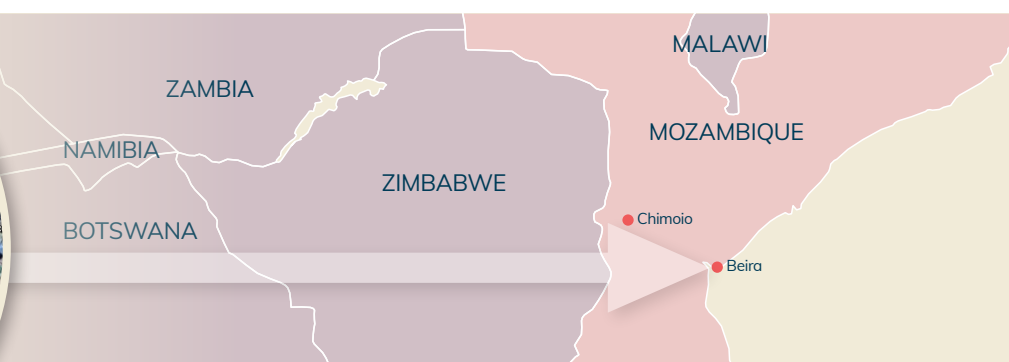


Beira, Mozambique: Praia Nova



Map: © CNES/Airbus, Landsat / Copernicus, Maxar Technologies, Google Maps 2021

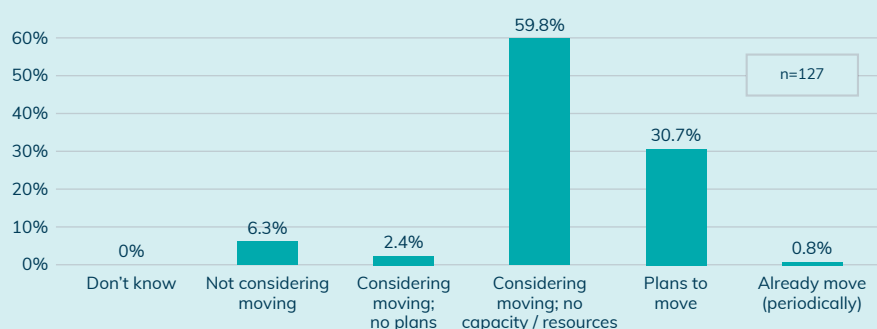
Informal coastal settlement in the city subject to storms and sea-level rise.



Key findings

- Frequent and severe impacts from flooding, storms, and sea-level rise
- Widespread experience of short-term displacement
- Common desire to move from the area but lack of resources
- Attachment to Praia Nova as a known source of livelihood options
- Stories of migration were mixed in terms of perceived "success"

Figure 1. Mobility intentions



Note on the data collection

A research team visited the Praia Nova suburb of Beira in September 2021. A total of 127 survey interviews were conducted within an area close to the coast, commonly affected by flooding. Three focus group discussions were held with participants from households in the sample area with: young people, women aged 25 years and older, and a mixed group over 25 years. Ten in-depth interviews were conducted with people who experienced different mobility outcomes: two with people who had left Praia Nova (one man and one woman); two with women who had stayed while members' of their households had moved away; two from households who had left and returned; two with people who planned to move (one man and one woman); and two with people not considering moving (one man, one woman).

About this project

The Mixed Migration Centre (MMC) undertook this research with the aim of identifying how climate-related factors affect aspirations and capabilities to migrate, and migration outcomes. MMC developed a framework based on Carling's aspiration / ability model of decision-making in migration, as well as literature on adaptation, adaptive capacity and resilience (J. Carling, 2002, "Migration in the age of Involuntary Immobility: Theoretical Reflections and Cape Verdean Experiences", *Journal of Ethnic and Migration Studies* 28 (1): 5–42). This research considers the effects of climate-related environmental stressors on populations across Africa, and how they impact mobility outcomes, taking into account the full range of (im)mobilities, and the continuum from voluntary to forced movement.

Data collection took place in seven locations that were selected to cover a range of climate-related hazards across Africa, and various kinds of (im)mobilities. From July to September 2021, teams conducted research in Lagos, Nigeria; Cahama, Angola; Moroto, Uganda; Alexandria, Egypt; Chikwawa, Malawi; Beira, Mozambique; and Tatki, Senegal. In each site, more than 100 household surveys were conducted and three focus group discussions were held to better understand the impacts of climate-related hazards and environmental stressors on individuals, their attitudes and behaviour around mobility, and to identify linkages between the two. In-depth interviews were then conducted with five households that represent various kinds of 'migration outcomes'. Where possible, two representatives from each household were interviewed. These interviews aimed to find out more about experiences of mobility, connections to climate-related hazards, and the perceived outcomes of migration. See the [synthesis report](#) for more information on methodology.

MMC conducted this research as part of the Africa Climate Mobility Initiative (ACMI), with the results presented for discussion at ACMI Consultations, and informing the ACMI Report "[African Shifts. The Africa Climate Mobility Report: Addressing Climate-Forced Migration and Displacement](#)". MMC takes full responsibility for all research and findings presented in this study. The analysis and reflections in this study do not necessarily reflect the position of ACMI, the institutions leading ACMI, or any of the donors supporting the work of ACMI or MMC.

A note on terminology

MMC developed a list of key terms used throughout this project including:

- Climate change: A change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer (IPCC (Undated) [IPCC — Intergovernmental Panel on Climate Change](#)).
- Climate-related environmental stressors: Perceived and experienced long-term meteorological impacts on the ecosystem that may affect the functioning of the biological system (e.g. NCBI (2016) [National Center for Biotechnology Information](#)).
- Climate-related hazards: Natural meteorological events that pose danger to humans and the environment. These events occur due to deficiencies or excess of precipitation, destructive winds and anomalous temperatures (based on WMO and UNFCCC terminology around climate-related risks / hazards and extreme events).
- Resilience: The ability of individuals, households, communities, cities, institutions, systems, and societies to prevent, resist, absorb, adapt, respond and recover positively, efficiently, and effectively when faced with a wide range of risks, while maintaining an acceptable level of functioning and without compromising long-term prospects for sustainable development, peace and security, human rights and well-being for all (IOM (2019) [Glossary on Migration](#)).
- Vulnerability: The limited capacity to avoid, resist, cope with, or recover from harm. This limited capacity is the result of the unique interaction of individual, household, community, and structural characteristics and conditions (IOM (2019) [Glossary on Migration](#).)

A note on limitations

This is a comparative project looking in-depth into people's perceptions across a range of locations. The scope and timeframe were limited, however, and additional expert knowledge of locations and populations could further enrich a more detailed understanding.

This is a pilot study. It is expected that the tools and methodology will be refined based on lessons learned. The study provides insights into perceptions of climate-related environmental stressors and adaptation that merit further exploration.

Beira and climate risks

Beira is the capital and largest city of Sofala province, located in the central region of Mozambique. Beira had an estimated population of 600,000 people in 2019, making it the fourth-largest city in Mozambique by population after Maputo, Matola and Nampula.¹ Beira is a rapidly growing port city that is projected to almost double in the next 13 years, reaching a population of one million by 2034.² Rapid population growth is putting an increasing strain on land, infrastructure, and services, with informal settlements predicted to become increasingly common.

Mozambique has a long history of catastrophic flooding, triggered by high-intensity rainfall and sometimes by river discharges from neighbouring countries.³ Beira is at the confluence of two major rivers: the Buzi and the Pungwe. Heavy rainfall upstream has led to flooding of the city and surrounding countryside much of which is below sea level. Deforestation, land degradation, and overpopulation in the region has exacerbated these conditions related to flooding. The Great Mozambique Flood triggered by tropical cyclone Leon-Eline in 2000 was the worst to hit the country for 50 years. The tropical cyclone killed some 800 people and 20,000 cattle, left tens of thousands of people homeless across Mozambique, and affected 1,400km² of farming land.⁴

Beira lies on the path of Indian Ocean tropical cyclones. Most recently, Cyclones/Storms Idai (2019), Chalane (2020-21) and Eloise (2021) have caused extensive damage and destruction in the city – Idai destroyed up to 90% of structures in the city.⁵ Climate models predict hotter temperatures in Mozambique, increased rainfall, and increased frequency of intense rainfall events.⁶ In 2011, the Global Facility for Disaster Risk Reduction (GFDRR) predicted a future increase in these events, which has been witnessed in the period since.⁷ These events have already become so frequent that there is not enough time for the city to recover before it is affected again, making preparedness even more difficult despite a strong focus on adapting to climate-related threats.⁸



Street scene in Beira.

Photo credit: © Pablo Garrigos / MSF 2019.

- 1 World Population Review (2019) [Population of Cities in Mozambique](#).
- 2 Beira, Mozambique Population, [Population.Stat](#).
- 3 Global Facility for Disaster Reduction and Recovery (2011) [Climate Risk and Adaptation Country Profile](#); Mozambique.
- 4 Estimates of the number made homeless range from 40,000 up to 250,000. [Floods take a serious economic toll](#), Africa Recovery, Vol.14(3), October 2000, page 13 (part of Mozambique: Country in Focus); World Bank (2000) [A Preliminary Assessment of Damage from the Flood and Cyclone Emergency of February-March 2000](#).
- 5 "Mozambique: Picking up the pieces after Cyclone Idai," Deutsche Welle, 2019; ["The sea is rising, the climate is changing"](#), The Guardian, 2 January 2021; ["Property damaged as Cyclone Eloise hits Mozambique's Beira"](#), Al Jazeera, 23 January 2021.
- 6 World Bank, [Climate Change Knowledge Portal: Mozambique](#), accessed October 2021.
- 7 Global Facility for Disaster Reduction and Recovery (2011).
- 8 Farand, C., ["Cyclone Eloise shatters Mozambique's progress to recover from 2019 storms"](#), Climate Change News, 28 January 2021.

Conditions in Praia Nova

In 2012, an estimated 75% of Beira's population was living in informal settlements and faced a high risk of flooding.⁹ Praia Nova is situated on the Indian Ocean coast and is a predominantly fishing community of approximately 10,000 inhabitants. It was among the areas worst affected by Cyclone Idai in 2019.¹⁰

Praia Nova has been classified by municipal authorities as a high-risk area where people are not supposed to live. Authorities have offered relocation or resettlement support to some families displaced by flooding, storms, or cyclones, but they have held back from physically preventing people from living in the neighbourhood.

Part of the neighbourhood reportedly becomes flooded every day at high tide.¹¹ These areas have more durable housing and the ground is typically muddier. Areas that are not flooded daily tend to have sandy soil, and houses are constructed with zinc or grass roofs.¹² When the 2019 cyclone hit, most residents fled either to temporary emergency shelters or to relatives or friends in safer areas of the city. While the majority returned within a couple of days, some were resettled to other sites, including Mutua Resettlement Site, about 60km from the city.

Population profile and perceptions

Profile of survey participants

127 survey respondents

Gender: 55% women; 45% men

Age: 72% aged 25-54 years

Ethnicity:

47% Machuabo, 23% Ndau, multiple others

Religion:

74% Christian, 17% Muslim

Average household composition:

6 members; 1 financial contributor; 3 under 18

Education level completed:

24% secondary; 51% primary; 25% no schooling completed

Occupation:

42% primarily business, small trades and services; 31% fisheries; 18% unemployed

Dependence on agriculture:

16% farming, but also purchase food; 80% do not farm

Remittances:

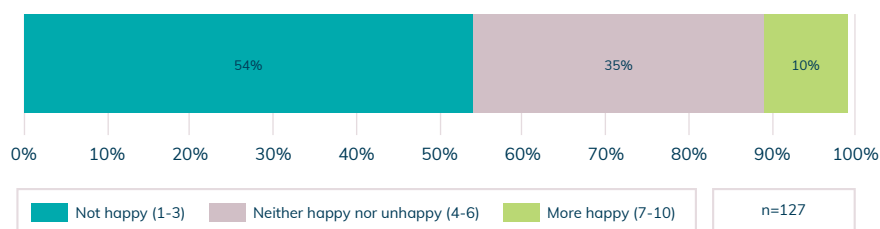
11% receive remittances

The residents interviewed were typically long-standing residents of Praia Nova, with most (61%) having lived there for 10 years or longer. However, very few residents were born in the area (3%), suggesting that it is relatively typical of 'Arrival Cities' around the world; i.e. informal areas where newcomers first establish themselves.¹³ Women are more frequently newer arrivals than men, and more often come from a rural area.

Many respondents considered that Praia Nova was better off than other communities: 58% reported that their community had better access to services. In total, 78% had access to electricity within their household. However, within the community, most participants felt they were worse off than their neighbours: 59% thought they had much fewer goods than others, and 50% thought they received less support, either formal or informal.

Around half of respondents expressed dissatisfaction with their living conditions (see Figure 2). In more direct material terms, 64% said they felt they were less able to provide for themselves in the last 12 months than before.

Figure 2. How happy are you with your household's conditions in the past 12 months?



Note: Respondents are asked for a score between 1 and 10. One person refused.

9 World Bank (2012) [Municipal ICT Capacity and its Impact on the Climate-Change Affected Urban Poor The Case of Mozambique](#).

10 Kleinfeld, P. (2019) [In post-cyclone Mozambique, lots of aid but little reconstruction](#). The New Humanitarian, 16 December 2019.

11 Jacobs, C. and Almeida, B. (2020) [Land and climate change: Rights and environmental displacement in Mozambique](#). Van Vollenhoven Institute for Law, Governance and Society.

12 Jacobs and Almeida (2020).

13 Saunders, D. (2011) *Arrival City*, Windmill Books.



Data collection in Praia Nova, Beira.

Photo credit: © Antonio Junior Tembe, 2021.



Survey interview in Praia Nova, Beira.

Photo credit: © Antonio Junior Tembe, 2021.

Despite typically negative perceptions of current circumstances, 41% of respondents expected to do better in the future, and only 12% expected to be worse off. In addition, 81% thought that changes could be made to improve their situation in the future.

Common challenges

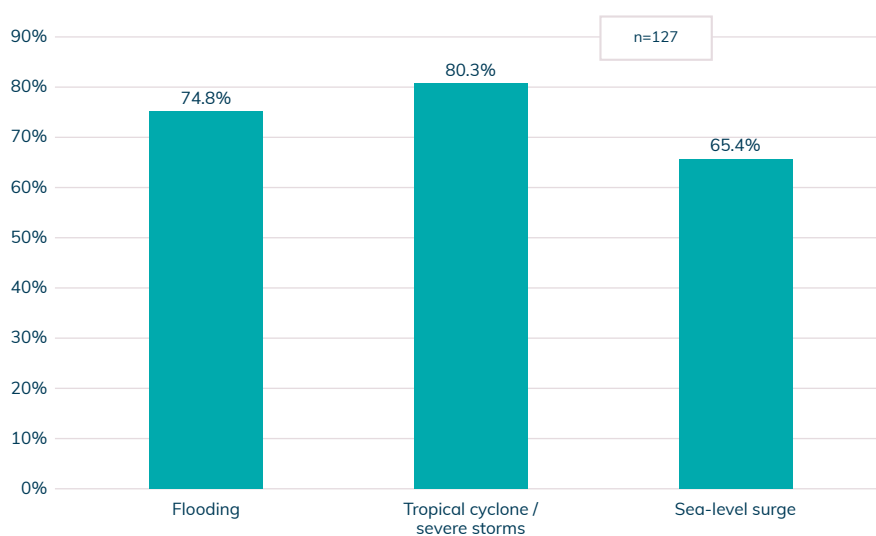
The major challenges identified by participants in discussions and interviews were overwhelmingly related to flooding and extreme weather events. It can therefore reasonably be assumed that the adaptation and coping mechanisms under consideration relate to the impacts of these events, and these are discussed below.

Crime and violence in the area were reported to be generally low, with almost half saying that incidents were either rare or never occurred. However, 5% reported that crime and violence were ever-present. Female respondents were more likely to report deteriorating security than males. In focus group discussions and in-depth interviews, participants did not mention crime or violence as being an issue in the area. Similarly, only a minority reported that discrimination and access to services within the community represented issues, and these were not considered to be pervasive or constant.

Impacts of climate-related events

Praia Nova is particularly exposed to storm and cyclone damage. Most homes and shelters are impermanent informal constructions prone to damage. Residents often evacuate to emergency accommodation or stay with friends or relatives elsewhere in the city, before returning to rebuild their homes in the days after a cyclone passes.¹⁴

Figure 3. Main climate-related events. Participants reporting 3 or more events in the last decade

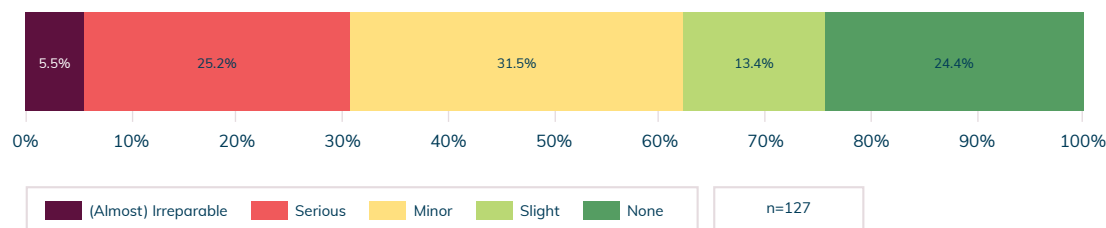


Note: These are the most common answers.

¹⁴ Jacobs and Almeida (2020).

Survey participants reported being affected by storms, flooding, storm surges, as well as sea-level rise, with a majority mentioning that they were affected by three or more events in the past decade (see Figures 3 and 4). These events were often connected, for example, sea-level rise caused flooding, and storms caused sea-related and rainfall-related flooding. Survey participants often reported that these events had similar effects (see Figure 5).

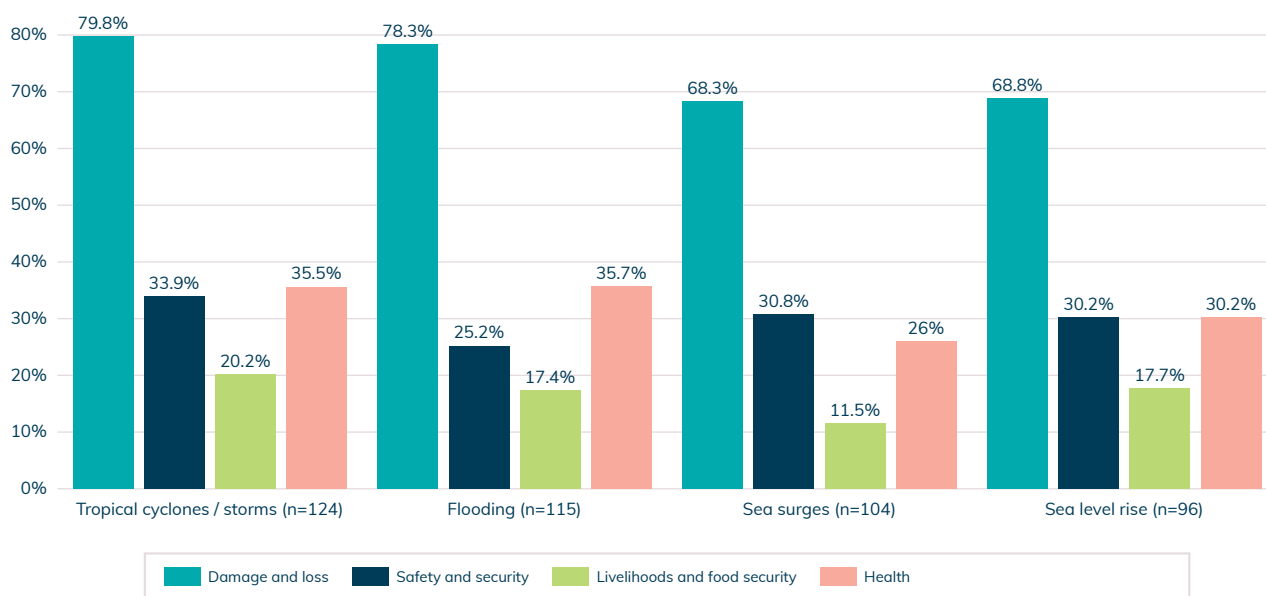
Figure 4. Damage caused by sea-level rise in the past decade



Note: Respondents are asked for a score between 1 and 10.

In focus group discussions and in-depth interviews, participants drew attention to issues of erosion and flooding linked to sea-level rise. Residents claimed that these issues were exacerbated by excessive sand harvesting. A majority of respondents reported that storms/cyclones, floods, sea-level surges, and sea-level rise had a negative impact on their household (ranging between 51% and 76% of respondents by hazard type). A smaller proportion indicated that they were able to absorb the impact of these events as part of everyday life (20%, and up to 35% for flooding). The main effects on people were similar regardless of hazard-type, these included (see Figure 5): damage and loss; health;¹⁵ safety and security; and livelihoods. Focus group participants talked about household goods being washed away, challenges travelling to school or conducting business, and contaminated and standing water leading to disease outbreaks.

Figure 5. Impacts of main climate-related events



Note: These are the most common answers. Respondents could provide more than one answer for each event.

Few reported that climate-related events affected food security and livelihoods. However, 47% indicated that these events were associated with reduced fish stocks, which negatively affected income levels, assets, stress and emotional wellbeing in the predominantly fishing community. For the more common climate-related events, respondents were less likely to report negative impacts of emotional and mental health impacts, suggesting a high degree of emotional resilience, and perhaps a confidence that they can withstand the shock and rebuild their lives.¹⁶ The study did not find evidence of climate-related events negatively affecting relations within the community, or within the household. In

15 This impact on health is supported by evidence of outbreaks of cholera and diarrhoeal disease after climate-related events (WHO (2019) [Combating cholera in Mozambique](#))

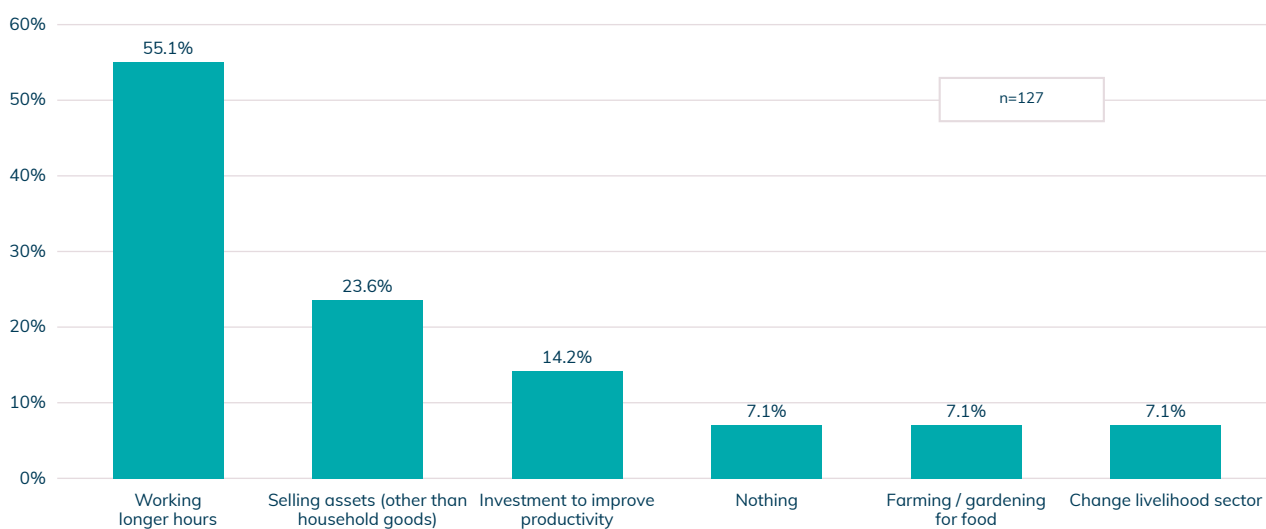
16 This was strongly suggested in research in Praia Nova elaborated in Jacobs and Almeida (2020).

total, 60% of those affected by storms, flooding, sea surges, and sea-level rise expect the effects to worsen in the next five years, and most of the rest were unsure.

In addition, the most frequently reported events (storms, rising sea levels, and flooding), most respondents also mentioned unpredictable rains but they were associated with less severe impacts. A minority reported that drought, increasing temperatures and extreme heat caused damage in the past decade. Female focus group discussion participants raised access to clean water as a problem. The focus on storms, sea level rise and flooding may reflect that lives and livelihoods in the area are particularly vulnerable to these types of hazards.

Responses to climate-related impacts

Figure 6. What have you talked about doing to improve your situation?



Note: These are the most common answers. Participants can provide more than one answer.

Some 81% of respondents felt they could make changes to improve their household's circumstances including in relation to climate-related impacts. In half the households surveyed, at least one member was working or planning to work longer hours to increase income. However, this approach was met with mixed success, with half reporting that increased work had not changed their situation. Only one respondent reported reduced food consumption.

“Money we used to spend on food we are now using to buy building materials ... to make a safe house that can withstand climate change.”

28-year-old woman

Almost a third of participants spontaneously mentioned that the construction of a sea wall could enable people to continue living in Beira. This was echoed in interviews and focus group discussions, where people often spoke of the need for more government action in terms of a sea wall and barrier construction, or assisting residents with improved services and more durable housing.

However, few respondents said their household had discussed accessing formal aid from the government or non-government organisations (NGOs) to improve their household situation (3%); only one respondent had put such a strategy into practice. These findings run counter to reports that residents return to live in Praia Nova after being displaced in order to access aid in response to future events.¹⁷

Overall the response to climate-related events appears to be one of **surviving shocks, rebuilding, and working more rather than implementing more fundamental changes** to adapt, or settle elsewhere more permanently. Participants leave when there is a threat of storms or flooding, and expect damage and loss to their assets. Respondents often

¹⁷ Jacobs and Almeida (2020).

“We just wait for the water to go down.”

25-year-old man

spoke of the cost and inconvenience of repeatedly replacing household items, and rebuilding their homes.

There is a perception that the impact of storms, flooding and sea-level rise will worsen. However, respondents were typically positive (41%) or uncertain (39%) about their future prospects.

Mobility

There are no official figures on the number of internal migrants living in Beira, or the proportion of residents who have relocated to the area due to climate-related events. However, it has been observed that drought stress, flooding, and poor agriculture outcomes in the surrounding region contribute directly to rural–urban migration.¹⁸ Very few of the survey participants (3%) were born in Praia Nova, while 45% said they moved from a rural area.

High mobility is often common in informal settlements due to low financial barriers of entry, as residents use them to get established in the city and then decide to move elsewhere within the same city. The majority of participants considered moving away from Praia Nova to be normal (64%). However, the most reported **movement was temporary and in response to flood damage (86%) or storms (38%)**, rather than being permanent or motivated by other factors. Almost three-quarters (73%) mentioned that people generally moved somewhere else in Beira. Women and children were considered most likely to leave.

These dynamics were reflected by recent departures of family members: 61% of respondents had someone from their household move away in the past six months. An additional 22% had a household member move in the past one to five years. The main reasons given for moving were flooding (40%) and storms (23%), and most people relocated to other areas in Beira (70%). Other reasons given for moving include marriage (35%), and pursuing livelihood opportunities (12%). There was a relatively high rate of people returning to Praia Nova, with 50% reporting that at least one household member returned after moving away.

Most respondents preferred to move (see Figure 1) but felt they have insufficient resources to do so (60%). People generally expressed a desire to move from the area permanently, however, this was not the overall trend in movement – around half of the people who reported a recent move said that the person had come back. This prevalence of short-term displacement despite aspirations for long-term migration was supported by other studies. Several reasons for this are raised in the literature including that people in Praia Nova typically: depend on precarious and informal jobs; have little savings; and experience difficulties finding employment and accommodation elsewhere.¹⁹

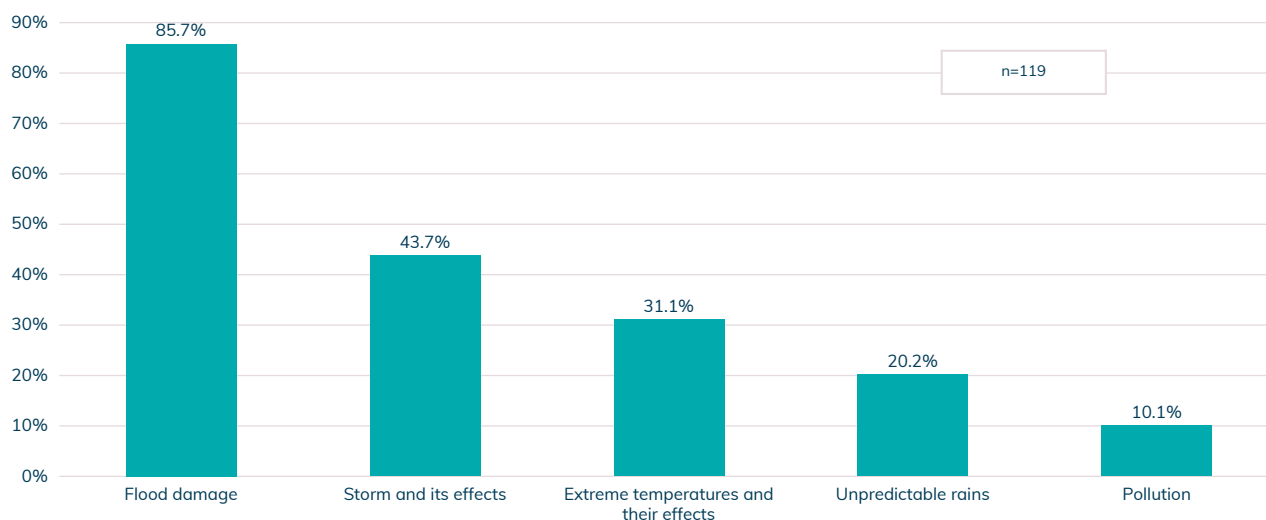
18 Anderson, K.J. and Silva, J. (2020) [Weather-related influences on rural-to-urban migration: A spectrum of attribution in Beira, Mozambique](#). Global Environmental Change

19 Anderson, K.J. and Silva, J. (2020).

Impact of climate-related events and mobility

Most respondents wanted to move but did not have the resources to do so (see Figure 1). The majority of respondents (70%) wanted to move permanently from Praia Nova, but most (67%) preferred to stay within Beira city. Respondents were more likely to report feeling forced to move out of necessity (38%) rather than by choice (24%).

Figure 7. Why do you want to move?



Note: These are the most common answers. Respondents can provide more than one answer.

“It is difficult for people to move ... because many here do not have a source of income.”

Women’s focus group discussion participant

Some aspects of climate change – such as extreme temperatures – were more commonly understood to affect displacement. Sea-level rise or “ocean approach” were not among the five most frequently cited factors. However, focus group discussion and in-depth interview participants often made a direct link between the encroaching sea, flooding, and the need or desire to move away. There was not always a clear distinction between sea-level rise and flooding.

Resettlement of displaced populations has been actively promoted by government authorities, and some people have been relocated from Praia Nova to areas further inland, sometimes tens of kilometres from the city.²⁰

For a community that is heavily dependent on fishing and other activities

related to the coast, moving inland equates to finding new livelihood opportunities, which can be challenging. There have also been reports of land disputes with new neighbours.²¹

Some people who left remain in uncertain situations – neither resettled nor returned.²² One report claimed in January 2021 that nearly 92,500 Mozambicans are still homeless two years after the 2019 cyclones, and living in makeshift shelters in 71 camps across four provinces, including Beira.²³

²⁰ Jacobs and Almeida (2020).

²¹ Jacobs and Almeida (2020).

²² Jacobs and Almeida (2020).

²³ The Guardian (2021).

“Climate change affects us a lot. I think it is because we do not have protection from the sea, sometimes we do not move to another area because we lack the resources.”

Women’s focus group discussion participant

When questioned about what measures would stop people from thinking about moving, **82% mentioned better government services, 28% mentioned a sea wall, and 18% referred to better work opportunities.** Of those affected by flooding, storms, and sea-level rise, between 46% and 51% said they would not feel the need to move if these phenomena did not occur.

Livelihoods and housing are important factors when considering mobility. Praia Nova's proximity to both the sea for fishing and the city centre for other enterprises (trading, mechanics) and work (domestic, paid) make it an attractive location. This study suggests that many residents of Praia Nova aspire to move, but stay because they are concerned that they will have less access to livelihoods and housing elsewhere. As a result, they often preferred to stay in the area despite risk stemming from storms and floods, rather than risk moving elsewhere.

Of the people interviewed who had left the area for longer-term periods, most moved to resettlement sites such as Savane and Mutua, and shifted their livelihoods to agricultural activities. These interviewees did not indicate any particular improvement in their conditions beyond being safer from storms and flooding. One woman, who had moved to the Zambezia province and taken up farming, was able to earn more money and was generally satisfied with her decision to move.

Summary

Beira’s population is projected to double in the next 13 years, increasing pressure on the local infrastructure.²⁴ This continued in-migration can be expected to comprise mainly economic migrants – Mozambicans leaving rural areas – including those for whom climate change is likely to have played a part in driving the decision to move.²⁵

Those leaving rural areas because of the impacts of climate change on their livelihood opportunities often end up in cities, and in specific areas in those cities, where they are again among the most vulnerable to the impacts of climate change and other environmental factors.²⁶ This is very much the case in Beira. Despite desires to move and high risks and limited opportunities in Praia Nova, there is limited long-term, planned outmigration, mainly because of a lack of resources.²⁷

24 Note that various schemes and structures have been built and are underway in an attempt to mitigate the situation – led by international donors in partnership with Beira municipality and the Mozambique government.

25 Anderson, K.J. and Silva, J. (2020) [Weather-related influences on rural-to-urban migration: A spectrum of attribution in Beira, Mozambique.](#) *Global Environmental Change*. Also, Anderson, K. (2019) [Linking Climate Drivers and Urban Outcomes of Migration: Perspectives from Beira, Mozambique.](#) American Association of Geographers.

26 Mixed Migration Centre (2020) [Climate exposure – the complex interplay between cities, climate change and mixed migration.](#)

27 Anderson and Silva (2020).

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ACMI was launched in September 2021 by the African Union Commission, World Bank, United Nations Development Programme, United Nations Framework Convention on Climate Change, and the International Organization for Migration, to bring a sharp global focus on climate-forced displacement and migration on the continent. ACMI will support the African Union and African nations to harness the potential of mobility in the context of the climate crisis, and address climate-forced displacement and migration. ACMI's report was launched at COP27 in November 2022, and more information on ACMI's work so far can be found on its website <https://africa.climate-mobility.org/>