



# Supporting urban recovery after Cyclone Idai Beira, Mozambique

May 2019

Holly Schofield, Simon Deprez



## Authors

Holly Schofield – Shelter advisor – [hschofield@careinternational.org](mailto:hschofield@careinternational.org)  
Simon Deprez – Shelter advisor – [simondeprez@hotmail.fr](mailto:simondeprez@hotmail.fr)

## Acknowledgements

The authors would like to extend our sincerest thanks to all who have been involved in providing support, advice, information, solutions to make this study possible. An extensive number of partners, city authorities and experts made the report possible, responding to requests for information and supporting in data collection. Special thanks go to the teams in Beira and Maputo who hosted us and put up with our requests and needs. Additional thanks go to the CARE Shelter Team in Beira and London who made time to provide valuable information and a stimulating and supportive working environment. A big thank you to Mission Educate whose staff introduced us to the neighbourhoods and helped us to understand the context before and after Cyclone Idai. Finally thank you to the people of Beira for taking the time to share your experiences. Thank You.

Cover page photo: Simon Deprez



# Contents

---

Abbreviations.....	5
Executive Summary .....	6
Key overall recommendations .....	6
Key recommendations for indirect approaches .....	6
Key recommendations for direct approaches .....	6
Introduction.....	7
Scope of the study .....	7
Methodology .....	7
Limitations .....	9
Cyclone idai post emergency context.....	10
Cyclone Idai overview and big figures.....	10
Coping and self-recovery processes.....	12
Displacement .....	12
Hosting.....	12
Renting.....	13
Sheltering and reconstruction .....	13
Factors for reconstruction and resilience .....	15
<i>Typologies, damages and repairs</i> .....	15
<i>Food security</i> .....	16
<i>Risk exposure</i> .....	16
<i>Most-vulnerable households</i> .....	17
Brief Urban Context Analysis: Beira .....	19
Affected urban areas .....	19
<i>Risk exposure</i> .....	19
Governance.....	22
Tenure.....	22
<i>Secure Tenure Systems</i> .....	23
<i>Gender and Tenure</i> .....	23
<i>Renting</i> .....	23
Livelihoods .....	23
<i>Informal and precarious</i> .....	23
<i>Markets and women</i> .....	24
The construction market.....	25
Typologies and weaknesses.....	25
<i>Built typologies</i> .....	25
<i>Common weaknesses</i> .....	25

The role of the households .....	26
Labour .....	26
<i>Masons</i> .....	26
<i>Carpenters</i> .....	27
<i>Block makers</i> .....	27
<i>Suppliers</i> .....	27
Materials.....	27
<i>Cement blocks</i> .....	27
<i>Sand</i> .....	28
<i>CGI</i> .....	28
<i>Timber</i> .....	28
Shelter recovery strategies.....	29
Rationale for Shelter Recovery strategies.....	29
Scenario 1: Indirect Support to Self-Recovery.....	31
General Recommendations .....	31
Scenario 2: Direct Support to Self-Recovery.....	33
General Recommendations .....	33
Overall Recommendations .....	35
Annexes .....	36

## Abbreviations

---

ABA	Area-based Approach
BBS	Build Back Safer
CGI	Corrugated galvanised iron
FHH	Female Head-of-Household
HLP	Housing, Land and Property
IEC	Information, Education and Communication
IBR	Inverted Box Rib
MZM	Mozambican metical
RENAMO	Resistência Nacional Moçambicana
UN	United Nations
WASH	Water, sanitation and hygiene
WFP	World Food Program

## Executive Summary

---

As the focus of the response to Cyclone Idai turns from emergency response to recovery, shelter actors face the all too familiar challenge of defining and implementing recovery programmes that achieve maximum impact with increasingly scarce resources. This is particularly difficult in urban areas that present unique challenges in terms of diversity, complexity and scale with a range of different formal and informal actors and processes. These complexities point to the need for highly flexible responses.

This paper presents the findings from a real time research project which sought to understand the impact of Cyclone Idai on urban households and communities as well as the options for shelter actors seeking to support their recovery. The aim was to provide recommendations to inform the Shelter Cluster response strategy, CARE Mozambique and the COSACA consortium's shelter response in Beira.

With need far outstripping likely financing, direct and indirect support to self-recovery will be one of the ways in which actors can reach increased numbers of Beira's urban population. Direct interventions see homeowners supported in the repair, retrofit or reconstruction of their houses through the provision of material and/or cash and voucher assistance.

Technical support and awareness-raising on safer construction will try to ensure that houses are constructed in a way that is safer than their pre-disaster condition. Indirect interventions aim to improve certain characteristics of the recovery context to foster long-term and safer reconstruction at scale and encourage continued investment in safer housing over time. Activities include improvements in the spatial organization of neighbourhoods, support for tenure security and/or construction market interventions to try and influence safer reconstruction of houses, as and when households can construct. The approaches each have their challenges and opportunities, but they are complementary, and it may be that partners ultimately base programmes on selection of key elements from each of them.

The stark reality is that unassisted self-recovery will be the recovery pathway of the majority of people affected by Idai. Ensuring that the impact of interventions is extended to reach as many people as possible must underpin much of the thinking of this response as strategies take shape.

### KEY OVERALL RECOMMENDATIONS

- Develop innovative ways to engage households in safer reconstruction.
- Develop high impact, efficient and wide coverage approaches to address specific contextual challenges.
- Allow individuals to make their own decisions for their recovery process.
- Engage women and men in shelter initiatives.
- Support the recovery processes of each beneficiary while respecting the pace of reconstruction.

### KEY RECOMMENDATIONS FOR INDIRECT APPROACHES

- Implement a comprehensive market analysis.
- Develop market approaches that integrate all supply chains.
- Take the different housing typologies into account, even in the city.
- Monitor and limit price increases.
- Highlight the cost-benefit ratios of some safe construction practices.

### KEY RECOMMENDATIONS FOR DIRECT APPROACHES

- Avoid high risk prone areas and promote risk reduction.
- Coordinate with local and municipal authorities for the selection of areas of intervention and of beneficiaries.
- Allow for some flexibility in the use of vouchers.
- Promote the use of all local typologies.
- To ensure safer reconstruction, promote the use of quality sand.

# Introduction

---

Cyclone Idai made landfall near the city of Beira on Thursday 14 March 2019 leaving mass destruction in its wake. The city of Beira suffered huge damages with low income residents of informal settlements feeling the strongest impacts. Early indications state that 63,506 houses lost their roofing and 23,822 houses were destroyed completely.

One of the main challenges for shelter actors in supporting household and community recovery from Idai related to the gap between the financing available for recovery and the needs of the affected population. The initial estimation likely to emerge from the upcoming PDNA is that the cost of reconstructing Beira could be as high as 200 million USD. This within a context in which the humanitarian response for all of Mozambique has struggled to reach even 24.3 percent of the required total during the first two months when incoming funding is likely to peak.

At the time of data collection, shelter partners were defining their strategies for urban and peri-urban areas. As partners struggle to have maximum impact with scarce resources, direct and indirect support for self-recovery looks likely to be a key component of many shelter recovery interventions in urban areas. This report provides an urban context analysis of the city of Beira, with a specific focus on the construction market and the experiences of key stakeholders within it. Its aim is to provide complementary, contextual information and make recommendations that may support shelter actors to refine strategies, and the activities adopted to fulfil them whilst increasing their impact.

## SCOPE OF THE STUDY

The objectives of this study were:

1. To understand the impact of Cyclone Idai on urban households and communities as well as the options for shelter actors seeking to support their recovery.
2. Provide recommendations to inform the Shelter Cluster response strategy, CARE Mozambique and the COSACA consortium's shelter response

The intended audience of this analysis are:

- Care UK and CI-RED Shelter Team in Mozambique
- COSACA Consortium
- Country Directors, Assistant Country Directors, Sectoral Advisors, Programme Managers and Programme Support Managers.

## METHODOLOGY

The data upon which this report is based was collected and analysed over a 3-week period in April and May 2019 across ten communities and two displacement centres in Beira and Dondo<sup>1</sup>. The data and analysis results from site visits and observation, building typology and damage surveys<sup>2</sup>. Interviews and focus groups were also conducted with households, building professionals, and suppliers. These activities were complemented with a series of meetings and discussions with key informants from the respective municipalities and from the humanitarian community.

---

<sup>1</sup> For a list of sites visited see Annex I

<sup>2</sup> Building surveys to assess typologies and damages suffered were developed by UN-Habitat and REACH for their complementary study of the impact of the cyclone on urban areas which were shared with the research team in order to complete this analysis.



**Fig. 1. Map of research activity locations**



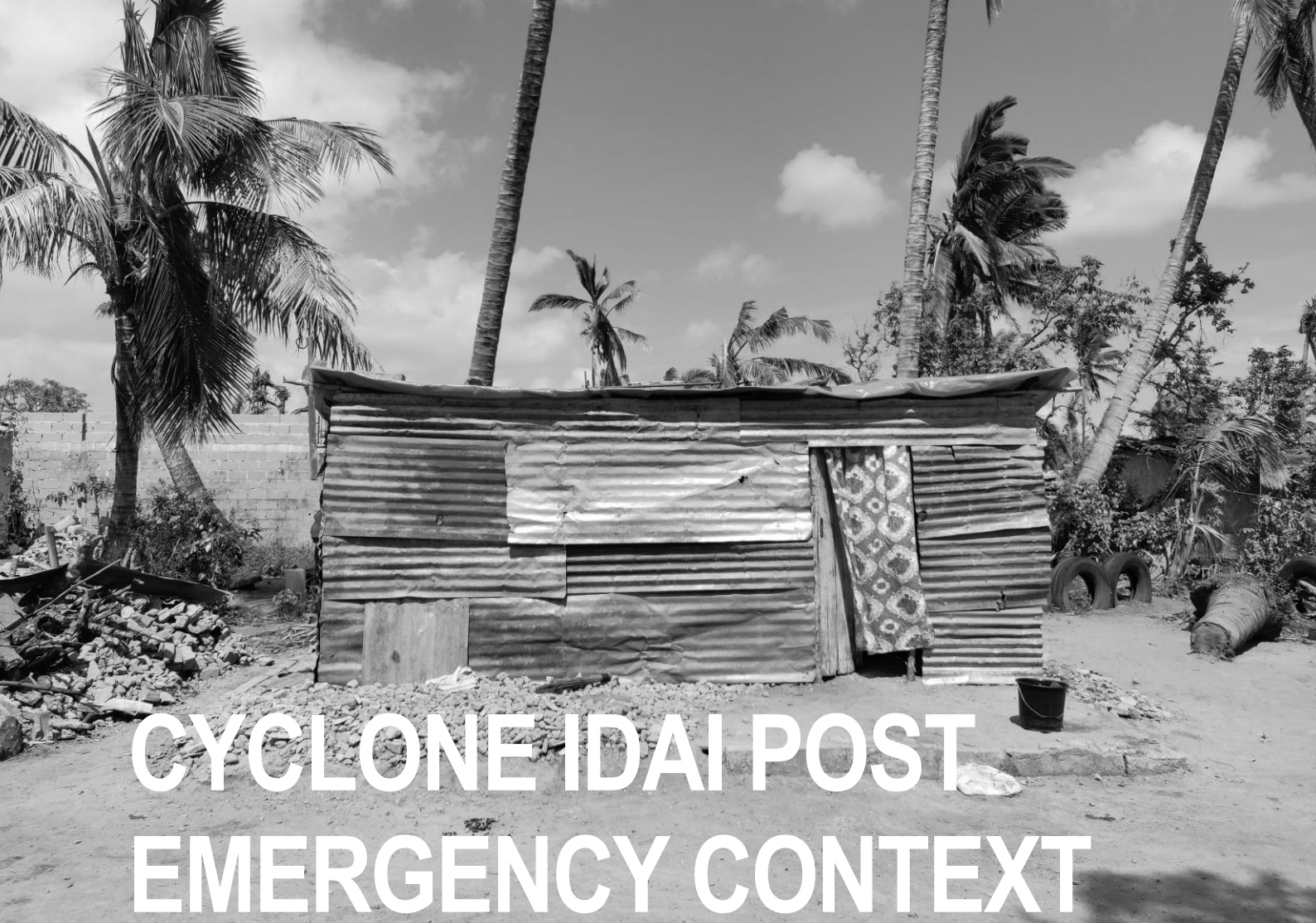


## Limitations

---

The study acknowledges the following limitations.

- The research team did not carry out any activities in resettlement sites. As such the opinions, opportunities and challenges faced by this particular group remain unrepresented in the following analysis.
- In the weeks following Idai, much of the focus of the humanitarian shelter community was on the displaced and geographically remote communities. There was little focus on the situation in the urban neighbourhoods. As a consequence, there was a lack of available data for analysis in relation to urban communities and their particular dynamics, including hosting, renting, and self-recovering groups.
- By the time the research team had collected the data a number of shelter actors were already turning their focus to early recovery and had developed broad strategies. For this reason, the focus needed to shift to the provision of recommendations to inform the refining of strategies based upon the urban context under analysis.
- There were a number of different actors that were interested in the contextual analysis being carried out and seeking similar information. Often the study functioned as a type of real time research, with the findings feeding into discussions and strategies being developed by CARE and into discussions at the Shelter Cluster level. Although it is positive that the work could have immediate relevance, the situation is advancing rapidly and there is the risk that the information in the report can become obsolete very rapidly.

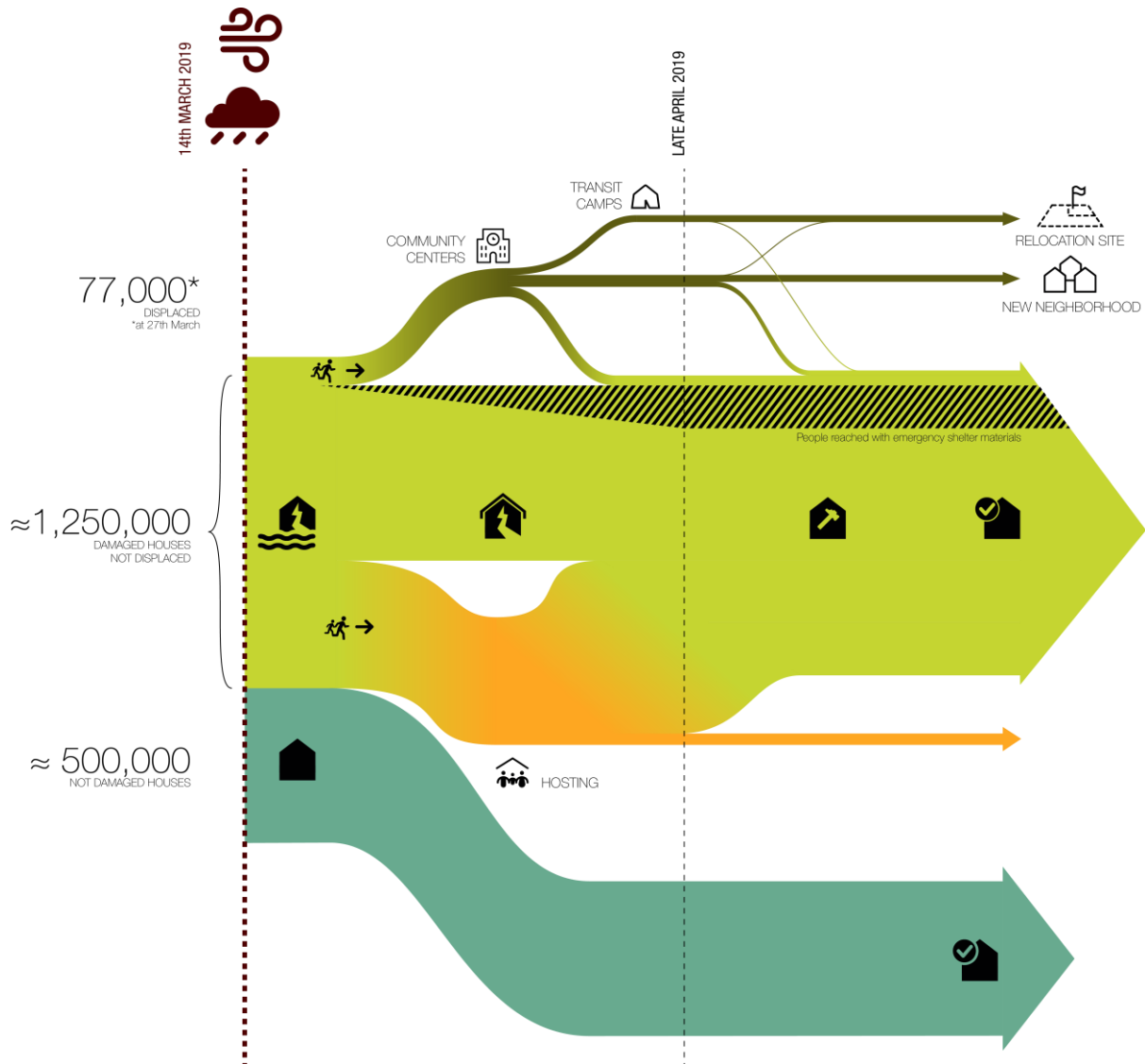


# CYCLONE IDAI POST EMERGENCY CONTEXT

## Cyclone Idai overview and big figures

Tropical Cyclone Idai made landfall as a category four Cyclone near Beira City (population 500,000) on March 14, 2019. Idai brought strong winds (180 – 220 km per hour) and heavy rain (more than 200 mm in 24 hours) across Sofala, Manica, Zambezia, Tete and Inhambane provinces. An estimated 3,000 sq. km of land was reportedly affected by flooding, with over 715,000 hectares of crop fields under water and widespread damages to key infrastructure. According to the Government of Mozambique’s official figures, as of 7 April 2019, a total of 239,682 houses had been destroyed or damaged, including 111,163 houses totally destroyed, 112,735 partially destroyed and 15,784 flooded. As of 20 April 2019, over 77,000 people were sheltering in temporary accommodation centres across the four provinces (IOM Situation Report #5 20 April 2019) The diagram below shows the initial coping and projected recovery pathways of disaster affected households. The arrow sizes represent the proportion of the affected population.

Fig. 2. Graph of recovery path, size of arrows in proportion to population.



## Coping and self-recovery processes

### MAIN FINDINGS

Following Idai, the majority of disaster affected people in the urban communities remained in their houses or were hosted by friends and neighbours. Many of those residing in traditional houses were able to reconstruct rapidly but their houses remain vulnerable to future events. Construction of conventional concrete block housing is costly, and the majority of urban households were yet to start reconstruction. These families either remain with host families, are sheltering in precariously repaired houses or have self-built shelters made of reclaimed materials.

### DISPLACEMENT

In Beira, a total of around 22,000 were thought to have been initially displaced to nearby schools and health centres where they remained for varied periods of time ranging from days to weeks. Following the decision of the government to empty some of the occupied schools to limit the disruption of education activities, 6550 people have been displaced to 5 ad-hoc transit camps, set-up, with the support of humanitarian actors, on empty plots of land.

Currently 14 community and transit centres are open in the city. However, the government and the municipality remain committed to emptying them, to limiting the assistance provided to them and fostering recovery of the families by their own means. They have therefore encouraged two approaches: relocation and returns. Together, the return of displaced people to their original place of origin (the case of those displaced to Beira from Buzi district) or the establishment of relocation sites in different locations of Sofala district, has already permitted the movement of more than 700 people from Beira's transit camps (Mozambique Shelter Cluster 5 May 2019). One of the camps was home to residents of Buzi district who were brought to Beira in the days following the cyclone but were later returned to Guara to remain until the reconstruction of houses can begin at resettlement sites. It has to be noted that resettlement is a common approach traditionally adopted by the government after past events. Following the Zambezia Floods in 2007, 30,000 families were resettled and about 106,000 after the 2000 floods in the south of the country. In these cases, families were provided with untitled land, construction material, and in 2007 with labour.

To promote returns, the government requested the support of humanitarian actors to provide shelter kits to displaced families in selected community centres. Returns were more common in the first days and weeks after the Cyclone but at the time of data collection seemed to have stabilised. Concerns over looting and cholera outbreaks encouraged residents to return to their housing even without support. In some cases, owners left other family members (particularly women and children) in the displacement facility, to increase the chances of accessing support or because the house was not yet habitable. Those remaining in transit centres described having no other option. The hope that assistance would be more forthcoming in these centres was acting as a further impetus to remain. Those remaining in transit centres therefore are likely to be particularly vulnerable groups with severely damaged houses lacking options for hosting and/or capacity to build adequate temporary shelters to which they can return.

### HOSTING

In Beira, high numbers of those interviewed across the communities (up to 80%), with damaged houses, took refuge in the lesser damaged houses of neighbours, friends and families during the cyclone and in the immediate aftermath. Hosting between neighbours was often short term, with families usually returning to the sites of their housing within days. However, there were instances where households continued to host numerous other family members 6 weeks after the event.

The number and situation of hosted families have not been monitored, but hosting was estimated as the most common coping strategy for sheltering within the first days after the cyclone, making host households great



contributors to the emergency response. However, nothing is known about the living conditions, protection, health and WASH issues of the hosted families.

## RENTING

Tenants with damaged housing either sought out alternative rental accommodation because the damage was too great or remained in the damage site awaiting repair. There were instances where tenants whose housing suffered minor damage were evicted by landlords whose own housing had been destroyed. Responsibility for housing repair lies with the landlord. However often they were absent or part of the low-income group themselves with little capacity to invest in the rental house. Tenants who suffered significant damage to livelihoods faced challenges in meeting rental payments. While some had negotiated a non or late payment for the first month, they expressed that future payments would also be a significant challenge. At the time of data collection, the security and right of occupation of renters seemed to have remained respected. The loss of potential income is a likely incentive for landlords to provide a degree of shelter repair. The option for renters to complete repairs in return for rental reduction/non-payment for a set time was not considered a possibility among those asked who felt as though they lacked the financial capacity to do so.

## SHELTERING AND RECONSTRUCTION

At the time of this assessment few families felt as though permanent reconstruction of housing was a possibility in the short or medium term. Families had instead remained in the damaged house. Other particularly vulnerable households have remained hosted by families or neighbours. The majority of neighbourhoods visited had not received shelter assistance yet, though a small amount of tarpaulins had been distributed in the visited peri-urban neighbourhoods. In some cases, this had limited utility for particularly vulnerable groups who lacked a minimum structure to attach it to.

**Pic. 1. Sheltering and repair of conventional and traditional houses.**



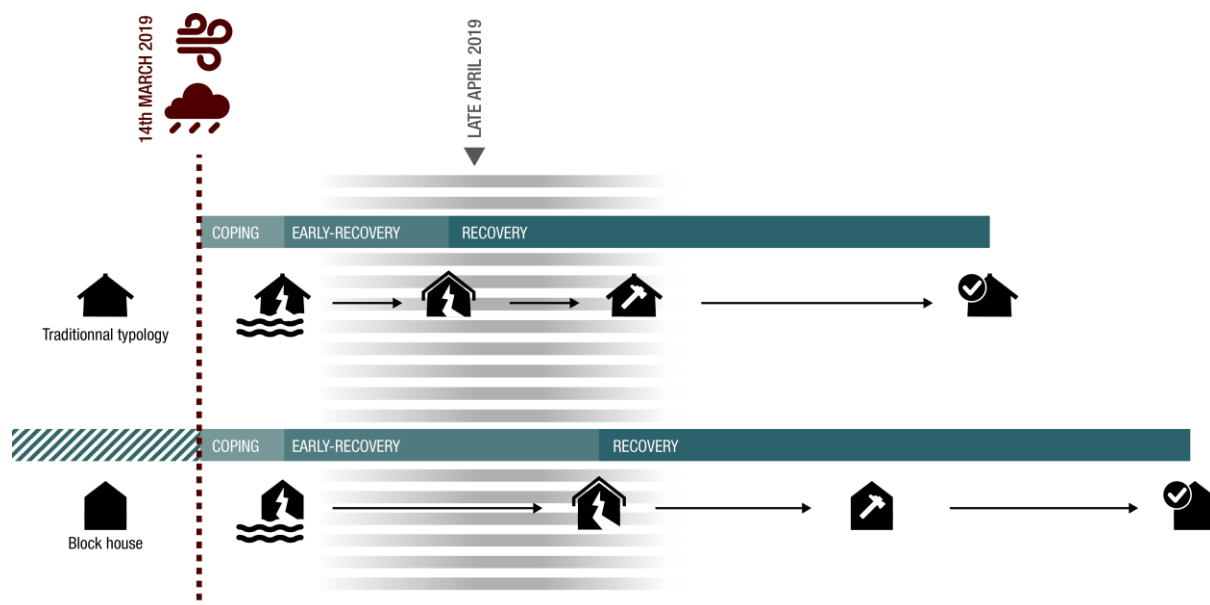
This inability to commence reconstruction is specifically true in urban areas where conventional block houses are expensive to rebuild and are typically built over an extended time. The process was described as having taken low- and middle-income families between 3 and 15 years with an estimated cost of between 150,000 to 300,000 MZM (2,000 to 4,000 USD) for substandard 2 room houses. Safer construction, according to commonly agreed standards, would cost around 5,000 USD. When implementing relocations, the government recommend a typology whose cost is estimated to be about 6,800 USD.

**Table 1. Proportion of conventional and traditional typologies in visited neighbourhoods**

NEIGHBORHOODS	CONVENTIONAL TYPOLOGIES	TRADITIONAL TYPOLOGIES
Matacuane	Estimated to 100 %	-
Estoril	84%	16%
Macuti C1	85%	15%
Macuti C2	86%	14%
Mafarinha	29%	71%

Traditional houses however, had often already been reconstructed or repaired. They were found in urban Beira but more typically a characteristic of the peri-urban and rural communities. They rely on lower cost materials which are often easier to access in those areas. The building typology and repair survey carried in the peri-urban neighbourhoods of Mafarinha in Dondo, for example, shows that 75 % of traditional houses were being repaired or reconstructed, whereas only 14% of formerly occupied block houses were being repaired.

**Fig. 3. Schematic representation of reconstruction path according to housing typologies**



## FACTORS FOR RECONSTRUCTION AND RESILIENCE

### MAIN FINDINGS

Risk exposure generally varies in Beira across neighbourhoods. Some face high risk exposure, while others cope with seasonal flooding. Poor construction practice and exposure to Idai's extremely strong winds caused houses of all typologies to face severe damage. The reconstruction efforts of most low-income urban residents are likely to be hampered by a continued lack of food security. Many households currently lack the ability to meet their basic daily needs. Communities can identify several vulnerable groups that will face specific challenges when it comes to reconstruction. These include the elderly, widows, single (female), women and child headed households.

### Typologies, damages and repairs

The main impacts of Idai on the neighbourhoods analysed in this report, were felt in terms of high winds (up to 240 km/h), and heavy rains. Housing in visited neighbourhoods can be divided into traditional and conventional typologies. Traditional typologies refer to houses built from mainly natural materials and conventional typologies refer to concrete block, masonry construction. The damage to traditional and conventional houses differed significantly.

Overall, isolated houses suffered significantly more than those in dense neighbourhoods and/or those protected by dense vegetation. Trees can provide protection against high winds but were also the cause of heavy damage. In some urban neighbourhoods, the majority of the damage to the structure of concrete block houses was caused by fallen coconut or mango trees.

Due to their fragile construction, traditional houses tended to suffer damage to their entire structure. High winds damaged roofs and shook the light, wooden structure to the point of destruction. The different elements of the structure (mud, stones, timber) fell apart, or the structure collapsed completely. Some traditional houses have resisted the high winds, thanks to their protected location, compact shape and more robust construction using large timber poles.

The heavy rains caused major damage to mud walls, whether the mud was used as a render on a wooden structure filled with stones or as an infill element in and on wooden cages or panels. The rains caused the disintegration of the earth-based elements, sometimes leading to the collapse of the structures itself.

The damage suffered by conventional block houses was largely to the roof covering, roofing structure, walls and structure. The damage was often sequential, for example with damage to roofing causing subsequent damage to the structure.

The high winds have primarily affected roofing and tended to have completely removed the CGI covering. This in turn caused major damage to other houses and injured people.

In some cases, the winds affected the wooden roofing structure at the same time as the CGI, which led to the removal of the whole roof from the masonry structure. This, in turn, often caused further damage to the walls and the concrete blocks. This ranged from the removal of the top layers of blocks to the partial or total collapse of walls and even to the complete destruction of the structure. Walls that survived the removal of the roof may have also suffered from the impact of the heavy winds and eventually fallen apart. This damage was frequently seen on ongoing or unfinished construction.



**Table 2. Data on damages in surveyed urban neighbourhoods.**

NEIGHBOURHOOD	HEAVY DAMAGE TO WALLS	HEAVY DAMAGE TO ROOF STRUCTURE	ROOF UPLIFT
C2	67%	67%	67%
C1	43%	34%	66%
ESTORIL	14%	32%	68%

The damage to housing can be attributed to a combination of the low quality of construction and extremely severe winds.

Cyclone-induced flooding had little impact on the housing in the urban neighbourhoods visited because it lasted only a few days. However, some of the areas visited (such as Estoril) do tend to suffer from frequent flooding events caused by heavy rains exacerbated by the lack of drainage. While this has a huge impact on access, movement and economic activities in the area the impact on the structure of concrete block houses was minimal.

**Pic. 2. Common damages to traditional and conventional houses.**



### **Food security**

The cyclone caused huge damage to agriculture. More than 700,000 hectares of agricultural land were damaged, and the destruction of crops and stocks caused price increases. These impacts have the potential to be long term, as the cyclone critically reduced the opportunities for sufficient harvests until the end of the year. Food security was already a critical issue in Mozambique prior to Idai, with 1.78 million people severely food insecure (Integrated Phase Classification analysis) and, according to the WFP, the population is only expected to be food secure from March 2020.

At the time of this assessment, food security was still a primary concern among the households interviewed. Meeting basic daily needs was a priority, and challenge, for many urban households. In this regard, the actual food assistance in transit camps and some community centres may act as a pull factor, limiting the return of some families to their places of residence.

### **Risk exposure**

Neighbourhoods in Beira are generally exposed to several environmental risks of varying intensity and frequency, ranging from seasonal flooding to high tides. Households are currently confronted with this situation, which influences the reconstruction process.

**Pic. 3. Seasonal flooding in urban neighbourhoods.**



Some of the displaced people that were interviewed were remaining in the community centres and transit camps whilst waiting for options to be relocated. Several were hoping for relocation and resettlement led by the government while others were using the time of the assisted displacement to identify alternative neighbourhoods, inside or outside of Beira. Some interviewees from the most high-risk urban communities expressed their desperation after seeing their house, which they have now rebuilt several times, be destroyed again. In some locations, the flooding has revealed their high exposure to risk and the land prices have dropped as a result. Plots of land bought at a high price in peri-urban locations a few years ago are now reportedly worth very little.

The non-displaced may be reluctant to invest resources in costly reconstruction or repairs in high risk locations. In some cases, the risk exposure is such that many safer construction measures cannot ensure a safe house. In these cases, the options are either the construction of precarious but cheap housing or relocation to another neighbourhood.

#### **Most-vulnerable households**

In most neighbourhoods visited, the interviewees identified the elderly as the most vulnerable people. Especially when they are widowed, and even more when they are women. The rather high number of widows, (13% in the municipality of Beira) is a consequence of the civil conflict fought from 1977 to 1992. In most cases these widows are living with one or several grandchildren, some of whom are orphans.

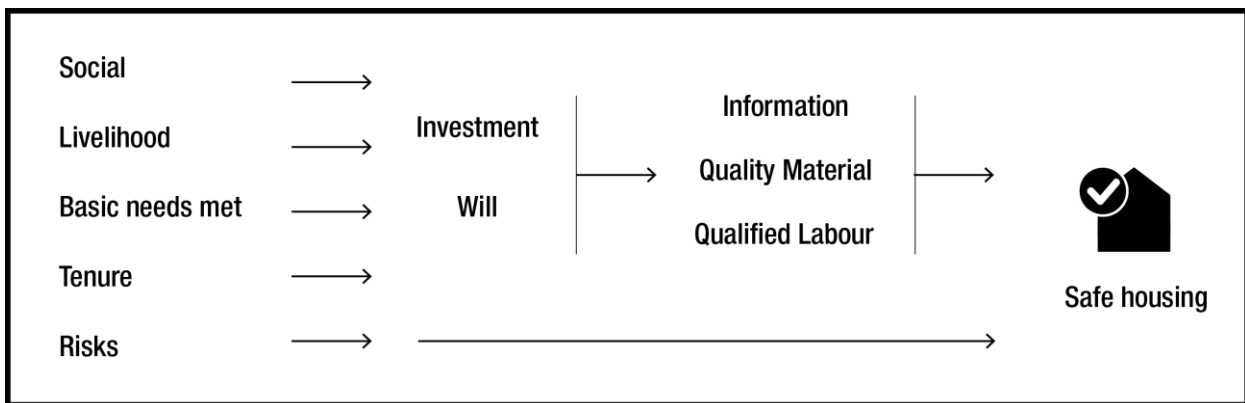
Because they are recognized as particularly vulnerable, widows were often supported by the communities, receiving assistance for their basic needs (food, etc...). During the cyclone, many were hosted by neighbours and some still are because they are unable to repair or rebuild their house without support.

Single-headed families are another vulnerable group and there were high numbers of female-headed households in the neighbourhoods studied. Separated and widowed women face social stigma, violence, abuse and exploitation. Contrary to widows, these groups often face marginalisation and exclusion from communities.

Women are often more vulnerable than men as they are often dependent on men's incomes and less able to seek employment to meet their own needs. Most people in the neighbourhoods during working hours are women, who also take care of the children, the household chores and sometimes of a little economic enterprise (such as a small shop in front of the house). Women in Beira are also less educated than men. In Beira district, illiteracy rates between men and women vary from a ratio of 1 to 4 to 1 to 6, depending on age groups. 16% of women between 20 and 24 years are illiterate, rising to 70% for women over 60, compared 20% of men of the same age. However, school attendance figures show that a more equal ratio had been achieved by 2009 for lower education levels.

Child-headed families form another key vulnerable group. Child-headed families depend on relatives and on precarious jobs. More often than not they have had to leave the education system. The interviews with local leaders showed that local authorities are aware of the vulnerability of some of the inhabitants, specifically the elderly and widows. This information is said to be shared at the municipal level with institutional and social representatives.

Fig. 4. A non-causal diagram representing the factors affecting reconstruction and in Beira



## Brief Urban Context Analysis: Beira

### MAIN FINDINGS

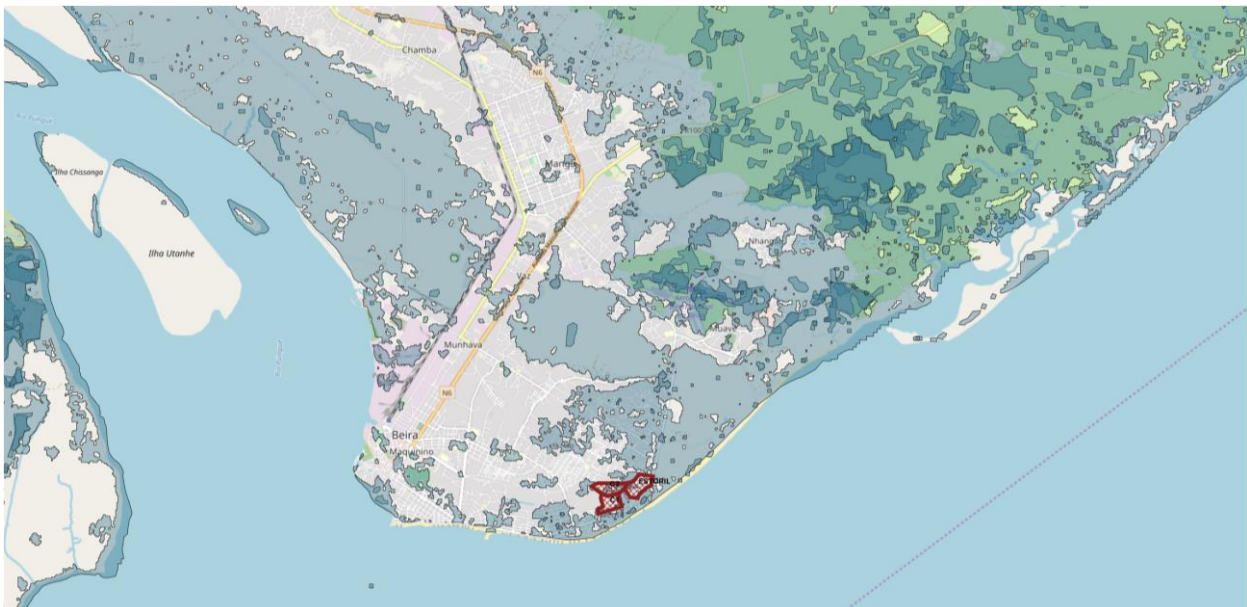
Beira faces high exposure to severe and extreme weather events which are likely to increase both in frequency and intensity with the changing climate to which its informal communities face increased exposure. In addition to environmental exposure, Beira's informal settlements display several other proxy indicators of urban poverty, including basic internal infrastructure, unequal and limited access to services as well as a reliance on informal, precarious employment. Land tenure however, remains largely secure and most neighbourhoods are recognised by the Municipality. Unlike most Mozambique's districts, Beira district is governed by the Municipality who has responsibility for all urban assets except for electricity, water and primary roads which are administered by national entities.

### AFFECTED URBAN AREAS

#### Risk exposure

The city of Beira was established in 1907, to take advantage of its strategic location on the Indian Ocean, at the mouth of the Pungwe River and at a relatively close distance to Zimbabwe, Malawi and Zambia. Beira is a port city, built on the flat sediment of the river, barely above sea level. As stated by many reports Beira is situated in a risk-prone area, particularly vulnerable to flooding, and tropical storms.

**Fig. 5. Surveyed neighbourhoods within areas flooded by the Cyclone.**



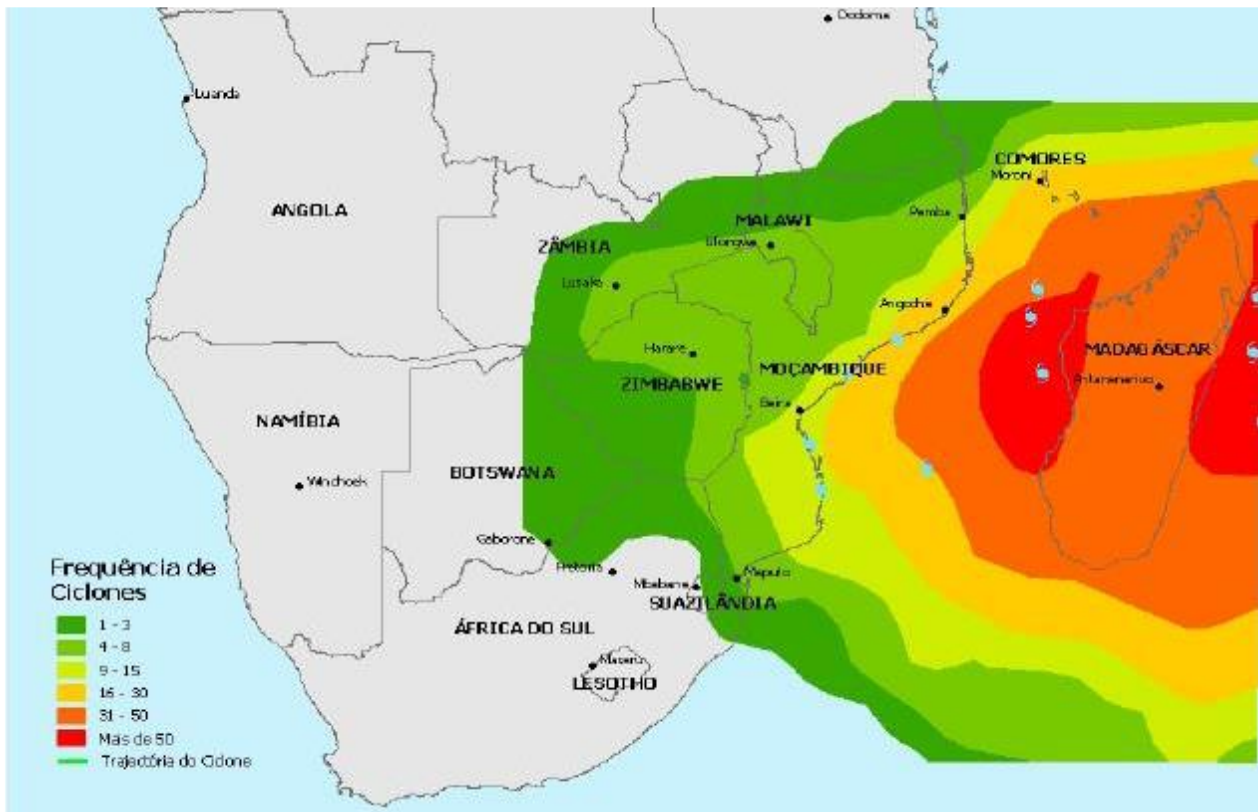
Cyclone Idai has, once again, revealed the high vulnerability of the Mozambican coast to extreme weather events. However, as stated by local authorities, this should not draw attention from its vulnerability to less severe but more frequent climatic events, such as high winds, heavy rains and high tides.



Big drainage works have been undertaken in the city as a means of reducing flood risk, but chaotic urban development over the past 60 years combined with the fall of investments in public works have resulted in an urban area that is unequally protected against environmental risks. The primary drainage network (recently upgraded) has reduced the risk of flooding at the municipal level, however low-income urban neighbourhoods tend not to be connected to this network.

The Mozambican coastal area as a whole is particularly exposed to the impacts of climate change, particularly rises in sea levels and increases in tropical cyclone frequency and intensity. Earthquake risk has been classified as medium, meaning that there is a 10% chance of a potentially-damaging earthquake in the next 50 years (Prevention Web).

**Fig. 6. Frequency of cyclones that have reached the Mozambican coast in the last 75 years.**



### Urban neighbourhoods

The municipal district of Beira comprises 26 administrative ‘bairros’ (neighbourhoods), grouped in five ‘postos’, two urban, two peri-urban and one rural. Each bairro is divided in several ‘quarteirões’, socially homogeneous subdivisions that are in turn divided in ‘unidades’ of ten households. Each level is governed by a chief and collectively the chiefs by the municipal institutional councillor (‘vereador’). This organisation permits a direct, two-way communication and ensures the municipal authorities have good knowledge and understanding of the neighbourhoods.

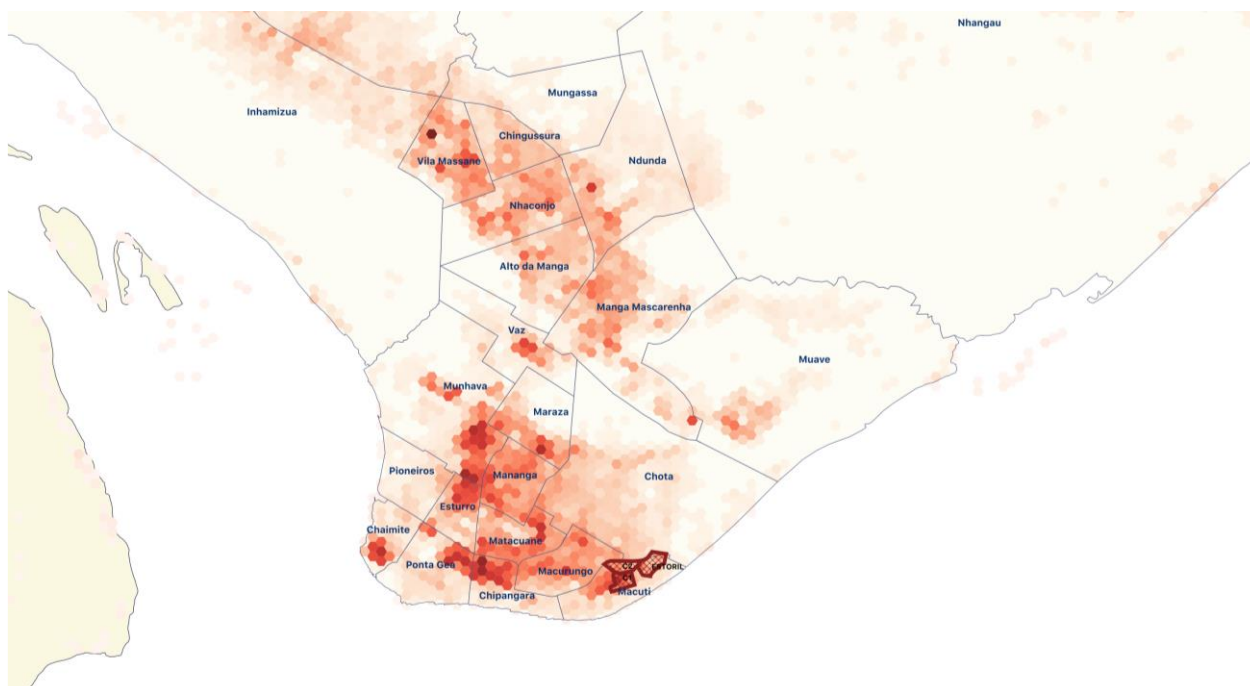
Until the 1950s, much of Beira’s development and urbanisation was driven by its port activities. The city’s rational grid plan comes from this period. In the 1960s, the emerging nationalist conflict forced Portugal to open the country to foreign investment. In Beira, this resulted in a real estate boom and the construction of many hotels and residential buildings. The need for cheap labour led to rapid urban growth and the development of urban slum communities such as Munhava, in the centre of Beira. This urban development stopped in the 1970s. With independence from Portugal came the nationalisation of all land and rental housing and the departure of many Portuguese and foreign employers. This was followed by the closure of much of the port activity to honour UN trade sanctions against Rhodesia.

The nationalisation of land has resulted in a certain level of control over urban development, even if it remains largely informal. A few of the urban neighbourhoods are not fully recognised by the Municipality. One example is

Praia Nova, a central, risk-prone, but economically dynamic area. Other informal neighbourhoods are legitimately recognised, their land occupation is monitored, and their issues integrated to municipal urban development plans.

Most of the surveyed neighbourhoods (Estoril, Macuti C1, Matacuane) have developed since the 1960s in former agricultural areas surrounding the historic urban centre of Beira. They benefit from connection and proximity to the city infrastructure and services, even if their internal infrastructure remains very basic. These neighbourhoods are inhabited by low- to middle-income families engaged in formal or informal employment in the formal city areas.

**Fig. 7. Surveyed neighbourhoods and population density in Beira.**



Other neighbourhoods are more recent and have developed since the 1990s or 2000s (Macuti C2, Matadouro). They too result from the subdivision and sale of former agricultural areas. These areas are located at the edge of the urban area and attract both poor households in search of economic opportunity and wealthier households in search of cheap land. These neighbourhoods are therefore more socially diverse and host a great proportion of renters and unfinished rental properties. The pressure placed on these areas in the recent years has changed living habits. Agriculture and self-sufficiency have drastically reduced over the years, leading to the higher dependency of poorest households on informal employment.

As mentioned, the government has a history of resettling urban residents in post-disaster contexts. However, it has also undertaken such activities to reduce risk exposure (Praia Nova, Munhava), to complete major infrastructure works such as drainage and roads or for business development (e.g. IVATO supermarket in Inhamizua). When this occurs, the Municipality provides the displaced population with new plots of land (and sometimes a house) in peri-urban or rural areas (Ndunda, Matadouro, Inhamizua). The success of these resettlement programs is questionable with many relocated people moving back to their original sites Praia Nova and Hotel Grande are clear examples of this.

### Services

Most of the informal neighbourhoods rely on the formal city for services, employment, transportation, health and education. In the surveyed areas the interviewees were generally satisfied with the access to services that they had.

Some services however, remain limited and unequal. Connections to public networks were more commonly a feature in urban than peri-urban or rural neighbourhoods. As an example, the 2007 census shows that, at the municipal level, 28% of the households do not have access to sanitation yet the survey results (carried out in predominantly urban areas) show a rate of 80% access to latrines. In Estoril, sanitation is available on the plot for

an average of 72% of households and inside the house for up to 22%. The most unserved area surveyed is Macuti C2 where 20% of households had no access to latrines.

The surveys show that between 23% and 54% of houses had connections to water networks available on the household plot and 46% – 70% had access on that of a neighbour. The older communities have better connections to water networks whereas in the more recently developed areas such as Macuti C2, all water sources are illegal and come from connection to surrounding neighbourhoods.

Electricity coverage in surveyed neighbourhoods range from 66% to 93%. Coverage was formed of formal contracts and illegal connections.

## GOVERNANCE

The Mozambican territorial administration distinguishes municipalities as an additional administrative level which lies under the provincial and district level administration. There are 33 municipalities governed by autonomous authorities. In most cases these municipal authorities coexist locally with the district administration, apart from a few exceptions, such as Beira where the municipal authority governs the whole district. In Dondo the normal administrative organisation applies, and the district authority governs the whole of Dondo district and the municipal authority only governs the urban area.

All urban assets are of the responsibility of the Municipality except electricity, water and primary roads which are administered by national entities. The Municipality of Beira, like other cities in Mozambique relies on the central government for financial resources, and on their capacity to raise funds through services and land tax.

From 2003, the Municipality of Beira is headed by Daviz Simango of the Resistência Nacional Moçambicana (RENAMO), the opposition political party in the country. Some reports argue that this has led to the marginalisation of the city and prevented it from benefiting from potential investment and participation in development programs.

Local capacity to undertake works or even maintain infrastructure is weak. The drainage network is an example of this, lacking cleaning and dredging. Nonetheless, the Municipality is rather dynamic and has developed plans with the support of external actors (see below). Among them, the well documented *Plano Diretor 2035*. These plans have only been partially implemented. Among the completed works is the 2013 plan for the improvement of the primary drainage network, managed by the World Bank and the Ministry of Public Works.

Prior to Idai, the Municipality priorities were: the protection of its coastal areas, plans for urban expansion and the improvement of urban housing. Different plans have been developed for the extension of the city on the high land to the north of the city. This approach promotes large-scale housing construction to meet the need of middle- and high-income groups. A plan for the construction of 25,000 houses will start in 2019 with a pilot phase of 150 houses.

The land administration has also been a priority for current Mayor Simango, efforts have been put to monitor the land occupation and claim land taxes. The Municipality has been supported in many of these tasks by the Dutch consultants of Deltares. UN-Habitat is another long-term partner. Both Deltares and UN-Habitat are currently supporting the Municipality in the production of the Post Disaster Needs Assessment.

It has also to be noted that the Municipality played an important role in the disaster response, mobilising up to 700 volunteers for road clearance and other technical services in public spaces. For the upcoming recovery phase, the Municipality is particularly concerned with the closing of community centres and transit camps, the sanitation situation in schools and health centres and the full recovery of major economic activities.

## TENURE

Land in Mozambique is the property of the state. However, the right to plan, develop and grant licences is delegated to the district or municipal level authorities. Despite there being no private ownership, land tenure is generally considered to be secure. Residents possess constitutional rights to the land on which they live, even if they lack a formal title. If the government or the municipality requires a piece of land, they must provide the resident with an alternative, with compensation for land 'improvements'. Residents have the right to the land that they have occupied for ten years or more if the use of the land was for residential purposes.

With no formal market, informal mechanisms provide the most important means of accessing land in urban areas. The trade in 'improvements' on the land is done with the understanding that the plot of land and the structure on it will be part of the same transaction. Without a formal title however, residents struggle to obtain credit for land



improvement or for small-scale business. Formal access is out of reach for most low-income urban families and 90% of urban inhabitants do not have a formal land title.

### Secure Tenure Systems

Formal land titles can be obtained through three ways. Through 'Good faith occupation' a person is considered the legal occupant after ten years of residence on the land. Through 'communal access' communities are able to register the land that they have traditionally occupied. Communal access rights are most relevant in rural areas. Finally, through official registration of idle land, individuals or businesses can apply to the appropriate state or municipal registries for the use of the land.

Formal titles are not required to prove rights to the land, but they are generally thought to help if any type of disagreement should arise. However formal processes were described as overly complicated and lengthy. Higher income households, making significant investment in the house considered it a necessary process due to concerns that compensation plans offered by the government for residents lacking titles and who are removed from land may not equate to the amount invested.

### Gender and Tenure

Women face unique challenges when it comes to land tenure. There were instances where women who were separated or widowed, often faced eviction from the husband's family. In a handful of instances, a woman had negotiated to remain in the house on the basis she had children to raise but expressed that this is uncommon. In such cases they feared for their security once the children were older stating that the family may return to evict them later. These issues were not confined to this research alone and were also key findings to emerge from CARE's Rapid Gender Analysis.

### Renting

Although no figures are currently available, there are potentially significant numbers of renters in urban areas. Rented houses tend to be easily identifiable, often constructed as a series of terraced small houses when constructed on empty plots. At other times they are constructed as a second house on the plot of the owner. Rental prices across Beira varied from 1700 MZM per month to 4000 MZM for a higher quality house among those asked.

**Pic. 4. Examples of rental accommodation housing typology and a relocation site.**



## LIVELIHOODS

### Informal and precarious

Livelihoods across the urban communities were informal and precarious. Common jobs included, fishermen, block makers, daily workers, small scale retailers, security guards, domestic workers, fish sellers and farmers. Common (informal) salaries ranged from 4,000 to 6,000 MZM (65 to 100 USD) though the minimum monthly wage is 12,500 MZM (200 USD). Many residents relied on traditional forms of informal cooperation. The term 'buscato', refers to the exchange of labour for food and/or cash and a common livelihood activity among both women and men in low-income urban communities. Families also relied on kinship ties with immediate and/or extended family networks. These ties offer an important form of social protection and guarantee a degree of social security for the elderly or in case of sickness. People lacking the capacity to work and without family ties could be among the most vulnerable groups.

**Markets and women**

Several of the communities visited, had thriving local markets at community entry points from the main road, with residents selling a range of commodities including fruit and vegetables, dried fish and charcoal. Smaller stalls outside of houses are spread through the communities. It is clear that markets play an important source of income generation for women. The small stalls found inside of the community are typically owned by women and in the case of Macuti C1, the vast majority of vendors in the main market were also women.

## The construction market

### MAIN FINDINGS

Poor construction practices and low-quality materials were the principal causes for damage sustained in urban communities. The quality of the sand used for construction is the most critical issue affecting the quality of conventional houses.

All decision-making power relating to construction lies with the homeowner who also has numerous competing priorities and limited economic capacity. As trusted sources of information, masons and carpenters have an important role to play but face specific challenges because of their age, status and employment trajectories.

### TYOLOGIES AND WEAKNESSES

#### Built typologies

Both traditional and conventional typologies are present in the city of Beira, with an unequal distribution between urban, peri-urban and rural neighbourhoods. The 2007 census shows that in Beira, the material used for structures are mainly masonry (56% of both block and brick) with traditional materials used for 41% of the houses. At the provincial level however, the difference between these figures is more marked, with 19% for masonry and 73% for natural materials. In terms of roofing materials, in 79% of houses in Beira use CGI or fibro-cement, 9% concrete slab and 9% have roof formed of traditional materials. In the whole province, the use of natural materials is higher (62%) but CGI and fibro-cement are still common (34%).

In the surveyed neighbourhoods, as shown in part “Sheltering and reconstruction” the proportion of conventional typologies is generally about 15% in urban areas, and up to 70% in rural areas. But CGI remains the most commonly used material for roofing, both on conventional and traditional structures.

It has to be noted here that in several peri-urban (Mafarinha, Estoril) or in-development neighbourhoods (Macuti C2), a lot of ongoing masonry construction has been observed, totalling up to 15% of all houses in Mafarinha, or 58% of the conventional buildings. These constructions are destined to be either principal residences or renting buildings.

#### Common weaknesses

As mentioned in the part “Typologies, damages and repairs” both typologies have shown specific weaknesses to high winds and heavy rains. These weaknesses are not intrinsic to the building typologies rather, they are caused by low quality materials and/or bad construction practices.

The use of low-quality materials is the main challenge for housing construction in the visited areas. Roofs were not overly affected due to the use of very thin CGI which tends to bend, tear or be removed completely when subjected to strong wind. The most commonly used thickness of CGI is 0,18 or 0,2 mm, compared to the 0,4 mm recommended (see section on materials from page 26). Small or irregular wooden-frame sections is also a common reason for weak roofing, as the wood can break or split under wind pressure and from the motion of the screws and nails. However, the quality of sand used for blocks, concrete and mortar and which affects the whole quality of the structures remains the critical issue. This is detailed in the section on materials (page 26).

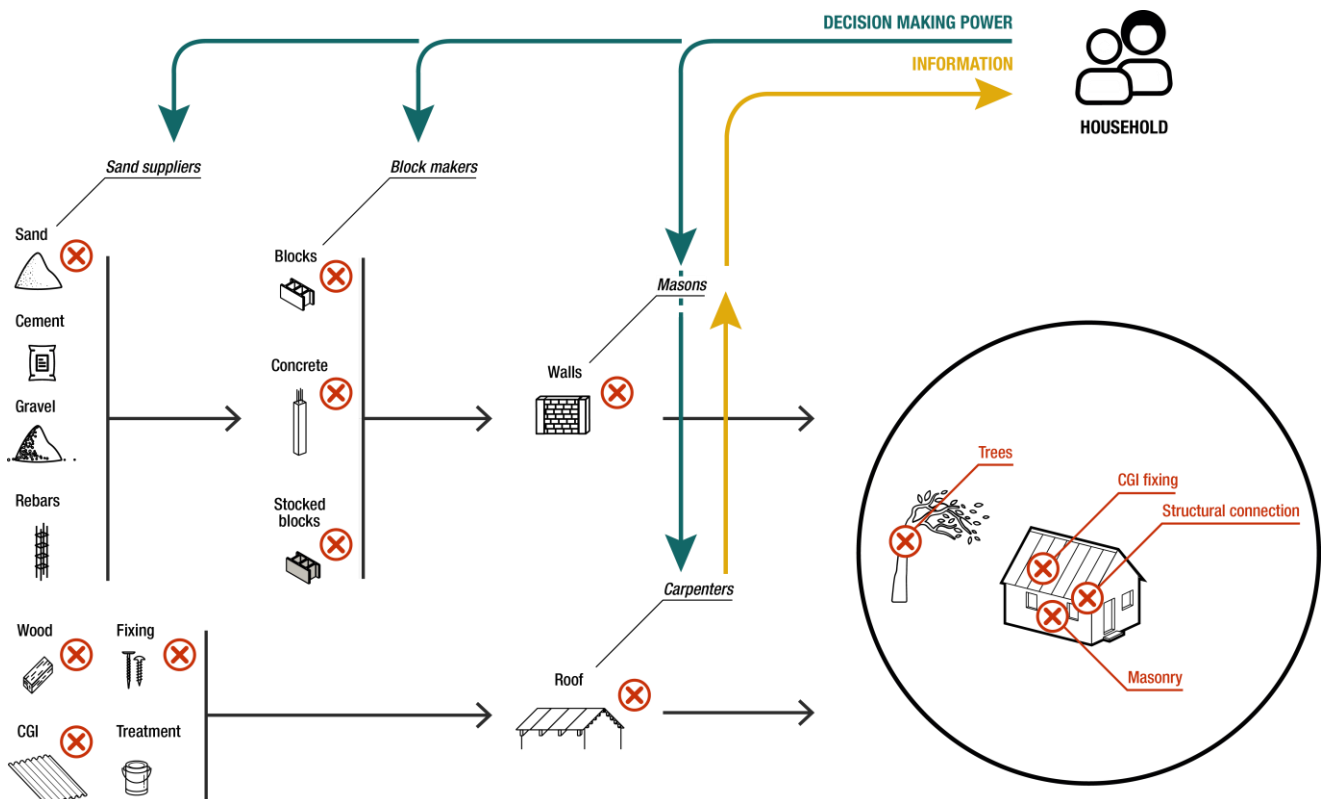
Low economic capacities result in a household reliance on low-quality and/or insufficient reinforcement. For both typologies, foundations are usually too shallow and connections between structural elements too weak. Masonry structures are the most affected. Structural elements are often too small, and most houses do not have concrete columns and almost never have concrete ring beams at eaves level. Consequently, connections between the walls and roof structure are very poor. In addition, walls are often constructed using blocks that are too thin with low structural capacities. Finally, the use of nails and screws for fixing CGI roofing is generally insufficient even if good quality nails and screws are available and used.

## THE ROLE OF THE HOUSEHOLDS

All processes relating to reconstruction must be understood within a context in which the homeowner retains the decision-making power, has numerous competing priorities and has limited economic capacity. This has several implications for the speed and quality of urban reconstruction. Knowledge and understanding of safer construction practices varied from household to household. While there appeared to be a tendency to seek information about construction from experienced builders, there was often a need to prioritise cost over quality.

Because economic capacities are very limited, construction is phased, with foundations, lower and upper walls, and roofing all built at different times when capacities permit. This phasing has an impact on the structural integrity of the whole structures and different builders can intervene on the same structure over a period of months or years.

Fig. 8. Main identified issues in the construction system.



## LABOUR

### Masons

Labour for reconstruction is locally available. Households typically pay local masons to carry out building work and felt as though there was no shortage of masons within the neighbourhoods. Masons and carpenters are typically trained at school or, on the job by a 'mestre'. The mestre works independently, usually with one unskilled worker.

Masons were described by households as being the primary trusted source of information when it comes to construction. Focus groups and interviews with masons demonstrated that masons possess knowledge of safe building practice but that ultimately households made key decisions about construction based on their economic capacity. The types of materials to be used are decided by the household as are the estimations of the quantities of materials, which incidentally, were rarely correct or enough. Households will opt for cheaper practices wherever possible.

Masonry was described as an employment for the younger generation owing to its physically demanding nature and, as such, there tends to be few older masons. Those interviewed stated that masonry is infrequently considered to be a job for life. Rather, masons stated that people tend to engage in masonry work for a few years

before transitioning to a more specialised area of work which may guarantee a higher income such as painting, plumbing or being an electrician. Masonry was infrequently the main or only source of income for the masons but rather supplemented income from other informal employment opportunities, particularly during the rainy season when options for income generation through masonry are reduced. The lack of organisation of masons resulted in an absence of common prices for goods and services.

Masons are not usually involved in the construction of traditional houses, which is mostly done by households. In the same way, post disaster repairs have been implemented directly by households. The only cases in which masons describe having carried out construction of traditional houses is when contracted by local organisations to provide assistance to a vulnerable person or household.

### **Carpenters**

There are fewer carpenters than masons and their involvement in housing construction is only in relation to specific steps of the process. Sometimes they are responsible for making the casing for concrete works, and the wooden roofing structure but these too are often implemented by masons.

Carpenters do tend to make doors and windows, providing them with alternative sources of incomes (as well as furniture making). Carpenters therefore have greater economic opportunities than masons and can work all year long. Consequently, unlike masons, carpenters tend to dedicate all of their time to the occupation, whether self-employed or employed in small scale workshops.

### **Block makers**

Rather than a profession, block making is more an income opportunity for young male adults because of its physically demanding nature requiring limited skills. As mentioned above, block makers may be contracted by households for one day of work or be employed by a business owner for a more regular activity. In the first case block makers receive a lump sum, in the second, they are usually paid about 100 MZM (1.55 USD) per cement bag used (for an average 4 bags a day).

In both cases block makers tend to have other complementary economic activities and are constantly searching for job opportunities, like other 'buscateiros'. As with young masons, most block makers expect to develop skills in a specific area of construction.

### **Suppliers**

This category is composed by professionals working at very different scales. Suppliers of the main construction items in Beira are big companies, established downtown, who provide materials and tools for everyone, from households to construction firms. They offer a broad range of most common products. They were described as the preferred place for most households as they offer the best price. Most products they provide are imported from surrounding countries. Only a few products are locally produced. Fibro cement sheets are produced in the Mozalite factory in Dondo. Some IBR and CGI sheets are cut to specific dimensions by a Chinese importer. Finally, sand is gathered in the region by different scale suppliers.

There are few intermediate suppliers in Beira. They can be found at the periphery of the city (Inhamizua, Chota road) or in other smaller cities (Dondo). They buy from big suppliers and therefore charge higher prices, so they are the less preferred option by households.

## **MATERIALS**

In Beira most construction materials are purchased in the city from main suppliers. Only sand, gravel and cement blocks are bought locally from local suppliers or individuals.

Natural materials for traditional houses (wood, thatch, bamboo etc.) are usually gathered in rural areas or bought from local individual suppliers in peri-urban markets. Sand is also regularly gathered from construction site or locally, swept from the roads or the beach. When building a traditional house, the items that are usually purchased are nails and binding wire although some make use of plastic sheeting between two layers of thatch to make it more waterproof.

The prices of construction materials are described to have increased following the cyclone; some, such as CGI have increased significantly. To prevent this, the government has imposed fines on suppliers raising prices which has resulted in price stabilisation. However, the price of cement was consistently described as having increased significantly from about 350 to 420 MZM (5.5 USD – 6.50 USD).

### **Cement blocks**

Blocks are frequently made by labourers, masons or households on the housing plot. Alternatively, some households buy blocks from nearby sites such as on Chota road. Blocks from these sites are higher quality and cost

22 MZM for a 15cm wide block) (see table in annex) and are made by day labourers previously discussed. Most households, labourers and masons asked stated that a 50kg bag of cement produces between 40 and 45 blocks (15 cm wide).

The quality of the blocks for construction is highly variable and largely dependent on the quality of the sand and the sand/cement ratio used. Blocks made at specific sites use sand purchased from suppliers and therefore is likely to be a higher quality. The typical ratio used was described as 'two wheel barrows' per 50kg cement sack for an estimated ratio of 1 per 9, which is commonly recommended.

The three main issues encountered affecting the quality of blocks are; a high number of blocks produced per bag of cement (sometimes 50 or higher), too much air in the sand and cement mixture as the blocks are not vibrated or compressed and, ultimately, bad quality of sand bought or gathered. It should be noted that a significant quantity of the blocks available for reconstruction are already in the market. High numbers of urban households were storing blocks prior to the cyclone and continue to do so.

### **Sand**

For households opting to have the blocks made at the site of their house there are two common processes for obtaining sand for use in construction which have implications for the cost and quality of the blocks produced as a result. The first is to buy sand from suppliers at a price of around 1,500 MZM (small 6m<sup>3</sup> truck) and have this transported directly to the house (transportation is usually included). In cases where there is no access, the supplier will drop the sand at the closest point and the household pays community members to transport it to the house.

The second process frequently observed in Beira, among families who are trying to reduce costs, is to gather locally available sand directly from the beach or by digging it directly from the plot on which the house has been built.

Because the soil is very sandy in Beira, it is very difficult to find gravel locally. Gravel is brought from quarries for almost double the cost of sand. This hinders the use of good quality gravel in foundations or in concrete works subsequently affecting the strength of the structure.

### **CGI**

High quality CGI and IBR, which are produced in China and South Africa, are available at local suppliers. A wide range of thicknesses are available; from 0.18 to 0.5 mm. Prices can vary significantly, from 400 MZM to 1,250 MZM (12 feet) for different qualities. Households tend to select the 0.18 to 0.3 mm sheets which are at the cheaper end of the scale. Coated or painted CGI and IBR are preferred as they are more rust-resistant.

Fibro cement roofing sheets locally known under the name of Lusalite (a factory based in Dondo) are a very common and preferred alternative to CGI. Fibro cement sheets cost about twice as much as CGI or IBR, (1500 to 1800 MZM per 12 ft sheet), but they provide better insulation and resistance to high winds. Census data shows they are used on 20% of houses in Beira. However, this material traditionally contains asbestos. As a result, a lot of asbestos is present in the rubble of damaged houses and public buildings. The Shelter Cluster and partners are expecting a specialist to develop specific guidance for fibro cement and asbestos management.

The use of asbestos was banned in Mozambique in 2010. Since 2008 the production of fibro cement roofing sheets in the factory in Dondo is asbestos free. However how to distinguish between asbestos and asbestos-free sheeting is little understood.

### **Timber**

Timber is used in conventional and traditional construction for the structure, doors and windows. Doors and windows are bought from local carpenters. Casing is often made with second hand plywood. There are concerns relating to the sourcing of timber used in structures and the environmental degradation that results.

In conventional houses, the timber is mainly used for the roof structure. The main timber dimensions seen were 5x10cm or 5x15cm, which are the commonly recommended size by shelter clusters. Low-quality beams had a smaller width (3cm), which may result in weak CGI fixings. Timber can be bought treated and untreated. It is sometimes treated on site with oil or chemicals. The sources of timber are currently insecure, many are from illegal logging. The Shelter Cluster partners are careful about using certified timber providers. CARE for example is studying the option of importing sustainable wood from South Africa.

Timber used for the structure of traditional houses is often gathered locally and used in its natural and raw state. Sticks ranging from 2-3 meters in length form sections of 2 to 10cm. The source of the timber also remains uncertain; it has been reported that some is mangrove wood, which is illegal to use.





# SHELTER RECOVERY STRATEGIES

## Rationale for Shelter Recovery strategies

The Shelter Cluster together with national and local authorities, has developed global goals in terms of shelter recovery assistance. These objectives, which are shared by all the actors, are as follows:

- "To provide decent and adequate shelter to flood- and cyclone-affected vulnerable people whose homes have been destroyed or damaged."
- "To support sustainable solutions to protracted displacement (avoiding the creation of camps and allowing safe return from collective centres)."

These shared objectives are being converted into two distinct, but complementary approaches: direct and indirect support to respond to the situation in Beira.

Direct approaches have typically involved NFI support, such as shelter kits, which are also the preferred option recommended by the government for the return of urban populations. This approach, implemented by several organisations is often an extension of emergency or early recovery intervention, with more complete kit composition. The other direct methodology proposed by agencies is the direct support for construction or repair of houses. These works can be done directly by humanitarian actors, or more often through owner-driven approaches. In both cases the construction will follow reconstruction standards linked to contextually-specific Build Back Safer principles. This methodology is often accompanied by training or awareness activities for households and building professionals. A key and specific objective of the direct approaches is to ensure safe housing for the targeted beneficiaries.

Indirect interventions aim to improve certain characteristics of the recovery context to foster long-term and safer reconstruction at scale and encourage continued investment in safer housing over time. Activities include



improvements in the spatial organisation of neighbourhoods, support for tenure security and/or construction market interventions to try to influence safer reconstruction of houses as and when households can construct. The relevant focus in Beira may be to improve the quality of materials, particularly those that go into the making of cement blocks, as well as the knowledge and techniques used locally by households and builders. This approach can be accompanied by in-kind support or vouchers to support and encourage safer reconstruction. On-site training where masons learn on the job, can also facilitate learning within neighbourhoods while providing safe housing for a limited number of extremely vulnerable people.

The goal adopted by these indirect approaches is generally to improve the frameworks that limit a safer reconstruction for a large number of affected people. Within the context of an underfunded crisis and very high needs, the rationale of the approach is to reach a maximum number of affected individuals with a significant impact.

Both approaches respond to the issues presented by the post-cyclone context in urban Beira, but they present different strengths, weaknesses and challenges. The tools mobilised may be similar (vouchers, IEC, etc.) but when implemented they will not serve the same objectives, hence the importance of considering the respective ambitions of the approaches developed to design and adapt the tools.

## Scenario 1: Indirect Support to Self-Recovery

MAIN CHARACTERISTICS	TOOLS	STRENGTHS	WEAKNESSES	MAIN CHALLENGES
Indirectly support safer reconstruction through the improvement of the quality of labour and materials.	Bespoke IEC for stakeholders (Training, Awareness)  Market interventions	Wider reach and impact  Sustainable, long-term impact	May not meet the needs of the most vulnerable  May be a challenge to engage households if no in-kind assistance will be provided  BBS impact limited to specific issues	Limit market perturbations (prices, stakeholders' continuity).  Establish joint agreement between suppliers and the municipality

### GENERAL RECOMMENDATIONS

- **Implement a comprehensive market analysis**

In order to gain a comprehensive understanding of the construction actors in the targeted areas and develop informed market intervention methodologies, it is essential to implement market studies at the municipal level.

- **Define areas of intervention that are consistent with the areas of action of stakeholders and with program objectives**

The different construction stakeholders (block makers, suppliers, masons, etc.) may work on different overlapping areas. To develop a controlled market intervention, it is important to map and then define areas of intervention that encompass both the different areas of action of key stakeholders and the areas inhabited by target beneficiaries.

- **Develop market approaches that integrate all supply chains.**

Within the construction system some key production steps depend directly on others. For example, the quality of masonry construction depends on the quality of the blocks which in turn depend on the quality of sand. Improving one part of the chain will often require intervention on the previous stages.

- **Monitor and limit price increases**

The improvement of the supply chains must be done without major price increase of the targeted services or goods. Joint or individual agreements with stakeholders must be established to prevent this. Price monitoring and information to customers will ensure these agreements. The accompaniment of the municipality in this follow-up will be a major asset.

- **Take into account the different typologies of housing, even in the city.**

Traditional housing remains a relevant option for many urban dwellers and can improve their resilience to weather events. The conditions are generally met to promote their use (materials available, cultural adequacy, ...). It is important to include these typologies in the activities (training, market intervention, etc.), the materials that they require, and therefore the stakeholders in these sectors (suppliers, etc.).

- **Adapt training and information activities to the status of the stakeholders.**

The professional statuses of the construction stakeholders are varied. Carpenters, for example, are career professionals, whereas block makers are casual workers. Training needs to take into account these differences in its content and form in order to support participation and ownership of the different stakeholders.

- **Support the efforts of local and national authorities in managing natural resources.**

Promote sustainable management of sand and timber in particular. Study the possibility of developing or supporting certifications of certain actors. The efforts of the municipality of Dondo to control sand supply is a good example of this. Promote and support plantation of wind-resistant vegetation, namely fast-growing, leafy trees, and smaller species.

- **Highlight the cost-benefit ratios of some safe reconstruction practices.**

Some safe reconstruction measures represent limited investment costs, for potentially large impacts. For example, a few extra nails or some binding wire can significantly improve the resistance of roof structures to high winds. Demonstrating these comparative advantages can support the adoption of these measures and inform the choice of populations.

- **Promote the role and status of the masons.**

Masons are key local stakeholders housing construction market; however, their role is often limited and their economic activity precarious. In order to sustainably improve the quality of construction in neighbourhoods, it may be appropriate to promote their role as well as to improve their capacity to organise.

## Scenario 2: Direct Support to Self-Recovery

MAIN CHARACTERISTICS	TOOLS	STRENGTHS	WEAKNESSES	MAIN CHALLENGES
Direct support to targeted households to rebuild	Direct or owner-driven reconstruction  Voucher assistance  Training with stakeholders	Meets needs of most vulnerable  Some people achieve safer homes  High BBS impact	Limited reach and scale  Limited replicability	Beneficiaries selection  Ensure safe reconstruction despite risk exposure and quality material

### GENERAL RECOMMENDATIONS

- **Avoid high-risk prone areas and promote risk reduction.**

Safer reconstruction cannot be limited to the house itself. Some high-risk prone areas are unsuitable for habitation, identify them in collaboration with the municipality. In some lower-risk areas, some measures can be taken locally (connection to primary drainage, retention walls,) to significantly reduce risk exposure. These works can be mutualised to mitigate risks at the neighbourhood level.

- **The selection of areas of intervention and of beneficiaries must be coordinated with local and municipal authorities**

Urban neighbourhoods in Beira are relatively homogeneous, so the choice of one area rather than another should be clearly informed and explained. In the same way, the socio-economic situations of the inhabitants of the same neighbourhood can be alike. The municipality and its local representatives can inform these choices and legitimize them. Working with the communities to establish beneficiary selection committees and to identify vulnerable households may also help reduce potential tensions.

- **Allow for some flexibility in the use of vouchers**

Depending on the approach adopted, vouchers will aim to support beneficiary self-recovery processes, and these are all specific. Even if the overall objective is to improve construction, it is important that the proposed items permit support to some complementary activities. The recovery of small-scale economic activity, or other important housing assets are an example of this. These elements make the process more effective and can have positive impacts on the household's psychosocial recovery.

- **Avoid unequitable vouchers between beneficiaries**

Unequal or unequitable approaches can cause difficulties and tension within and outside of the programs. Distinctive approaches are often necessary to achieve common objectives but assistance (such as the value of the voucher) should remain equitable. Assess the social acceptance of unequal approaches, especially between rural and urban population.

- **Adapt the contributions of households to the reconstruction of their homes to their socio-economic situations.**

Households' financial resources are limited, underemployment and the food insecurity weigh on their finances. It is important to request realistic contributions, in terms of finance, materials, or time so that the reconstruction

programme, despite its positive impact on the improvement of housing, does not further aggravate their economic dependence.

- **Promote the use of all local typologies**

Traditional and conventional typologies have respective advantages that are important to highlight. The proposed assistance must be able to concern all the typologies, in coherence with the freely informed choice of the beneficiaries.

- **Consider municipal and national housing procedures and standards.**

In order to guarantee a conformity of the houses built with the national law and with the municipal frameworks, it is important to liaise with the local authorities and to follow the existing norms both in terms of habitability (minimal area, etc) and construction practices.

- **To ensure safer reconstruction, promote the use of quality sand.**

The widespread use of poor-quality sand has a lasting negative impact on the quality of masonry construction. Work with all actors in the supply chain to improve the quality of the blocks, concrete and mortar used.

- **Improve individual sanitation and water supply.**

Access to individual sanitation is uneven and limited in Beira's urban neighbourhoods. Intervening to improve housing must include an intervention that will also improve the sanitation and the water supply to allow further improvements to hygiene, health and protection.

- **Promote the formalisation of land tenure**

Although land tenure insecurity is limited, it may limit the occupants' free exercise of their rights. Case-by-case work on housing, can be an opportunity for information, promotion and support for the legalization of tenure (see also recommendation on Gender).

- **Reorganise housing location on plots where possible.**

Having the optimal positioning of houses on small urban plots can have positive impacts. It can allow or facilitate other activities, such as small-scale agriculture or crafts. Similarly, the well-thought-out layout of a collection of houses can reduce their vulnerability to environmental risks.

## Overall Recommendations

---

- **Coordinate at the municipal level with other actors and local authorities.**

Indirect and direct approaches to supporting self-recovery are complementary. They also share many common activities (training of building professionals). Seek opportunities to extend the impact of interventions by coordinating, where possible, with other actors implementing complementary programming in the urban space and to align common approaches (training packages).

- **Develop impactful, efficient and wide coverage approaches to address specific contextual challenges.**

Keep in mind the challenging context of the response, marked by high needs, a wide affected area and limited funds. Develop adequate strategies, methodologies, tools and activities that take these challenges into consideration and support the affected population in the best possible way, namely in a more broad, efficient and effective manner.

- **Develop innovative ways to engage households in safer reconstruction.**

Households retain decision-making power when it comes to safer reconstruction and will be balancing numerous competing priorities. Finding innovative ways to engage households will help them to make informed choices about safer reconstruction.

- **Engage both women and men in shelter initiatives.**

Community-driven response and inclusive, community engagement approaches may support women and girls to achieve a more secure form of tenure. Engage both women and men in shelter initiatives and support advocacy initiatives with local partners to raise awareness, particularly for women (including single FHHs) on land and property rights.

- **Develop capacity-building activities according to programme objectives.**

IEC activities can contribute to various capacity-building or information objectives (promotion of good practices, technical reinforcement, etc.). They are not generic or interchangeable. It is relevant to define specific objectives for each IEC activity and for each target group.

- **Allow individuals to make their own decisions for their recovery process.**

Recovery and resilience processes are unique and complex. During recovery, priorities shift according to many factors (e.g. economic, environmental, social, political, technical). Some people may prioritize housing whereas others may prioritize economic activity to recover. Assistance programs should strive to provide support without imposing a single solution. Flexible support, vouchers or training may allow beneficiaries to use the assistance program freely (including in unplanned ways).

- **Support the recovery processes of each beneficiary while respecting the pace of reconstruction.**

Shelter is a process. The construction of houses generally extends over many years whereas recovery programs usually last a few months. In order not to impose the pace of assistance programs on recovery, it may be appropriate to define end-of-program objectives that can apply to unfinished houses.

## Annexes

---

### Annex 1: Visits

---

Name	Type	Visit
Picoco	Transit centres	Transit centres
Hospital, avenida do Centro Comercial, Macuti	Community centre	Community centre
Matadouro, Quarteirao 3	peri-urban neighbourhood	Interviews
Nhocamalosa, Bairro 18	peri-urban neighbourhood	Interviews
Matacuane	urban neighbourhood	Interviews
Ndunda 2	peri-urban neighbourhood	Interviews
Macuti C1	urban neighbourhood	Survey
MacutiC2	urban neighbourhood	Survey
Estoril	peri-urban neighbourhood	Survey
Dondo Mafarinha	peri-urban neighbourhood	Survey
Praia Nova	urban neighbourhood	Walkthrough visits
Maunhava	urban neighbourhood	Walkthrough visits
Esturro	urban neighbourhood	Walkthrough visits



## Annex 2: Selected Bibliography

---

### EVALUATIONS

- Alnap, Flood disasters: Learning from previous relief and recovery operations, 2008
- Arnall et al. Flooding, resettlement and livelihoods change evidence from rural Mozambique, 2013
- CARE, Post-disaster shelter in India: A study of the long-term outcomes of post-disaster shelter projects, 2016
- CARE, Lessons from Typhoon Haiyan: Supporting shelter self-recovery in the Philippines, 2018
- DEC, Independent Evaluation of Expenditure of DEC Mozambique Floods Appeal Funds, 2001
- DRC Shelter Working Group/CashCap, Lessons Learnt and Recommendations for Cash-for-Shelter Programmes in DRC, 2018
- FAO, On Solid Ground, The floods in Mozambique, 2010
- GFDRR, Recovery from Recurrent Floods 2000-2013, Recovery Framework Case Study, August 2014
- Global Shelter Cluster, Shelter Cash Champion Deployments: Updates and Lessons Learned, 2019
- Miranda Morel, Shelter assistance: gaps in the evidence, 2018
- USAID, Mozambique 1999-2000 floods - impact evaluation of USAID's cash grant programme, 2002
- World Bank, Learning Lessons from Disaster Recovery: The Case of Mozambique, 2005

### DOCUMENTATION ABOUT BEIRA CITY

- AIAS/CRA, Quadro de Políticas de Gestão Ambiental e Social: Infra-estruturas de Água e Saneamento, 2017
- Instituto Nacional de Estatística, Estatísticas do Distrito de Cidade Da Beira, 2013
- Instituto Nacional de Estatística, Estatísticas do Distrito de Dondo 2011
- Makgetla I., Building Beira: A Municipal Turnaround in Mozambique 2003-2010, Princeton University , 2010
- Pinsky B., The urban problematic in Mozambique, Centre for Urban and Community Studies University of Toronto, 1982
- Plano Director da Beira 2035, 2013

### MOZAMBIQUE URBAN FRAMEWORK

- Hébert J., Making Mozambican Cities Resilient Implementing : Participatory Resilience Planning in Mozambique, 2017
- Instituto Nacional de Estatística
- República de Moçambique, Diagnóstico da situação actual dos assentamentos informais em moçambique , 2010
- República de Moçambique, Estratégia de Intervenção nos Assentamentos Informais em Moçambique e seu Plano de Acção, 2010

República de Moçambique, Resolução n.º19/2011 Política e Estratégia de Habitação, 2011

UN-HABITAT, Mozambique Urban Sector Profile, 2007

UN-Habitat, Mozambique, Cities Without Slums, Analysis of the Situation & Proposal of Intervention Strategies, 2006

World Bank, Land Reform in Mozambique, 2008

World Bank, República de Moçambique: Análise da Urbanização em Moçambique, 2017

World Bank, Urbanization And Municipal Development In Mozambique: Urban Land Management and Low Income Housing Study, 2008

---

## CARE International Secretariat:

Chemis de Balexert 7-9  
1219 Chatelaine, Geneva  
Switzerland

Tel: +41 22 795 10 20  
Fax: +41 22 795 10 29

[cisecretariat@careinternational.org](mailto:cisecretariat@careinternational.org)  
[www.care-international.org](http://www.care-international.org)

## CARE Gender in Emergencies:

[emergencygender@careinternational.org](mailto:emergencygender@careinternational.org)

<http://gender.care2share.wikispaces.net/Gender+in+Emergencies>

CARE works with poor communities in developing countries to end extreme poverty and injustice.

Our long-term aid programs provide food, clean water, basic healthcare and education and create opportunities for people to build a better future for themselves.

We also deliver emergency aid to survivors of natural disasters and conflict, and help people rebuild their lives.

We have 70 years' experience in successfully fighting poverty, and last year we helped change the lives of 65 million people around the world.