephone poles, there is hardly any development that comes from KMC. Residents have taken that responsibility on their own, ranging from clearing grass, moving trash to the use of their human resources to help neighbors put off fires before the fire service shows up without water. Shops are built within compound walls to cater to the needs of essential commodities because most residents live far from any markets.

These businesses/shops within compounds seem legal because they exist throughout the country, and there are no stories of the authorities cracking down on them.



FIG 2.0

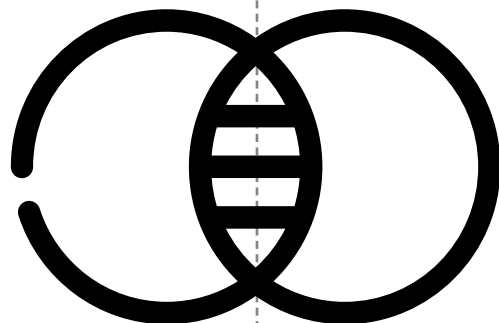
THE MINI BANTABA

Individually driven

Looking at activities of people daily were people hangout under trees outside, or within their compounds to deal with the sun and heat during the day, bringing back the Bantaba with slight modification on its functions from being the center of the village or community where all essential activities happen, it will now be a private initiative. Gambians are accustomed to hanging out with family and friends at their homes. Mostly under trees within and outside their compounds. They rarely meet up at coffee shops or bars to hang out.

The Campeh (hanging out spot) is the usual meeting place for friends and families, usually a spot under a tree. It is ideal to look into the tradition of the Bantaba and the way people hang out nowadays to provide individually driven solutions. This mini Bantaba idea will aim encourages residents to plant more trees on their properties and not wait on the authorities to provide green spaces where the will does not exist.

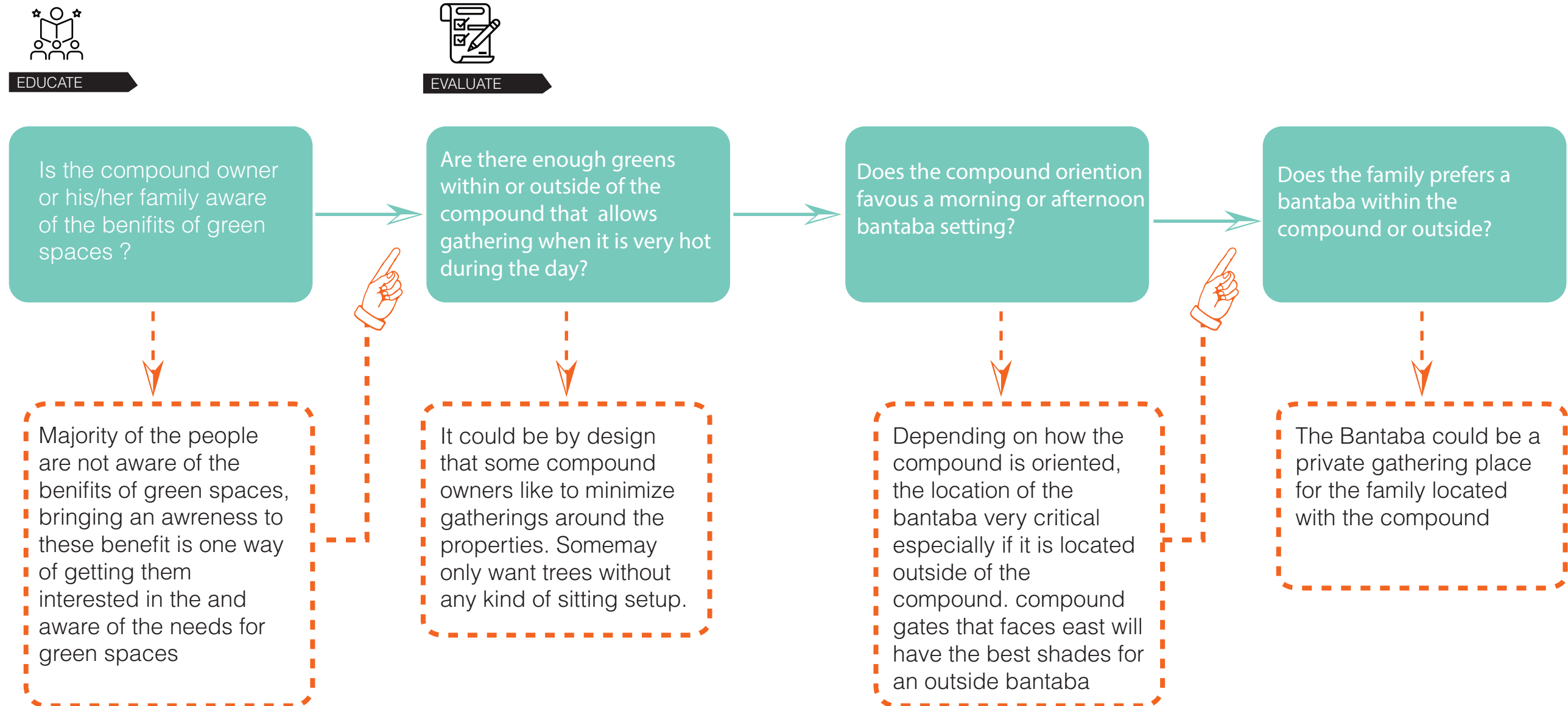
Today



Tradition



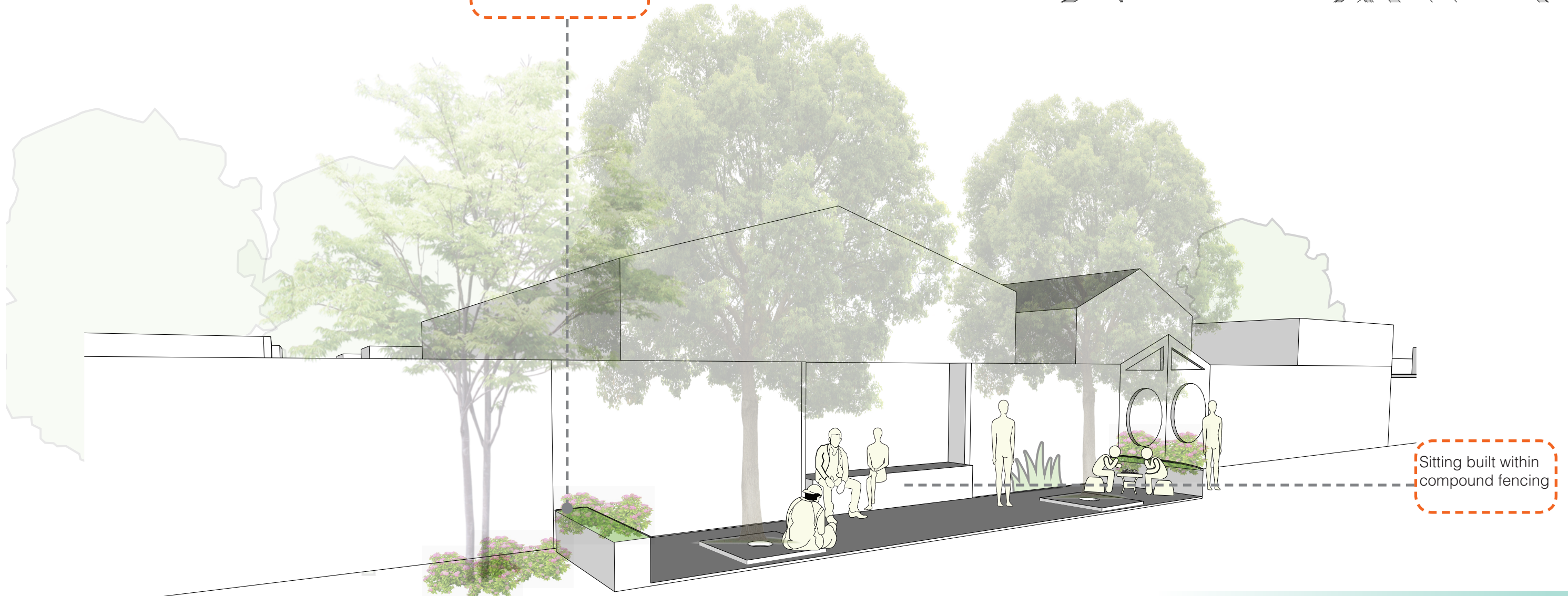
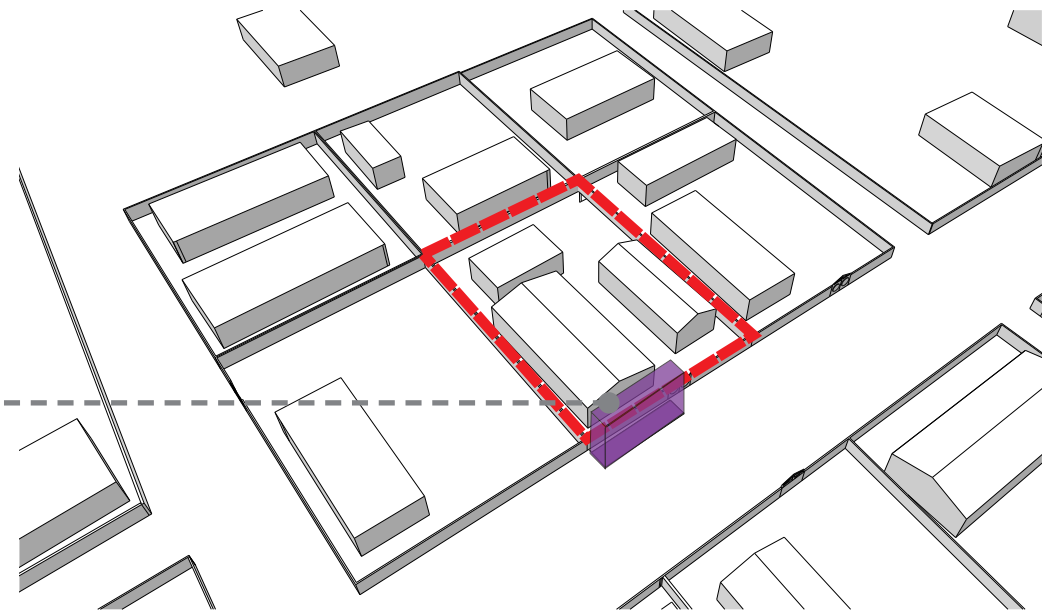
FRAME WORK - EVALUATING COMPOUNDS



DESIGN OPTION OUTSIDE COMPOUND FENCE

The outdoor Bantaba sitting hangout is very common among Gambia. Utilizing this to their advantage by designing sitting arrangements and planting trees not only enhances well-being but also gives a good

Planters on built up platforms for protection from cars

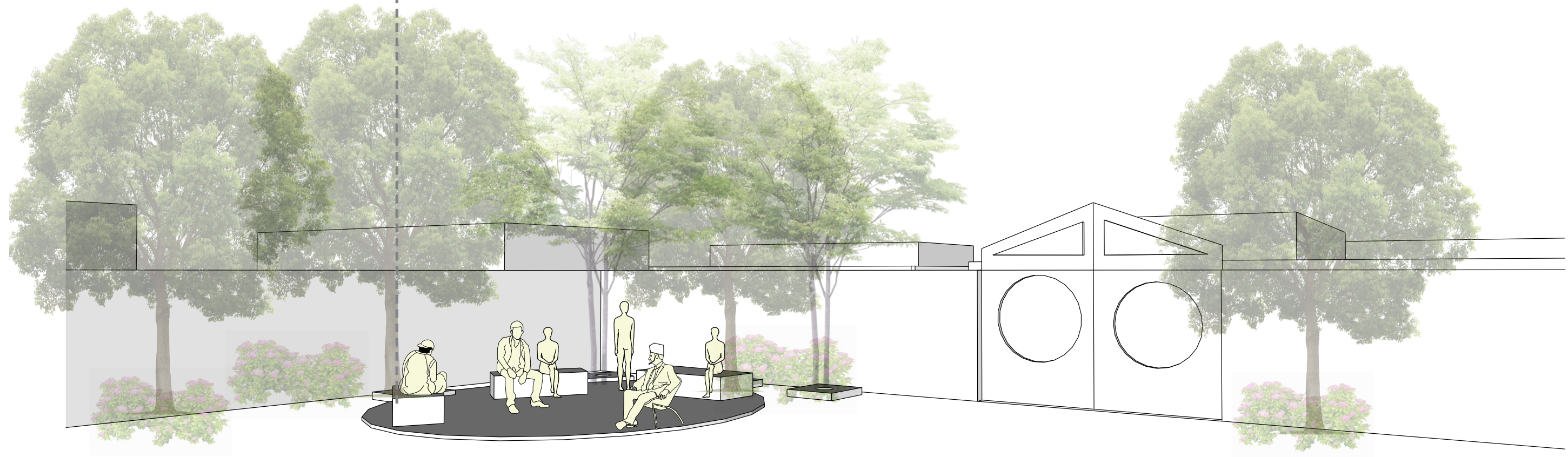
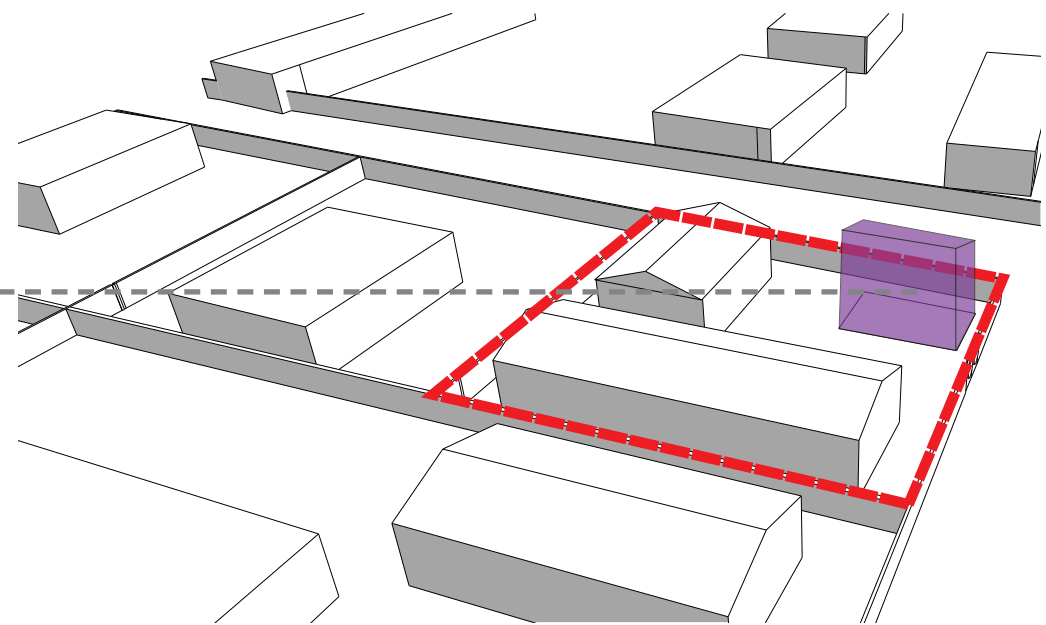


Sitting built within compound fencing

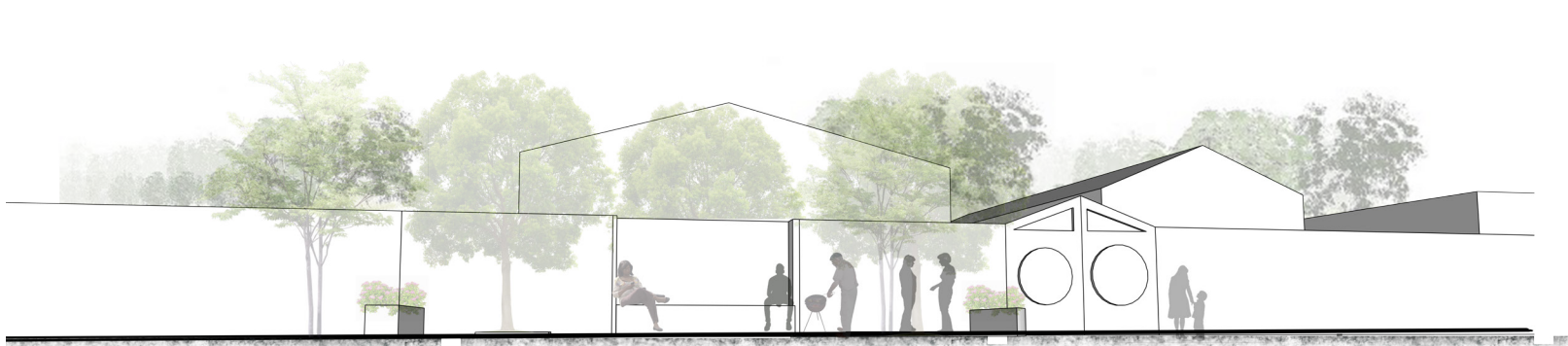
DESIGN OPTION INSIDE COMPOUND

Sitting built within compound fencing

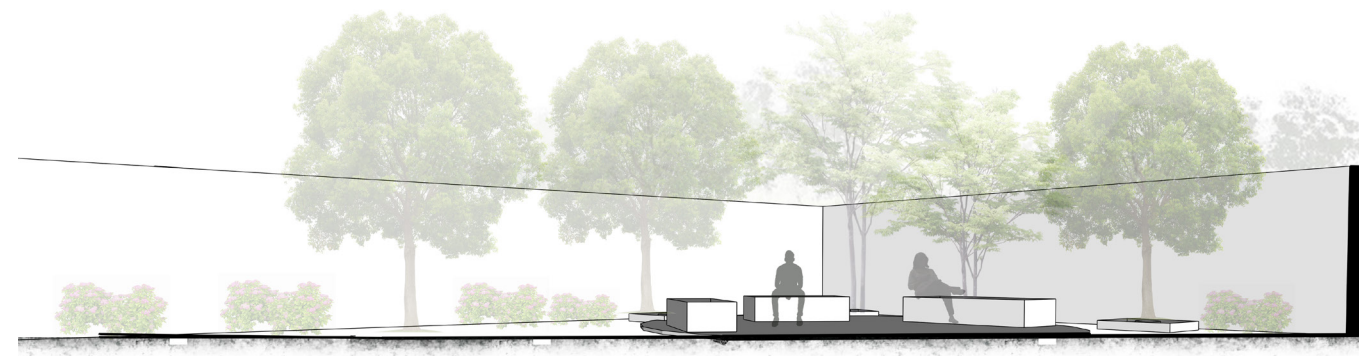
This type of indoor arrangement would be recommended for those who prefer private setting within compound perimeter. It could also give opportunity for a well decorated compound courtyard.



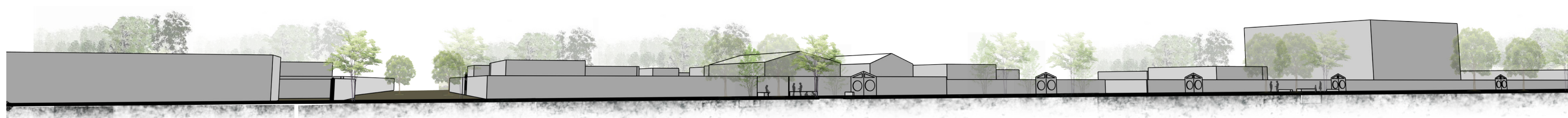
SECTIONS



SECTION - OUTDOOR BANTABA



SECTION - INDOOR BANTABA



STREET SECTION

REFLECTION

Working on this thesis came with much frustration on the part of trying to get information. There is not much research done on this aspect in KMC and The Gambia at large. Most of the research found that were somewhat related to the thesis topic came from the UNHABIT with the help of Gambian professionals. Information, in general, is hard to come by regarding any research in The Gambia.

In the case of KMC, there are no directories or a website where information can be easily accessed. Through an interview with the deputy director of planning at KMC, some of the information came about. However, the deputy director could not direct to any website or directory for gathering more information. This thesis took a drastically changed in approach when a visit to The Gambia took place. The large-scale intervention envisages at the beginning changed to a somewhat more realistic approach that is individuals driven. It should be clear by now that there were no signs from the authorities of KMC working on policies or projects that involve large-scale interventions as of the time this research took place. Coupled with the distraction that people deal with daily, ranging from essential urban services, urban safety, and disaster management, economic and local economic development affect their thinking regarding green spaces.

REFLECTION

It is the government's responsibility to take care of the needs of its citizens. In this case, KMC should take care of its citizens' needs by meeting all their expectations regarding these necessities. The lack of planning in the city makes it hard for them to do anything meaningful. There is no available space to do a large-scale intervention. When it comes to road building, people's properties are taken away or reduced to build the required road sizes specified by designers. Those property owners who moved out and or their property sizes reduced get compensated for their loss. The belief is, any large-scale intervention will have to follow the same process and of course with the help of the central government.

The most important finding of this research that needs consideration is the lack of awareness of KMC and The Gambian people regarding the benefits of green spaces. Green spaces have many benefits, as already highlighted in this thesis, and these benefits are not known to the masses. It requires educating people on its importance and the benefits that they bring.

A revolution is what The Gambia needs. All revolutions around the world started from dissatisfied citizens of their governments. The Gambia finds herself in a similar situation, where the citizens are not satisfied with the lack of green spaces in The Gambia, KMC specifically. The revolution will not be political as it is known worldwide, but a green revolution instead of a political one that will take over the whole country. Individually driven revolution is the way to go till a comprehensive plan comes from the authorities in charge. No indication shows any desire from the authorities to stifle any initiative that is a bottom-up approach, where the idea of the Bantaba comes from the residents themselves. It will only be wise of the authorities to join on that effort and push it forward rather than trying to put a stop to an initiative that they should have led in the first place.

TREE OPTIONS

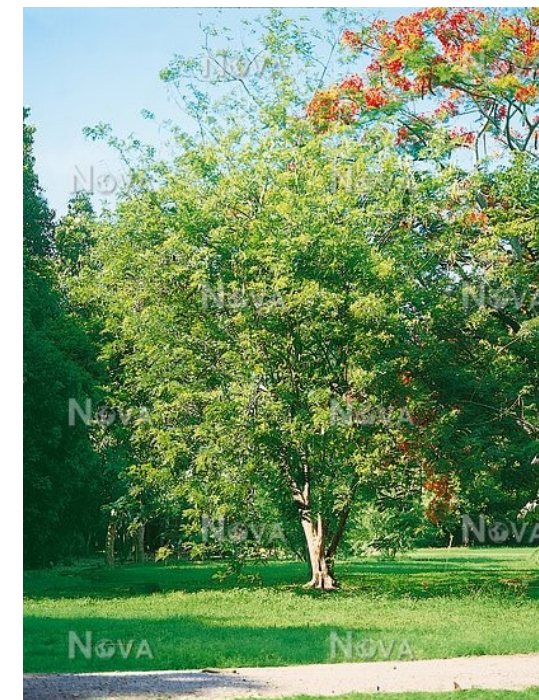


TECTONA GRANDIS

A local or scientific name could not be found. A twig can be easily come a new tree



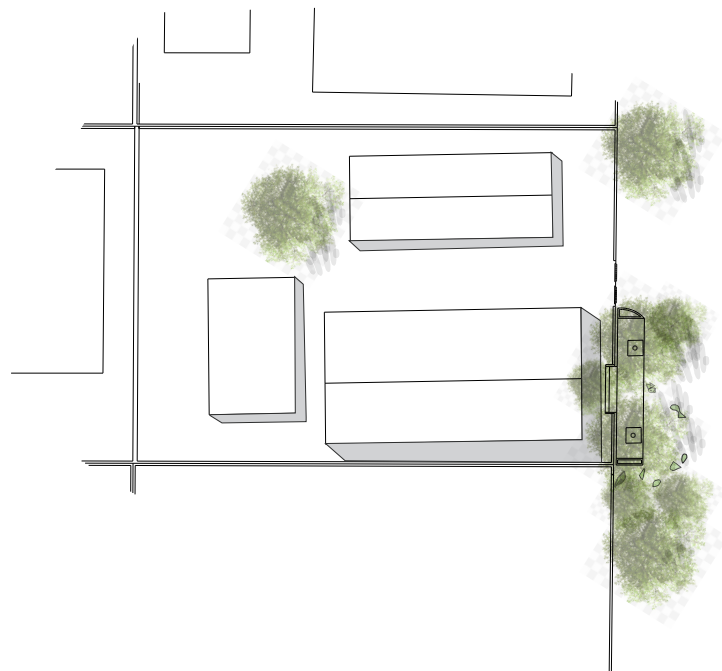
DELONIX REGIA



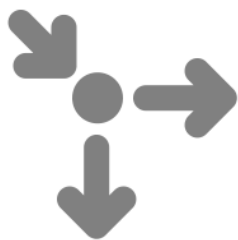
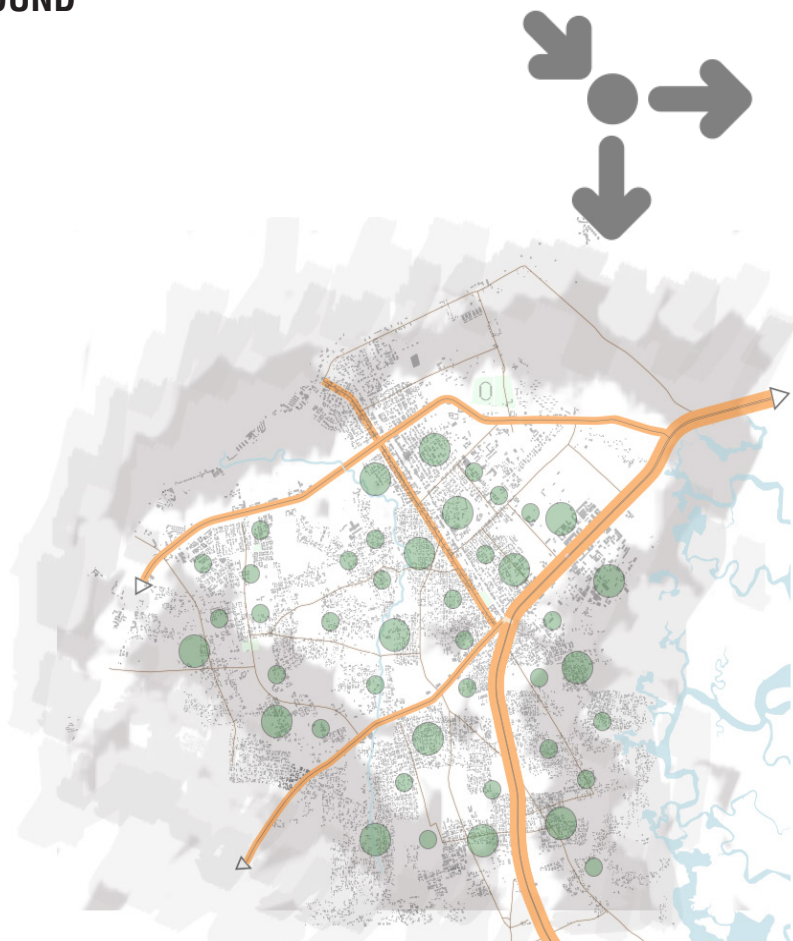
GLIRICIDIA

FIG 2.1

CHAIN REACTION



1 A COMPOUND



2 KANIFING MUNICIPAL COUNCIL (KMC)

The aim is the mini Bantaba would create a domino effect, allowing people to copy it throughout the country once they buy into the idea.



3 THE GAMBIA

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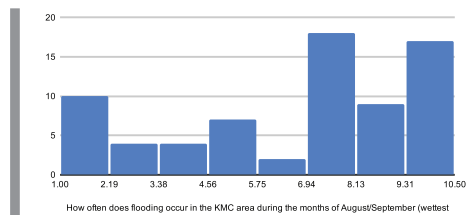
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FIGURES

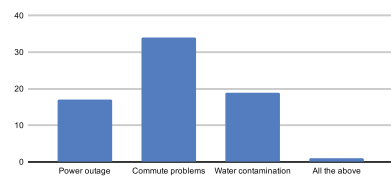
- FIG 1.0** Images showing urban settlement on highway areas
- FIG 1.1** Images showing urban settlement around residential areas
- FIG 1.2** Image showing the business at Serekunda market
- FIG 1.3** Images showing the distraction people deal with daily
- FIG 1.4** Map showing participated countries in a research of urban green infrastructure & ecosystem services in sub-saharan Africa
- FIG 1.5** Images showing improvements in Medellin, Columbia
- FIG 1.6** Images showing greenery additions in downtown KMC
- FIG 1.7** Images of Bantabas
- FIG 1.8** Image showing the traditional storey telling set up in West Africa
- FIG 1.9** Google earth image of Ngerr village
- FIG 1.10** Setting arrangements in traditional Bantabas
- FIG 2.0** Image of street layouts and hanging out spots
- FIG 2.1** Images of tree option that can be used Bantaba ideas

APPENDIX

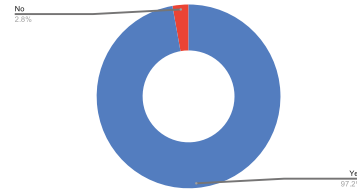
HOW OFTEN DOES FLOODING OCCUR IN KMC DURING THE MONTHS OF



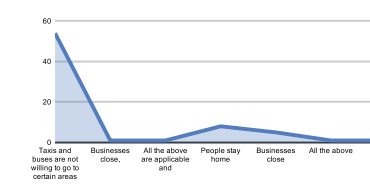
WHAT IS THE BIGGEST IMPACT OF FLOODING YOU FACE ON A DAILY BASIS



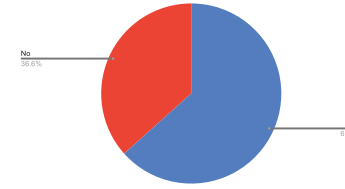
DOES FLOODING AFFECT THE ECONOMY IN KMC?



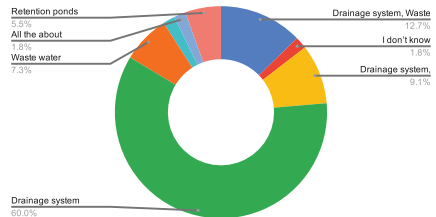
HOW DOES FLOODING AFFECT THE ECONOMY IN KMC?



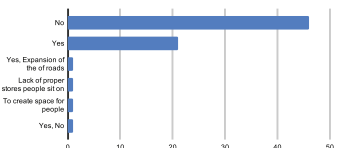
ARE THERE ANY MITIGATING SOLUTIONS FOR FLOODING IN KMC?



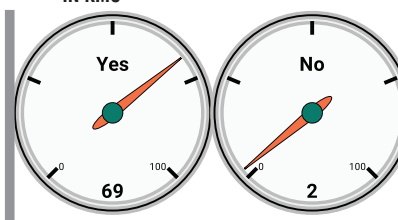
WHAT ARE THE MITIGATING SOLUTIONS FOR FLOODING IN KMC?



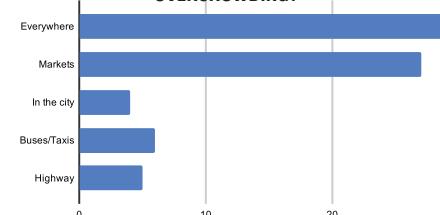
ARE THERE ANY SOLUTIONS THAT EXIST THAT YOU KNOW OF IN KMC THAT DEALS WITH OVERCROWDING?



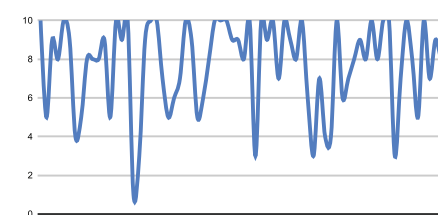
DO YOU EXPERIENCE OVERCROWDING IN KMC



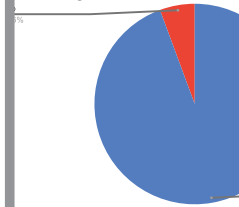
WHERE DO YOU EXPERIENCE OVERCROWDING?



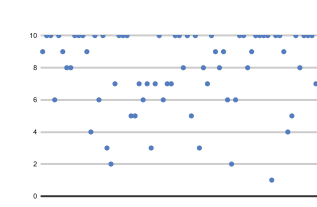
HOW HAS OVERCROWDING AFFECTED OVERCROWDING EMOTIONALLY?



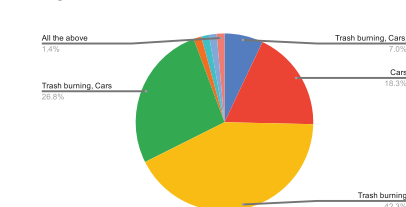
DO YOU EXPERIENCE AIR POLLUTION IN KMC?



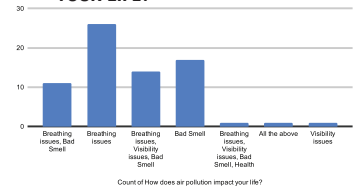
DOES AIR POLLUTION IMPACT YOUR LIFE?



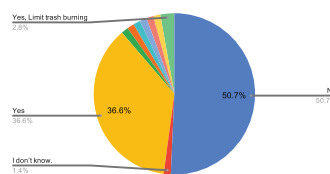
WHAT ARE SOME OF THE CAUSES OF AIR POLLUTION IN KMC?



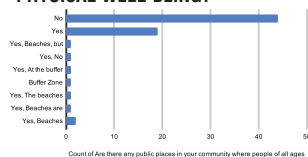
HOW DOES AIR POLLUTION IMPACT YOUR LIFE?



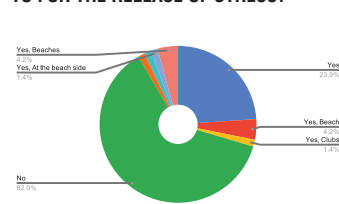
ARE THERE ANY MITIGATING SOLUTIONS FOR AIR IN KMC THAT YOU



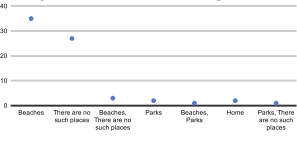
ARE THERE ANY PUBLIC PLACES IN YOUR COMMUNITY WHERE PEOPLE OF ALL AGES & GENDER CAN EXERCISE FOR THE PHYSICAL WELL-BEING?



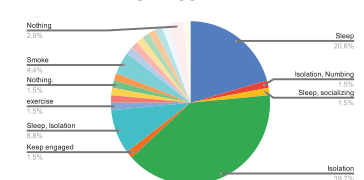
ARE THER ANY PLACES IN KMC THAT YOU GO TO FOR THE RELEASE OF STRESS?



WHERE DO YOU RELAX OUTSIDE OF YOU HOMES & WORKPLACE TO DEAL WITH HIGH HEAT INDEX IN KMC?



WHAT DO YOU DO TO COPE WITH MENTAL HEALTH AND STRESS?



ARE THERE ANY PRIVATE PLACES IN KMC WHERE PEOPLE EXERCISE FOR THEIR PHYSICAL WELL-BEING?

