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UNDP

Infrastructure Damage Assessment

Cabo Delgado – Mozambique

August 2022

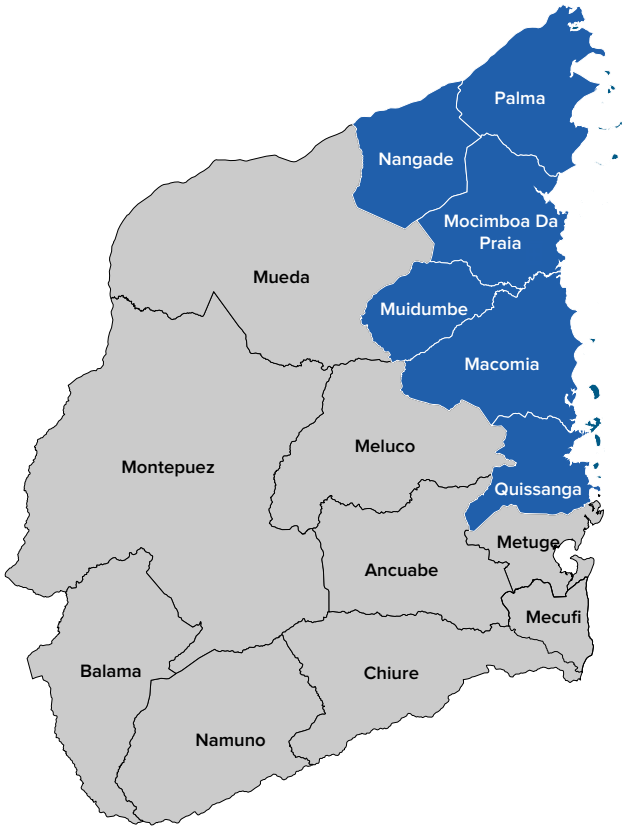
Contents

Image 1

The 19 de Outubro-Quissanga Sede road (64 km) links three villages affected by the conflict, stretching all the way to the district capital of Quissanga

Introduction

Since 2017, the Province of Cabo Delgado in Mozambique has been subject to escalating conflict, compounded by a fragile situation of chronic underdevelopment, consecutive climatic shocks, and recurrent disease outbreaks. Violent attacks by non-state armed groups (NSAGs) increased and expanded substantially in 2020. Reports of violence against civilians, including killing, rape, kidnapping and beheading increased significantly. As of October 2021, over 800,000 internally displaced people (IDPs) from the districts of Palma, Mocímboa da Praia, Macomia, Quissanga, Nangade and Muidumbe are living in relocation camps or are informally hosted by already vulnerable communities across the southern districts of Cabo Delgado, as well as in the provinces of Nampula and Niassa. Over 900,000 people are facing severe hunger and over 1.3 million people require urgent humanitarian support. As alluded to above, the violent attacks by NSAGs have also significantly heightened protection risks for women and girls.



Map 1: According to the 2017 Census, 2,267,715 is the population of Cabo Delgado province. Since 2017, more than 900.000 people have fled their homes due to escalating violent attacks in Cabo Delgado and neighboring provinces.

The six districts highlighted in blue on the map above are currently the most affected areas and are the focus of the Stabilization Programme. Areas of intervention may change depending on the evolution of events.

Food insecurity has been rising as conflict, excessive rainfall and storms/cyclones as well as displacement have disrupted communities' agricultural activities and livelihoods. The escalation of violent attacks has also directly affected the provision of social services to civilians through the destruction of essential infrastructure, such as schools, health facilities, police stations, and water and electricity systems. People have lost access to drinking water due to the disruption of centralized water supply networks. The capacity to deliver services, which was overstretched before the conflict, has become extremely reduced, severely restricting the ability to monitor and respond to diseases outbreaks and provide critical healthcare.

At the moment of writing, IDPs are beginning to return to their areas of origin, following a slight improvement in the security situation. In May 2022, the government of Mozambique authorized IDPs to return to specific areas affected by the conflict. The majority of IDPs are returning to the districts of Muidumbe, Palma, Mocimboa da Praia and Macomia. According to IOM's Displacement Tracking Matrix (DTM), over 7,800 people returned between April 27 and May 17 2022. Furthermore, around 70% of the displaced people surveyed during this period reported an intention to return. However, needs remain very high as most of families rely on emergency humanitarian assistance.

Strategic Response Approach and the Stabilization Programme

The government of Mozambique has responded to the attacks with military action and reclaimed a number of areas that had been occupied by NSAGs. Prior to the arrival of the first foreign troops on the ground in July 2021, UNDP had initiated stabilization interventions to assist the government in its efforts to re-establish the presence of the state in the reclaimed areas, paving the way for reconstruction and a subsequent safe and voluntary return of IDPs to their areas of origin. The key target districts within these interventions are Macomia, Quissanga, Palma and Mocimboa da Praia. Benefiting from decades of experience in stabilization activities elsewhere on the continent and in the world, and with an office fully established in Pemba since July 2021, the United Nations Development Programme (UNDP) is well-positioned to support the government in three interrelated and complementary dimensions of stabilization:

OUTCOME 1: The foundation for social cohesion, peace and development are created.

Community security is improved with a focus on Rule of Law and Access to Justice, creating the foundation for social cohesion, peace and development.

OUTCOME 2: The capacity of local authorities to improve access to service delivery are developed.

Basic services and infrastructure are rehabilitated, functional, and accessible and the capacity of local authorities are developed to improve access to service delivery.

OUTCOME 3: Immediate livelihood support for affected populations is provided.

Socio-economic support is provided to individuals and communities, including immediate livelihood support for affected populations.

UNDP's stabilization engagement in Mozambique is part and parcel of the government's priorities in Cabo Delgado, as specified within the Reconstruction Plan (PRCD) and the Northern Resilience and Integrated Development Programme (PREDIN). Moreover, to facilitate integrated programming and promote policy linkages, UNDP is utilising community- and area-based approaches. As a result, the present programme is both integrated with and complements other UNDP flagship programmes in Mozambique, including within decentralization, rule of law and access to justice, and social cohesion and peacebuilding.

Furthermore, UNDP's stabilization engagement is grounded in two of the foundational elements of the UN-wide engagement on internal displacement, in which UNDP has a critical role: on the one hand, this concerns the 2011 decision on Durable Solutions adopted by the UN Secretary-General, and the accompanying Preliminary Framework on Ending Displacement in the Aftermath of Conflict. On the other hand, the recommendations of the report of the United Nations Secretary-General's High-Level Panel on Internal Displacement, released in September 2021. The proposed programme builds on the call for development and peace actors to act as promptly, appropriately and prudently as possible on solutions for displacement. It also responds to the critical need for a development-oriented approach that both strengthens public systems and services and recognizes the primary responsibility and accountability of the state in the search for durable solutions to displacement. Although it cannot be classified as a peacebuilding intervention, stabilization constitutes an immediate and foundational step to sustaining and maintaining peace, as part of a coordinated humanitarian, development and peace engagement (HDP Nexus). UNDP will ensure that it engages dutifully as part of the existing humanitarian and wider coordination platforms and will continue to collaborate with sister agencies on the ground. UNDP will also ensure joint analysis and planning of actions with communities, district and provincial administrations, in consultation with ADIN.

As a result of the stabilization engagement, it is expected that:

i) State presence is reinforced as the foundation for an improved social contract between the state and its citizens;
ii) The management of the return process is improved by the local authorities; and,
iii) Security is reinforced in target districts through coordinated interventions alongside security forces respecting human rights principles.

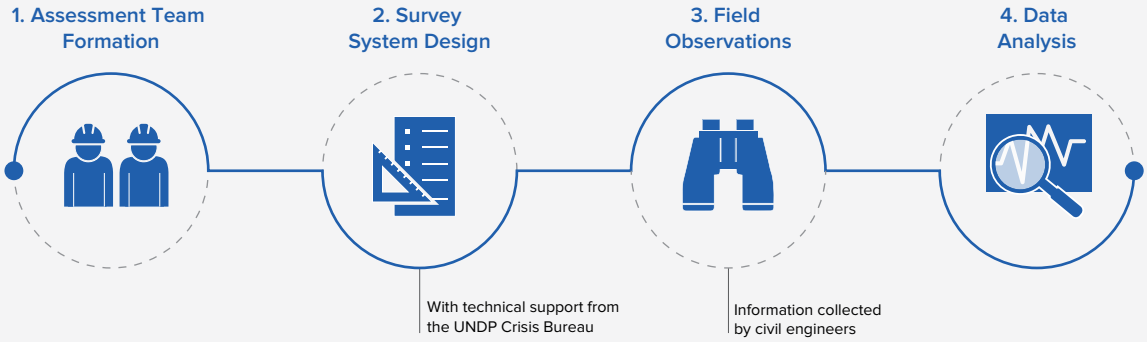
1. Methodology

1.1 Assessment objectives

One of the most challenging and fundamental components of the stabilization and recovery process is having access to reliable data on the damaged infrastructure that needs to be rehabilitated or rebuilt to enable the resumption of public services. The Infrastructure Damage Assessment (IDA) is an established, comprehensive and multiphase process methodology utilized by UNDP globally. The present IDA was conducted to assess the operational status and level of damage to public infrastructure in violence-affected areas of northern Mozambique. Through the IDA analysis, UNDP aims to both inform government regarding priority areas and offer a strategic and operational recovery plan, whilst simultaneously presenting evidence needed for awareness and advocacy.

1.2 Assessment methodology

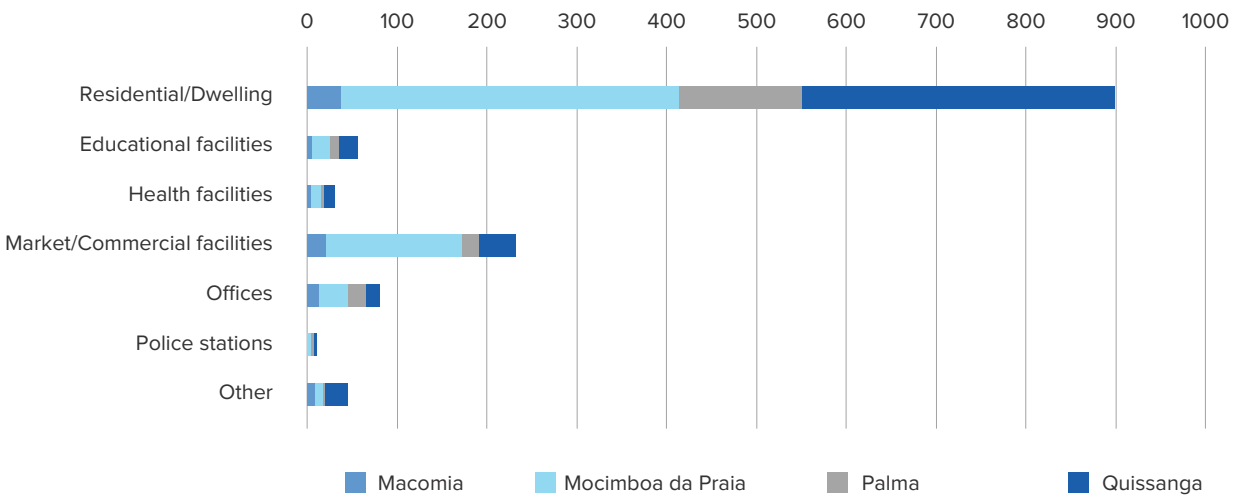
To achieve the aforementioned objectives and address the main research questions, UNDP carried out primary data collection on both quantitative and qualitative variables. The IDA was designed and conducted with technical support from the UNDP Crisis Bureau. The infrastructure damage information was collected by civil engineers between January to May 2022, using tablets and Kobo ToolBox to capture field observations. The survey items used were derived from UNDP's IDA resource library but adapted to the local context.



The assessment covered residential buildings, educational facilities, market and commercial facilities, health facilities, offices, police stations, and other types of buildings. A total of 1,352 buildings were assessed across Macomia, Mocimboa da Praia, Palma, and Quissanga. The assessment will, however, be extended to other affected areas when the security situation allows. Table 1 provides the number of buildings that were assessed, by districts.

Table 1: Sample

	Macomia	Mocimboa da Praia	Palma	Quissanga	Total
Residential/Dwelling	37	375	138	348	898
Educational facilities	6	19	11	20	56
Health facilities	6	10	3	11	30
Market/Commercial facilities	21	152	19	40	232
Offices	14	32	20	15	81
Police stations	1	3	4	2	10
Other	9	8	3	25	45
Total	**94**	**599**	**198**	**461**	**1352**



1.3 Damage Classification

The classification of buildings in Mozambique, particularly in the province of Cabo Delgado, is less complicated than in other countries because of the simplicity of the structures, something that was reflected in the survey's classification system. Most buildings in the surveyed areas have one single function, as opposed to multiple ones. For instance, commercial facilities are used only for commercial purposes and government buildings are used exclusively for public services. Multipurpose structures are uncommon. Accordingly, an agreement was made with the relevant authorities to consider the building's usage as the first classification for each facility.

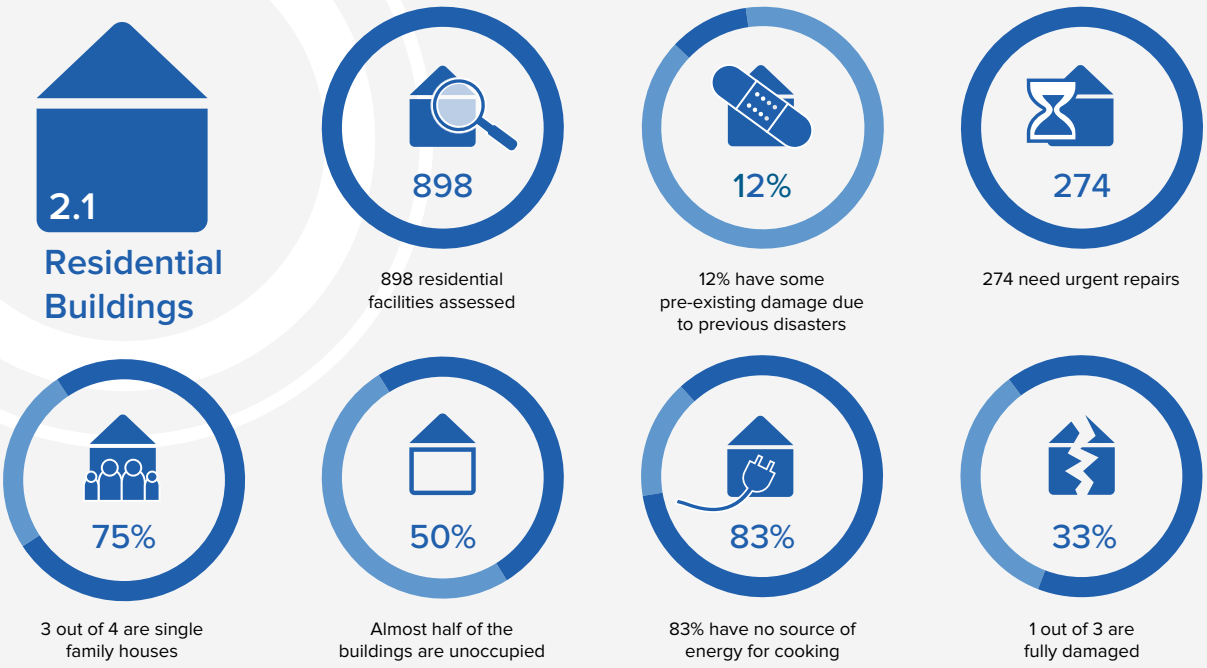
Damage to structures and residences was divided into three categories for the purposes of this assignment: totally damaged, partially damaged, or undamaged. The term "totally damaged" refers to structures and facilities that are unusable and cannot be rehabilitated since the expense of rehabilitation exceeds the cost of demolishing and re-construction. In some cases, these buildings pose some dangers to the surrounding population, as they are liable to collapse and contain large amounts of rubble, construction debris, and war remnants, as well as fragmented asbestos. The IDA methodology considers the building as totally damaged if the roof, walls, and foundation are fully damaged. If a building is classified as partially damaged, the extent of its damage is less, and the cost of re-habilitation is more feasible. All the buildings that need roof repairs or existing roof structures without structural damage fall under this category.

Note that some public and residential units have been rated as partially damaged, but it is expected that if they are not rehabilitated soon, the category may change to totally damaged, as the heavy rains and natural disasters that tend to occur during the winter season may make the structural elements and foundations of the facilities unstable.

The IDA also evaluated the level of operationality of buildings and infrastructure. Additionally, in-depth analyses on the damage of each building component were conducted. Walls, roofs, ceilings, floors and foundations of buildings were analyzed and classified as no damage, minor damage, moderate damage, severe damage or completely destroyed. The status of the electricity and the water, sanitation and hygiene (WASH) system were also mapped, in particular access to the water supply system and drinking water, as well as the type and operability of latrines and toilets. Some energy and WASH infrastructure (e.g., networks / pipes) are not visible as they are buried underground, and it is difficult to assess their condition. The team used to request the infrastructure government team to verify the specifications of these items.

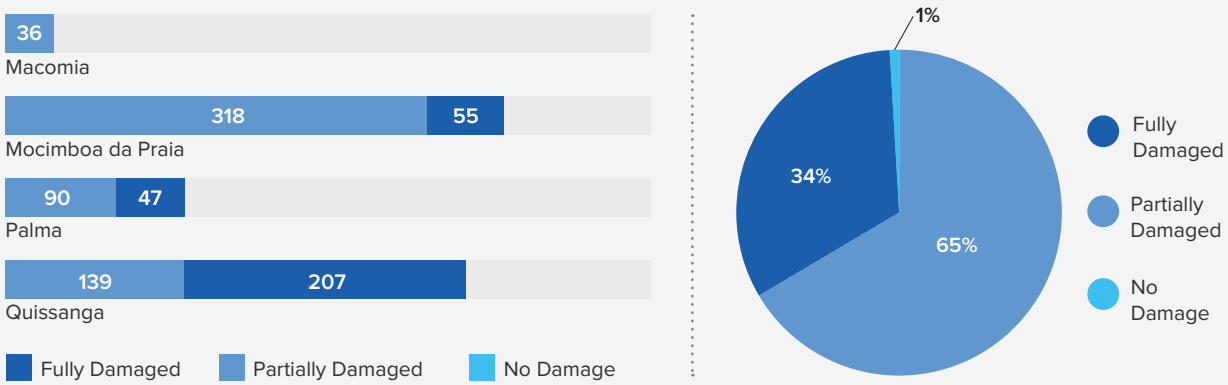
Image 2
The Mieze-Naminause road (12 km) links both villages in the Pemba-Metuge district.

2. Physical Damage to Buildings[1]



Practically all the residential buildings surveyed were found to have been impacted by the conflict. While the largest share of the buildings had sustained partial damages, the share of residential buildings considered as fully damaged is relatively high. Out of the 898 buildings assessed, 65% or an equivalent of 583 buildings have been partially damaged while 34%, or 310 buildings, have been fully damaged (Figure 1). A district-wise comparison shows most of the buildings that are fully damaged are in Quissanga. More than half of the buildings assessed in this district are fully damaged, with a total of buildings fully damaged being 207, as compared to 139 that are partially damaged. In Macomia, almost all buildings assessed have sustained partial damage, while only one was fully damaged. The share of buildings that are fully damaged in Mocimboa da Praia is also relatively small; namely, 15% compared to 85% that are partially damaged.

Figure 1: Damage to residential buildings (total=898)



[1] The figures and analyses provided in this section will be updated and changed as new affected areas become accessible.

Image 3
The housing unit of a civil servant in Quissanga sede (Quissanga district).

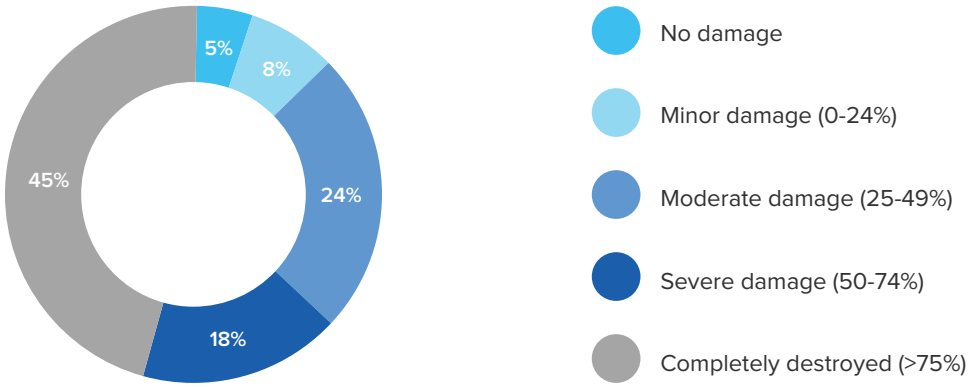
Further analyses on the components of the residential buildings show that all components have been damaged by the conflict. One out of three of the buildings have the walls, foundations, and floor destroyed (Table 2). The roof is destroyed in 44% of the buildings assessed, meaning that 395 residential buildings out of 898 assessed have their roof destroyed. Looking at the ceilings, the overall level of total destruction is almost equally severe: these are completely destroyed in 40% of the buildings assessed. Table 2 also emphasizes that a number of residential buildings' foundations are unaffected by the conflict. In fact, 19% or an equivalent of 167 buildings have still the foundations entirely intact.

Table 2: Damage to components of residential buildings

	No damage	Minor damage (0-24%)	Moderate damage (25-49%)	Severe damage (50-74%)	Completely destroyed (>75%) (collapsed)	Total
Walls	1.0	8.9	31.7	22.6	35.8	100
Roof	1.9	9.1	28.7	16.4	43.9	100
Ceiling	12.4	6.5	25.7	15.6	39.9	100
Floor	1.6	11.4	34.1	18.6	34.4	100
Foundations	18.9	14.1	21.6	11.7	33.6	100

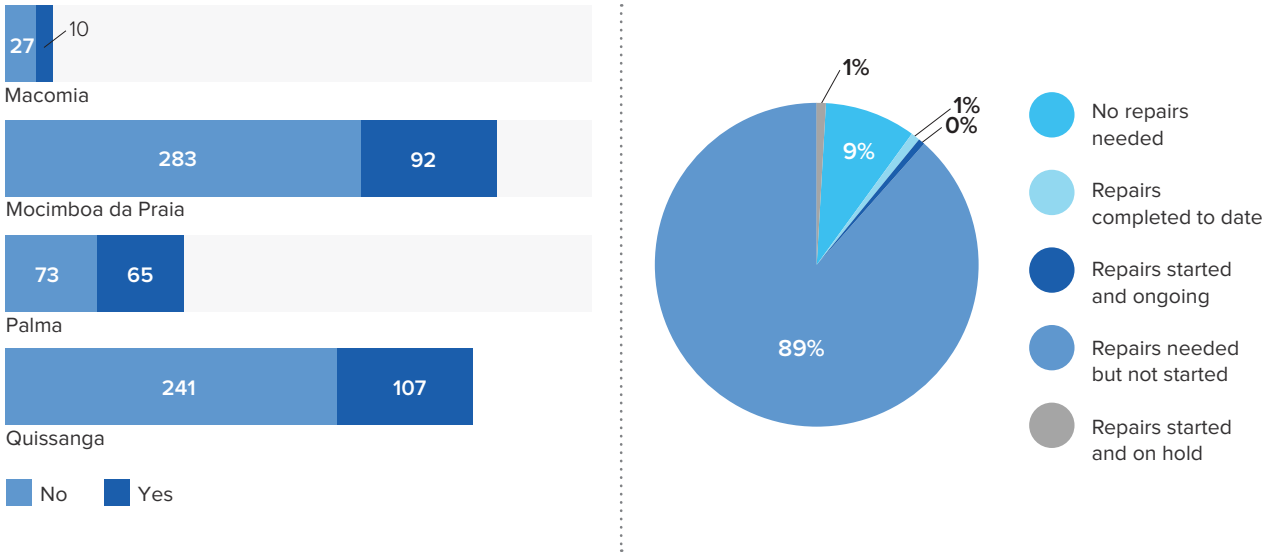
Another aspect of the buildings that is also of interest toward the recovery program concerns damage to electricity systems. Figure 2 illustrates that 45% of the 568 buildings connected to electricity have sustained full damage to their electricity system, which is relatively high as compared to the share of buildings for which the electricity system is either moderately damaged (24%) or severely damaged (18%). However, it should be noted that only 5% of the buildings still have an operational electricity system, while 8% have minor damage to their electricity system.

Figure 2: Damage to the electricity system (residential, N=568)

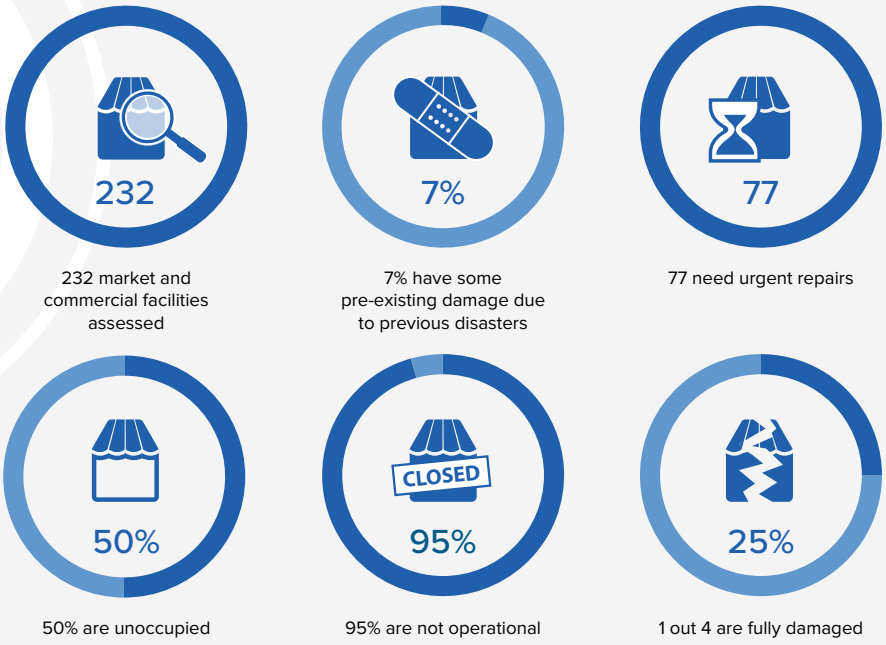


Under certain circumstances, some buildings require repairs more urgently than others. In this assessment, 274 residential buildings out of the 898 assessed need urgent repairs. Figure 3 (left) demonstrates that there is a positive correlation between the share of buildings that are fully damaged and the need for urgent repairs. As such, the district of Quissanga has the highest number of buildings that need urgent repairs among the districts covered by this assessment. One out of three buildings in this district require urgent repairs, with the total number of buildings needing urgent repairs amounting to 107. Beyond urgent repairs, Figure 3 (right) shows the share of buildings that require repairs, although these are not classified as urgent, as well as the repairs done since the damage. The figure demonstrates that the majority of the buildings assessed (89%) require repairs, which have yet to commence. Only a small share (1%) of the residential buildings assessed have the repairs completed.

Figure 3: Number of buildings requiring urgent repairs and repairs done since the damage (residential/dwelling)

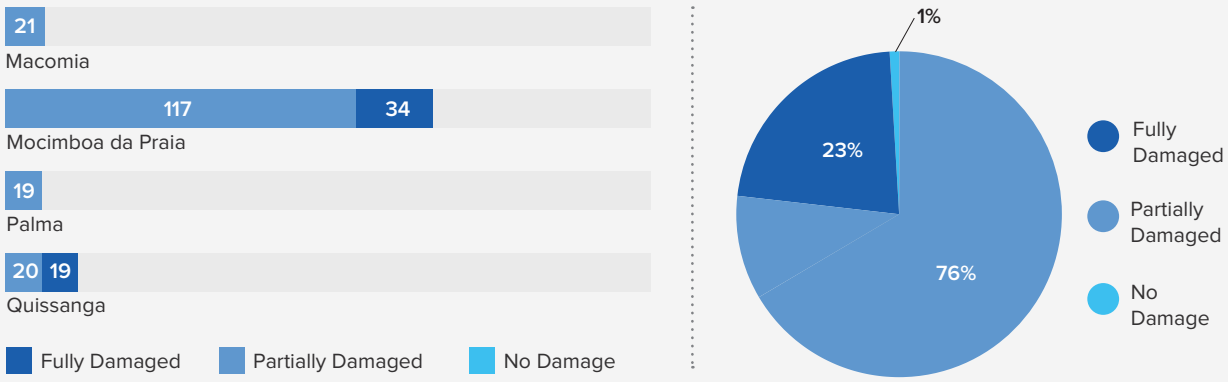


2.2 Market and Commercial Facilities



Markets or shopping centers hold significant value for the development of economic activities and income generation. Their destruction is expected to have an immediate impact on households' incomes, and the supply of food and other necessary goods. In this assessment, 232 market and commercial facilities were evaluated. Of these, 76% (177 facilities) were found to be partially damaged while 23% (55 facilities) are fully damaged (Figure 4). All the commercial facilities assessed in Macomia and Palma are partially damaged. Although the number of market and commercial facilities that are fully damaged in Mocimboa (34 facilities) is relatively higher than that in Quissanga (19 facilities), it remains that Quissanga has the proportionally largest share of markets fully damaged (48%, compared to 22% in Mocimboa). In fact, three out four of the market or commercial facilities evaluated in Mocimboa are partially damaged.

Figure 4: Damage to market/commercial facilities (total=232)



To understand how market facilities have been impacted, this assessment considers the damage to their components, distinguishing between the walls, the roof, the ceiling, the floor, and the foundations. The findings displayed in Table 3 indicate that walls and floors have suffered mostly moderate damages, with 40% of the market facilities sustaining moderate damage to their walls and 34% to their floors. Most market facilities have endured the complete destruction of their roof and ceiling, at 38% and 33%, respectively.

Map 2: Market and other productive facilities assessed by level of damage

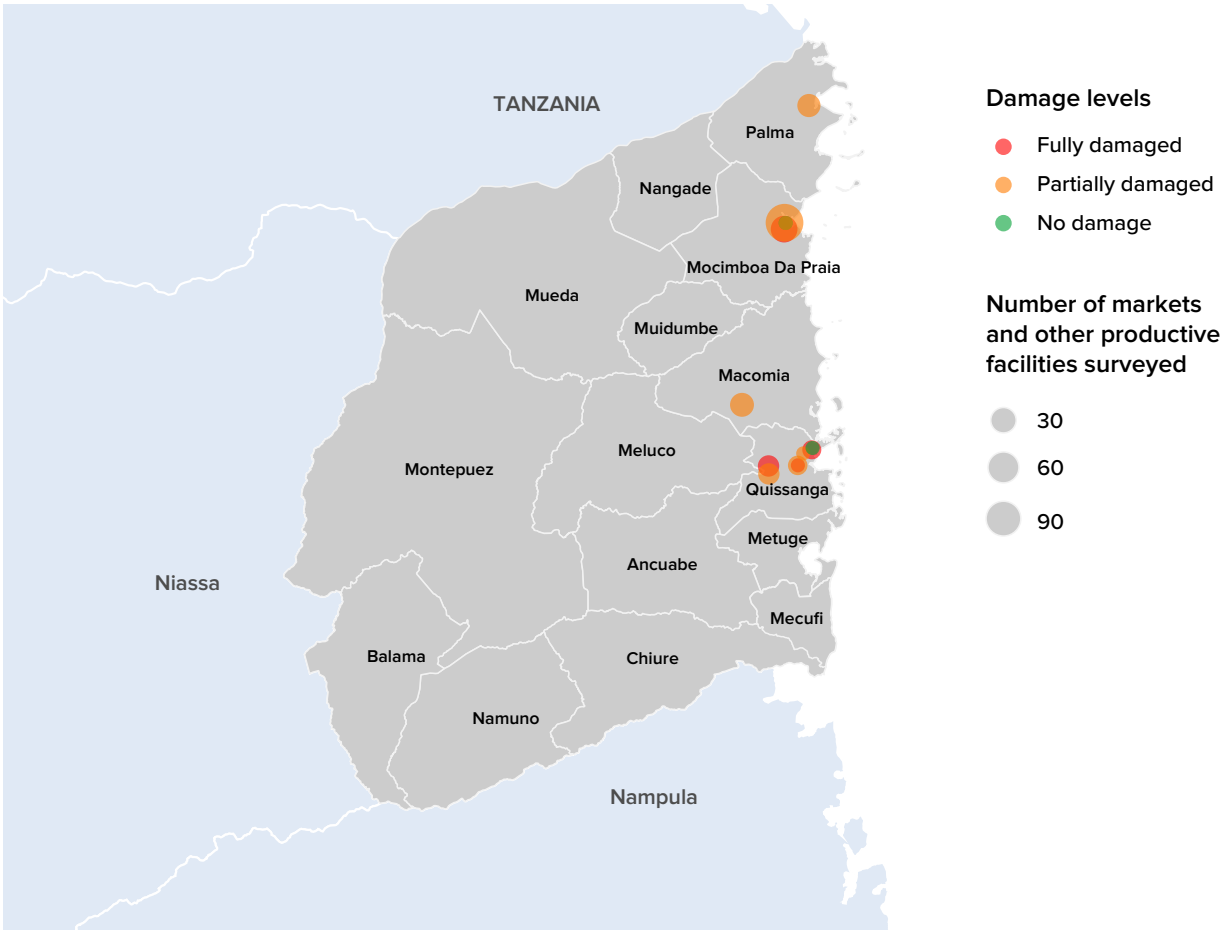
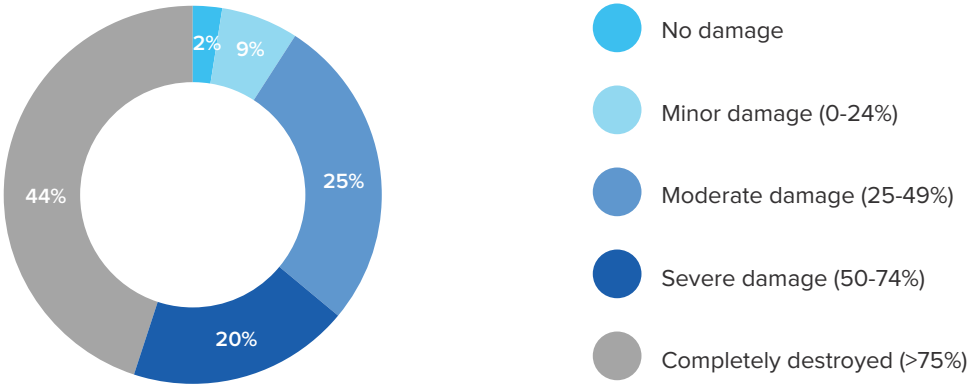


Table 3: Damage to components of market/commercial facilities

	No damage	Minor damage (0-24%)	Moderate damage (25-49%)	Severe damage (50-74%)	Completely destroyed (>75%) (collapsed)	Total
Walls	1.7	14.7	40.1	19.4	24.1	100
Roof	4.3	10.3	33.2	14.7	37.5	100
Ceiling	17.7	8.6	26.7	13.8	33.2	100
Floor	2.2	17.2	34.1	19.4	27.2	100
Foundations	19.8	30.2	20.7	6.0	23.3	100

Akin to residential buildings, a significant share (44%) of the market and commercial facilities connected to electricity before the conflict have seen their electricity system destroyed (Figure 5). The share of commercial facilities for which the electricity system was severely damaged also remains relatively high (20%), which implies that more than half of the commercial facilities connected have encountered either severe damage or complete destruction. This is critical considering that some economic activities require electricity to operate. Furthermore, damage to the electricity system could result in unsafe environments and working conditions for those who would like to continue their economic activities, even if facilities are partially damaged.

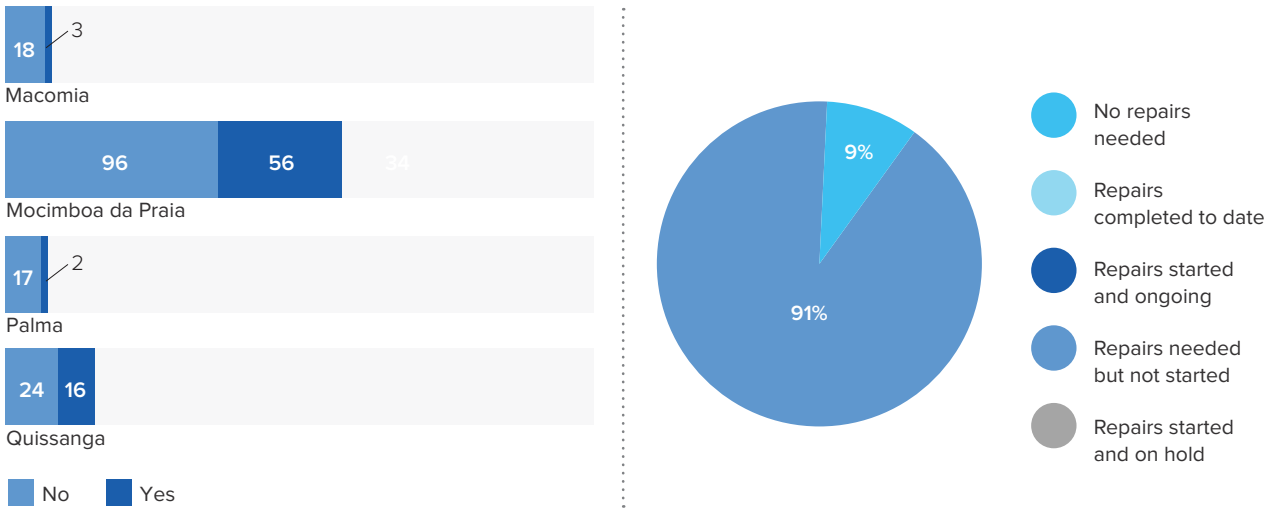
Figure 5: Damage to the electricity system (market/commercial facilities, N=192)



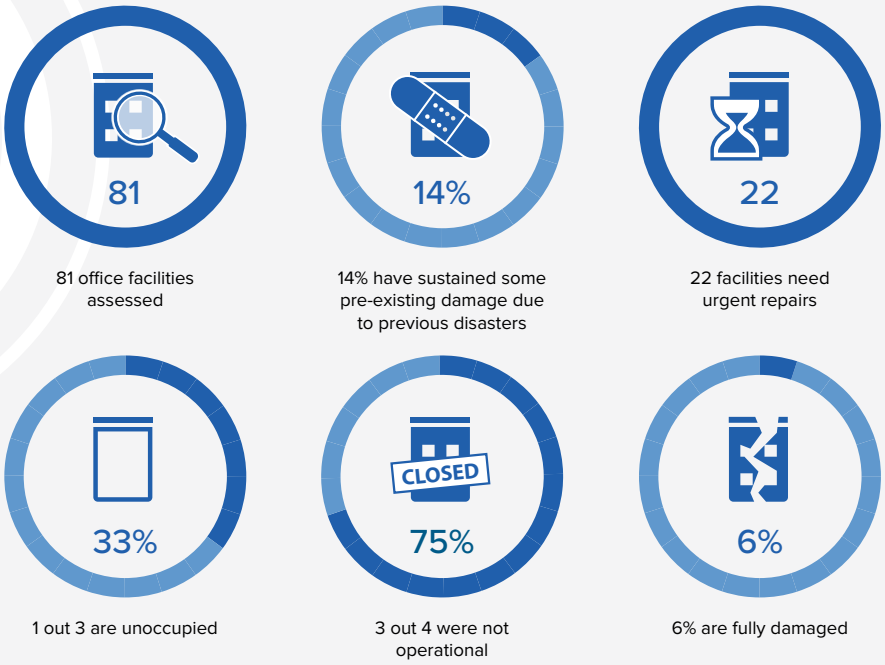
Of the 232 market or commercial facilities assessed, one out of three (77 facilities in total) require urgent repairs. We observe a positive correlation between the number of buildings that are fully damaged and the need for urgent repairs (right-side of Figure 4 and the left-side of Figure 6). The left-side of Figure 6 also indicates that most of the of the market facilities that require urgent repairs are in Mocimboa da Praia (56 facilities).

Although most of the markets assessed are not in urgent need of repair, many are still in need of repair in the short or medium term due to the damage they have sustained. As shown on the right-side of Figure 6, a striking 91% of the market facilities are in need of repairs, but the repairs have not started yet.

Figure 6: Number of market/commercial facilities requiring urgent repairs and repairs done since the damage



2.3 Office Facilities



All office facilities assessed have suffered damage either partially or fully. The majority (94%), however, has sustained partial damage while only 6% are fully damaged (Figure 7). This trend is also observed at district level. The districts in which office facilities were fully damaged are Mocimboa da Praia (two facilities), Palma (two facilities), and Quissanga (one facility). The remaining office facilities in these districts are only partially damaged.

Figure 7: Damage to office facilities (total=81)

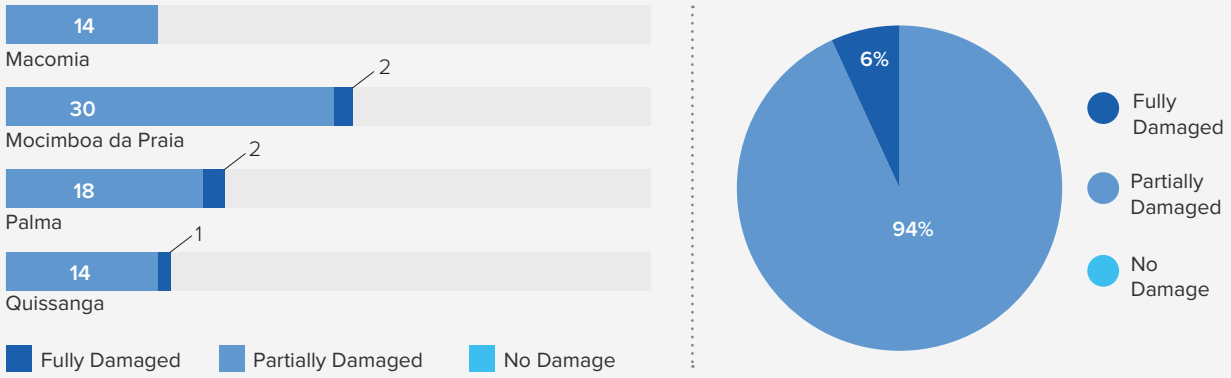


Image 5:
Computer classroom completely destroyed in Bilibiza (Quissanga district).

The above finding is also reflected in a relatively speaking less severe impact on the components of the office facilities. For instance, only 6% of them have encountered a complete destruction to their walls and floors (Table 4). In more than half of the office facilities assessed; the foundations have sustained no damage. However, it is worth noting that the share of office facilities facing severe damage is not negligeable. In one out of four office facilities assessed, the walls, roof, and floor sustained severe damages. In more than half of the office facilities assessed (54%), the ceiling is either severely damaged or completely destroyed.

Map 3: Offices facilities assessed by level of damage

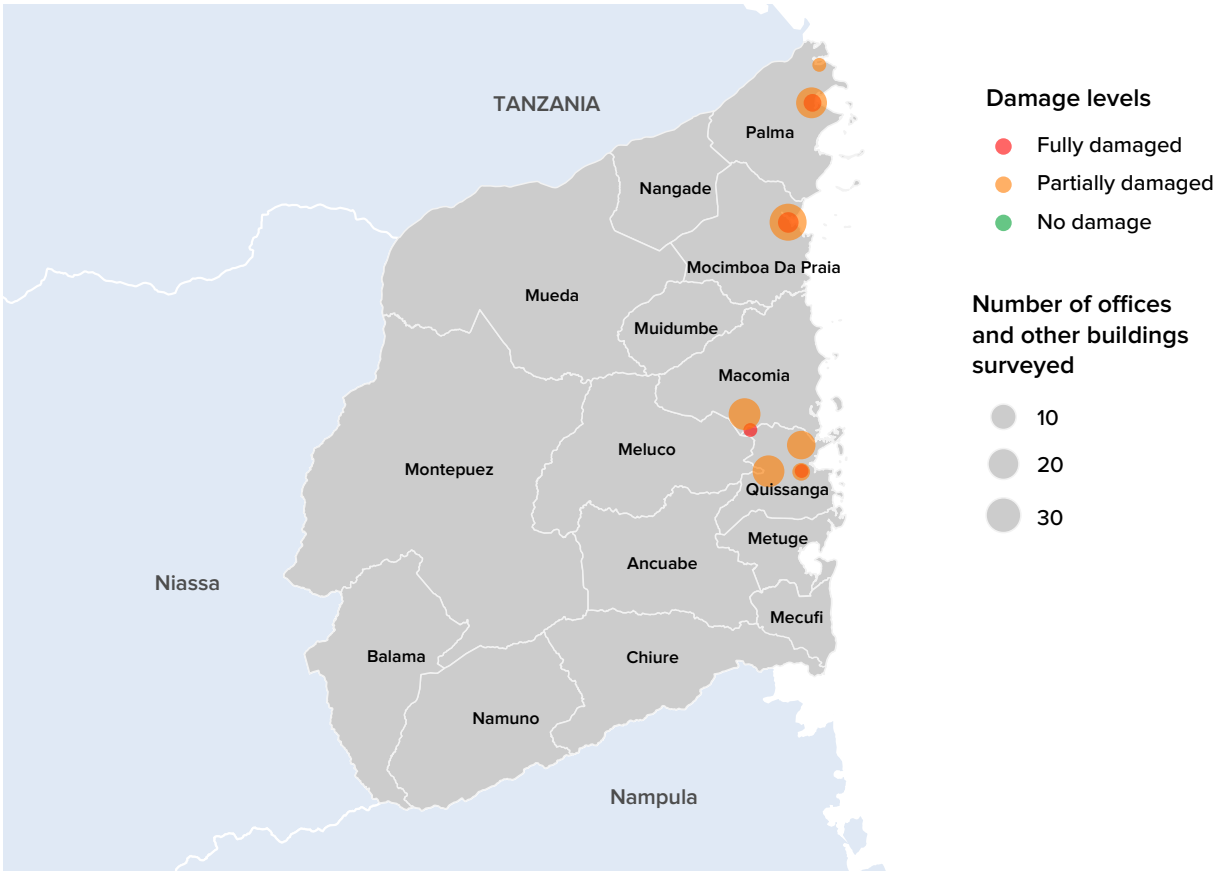
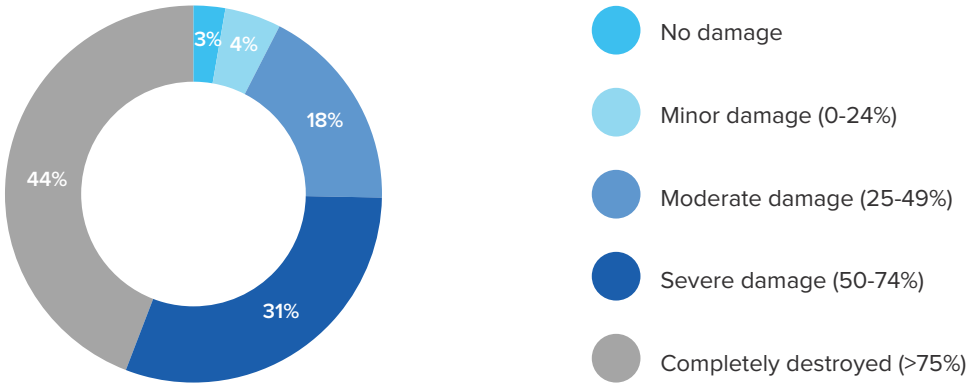


Table 4: Damage to components of office facilities

	No damage	Minor damage (0-24%)	Moderate damage (25-49%)	Severe damage (50-74%)	Completely destroyed (>75%) (collapsed)	Total
Walls	1.2	18.5	46.9	27.2	6.2	100.0
Roof	1.2	17.3	30.9	25.9	24.7	100.0
Ceiling	11.1	13.6	21.0	19.8	34.6	100.0
Floor	0.0	24.7	46.9	22.2	6.2	100.0
Foundations	58.0	27.2	11.1	0.0	3.7	100.0

While most office facilities have faced partial damage to the overall building, those connected to the electricity system have encountered severe damage. This is illustrated by Figure 8 which depicts that only 3% respectively 4% of the facilities assessed have no or minor damage to the electricity system. Two out of three (65%) office facilities have sustained either a severe level of damage or the complete destruction of their electricity system. A total of 31% have seen their electricity systems severely damaged, while most (44%) have had their electricity systems destroyed.

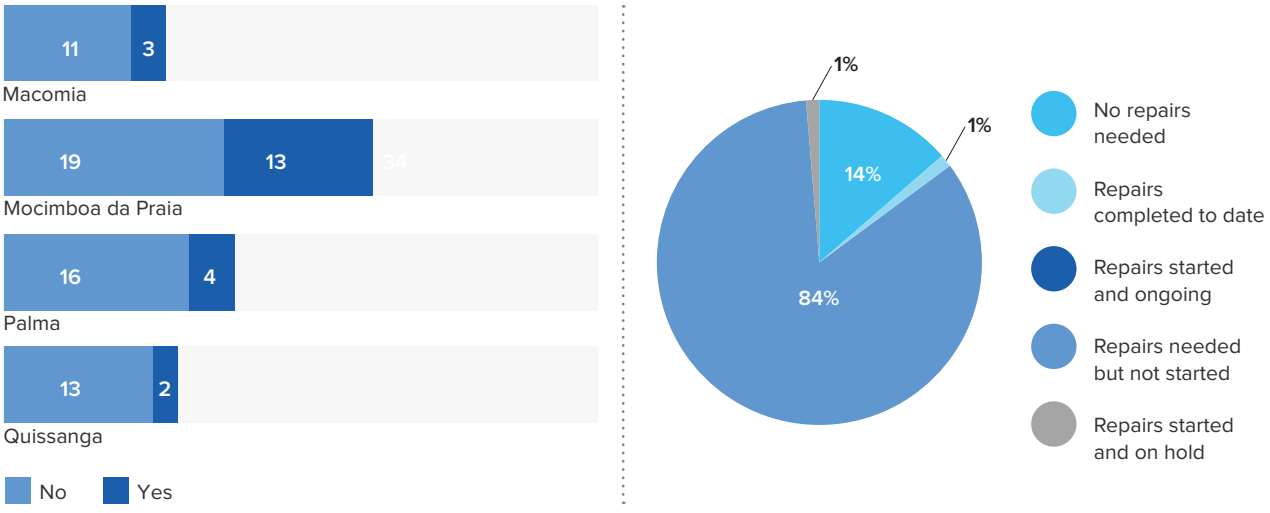
Figure 8: Damage to the electricity system (office, N=68)



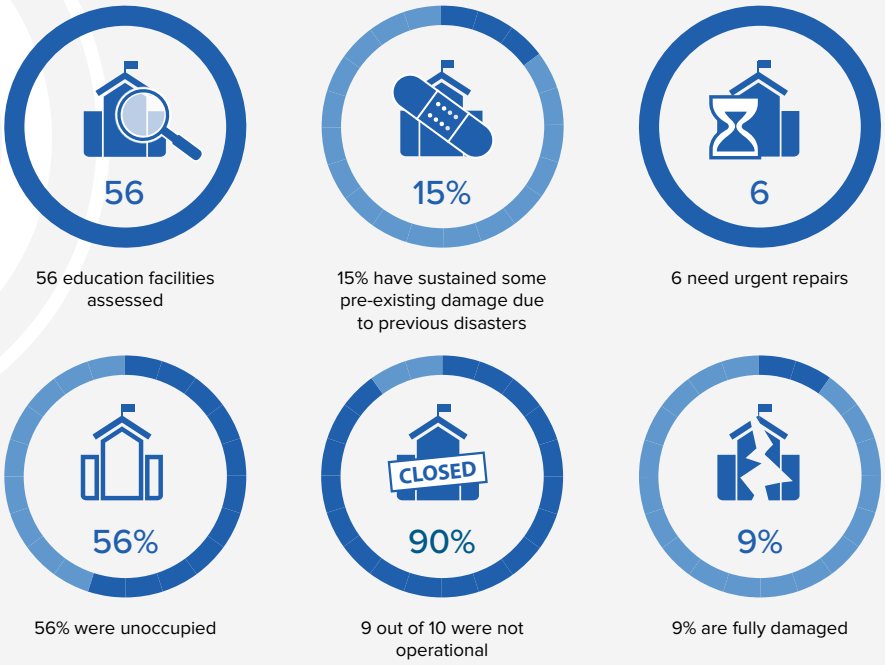
While most office facilities assessed are partially damaged, one in four office facilities (22 facilities) require urgent repairs. Over half (13 facilities) of these are in Mocimboa da Praia (left side of Figure 9). Regarding the office facilities requiring urgent repairs in the other districts assessed, three (03) are in Macomia, four (04) are in Palma, and two (02) in Quissanga.

While some facilities do not need urgent attention, repairs are still required in the medium or long run given the damages they have encountered. This is shown in Figure 9 (right), with 86% office facilities requiring repairs. Only one office facility has had repairs completed to date while one has repairs started but on hold.

Figure 9: Number of office facilities requiring urgent repairs and repairs done since the damage

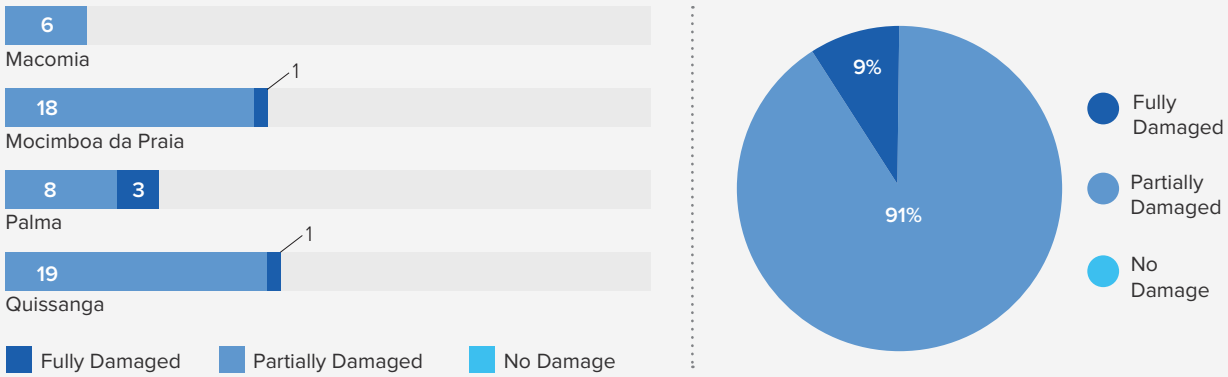


2.4 Educational Facilities

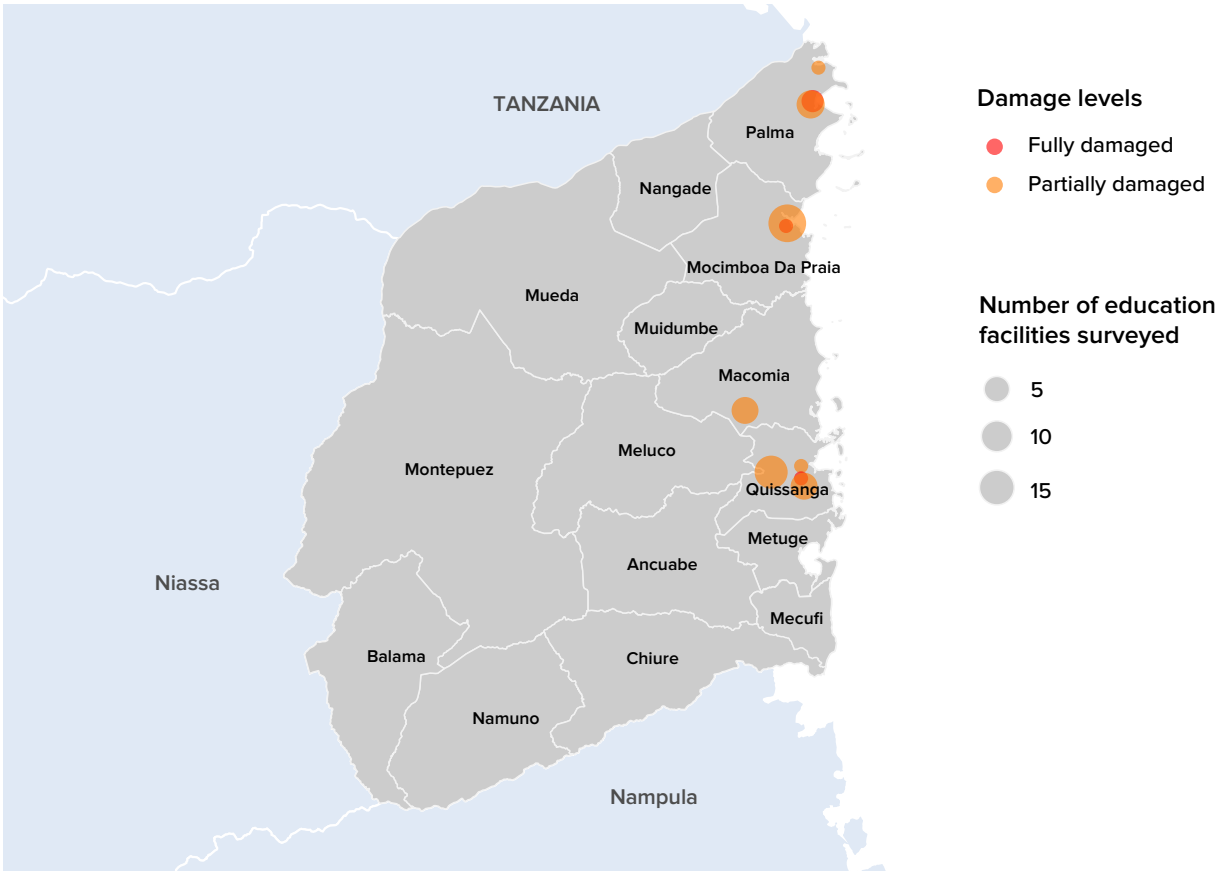


Education is one of the development-related priorities of the United Nations, as stipulated within the Sustainable Development Goal (SDG) 4. One aspect of this is to ensure that all children have access to free, equitable and quality primary and secondary education. This can only be achieved through the availability of quality and functional education facilities. Hence, by extension, this assessment examines the impact of the conflict on educational facilities and finds that all the 56 education facilities have been damaged by the conflict. A large share of them (91%) have sustained partial damages while a small part (9%) has been fully damaged. This pattern is confirmed at the district level, with only 5 education facilities having been fully damaged across three districts, Mocimboa da Praia (3 facilities), Palma (1 facility) and Quissanga (1 facility).

Figure 10: Damage to educational facilities (total=56)



Map 4: Education facilities assessed by level of damage



Analyzing the damage to educational facilities help one understand how they have been impacted, and why so many educational facilities faced partial damage overall. Table 5 highlights that the walls, roof and floors have mostly sustained moderate damage. In addition, the ceilings have not been damaged in one out of four (29%) educational facilities. The building foundations have not been impacted in almost half of the education facilities assessed. These findings could explain why 91% of the education facilities surveyed have been considered as partially damaged. However, one finding in Table 5 that deserves attention is that one out of four educational facilities have sustained severe damage to their walls as a result of the conflict.

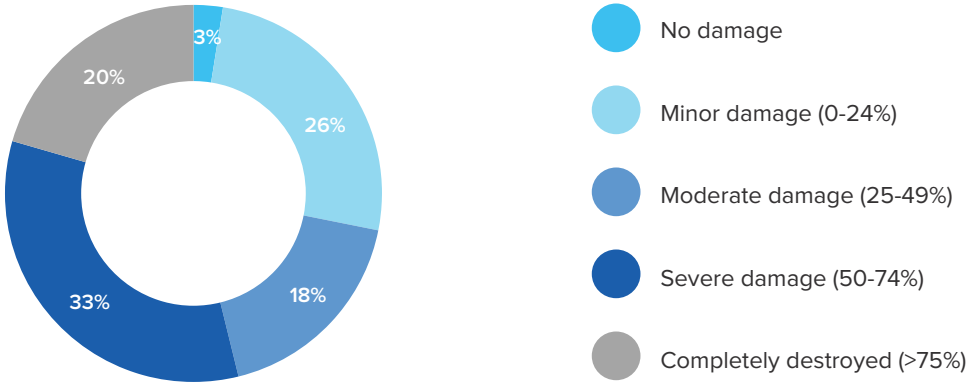
Table 5: Damage to the components of education facilities

	No damage	Minor damage (0-24%)	Moderate damage (25-49%)	Severe damage (50-74%)	Completely destroyed (>75%) (collapsed)	Total
Walls	8.9	23.2	35.7	23.2	8.9	100
Roof	7.1	23.2	26.8	21.4	21.4	100
Ceiling	28.6	21.4	17.9	12.5	19.6	100
Floor	3.6	26.8	32.1	23.2	14.3	100
Foundations	42.9	30.4	12.5	8.9	5.4	100

The electricity system has also been damaged in almost all of the educational facilities connected to electricity before the attacks. The largest share of them (33%) sustained severe damage to their electricity system, while 20% had their electricity system destroyed. However, it is notable that one out four educational facilities have sustained only minor damage to their electricity system.

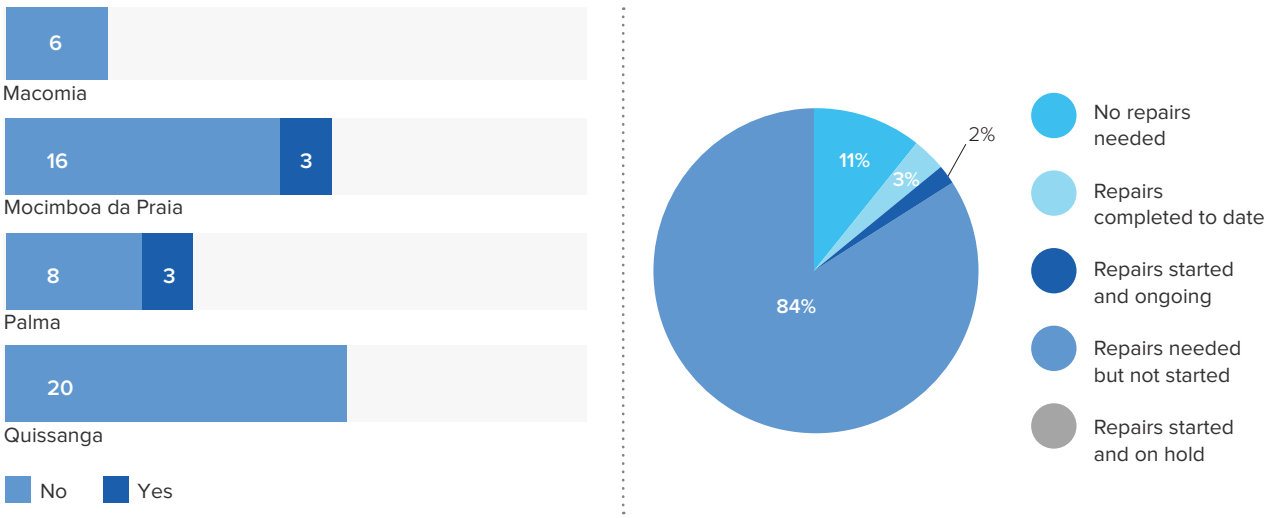
Image 6:
School in Bilibiza (Quissanga district).

Figure 11: Damage to the electricity system (education facilities, N=39)



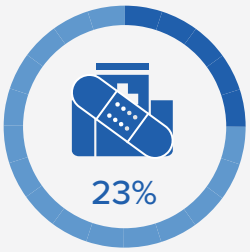
The share of educational facilities requiring urgent repairs is low (10%), compared to other types of buildings. Only 6 out of 56 surveyed need urgent repairs, with half being in Mocimboa da Praia and the second half in Palma (left side of Figure 12). All educational facilities assessed in Macomia and Quissanga do not need urgent repairs. However, this does not mean that they do not require repairs at all. As shown in the right side of figure 12, 84% require some type of repairs. While only 3% have repairs completed to date, 2% have repairs that have started and are ongoing.

Figure 12: Number of educational facilities requiring urgent repairs and repairs done since the damage



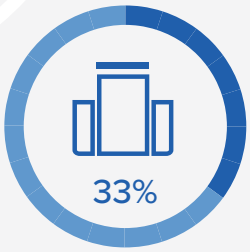
Health Facilities

30 health facilities assessed

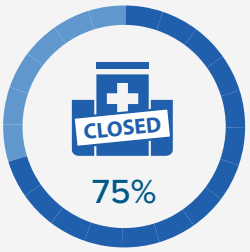


23% have some pre-existing damage due to previous disasters

10 need urgent repairs



1 out 3 were unoccupied

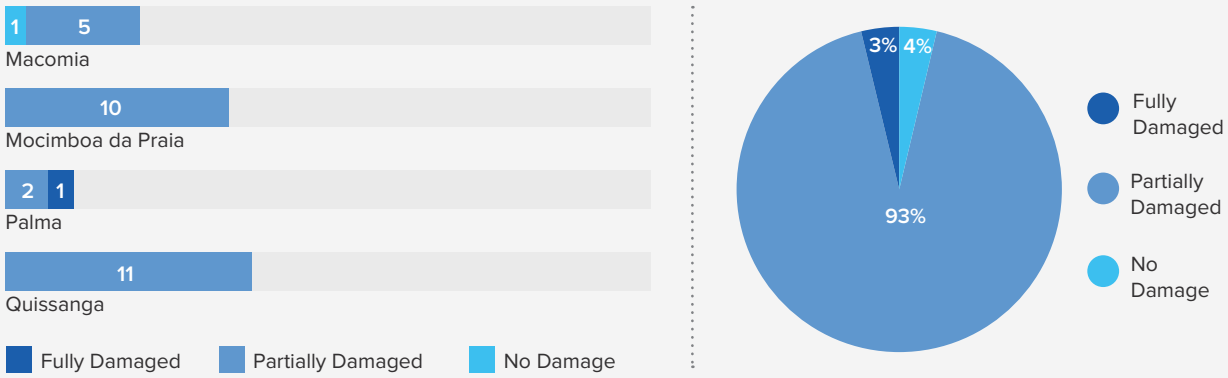


3 out of 4 were not operational

Only 1 is fully damaged

Health capital is essential to sustainable development especially in all low-income areas, including Cabo-Delgado. Of the 30 health facilities examined for the purposes of this assessment, the majority (93%) have been partially damaged while a minor 3% has been fully damaged (Figure 13). Only 4% sustained no damage as a result of the conflict. Putting these figures in numbers distributed by districts, it is found that only one health facility, located in Macomia, is not damaged. Furthermore, there is only one health facility that was fully damaged, which is in Palma. All health facilities assessed in the two remaining districts, Mocimboa da Praia and Quissanga, are partially damaged.

Figure 13. Damage to health facilities (total=30)



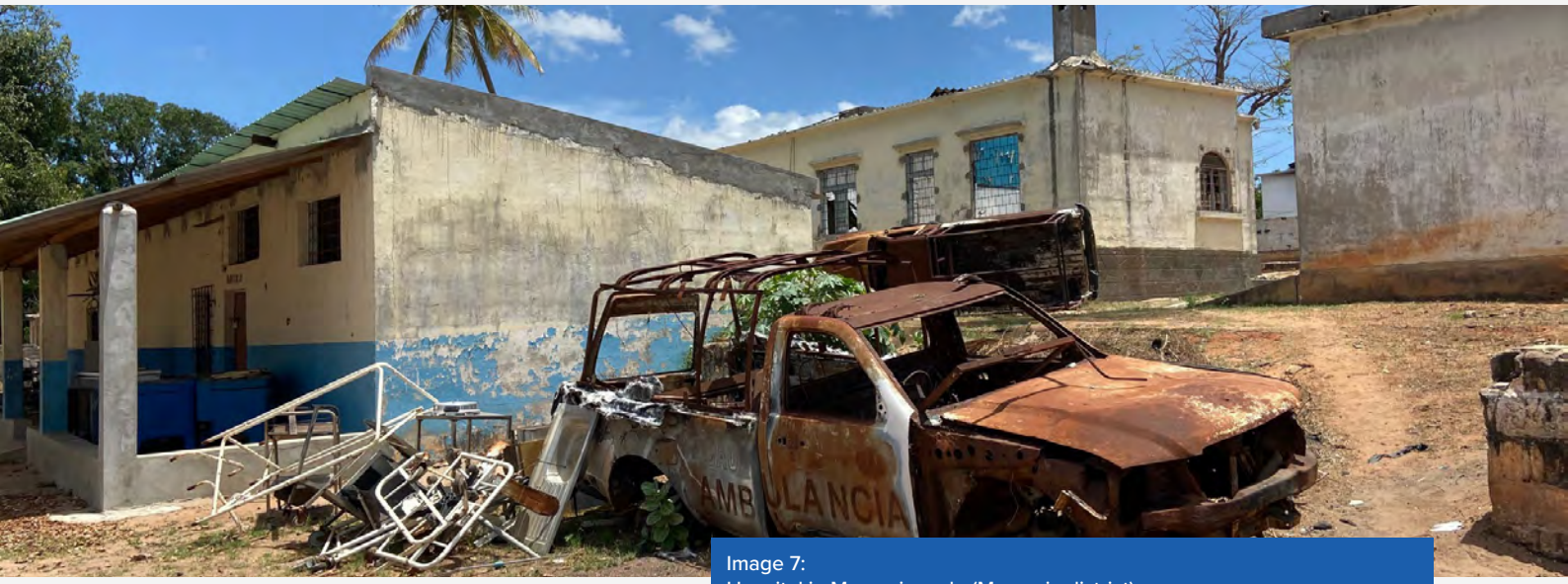
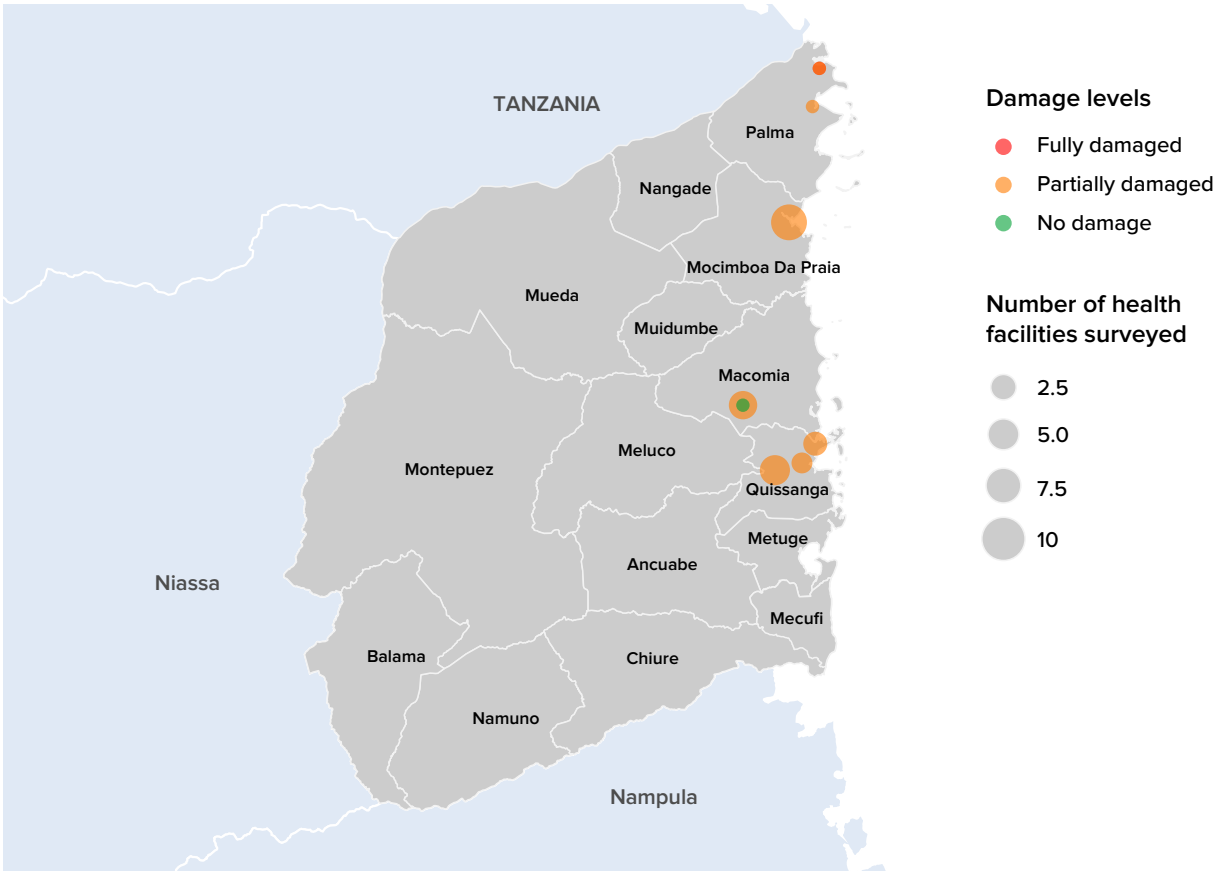


Image 7:
Hospital in Macomia sede (Macomia district).

Map 5: Health facilities assessed by level of damage



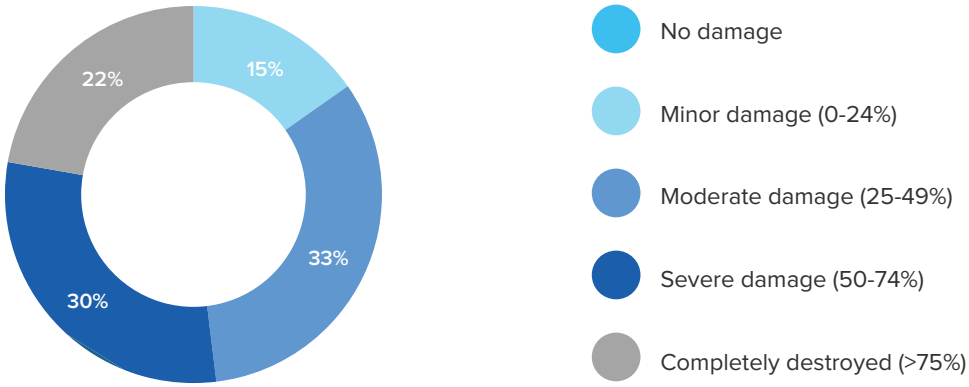
By examining separate impacts on building components, we observe that the walls, ceiling, and floors have mostly sustained a moderate level of damage, as depicted in Table 6. More than half of the health facilities have had a moderate damage on their walls and floor. As for the ceiling, most (4 out of 10) have been moderately damaged. Table 6 also shows that the roof is the part of the building that exhibits the highest degree of severe damage, overall. One out of three (33%) health facilities have encountered a severe level of damage to their roofs, as compared to 13% for walls, 17% for the ceiling and 10% for floors. It should be noted that the walls have been completely destroyed in only 3% of the health facilities assessed. Meanwhile, no health facility has had its floor completely destroyed. Regarding the foundations, they were not damaged in most (70%) of the health facilities assessed.

Table 6: Damage to the components of health facilities

	No damage	Minor damage (0-24%)	Moderate damage (25-49%)	Severe damage (50-74%)	Completely destroyed (>75%) (collapsed)	Total
Walls	6.7	20.0	56.7	13.3	3.3	100
Roof	3.3	23.3	33.3	33.3	6.7	100
Ceiling	10.0	16.7	43.3	16.7	13.3	100
Floor	10.0	20.0	60.0	10.0	0.0	100
Foundations	70.0	16.7	13.3	0.0	0.0	100

All the health facilities connected to electricity have faced damage to their electricity system. Most of them (33%) have endured a moderate level of damage to their electricity system (Figure 14). However, a sizeable share (30%) has sustained a severe level of damage to electricity systems, while a notable share (22% of the buildings with electricity) has seen its electricity system completely destroyed.

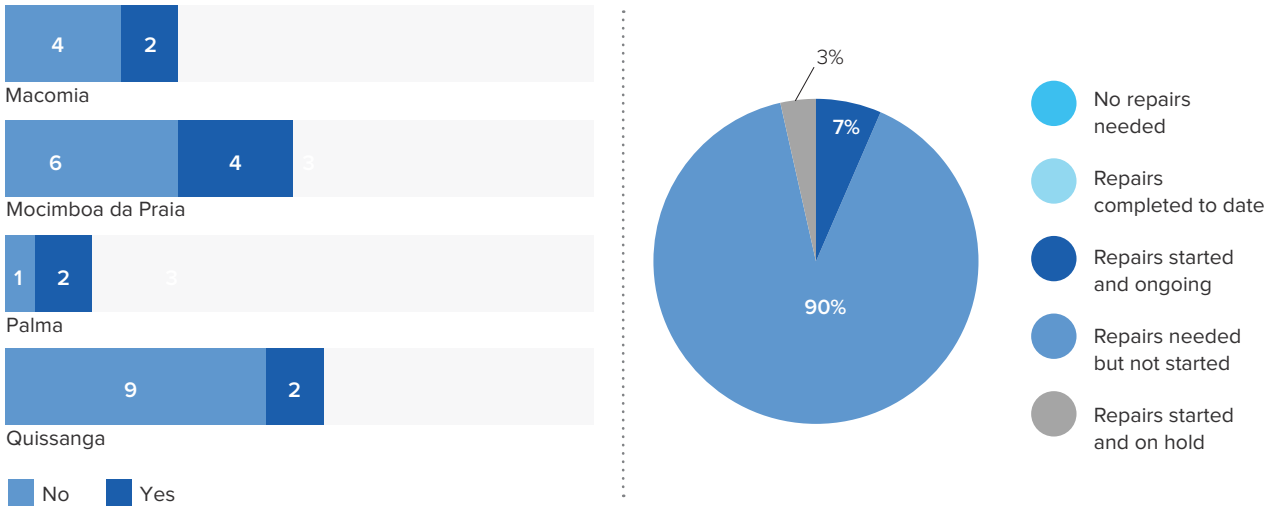
Figure 14: Damage to the electricity system (health facilities, N=27)



One out of three (10 facilities) of the 30 health facilities assessed require urgent repairs. The left-hand side of Figure 15 shows that, in all the four districts assessed, there are two to four health facilities that need urgent repairs due the damages sustained. Four are in Mocimboa da Praia. The other districts assessed each have two facilities requiring urgent repairs.

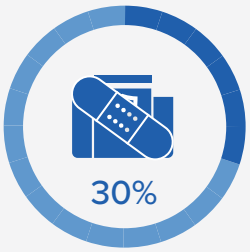
Although the number of health facilities that need urgent repairs is limited, there is still a large number that require repairs in the short and medium term. As shown in the right-hand side of Figure 15, all health facilities assessed require repairs. The majority (9 out of 10) need repairs, but none have commenced. Only two health facilities (7%) have repairs started and ongoing, while one health facility has repairs started and on hold.

Figure 15: Number of health facilities requiring urgent repairs and repairs done since the damage



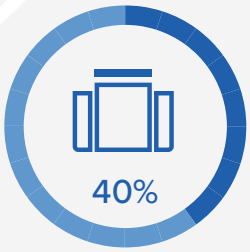
Police Stations

10 police stations assessed



3 had some pre-existing damage due to previous disasters

5 need urgent repairs



4 were unoccupied

All 10 were not operational

Only 1 is fully damaged

9 out of 10 police stations surveyed have been partially damaged, while the remaining one is fully damaged. Across all districts, only one police station has been fully damaged, and it is located in Quissanga (see Figure 16).

Figure 16: Damage to police stations (total=10)

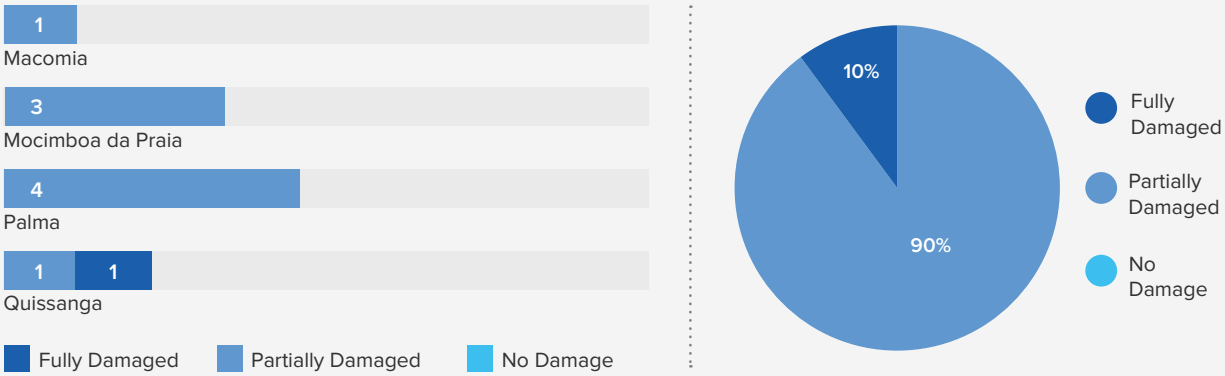
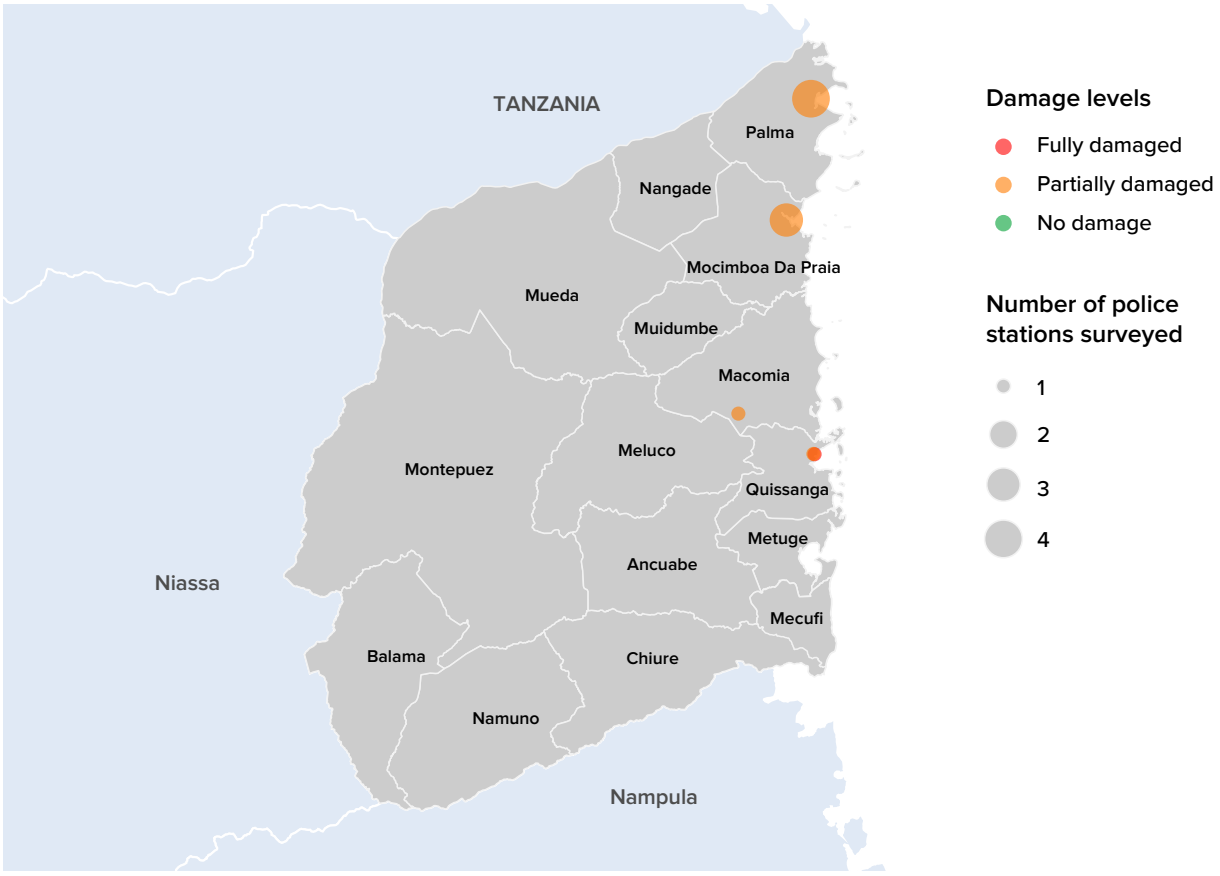


Image 8:
Police station in Quissanga sede (Quissanga district).

Map 6: Police stations assessed by level of damage



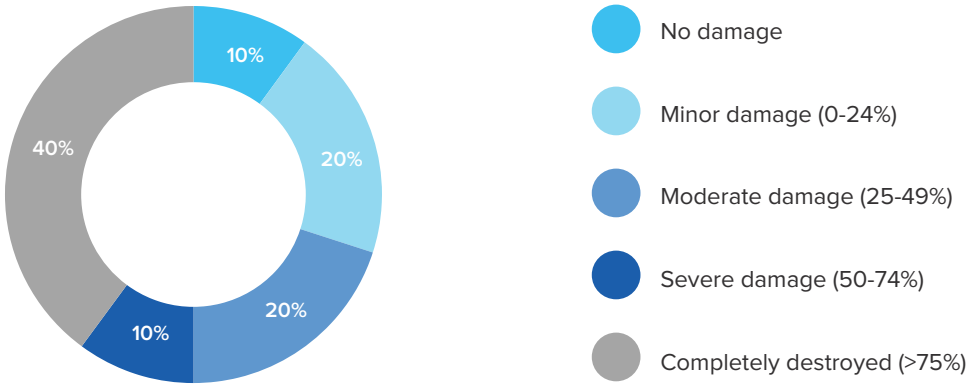
The analysis of the police stations' building components (Table 7) reveals that most have sustained a severe level of damage to their walls (4 out of 10 buildings), roofs (5 out of 10), and ceilings (4 out of 10). Most (6 out of 10) showcase a moderate level of damage to their floor, while 8 out of 10 had no damage inflicted upon their foundations.

Table 7: Damage to the components of the police stations

	No damage	Minor damage (0-24%)	Moderate damage (25-49%)	Severe damage (50-74%)	Completely destroyed (>75%) (collapsed)	Total
Walls	0	20	30	40	10	100
Roof	10	0	20	50	20	100
Ceiling	30	0	20	40	10	100
Floor	0	10	60	20	10	100
Foundations	80	10	10	0	0	100

Regarding the electricity system, most police stations have been confronted with the destruction of their electricity systems. This is illustrated in Figure 17, with 4 out 10 having their electricity systems destroyed. On the other hand, one police station is severely damaged, two are moderately damaged and two others only have minor damages.

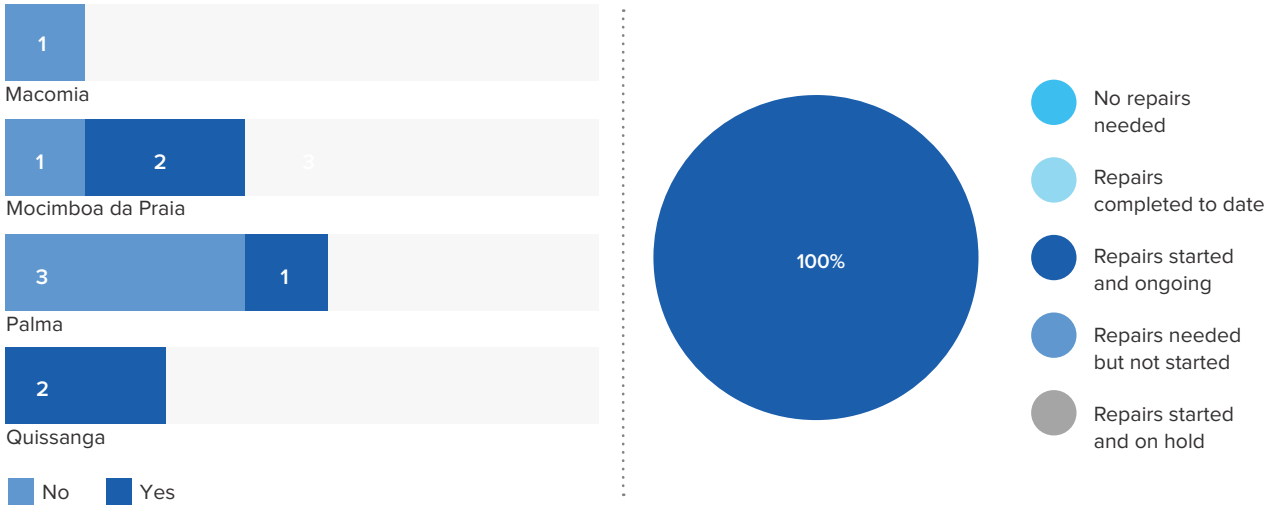
Figure 17: Damage to the electricity system (police stations, N=10)



Half of the police stations assessed require urgent repairs, with two in Mocimboa da Praia, one in Palma, and the remaining two in Quissanga (left side of Figure 18). It is noted that both police stations assessed in Quissanga require urgent repairs.

Beyond the urgent repairs, all the police stations assessed need repairs in the short or medium term, but these have not yet commenced.

Figure 18: Number of police stations requiring urgent repairs and repairs completed since the damage



3. Water and sanitation system

- **Current source of drinking water:**

Residential

74% have no direct source
14% use public tap/standpipe

Market/ Commercial

85% have no direct source
11% use public tap/standpipe

Office

47% have no direct source
36% use public tap/standpipe

Educational

66% have no direct source
25% use public tap/standpipe

Health

60% have no direct source
30% use public tap/standpipe

Police

40% have no direct source
20% use public tap/standpipe
40% use Tube well/Borehole

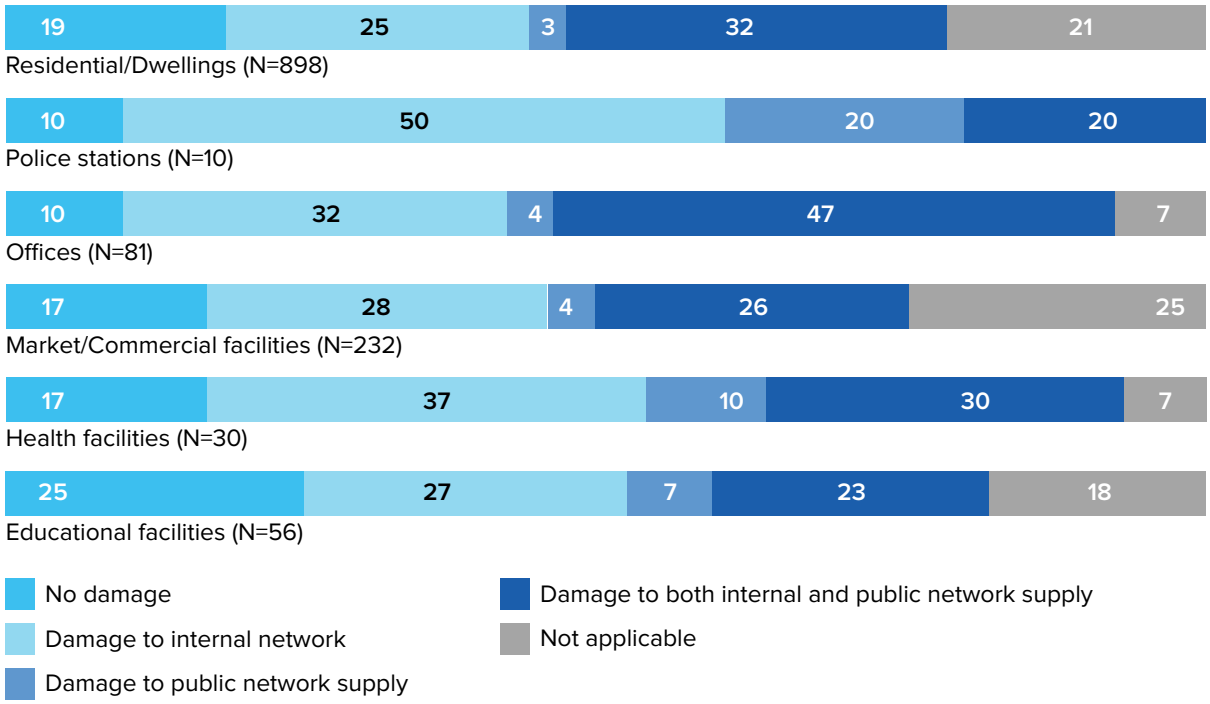
- **Functioning public latrines before the event:** Average: 1, min: 0, max: 20
- **Public latrines that became unusable:** Average: 1, min: 0, max: 15

Image 9:
Hospital toilet in Macomia sede (Macomia district).

Challenges exist concerning access to water in the districts assessed. Prior to the conflict, 51% of households in Quissanga used unprotected wells to access drinking water, as compared to the 19% that used protected wells, and 4% that had access to piped water (Population Census, 2017). The same conditions are prevalent in the remaining districts assessed, with 44%, 43%, and 42% households using unprotected wells in Mocimboa da Praia, Macomia, and Palma, respectively.

The NSAGs attacks have worsened matters. Over half the buildings surveyed currently do not have access to drinking water. The existing water infrastructures have also been damaged in most of the buildings assessed. Residential buildings, as well as the offices facilities have mostly faced damages to both the internal and external water supply networks, 32% and 47% of the buildings, respectively (Figure 19). Half of the police stations have encountered damage to their internal water network. Most educational and commercial facilities have also sustained damage to their internal water networks, at 27% and 28%, respectively. However, there is no significant difference between the proportion that only faced damage to the internal network and that experiencing both internal and external damages. Like market and educational facilities, health facilities have mostly registered damages to their internal water network, with one out of three facing such impact.

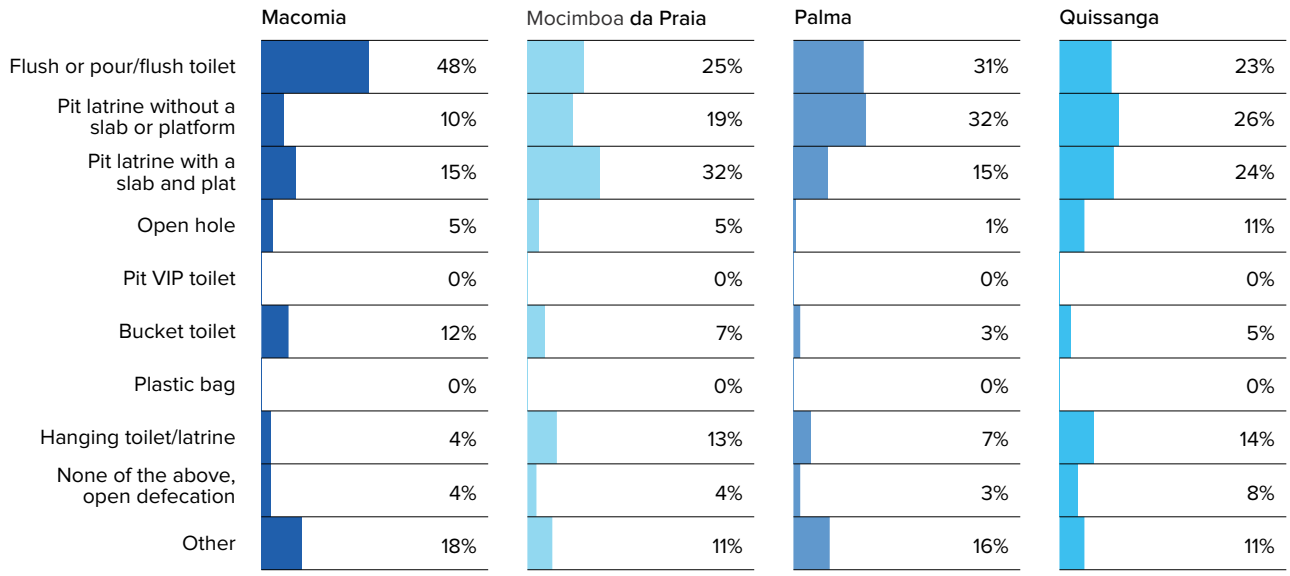
Figure 19: Damage to the water supply system (in %)



Sanitation is also a challenge within the districts assessed. Preceding the conflict, most households used low quality latrines while a significant share have no toilets whatsoever. In Palma, 42% of households used unimproved latrines, while 31% were living without toilets (Population census, 2017). In Mocimboa da Praia, half of the households interviewed in 2017 used unimproved latrines for defecation. As of Macomia and Quissanga, most households, 46% and 47%, respectively, were utilizing bad condition toilets in 2017.

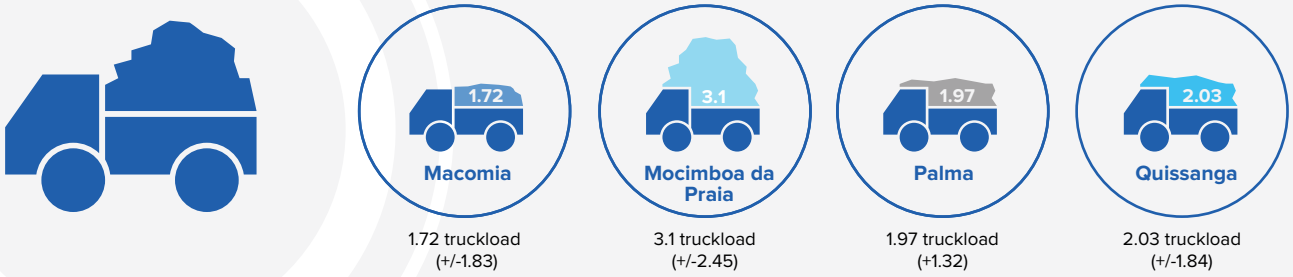
This assessment examined the conflict's impact on public latrines. On average, only one public latrine (+/- 1) is functional, with the maximum being 15 latrines. In Macomia, the flush toilet is the most common type in operations, constituting almost half of all toilets (48%) (Figure 20). In the remaining districts, there are three main types of public toilets that are used; namely, the flush toilet, pit latrine without slab, and pit latrine with slab and plat. In Mocimboa da Praia, the most available of these three is pit latrine with slab and plat (32%), while in Palma, the two most functioning public toilets are pit latrine without slab (32%), and flush toilet (31%).

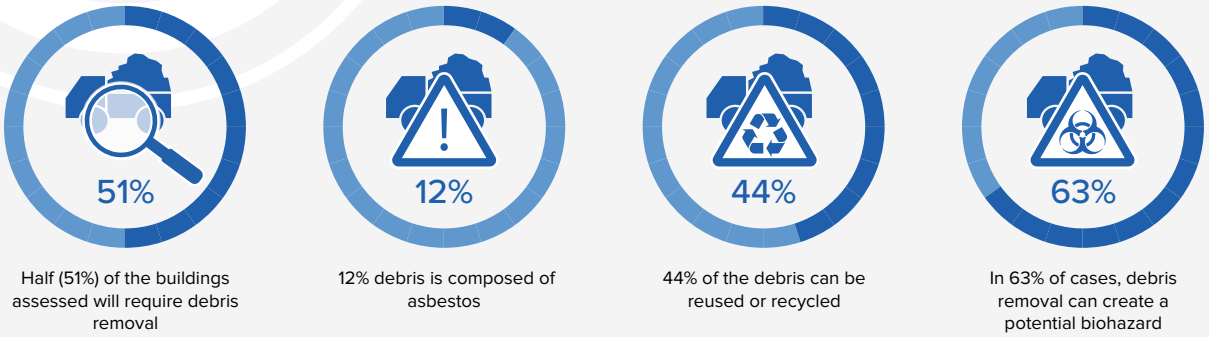
Figure 20: Type of functioning public latrines/toilets by districts



4. Debris management

- **Debris Volume:**





One of the key topics covered by this assessment is related to debris management. In this section of the report, we delve into issues related to buildings that require debris management; the type of debris that is present; debris with the presence of asbestos; debris that can be reused/recycled; and, potential hazards related to debris removal. About 50% of the assessed buildings in Mocimboa da Praia (55%), Quissanga (52%) and Palma (48%) require debris management strategies (see Figure 21). Only 1 in 3 assessed buildings in Macomia (31%) require such services, meaning that the vast majority of buildings within this district do not require debris management operations (69%).

Figure 21: Share of buildings that will require debris management by districts (in %)

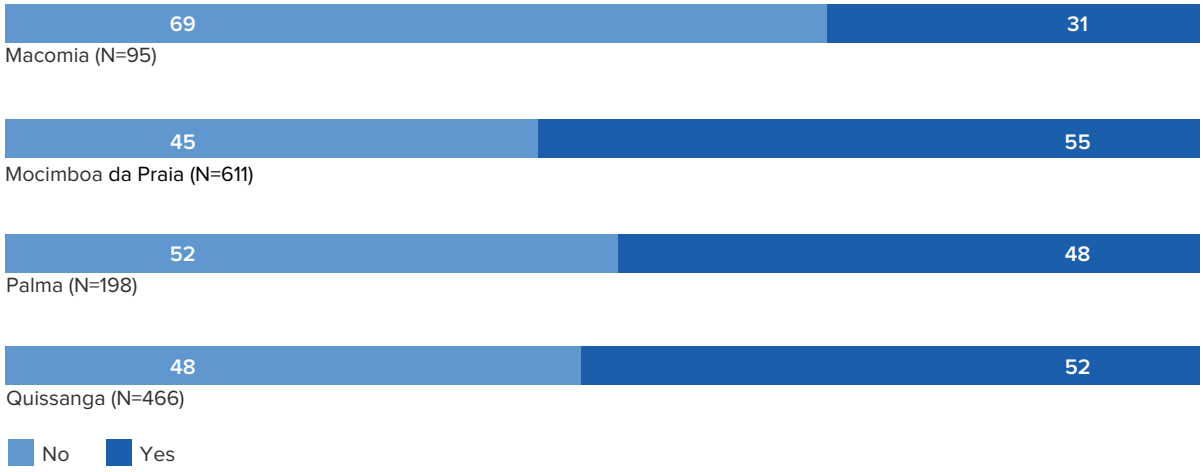
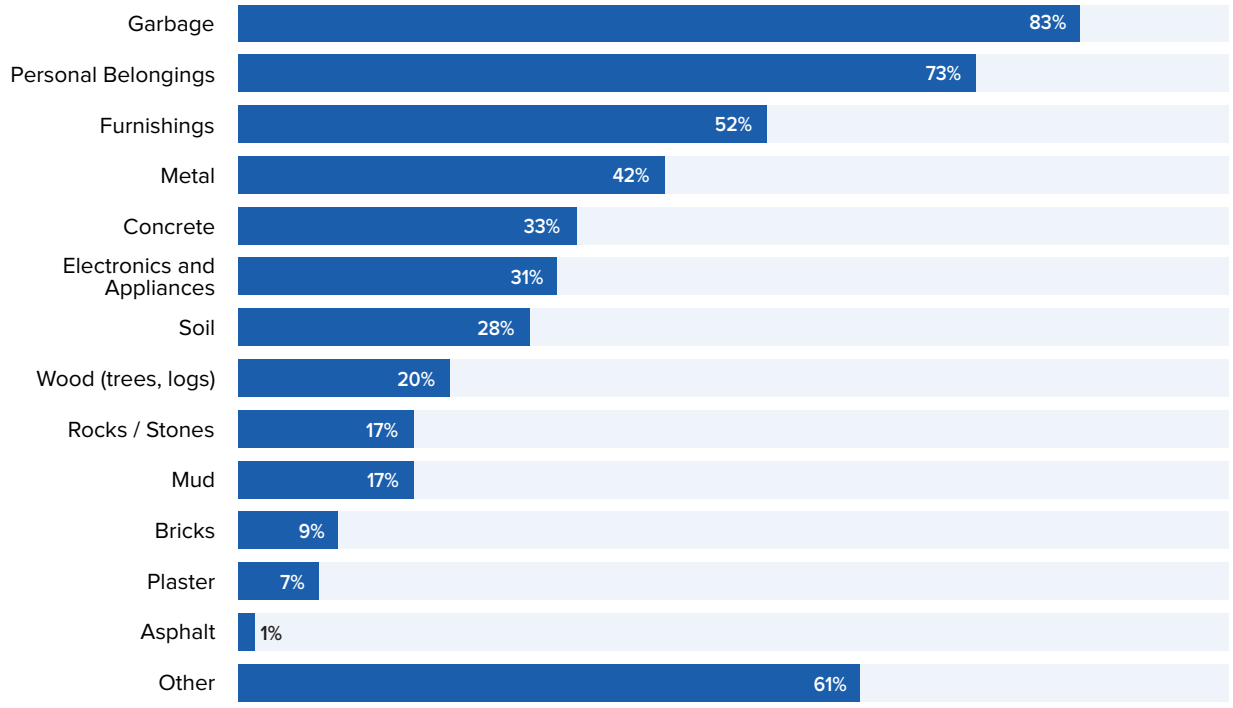


Image 10:
Participants of cash for work (C4W) painting a wall.

Garbage (83%), personal belongings (73%) and furnishings (52%) represent the three most prevalent types of debris, succeeded by metal (42%), concrete (33%), and electronics (31%). The least prevalent type of debris are asphalt (1%), plaster (7%) and brick (9%).

Figure 22: Type of debris that is present (in %)



In the assessed districts, the share of debris containing asbestos is relatively small. Some 21% of the debris in Macomia contain asbestos (Figure 23). This figure is reduced to 16% in Quissanga, 10% in Mocimboa, and 7% in Palma.

Advantageously, a significant share of debris can be reused or recycled. In fact, this assessment reveals that 44% of the debris present in the buildings assessed can be reused or recycled. Palma has the highest share, with more than half (54%) of the debris being reusable (Figure 24). In Mocimboa da Praia and Quissanga, the share of reusable debris is 45% and 41%, respectively. Macomia has the lowest share of reusable or recyclable debris, with only 20% being reusable.

Figure 23: Share of debris composed of asbestos (in %)

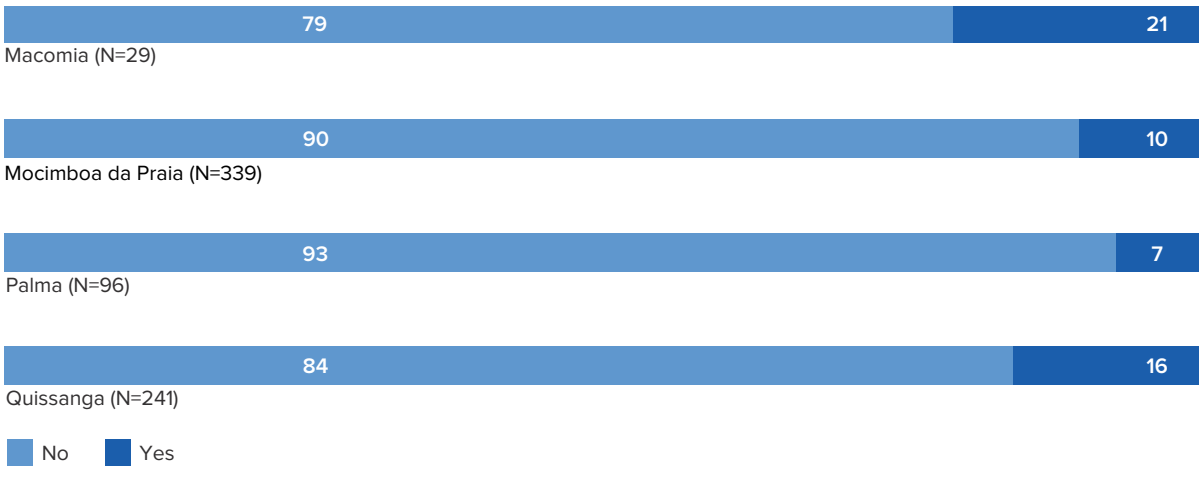
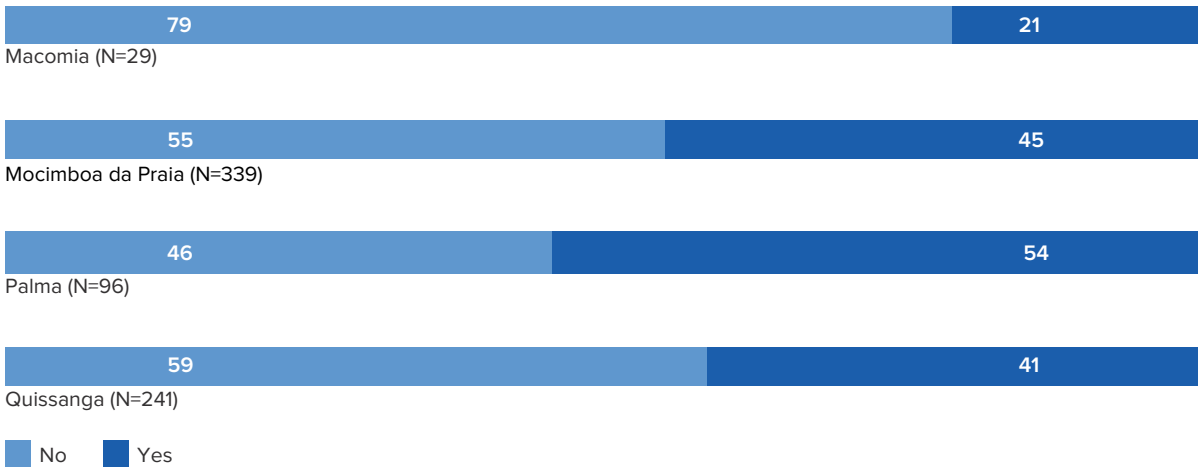
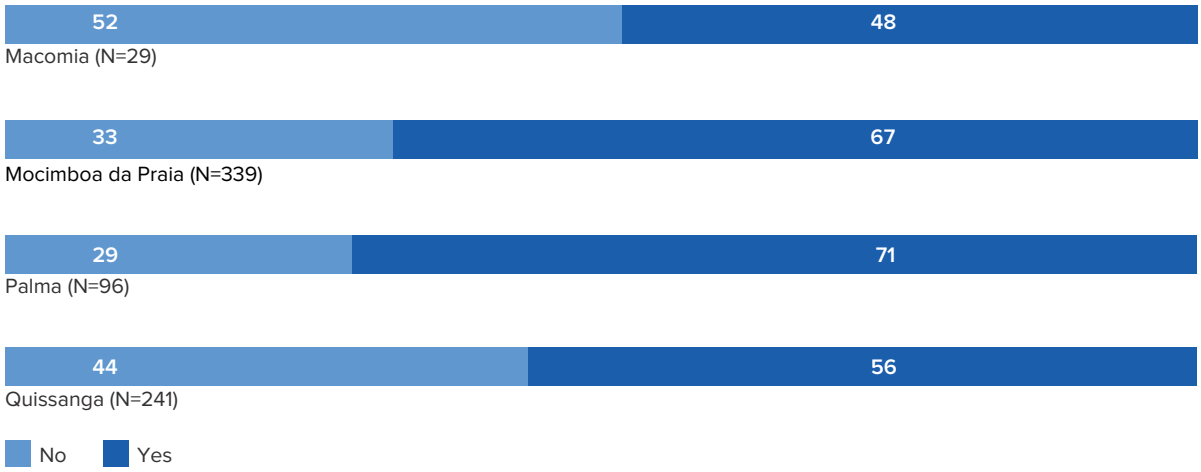


Figure 24: Share of debris that can be reused/recycled (in %)

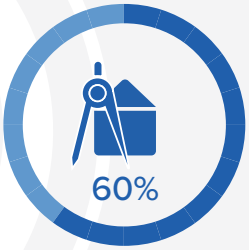


Debris management can present potential risks or result in the presence of hazards or hazardous environments. In almost two out of three situations, debris removal is expected to create a potential hazard. Risks of this are markedly high in Palma where, in 71% of cases, debris removal can create a potential hazard (Figure 25). The number is also high in Mocimboa da Praia and Quissanga, with 67% and 56% debris removal being classified as high-risk activities. In Macomia, while the number is relatively lower, half the debris might create risks upon removal operations.

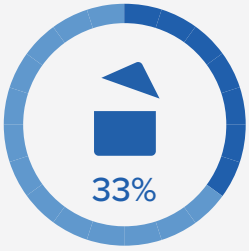
Figure 25: Will debris removal create any potential hazards? (in %)



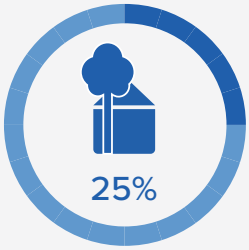
5. Preparedness and Resilience



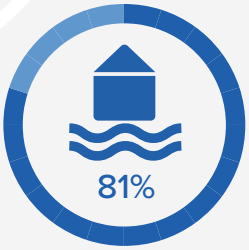
Almost 60% of the buildings assessed were not built in compliance with the building code



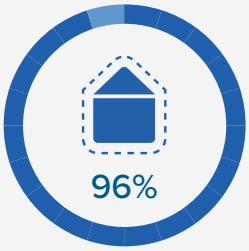
2 out of 3 buildings do not have the roof reinforced with cyclone straps or similar to prevent lift-off



1 out of 4 properties have nearby trees or tall structures that could become a threat to the building



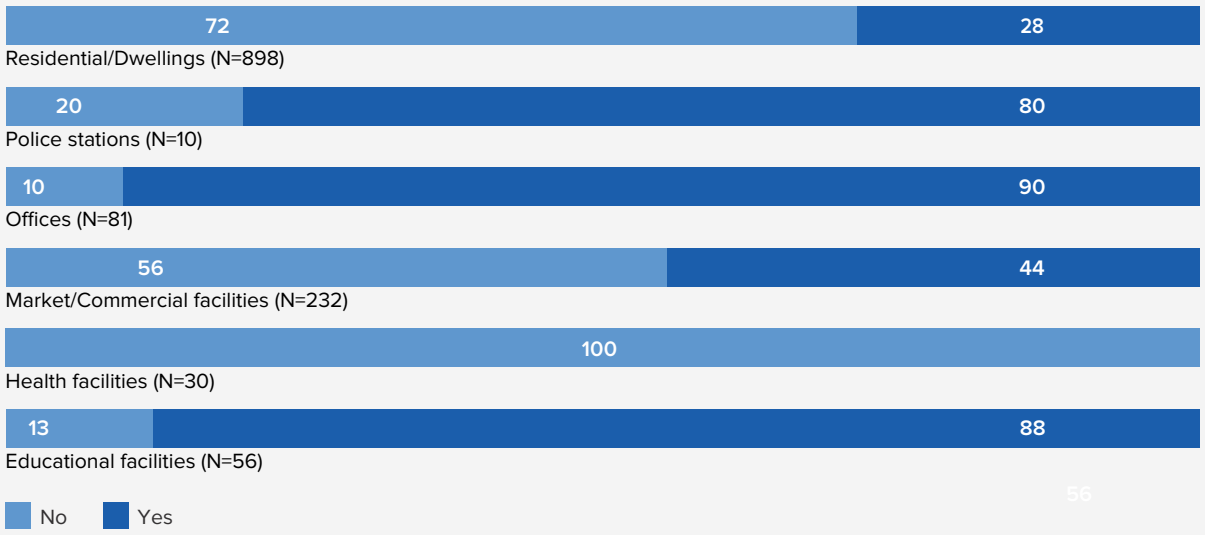
81% of buildings' ground levels are above the sea level



96% have no protected space

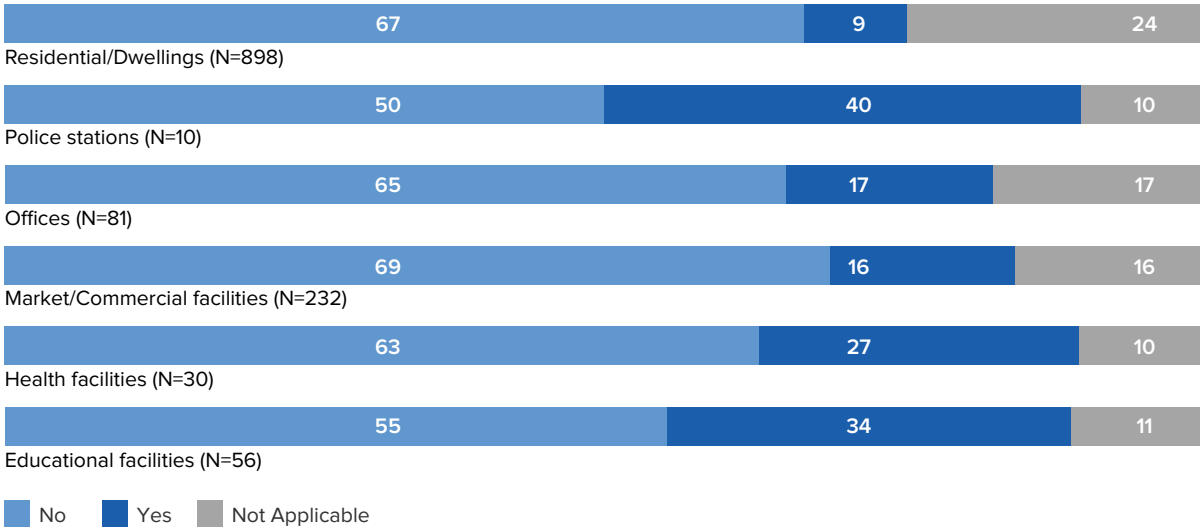
The majority of residential/dwelling buildings and market/commercial facilities are not compliant with the building codes (see Figure 26). The poorest rate of compliance with building codes are found among residential and dwelling buildings, where 72% are not compliant. The second poorest compliance is observed among markets and commercial facilities – 56% of these are not compliant. Buildings used by public service providers reflect the highest shares of buildings built following the building codes (health facilities, 100%; offices, 90%; educational facilities, 88%; and police stations, 80%). While interpreting these figures, it is important to note the number of observations per type of building category. This information is plotted within the graph below (Figure 26).

Figure 26: Built in compliance of the building codes (in %)



Another component examined in this assessment concerns roofs and their reinforcement by means of cyclone straps or similar to prevent detachment. Figure 27 illustrates the share of buildings which have or do not have reinforced roofs for cyclone resilience. Owing to these figures, we surmise that there is room for improvement in this regard. The lowest shares are found within residential/dwelling buildings (9%), followed by market/commercial facilities (16%).

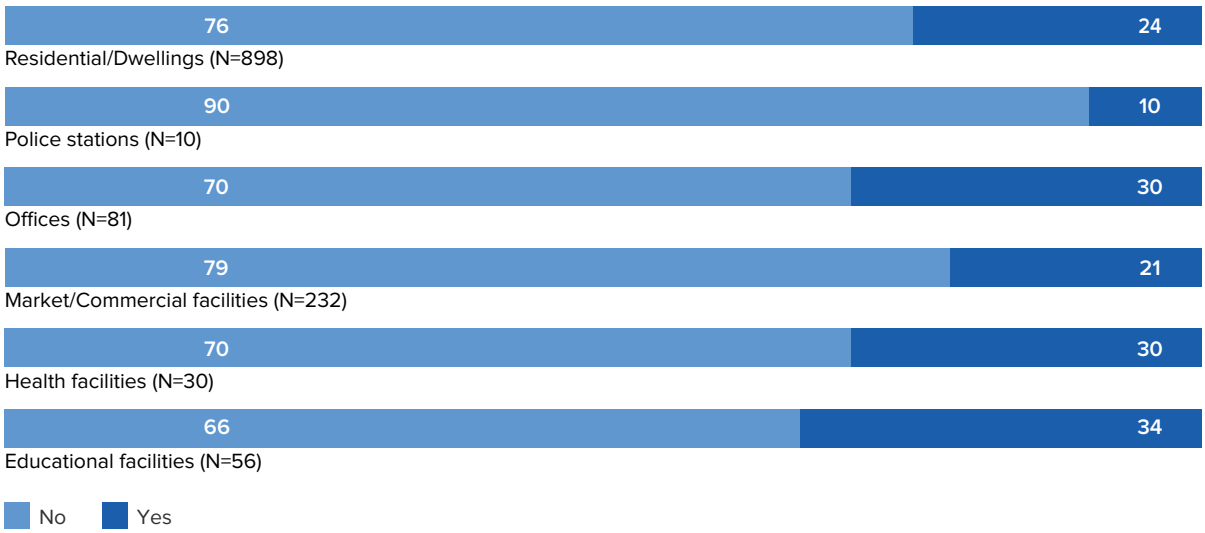
Figure 27: Building roof reinforced with cyclone straps or similar to prevent lift-off (in %)



The presence of the trees and tall structures near the buildings can generally be characterized as potential hazards. For this reason, the survey covered this aspect by including in the questionnaire a question that points out to this issue. Overall, one in four buildings are near trees or tall structures that could pose risks to infrastructure. The highest rates are recorded in educational facilities (34%), followed by health facilities (30%) and offices (30%).

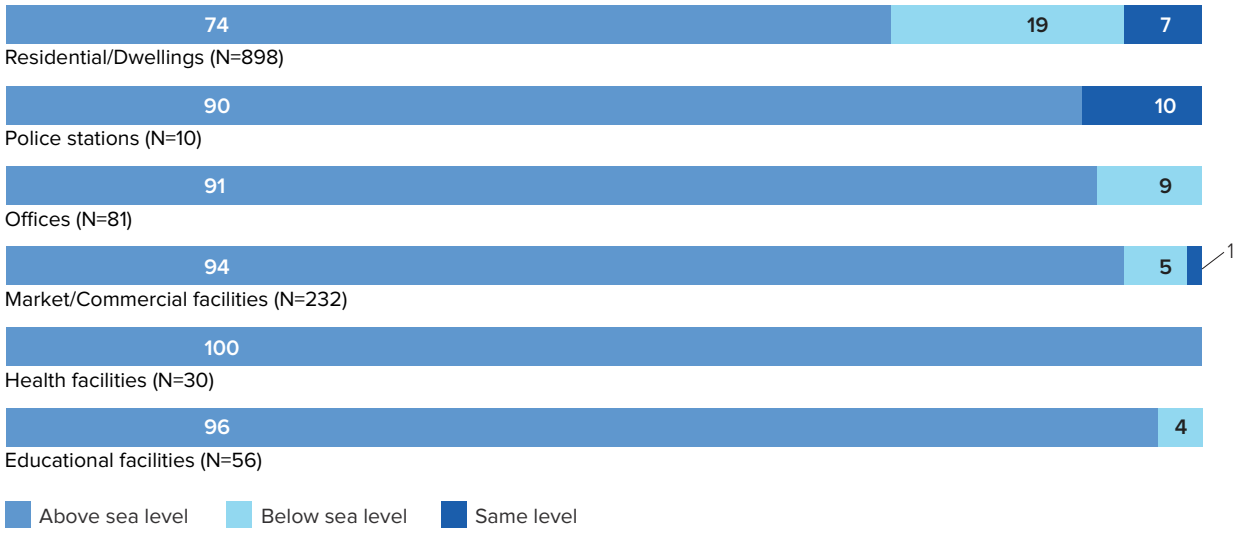
Image 11:
UNDP engineer collecting information for the IDA exercise in Palma district.

Figure 28: Presence of trees and/tall structures near the building that could become a threat to the building (in %)



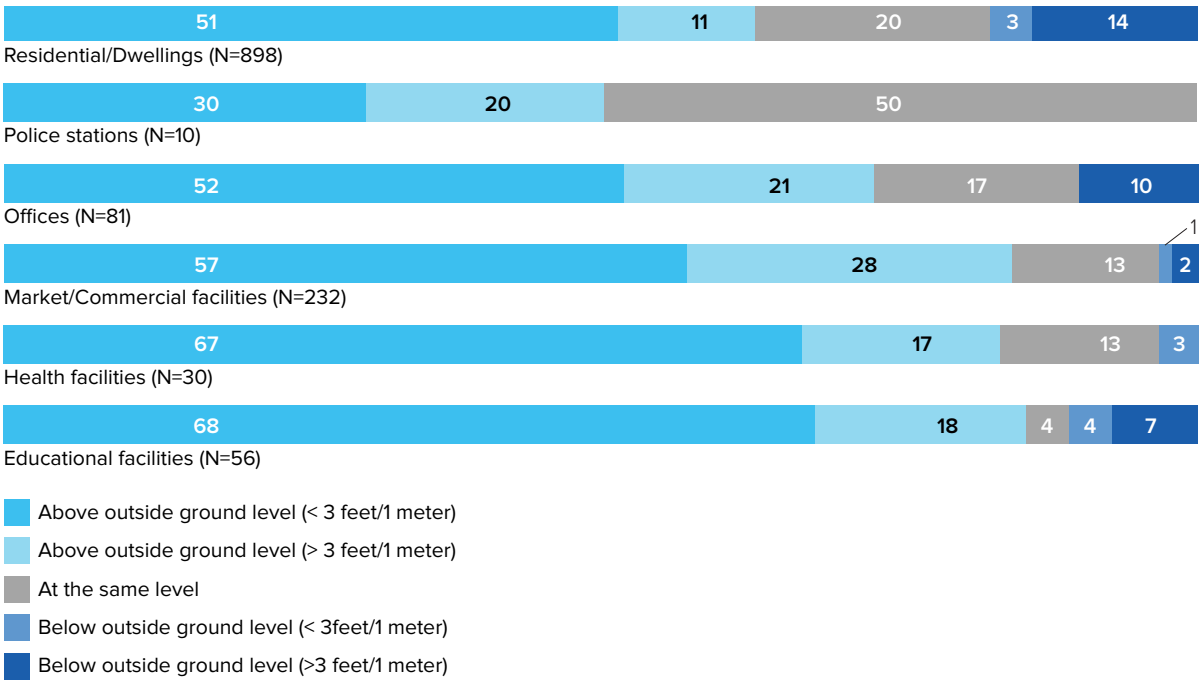
Coastal infrastructure can be jeopardized by rises in sea levels. This assessment finds that one in four residential/ dwelling buildings are exposed to such risks, as their ground levels are at sea level (7%) or below sea level (19%). Other categories of buildings are not highly exposed to such risks – only 10% or less of other buildings mapped have their ground levels at sea levels or below. Figure 29 offers additional details in this regard.

Figure 29: Building ground level in comparison to the sea level (in %)



In response to the results of this assessment regarding the ground level in comparison to the sea level, a question was added in the questionnaire to collect information about the ground level of the buildings in comparison to the outside ground level. Such information is plotted in Figure 30. In most cases, the building ground level is found to be above the outside ground level. It is most common for the building ground level to be at below 3 feet/1 meter above the outside ground level. A slightly smaller share has their ground level at above 3 feet/1 meter – this is relatively common for instance among the markets/commercial facilities (28%), offices (21%) and police stations (20%). There is reason for concern, however, with regard to the dwellings and residences and the offices surveyed – among these, 17% respectively 10% have the ground level the outside ground level.

Figure 30: Building ground level in comparison to the outside ground level (in %)



6. Way Forward

At the stage of publication of this report, resources for the stabilization programme are limited and UNDP has invested its regular resources to implement its interventions. Immediate investments for the timely rehabilitation and reconstruction of infrastructure, including the incorporation of improved construction practices, as well as an improvement in community security, the rule of law and the promotion of socio-economic support activities for individuals and communities are fundamental elements to ensure the resumption of daily activities and strengthen peace in the region.

Humanitarian, development and peace actors must work closely with relevant authorities to support the people of Cabo Delgado to return safely, access essential services, and restore their livelihoods in a dignified manner.

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