

ASSESSMENT OF VULNERABILITY AND RESPONSE TO COVID-19 IN THE MUNICIPALITIES OF MOZAMBIQUE

Results of Participatory
Planning and Mapping

In collaboration with the Urban Task Force for Response to COVID-19 in urban areas:

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1. INTRODUCTION

1.1 Context

More than 95% of all recorded cases of COVID-19 are in urban areas. In fact, the size of the urban population and the high number of global and local interconnections have made cities particularly vulnerable to the virus. Particularly, the impact of COVID-19 will be most devastating especially for the 1 billion people living in informal settlements in the world's poorest and most densely populated urban areas.

According to INFORM Epidemic Risk Index 2020, Mozambique was ranked as the 11th country in the world with the highest level of vulnerability to epidemics. In Mozambique, 76.9% of the urban population lives in overcrowded informal settlements, in housing with inadequate water and sanitation conditions, with crowded public transportation, and limited access to basic services and public health facilities.

The 2018 Afro-barometer survey indicates that up to 42% of urban households have no water access in their house or courtyard, 13% have no latrine, and 28% have no electricity supply. Also, in many urban areas of Mozambique families live in cohabitation with excessive household densification and several times the water supply is precarious, with frequent service interruptions. Therefore, preventive measures for COVID-19, such as hand washing, physical distancing and self-isolation, are often impossible in these areas. It is therefore very clear that there is a high risk that the impacts of COVID-19 on disadvantaged people in urban areas will be considerably higher

compared to other areas. Some heavily frequented urban locations and public spaces are also particularly at risk. This is due to the overcrowding combined with little access to handwashing facilities. In Mozambique, epidemiological reports from the cities of Nampula, Maputo, Beira, and Pemba, have shown that the urban areas most at risk are, among others, markets and public transports.

Thus, it is clear that planning at the municipal level is essential in the fight against COVID-19. For this purpose, mapping the most vulnerable areas proves to be an essential tool for the development of public policies and response plans at the local level. With this, innovative mapping and planning technologies can be used in the fight against the new coronavirus to support municipalities in their preparedness and prevention activities.

UN-Habitat worked with *Associação Mapeando Meu Bairro* in the context of the Urban Task-Force to support 12 municipalities of Mozambique in vulnerability mapping and strategic planning for COVID-19 response, through a participatory approach. This was done with the aim of prioritizing sites and interventions to promote access to water, sanitation and hygiene and information access in vulnerable urban locations with a focus on informal settlements. These innovative tools will enable a concrete response to COVID-19 in the Municipalities, based on real and verified data.

1.2 Objective

The objective of the publication is to present the results of the participatory planning and vulnerability mapping work for the prevention and response to COVID-19 at urban level, developed with 12 Municipalities of Mozambique. This is in order to firstly disseminate good practices on tools and initiatives to fight the pandemic in urban areas and secondly to trigger reflections on the urban areas vulnerabilities and possible areas of improvement.



2. METHODOLOGY

2.1 Vulnerability Mapping

To realize the vulnerability mapping, a multi-criteria approach was adopted that allowed to realize COVID-19 vulnerability maps of 12 Municipalities at neighborhood level, focusing on access to water, hygiene and sanitation.

The objective was twofold:

- Provide planning tools to Municipalities and possible partners to prioritize their interventions to strengthen access to water, hygiene and sanitation and awareness information in urban areas with a focus on informal settlements, as well as access to COVID-19 prevention information;
- Build capacity in the Municipalities with a focus on municipal technicians in data collection for COVID-19 vulnerability mapping with innovative and easily accessible tools.

The methodology used was comprehensive and participatory and relied on several phases, namely:

- Identifying vulnerability criteria*
- Preliminary analysis*
- Survey of existing data*
- Survey of new data and training of municipal technicians*
- Final multi-criteria analysis*
-

Key criteria have been identified on the basis of international good practice to identify levels of vulnerability. They are:

- Population Density
- Prevalence of Informal Settlements
- Lack of access to water and sanitation
- Lack of access to reliable information
- Presence of high-density public spaces such as markets, terminals, and public spaces.

The data sources used were of two typologies: Firstly, existing data, surveyed through online databases (OpenStreetMap, HumDATA) and INE data with the 2017 Census; Secondly, new data identified through satellite photos restitution, telephone interviews with municipal technicians and field surveys.

The field surveys were carried out with a participatory approach by Municipal technicians from the 4 pilot cities of Dondo, Beira, Boane and Maputo. They were previously trained in the use of innovative field mapping tools such as the OMS Tracker application and Open Street Maps, that supported in the formulation of the survey to the residents of type zones of the selected neighborhoods.



Training of Maputo Municipal technicians in vulnerability mapping to COVID-19 with open data

The final result consists of 12 maps with:

- 5 levels of vulnerability for the classification of neighborhoods, based on previously selected criteria
- 2 levels of vulnerability for the classification of the main agglomeration areas (markets and terminals) on the basis of selected criteria like users turnout and access to water and sanitation



Training of Boane Municipal technicians in field mapping with open data

FOCUS ON VULNERABILITY FACTORS

1. POPULATION DENSITY

People who live in and frequent areas with high population density, such as urban and metropolitan areas and in particular informal settlements are more likely to contract the virus, being a communicable disease. Markets, public spaces, public transports and bus stops or terminals are places with high risk of exposure, as demonstrated by the sero-epidemiological surveys conducted in Mozambique's main cities.

2. PREVALENCE OF INFORMAL SETTLEMENTS

Informal settlements are places with high population density, inadequate housing condition, and insufficient access to adequate basic services such as water, hygiene, and sanitation. A high number of people living in small houses or single rooms poses challenges for the isolation of sick people, or simply for social distancing, since it is difficult for people to stay long in overcrowded housing. In addition, the requirements for social distancing and closing off public spaces are likely to put substantial pressure on individuals living in these conditions. Spending more time in such houses may increase vulnerability to other medical conditions and is likely to induce substantial psychological strain. Precarious housing of traditional materials can also generate challenges in maintaining adequate hygiene standards.

3. LACK OF ACCESS TO WATER

Maintaining proper preventive hygiene, such as regular hand washing with soap and water, is the best way to protect against COVID-19. It is likely to be more difficult in households without access to piped water at home or in overcrowded spaces such as markets and terminals.

Households dependent on unimproved water sources are also at risk of contracting other waterborne diseases such as cholera, increasing the overall likelihood of needing other medical care.

At the same time, having access to piped water and shared water resources in neighbors' backyards or public wells can lead to additional risks being places that can generate crowding, difficult cleaning and limit the effectiveness of any quarantine.

4. POOR SANITATION

Sharing sanitation facilities among several people or households limits the effective enforcement of social distancing, forcing interactions and making it difficult to maintain an adequate level of hygiene, especially in case of absence of water sources in the surroundings. Inadequate sanitation is also a source of other infectious diseases that can compromise recovery from COVID-19. Additionally, according to the WHO, sanitation facilities, both public and private, should be accompanied by the presence of handwashing points within 5m of distance.

5. LACK OF ACCESS TO INFORMATION

Access to information is critical for communities to understand the importance of social distancing and preventive hygiene and to have the knowledge of how to properly implement the measures outlined by the government. Connectivity through the Internet, television or radio means that information is reliable and official and can reach the household without any direct human contact. In addition, having easy access to information, education and entertainment at home is likely to make it easier for households to practice social isolation.

2.2 Priority Action Matrix

In parallel to the elaboration of the vulnerability maps to COVID-19, a participatory planning exercise was conducted to support the Municipalities in developing strategies and prioritizing interventions in key locations for fighting the pandemic. This with a focus on the components of coordination and planning, promotion of access to water, hygiene and sanitation, and access to information and awareness. The action plan can also serve as a fundraising tool with potential donors and for partners to identify priority areas to support municipalities.

The final aim of the activity was to strengthen the Municipalities' capacity to plan and prepare to face the pandemic by strategically prioritizing immediate, practical activities to improve access to water, hygiene and sanitation, and information in places and for the most vulnerable populations in the city in the short, medium and long term. The action plan focuses on three key pillars, following the key vulnerability criteria of the maps, i.e. focusing on:

- **Institutional coordination and planning;**
- **Water, sanitation and hygiene and urban planning;**

- **Awareness and community engagement.**

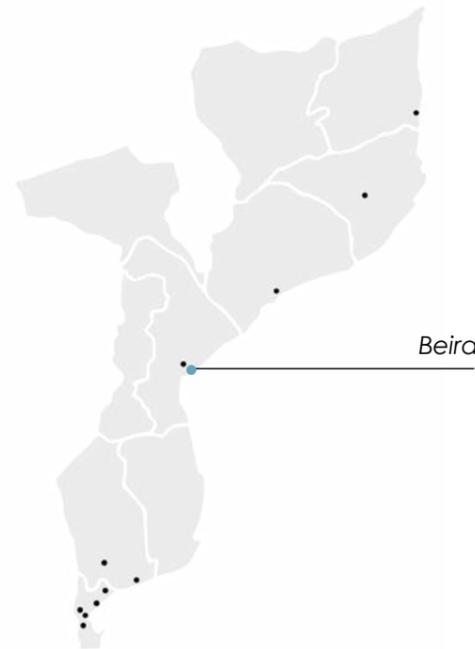
To support the Municipalities in the elaboration of the action plans, an inclusive and simplified tool was elaborated based on strategic questions that allowed to focus on the prioritization of maximum 6 actions within the three pillars described above. The action plans were elaborated in a participative way by the Municipalities with monitoring by the Urban Task Force technical team, according to the participative methodology of the designed tool.

The two participatory planning and mapping exercises are complementary, with the mapping serving to support the Municipalities in identifying priority sites for action implementation. It also may serve to further feed into the action plan on the basis of Municipalities' priorities and needs. At the same time, the planning results served as validation of the sites identified as most vulnerable in the vulnerability maps.



3.VULNERABILITY PROFILES

3.1 Beira Municipality



Beira Municipality has 590,293 inhabitants and a population density of 935 inhabitants per km². Beira is a coastal city, capital of Sofala Province and considered to be the second largest city in the country.

In March 2019, the city had about 90% of its extension destroyed by Cyclone Idai and it is still in the process of recovery and reconstruction. Between late 2020 and early 2021 it was again affected by Tropical Storm Chalane and Cyclone Eloise, which caused even more infrastructure destruction. In addition to having an effect on the coverage of public services that no longer cover the entire city, this also has direct consequences on the population vulnerability to COVID-19 in terms of precarious housing, insufficient livelihoods, poor access to water and hygiene among others. The emergency of overcrowded reception centers for victims of Cyclone Eloise makes social distancing and continuous and appropriate access to water and hygiene materials difficult, thus presenting an even greater risk for the increase of cases of COVID-19 in the city.



592,090
inhabitants



935 inhab/Km²
density



53,9% people with
private access
to water*
à água*

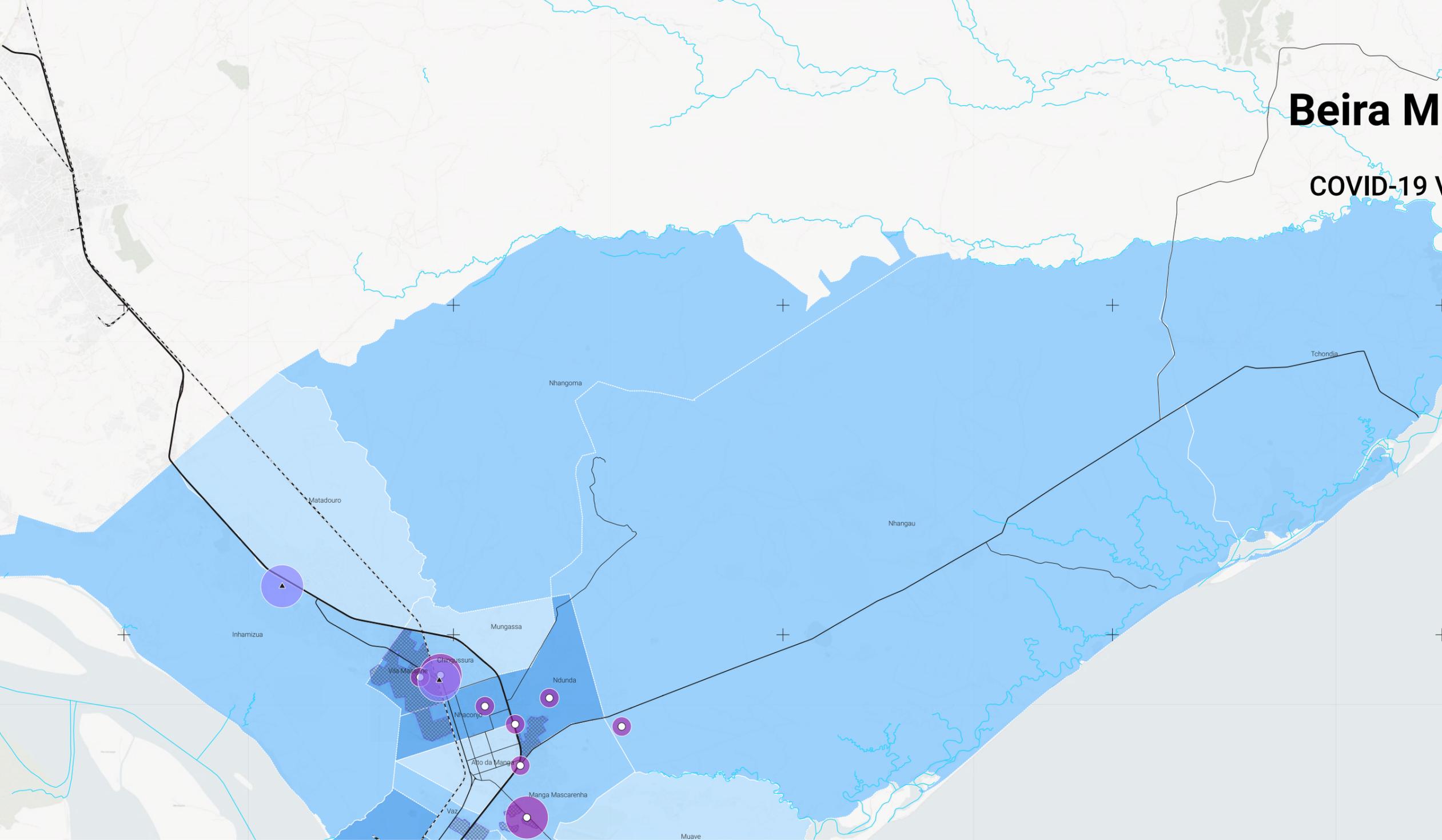
As evidenced in the COVID-19 vulnerability map of Beira City, the Municipality has a city center with a greater presence of informal settlements and a higher concentration of high density neighborhoods. Thus, unplanned and uncoordinated urban development negatively affects the living conditions of Beira residents, especially in flood-prone areas. Agglomeration sites such as markets, transport terminals, and public spaces are also located in the city center, with the most vulnerable placed in the Munhava and Chaimite neighborhoods, among others.

At the same time there are vast peri-urban areas with low population density characterizing a dispersed urban growth with less access to services but greater dependence on public transport to reach the city center. According to the analysis of vulnerability to COVID-19 of the Municipality of Beira, after crossing several factors, it resulted that the neighbourhoods with the highest level of vulnerability are located in the city center, due to the above-mentioned factors, highlighting Munhava, Macuti, Ndunda, Vila Massane and Nhaconjo as the most vulnerable. At the same time, some peri-urban neighborhoods such as Nhangoma and Tchonja show medium levels of vulnerability, due to poor access to basic services that can guarantee adequate protection by COVID-19. According to the preliminary results of the Sero-Epidemiological Survey of October 2020, the neighborhoods considered on the map as the most vulnerable were in fact the neighborhoods with the highest number of registered cases in the city.

(*) By "private access to water" is meant safe access to piped water in the household's own yard or inside the house. The remaining percentage indicates access to shared water sources (wells etc.) or to water from unsafe sources

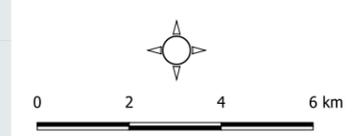
Beira Municipality

COVID-19 Vulnerability Map



LEGENDA

- Unidades Sanitárias
- Mercados**
 - Vulnerabilidade Baixa
 - Vulnerabilidade Alts
- Terminais**
 - Vulnerabilidade Baixa
 - Vulnerabilidade Alta
- Rios
- Linha Férrea
- Rede Viária**
 - Vias Principais
 - Vias Secundárias
 - Vias Terciárias
 - Assentamentos Informais
- Níveis de Vulnerabilidade**
 - Baixo
 - Médio-Baixo
 - Médio
 - Médio-Alto
 - Alto



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