



# BEIRA MUNICIPAL RECOVERY AND RESILIENCE PLAN

A Roadmap to Building Beira Back Better

Volume 1 - Main Report



With technical assistance and contributions of:



Government of  
the Netherlands

**UN HABITAT**  
FOR A BETTER URBAN FUTURE

  
**Shelter**  
Initiative by  ARCADIS with UN-Habitat

  
**UN  
DP**  
Empowered lives.  
Resilient nations.





# BEIRA MUNICIPAL RECOVERY AND RESILIENCE PLAN

A Roadmap to Building Beira Back Better

Volume 1 - Main Report

With technical assistance and contributions of:



Government of  
the Netherlands

UN HABITAT  
FOR A BETTER URBAN FUTURE



Initiative by  ARCADIS with UN-Habitat



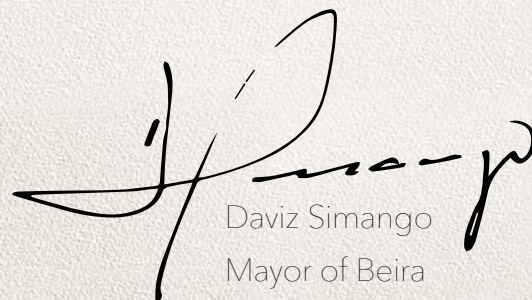
Empowered lives.  
Resilient nations.

## Preface

On March 14 2019 cyclone Idai struck the central region of Mozambique with tremendous force, causing widespread human loss and economic damages. The city of Beira received the full force of the cyclone, and in the following days large areas within the municipal boundaries were flooded. Most buildings in Beira were damaged and many were destroyed. In the weeks after the cyclone an outbreak of cholera added to the disaster, and several dozens of people lost their lives as a consequence.

The events were extremely tragic for Beira and the central region, but there is also another side to the disaster. First it showed the tremendous strength and courage of all parts of Beira's civil society. The municipality organized road clearing and removal of debris and waste, with strong support from the private sector with equipment, and hundreds of volunteers. The national government supported wherever possible through INGC. Secondly it showed that Beira has friends. International organizations, NGO's and governments came to Beira to provide immediate practical support, and in the weeks after the disaster they supported the population and the government both with help on site and with financial aid. Only a few weeks after the disaster the repair operations were in full force. We are thankful to all those who helped us in these difficult times.

However, the work for recovery is only starting. In the coming months and years, the city of Beira has to be rebuilt. Not as it was, but in a better, cyclone proof and climate change resilient way. This process will demand a lot of resources, and support from international finance institutions is needed to make recovery possible. Beira suffered a disaster. With international support it will be able to turn the disaster into a bright future for a safe, prosperous, resilient and attractive Beira. Let's turn the motto 'Building Beira Back Better' into reality!



Daviz Simango  
Mayor of Beira



# Acknowledgements

Principal author

Municipality of Beira

Technical Assistance

Government of the Netherlands

Contributors:

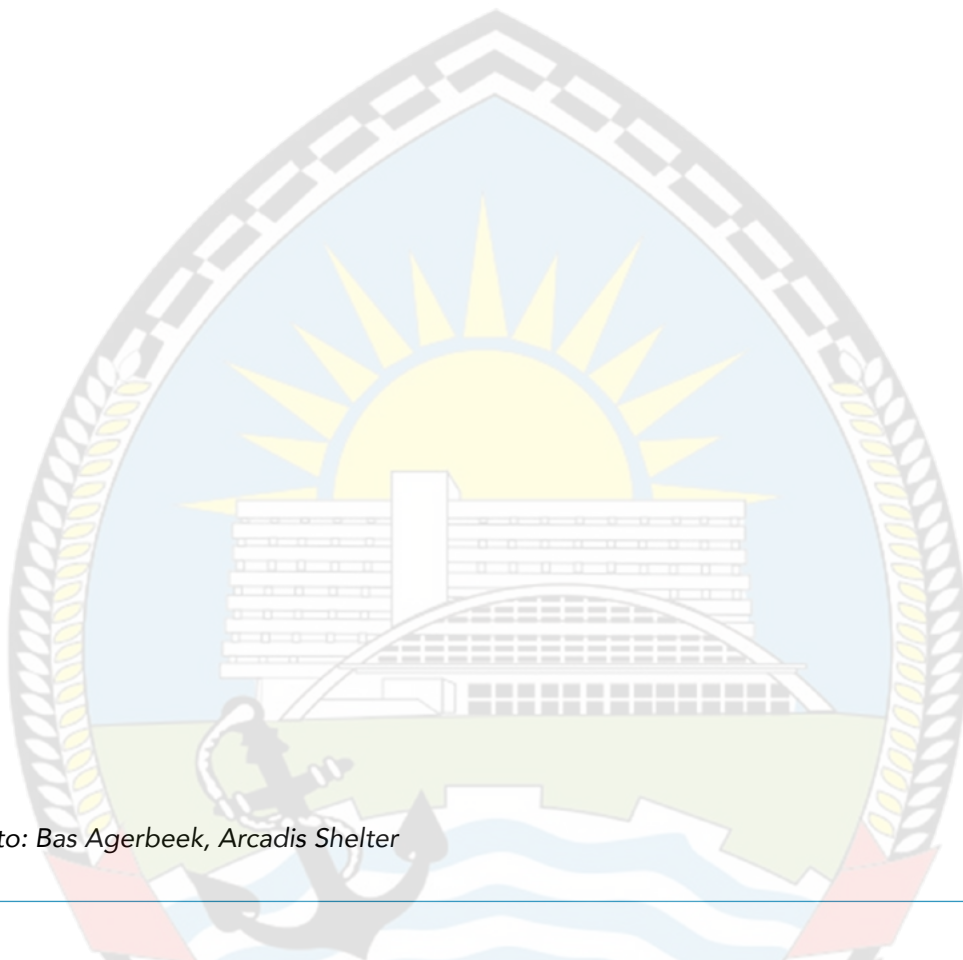
- Housing and settlements
- Drainage, Sanitation,  
Coastal Protection
- Solid waste management

UN-Habitat, SHELTER Program, Arcadis CSR  
partnership with UN-Habitat  
SHELTER Program, Arcadis CSR  
partnership with UN- Habitat  
SHELTER Program, Arcadis CSR partnership  
with UN- Habitat, UNDP

Graphic Design and Layout

SIGNUS MZ

Cover photo: Bas Agerbeek, Arcadis Shelter



On behalf of the Municipal Council of the City of Beira, I would like to thank all those that have contributed to the creation of this Beira Recovery and Resilience Plan.

This plan has been compiled by the 'Taskforce Rebuild Beira 2019' under the guidance of Beira Municipality.

To develop the Beira Recovery and Resilience Plan staff was generously provided by three main partners: The Netherlands government, UN-Habitat, and the Shelter Program (Arcadis, CSR partnership with UN-Habitat). UN-Habitat and the Arcadis Shelter Program contributed with specific sectorial annexes to the Beira Recovery and Resilience Plan, which in turn were used by the Municipal Council of the City of Beira to develop the main contents of this report.

In addition, significant support was provided by The Impact Initiative, the UN Development Program, and the World Bank. The task force started as a team of 7 with a relatively short and focused assignment and ended up as a 23 person team delivering a full recovery and resilience plan that will allow for rapid implementation. Numerous companies and organizations have worked with the task force and provided valuable input. Among them are the 'Associação Comercial da Beira', the Dutch knowledge institute Deltares, dredging company Van Oord, engineering firm Royal Haskoning DHV, Beira based non-governmental organization CAM, Wissing Urban Planners, and many others. The work was done in coordination with the team in Maputo that was conducting the Post Disaster Needs Assessment for all the affected areas, of which Beira is a part. The interaction has been fruitful and has allowed for the damages, losses and needs in Beira to be incorporated into the national Government's final document, to which this Plan is an annex. Many thanks to all involved in that process and in particular to Mr. Francisco Perreira, Director of the Idai Post Disaster Recovery Executive Office. We look forward to our ongoing cooperation.

Finally we also like to honor the work of the staff of the Beira Municipality who, under difficult circumstances due to the loss of personal property in the cyclone, as well as difficulties of the work environment due to damage to the municipal buildings and equipment, have tirelessly worked to make the recovery of the city, and this plan, a reality.

The methodology applied to prepare this Plan was derived from the St. Maarten Recovery and Resilience Plan, prepared by World Bank and Government of the Netherlands in 2018.

To all of you: many thanks!

The Mayor

# Table of Contents

Preface	2
Acknowledgements	4
Table of Contents	7
Abbreviations and Acronyms	8
Executive Summary	10
Beira Municipal Recovery and Resilience Plan	14
I. Vision for Recovery and Resilience	18
II. Objectives of Recovery and Resilience	22
III. Guiding Principles to Enhance Recovery and Resilience	32
IV. City context, Cyclone Idai, First Response and Early Recovery	36
V. Scope and Methodology of the Municipal Recovery and Resilience Plan	40
VI. Summary of Damages, Losses, and Needs	44
VII. Proposed Recovery and Resilience Interventions	48
A1. Housing and settlements	50
A2. Resilient Expansion of Residential Areas	52
B. Municipal real estate	54
C. Coastal protection	56
D. Drainage	58
E. Sanitation	60
F. Solid Waste Management	62
G. Road Infrastructure	64
H. Green infrastructure	66
I. Business	68
VIII. Implementation framework	72



Annex I Summary of Sector Needs Periodization	76
Annex II Overview of Proposed Needs Interventions	77
Annex III Acknowledgements	96
Annex IV SDU Beira	97
Annex V Stakeholder platform implementation arrangement	100

## Volume II - Sector Reports

Annex A - Housing and settlements
Annex B - Municipal buildings and services
Annex C - Coastal protection
Annex D - Drainage
Annex E - Sanitation
Annex F - Solid waste management
Annex G - Road infrastructure
Annex H - Business





# Abbreviations and Acronyms

BBBB Build(ing) Beira Back Better

BURD Beira Urban Development Corporation

CCA Climate Change Adaptation

DRR Disaster Risk Reduction

GDP Gross Domestic Product

GIS Geographic Information System

ICT Information and Communication Technologies

MRRP Municipal Recovery & Resilience Plan

N&E Nature and Environment

NGO Non Governmental Organization

PDNA Post Disaster Needs Assessment

QLI Quality of Life Index

UNDP United Nations Development Programme



# Executive Summary

The Beira Recovery and Resilience Plan has been prepared by the Municipality of Beira in the aftermath of cyclone Idai that hit Beira on 14 March 2019. It addresses the immediate recovery needs, applying principles of 'building back better' and 'disaster risk reduction', with a wide range of strategies and plans that aim to make Beira a resilient city.

It should be noted that this Plan has been brought in line, as much as possible, with the national Post Disaster Needs Assessment methodology. It seeks to address a fuller range of recovery and resilience interventions. The Plan focuses on those sectors that are under the responsibility of the Municipality of Beira.

From the table below it can be seen that by far the largest damages and losses have been sustained by people who have seen destruction of their houses, and to businesses. The Beira Municipality has very few resources that might be employed to address the enormous needs that result from this. It appeals to the national government and the international community to focus on the needs of people and of businesses, because they are vital for the recovery of the city.



	DAMAGES	LOSSES	NEEDS
<b>Social</b>			
Housing and settlements	USD 184,380,000	USD 37,626,000	USD 275,345,000
Municipal buildings and services	USD 8,290,000	USD 1,460,000	USD 12,310,000
<b>Infrastructure</b>			
Coastal protection	USD 1,975,000	USD 0	USD 90,850,000
Drainage	USD 121,000	USD 0	USD 193,606,000
Sanitation	USD 98,000	USD 0	USD 48,958,000
Solid Waste Management	USD 410,000	USD 223,000	USD 28,079,000
Road infrastructure and public space	USD 2,000,000	USD 1,850,000	USD 37,300,000
<b>Economic</b>			
Business*	USD 119,000,000		USD 203,000,000
<b>Grand totals</b>	<b>USD 316,274,000</b>	<b>USD 41,158,000</b>	<b>USD 888,448,000</b>

\* damages and losses aggregated

**The climate change** and disaster resilience strategy of the Municipality focuses on five key areas of infrastructure. The plans for these areas of infrastructure are summarized below.

**Coastal protection** is the most vital of all. Cyclone Idai hit Beira at neap tide. Had it reached Beira during spring tide, sea water levels would have been nearly two meters higher and the flooding of the city from the sea would have been extensive. The coastal protection of Beira has to be brought to a minimum acceptable level for the city to have a future. The existing system of breakwaters needs to be upgraded, sand nourishment to the beach is necessary in the short term, and the Praia Nova area requires urgent attention. The total cost of the minimum protection works amounts to 91 million USD.

**Drainage** is equally important. The reconstructed primary drainage system in part of the city worked well during the cyclone and other storms. The primary system in other parts of the city also requires rehabilitation. Only a completely rehabilitated drainage system will minimize the risk of inundation in the city. Expansion of the primary system and construction of a large retention basin in the Rio Maria area are part of the priority drainage project. Next to the need for the completion of the primary system, attention is needed for the secondary and tertiary system to evacuate water faster from the areas where people live. A total cost of 193 million USD for the first five years has been calculated.

**Sewage** is a sector that requires urgent attention, both to rehabilitate the existing system and expand it into unserved areas of the city. No city can function properly and sustainably without a sewage system and combined with high water tables, many citizens of Beira experience unhygienic conditions in their houses and neighborhoods. The total cost for rehabilitation and expansion would come to 49 million USD.

### **Solid waste**

The weaknesses of the solid waste management of Beira was exposed by the cyclone. Solid waste, in enormous quantities, was visible throughout the city. The weaknesses are in the whole chain, including, notably, a lack of equipment. The total need to structurally improve solid waste management would be 28 million USD, of which the largest part would be invested in a proper sanitary landfill.

### **Roads infrastructure**

The damage to roads has been extensive by the cyclone, particularly along the coast where the road has been destroyed by sea waters, and by the heavy equipment used to remove fallen trees and waste. In other areas there is an urgent need not only to restore cyclone damage but to build resilient roads that can stand heavy rainfall without deteriorating and that can be used as evacuation routes during future flooding. Strong roads will improve, for instance, the ability to reach the waste deposit site. The total needs amount to 37 million USD.

### **Housing and settlements**

Beira's existing housing stock was badly affected by cyclone Idai with approximately 70% of houses destroyed partially (63.506 units) or totally (23.833 units). The biggest destruction occurred in the poorest neighborhoods, increasing an already critical social, economic and environmental vulnerability. On top of huge damages for most households, the cyclone caused major losses, making the self-recovery processes even more difficult for the poorer victims due to their lack of money. An estimated 275 million dollars is needed to develop an efficient and inclusive implementation strategy, to ensure an integrated approach to increase resilience, not only for better-built homes but also at settlement scale, through a strong partnership between communities, humanitarian and development partners, private sector, with the Municipality in a key coordination role.

## Municipal buildings and services

176 buildings owned by the municipality are damaged or severely damaged by cyclone Idai, and most of them are critical municipal infrastructures. Due to rainfall, lots of equipment and municipal furniture suffered damage, and much had to be discarded. The municipal functionality needs to be restored as quickly as possible by repairing and reconstructing its critical infrastructure in a resilient way (BBB) and by replacing lost and damaged equipment and furniture. This will involve an amount of 12 million USD.

## Urban extensions

The Beira Masterplan 2035 which was approved by Beira Municipality in 2014 provides the framework for the resilient development of the city. The Maraza Residential Area and the Munhava Industrial and Commercial Park, in combination with the new Port Access Road. Are key developmental projects which can contribute to release pressure from existing areas, including those that were affected by the cyclone, and can create space for new developments.

For the implementation of the Maraza and Munhava urban developments the SDU Beira – urban development corporation has been created by the Beira Municipality in November of 2018, in order to prepare and implement these area developments.

