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# How can Morocco's crisis management and disaster response be optimized? Lessons from the Al Haouz earthquake response

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# Contents



# Abstract

Morocco's disaster management strategy has evolved in reaction to historical crises. On September 8th, 2023, the Al Haouz region of Morocco was struck by a 7.2 magnitude earthquake. The area was especially vulnerable to such a disaster due to its underdeveloped infrastructure, remote location, and lack of services. As the last phase of the disaster management cycle is unfolding, seven months after the earthquake, this research assesses the successes and challenges of the response and establishes areas of

improvement to implement in national policies to optimize future crisis management across all four stages of the disaster management cycle.

## Acknowledgement

Thank you to Youssef Mazouz for his incredible work in the villages, conducting and translating the interviews in Darija and Tamazight to English. His knowledge of the region, culture and language allowed interesting open conversations to occur and created a high level of collaboration from participants in the interviews.

I deeply appreciate the active participation of all the respondents. Your openness, truthfulness, and willingness to share without any reservation have been truly commendable. I am also deeply touched by the warm hospitality and generosity of the different communities of Al Haouz we had the privilege to visit.

## Introduction

On September 8th, 2023, an earthquake with a magnitude of 7,2 hit Al Haouz province in Morocco, destroying entire villages, killing almost 3000 and injuring over 5500. The earthquake impacted the imperial city of Marrakech, over 75km away from the epicenter, and was felt all the way to the Moroccan coast, hundreds of kilometers away (Leatherby, L., Hernandez, M., Reinhard, S., Shao, E., Yourish, K., & Zhang, C.). A powerful demonstration of empathy was instantly created nationally and internationally. Communities across the country's most developed and densely populated cities mobilized to deliver food, water, and shelter in the affected region, while the international community saw an abundance of donations going to humanitarian help organizations and first respondent teams preparing to deploy humanitarian help overseas. Despite this beautiful demonstration of collaboration, the crisis management of the Al Haouz earthquake demonstrated

significant shortcomings on the coordination of the help, the execution of legislative measures and the continuity of efforts, leaving the local communities with high fatality rates, an ongoing failure to meet essential human needs months after the disaster, and an uncomprehensive reconstruction plan inadequately addressing community priorities. Morocco has a history of developing policies in reaction to disasters and crises to mitigate and prepare for future crisis management. Thus, learning from the Al Haouz earthquake management, how can Morocco's crisis management strategies and disaster response be optimized to provide a more effective, perennial, comprehensive, and holistic response to affected communities?

Interviews with earthquake survivors in 10 affected cities and villages of the Al Haouz province and actors involved in the relief efforts and ongoing response on the perceived success of the efforts, the most urgent needs at different points in the post disaster timeline, and the satisfaction levels with response efforts allowed the identification of the most critical shortcomings in the management of the Al Haouz earthquake. The comparison of the successes and failures in the response with other disaster responses, including the 2010 Haiti earthquake, the 2005 Kashmir earthquake, numerous earthquakes in Nepal in the past two decades, and the 2022 Turkey-Syria earthquake, and the consultation of relief effort experts' reports pinpointed areas where improvement is needed and how these improvements can be tailored to Morocco's unique socio-political context to optimize the country's response in future crisis.

In the framework of the Al Haouz earthquake, the socio-cultural context is characterized by the Berber identity of the communities who lead traditional low and high Atlas Amazigh lifestyles. The economy and workforce strongly revolve around ancestral professions in the fields of agriculture and crafts. The infrastructure of the region is also influenced by this cultural heritage with most buildings being made from traditional thick mud and stone walls, a technique that

accommodates the ever-changing temperatures in the Atlas Mountains. Additionally, the region is characterized by low levels of development and few public services and public infrastructure. Some of the villages in the region are unknown to national authorities and not listed on any maps. Others are accessible by a single road and require a 4x4 vehicle. The low levels of development in the region represent the developing challenges of the country and create high levels of poverty and low economic opportunities within the region.

Governmental and non-governmental organizations were active in improving the standard of living and creating equal access to public services such as education and health before the earthquake. However, the challenges created by the disaster reinforced the regions underdevelopment. They created an urgent need for further investment in public services, economic opportunities, public infrastructure, and social services. Such needs must be addressed through a perennial plan that considers the earthquake in relation to the pre-existing reality of the region. on. The answer to improving Morocco's crisis management and disaster relief lies in a continued coordination of stakeholders across all phases of the disaster management cycle that is catered to the socio-cultural identity of the affected population and territory.

## Methods

In the first phase of our research, we delved into the situation seven months post-earthquake in the most affected region: Al Haouz. We visited villages and cities of varying distances from the epicenter, each with its unique socio-economic development and levels of destruction. Here, we had the privilege of conducting interviews with residents and earthquake survivors, who bravely shared their experiences. The interview questions aimed to gauge their satisfaction with the initial response and ongoing aid. In each of the towns we visited-Ait Bourde, Tizguine, Ouadakar,

Amizmiz, Ineghede, Imi n Tala, Adouz, Tizekka, Sidi Hssaine, and Tafeghaghte-5 to 20 families participated in the interviews, providing valuable insights into the earthquake response, their personal experiences, and their ongoing needs and challenges.

The initial research method involved a formal survey with a satisfaction scale on various aspects of the response in order to obtain quantitative data regarding the satisfaction levels and the state of local communities' needs, however, witnessing the local populations' eagerness to share their stories in detail and participate in an interactive way, the surveys were abandoned and replaced with qualitative data obtained through thorough interviews and field observations. While the research was designed to prioritize ethical concerns and only ask participants to share testimonies of traumatic experiences if they consented to doing so prior to the interview starting, it was discovered that participants wanted to share their stories and openly discussed personal experiences without preoccupations concerning privacy or breech of personal and traumatic boundaries. Because the information shared was at times critical of local authorities and could represent a danger if traced back to the exact source, the status of all participants will remain anonymous. Information was collected on the local communities needs and priorities evolution through time, the efforts and initiatives they were presented with, the ones lacking and the overall perception and satisfaction level with these initiatives, the biggest challenges in the disaster recovery, and the impactful actors in the response.

In the second part, governmental actions and communications were revised to gain a better understanding of the measures put in place to manage the crisis. A comparison between the action plans and manufactured measures and their enactment on the ground was drawn to identify successes and shortcomings. A comparison between governmental narrative and population perspective was also studied to identify any gaps and investigate the shortcomings causing these

gaps. An analysis of governmental policies regarding crisis management and the chain of command in times of emergency as well as its relation with all stakeholders was conducted to understand the governance system operating in the response.

In a third part, the various non-governmental aid actors mentioned by participants were also interviewed to assess their own perception on their response and understand the organizational point of view behind the responses. The initiatives available in the Al Haouz region were explained and the helpers' perceptions were compared to the help recipients' perceptions. Collection of data on both sides of the response allows a comprehensive analysis of the accuracy with which the aid corresponded to the needs and helps understand areas where improvements are required as well as the factors influencing success and efficiency levels.

# Discussion

## Overview of the Al Haouz Earthquake

At 23:11 on September 8th, 2023, the earthquake struck from the northwestern face of Djebel Gourza (Leatherby, L., Hernandez, M., Reinhard, S., Shao, E., Yourish, K., & Zhang, C., 2023) with a magnitude of 7,2. The region, unknown for earthquakes, was violently shaken and the ground underneath 3000 mountain villages collapsed (Jazouli, 2023). As the area was struck by immediate damage and terror, the fear of an aftershock settled into the minds of the survivors; at the same time, rescue efforts were launched to remediate the disaster as quickly as possible. The Moroccan population was the first one to react, get on their feet and initiate relief efforts. In major cities, civilians were filling up their personal cars and 4x4s with all sorts of aid supplies, going from food, to blankets, and tarps, to make the following nights slightly more tolerable to their fellow Moroccans who had just lost their homes (Blowers, K., & Azzelzouli, O, 2023). Meanwhile,

in more rural areas closer to the epicenter, some villages were completely isolated from the rest of the nation due to the collapse of the single road accessing them (Focus on Africa, 2023). The windy mountain roads, often single lane dirt paths following the edge of the mountains, overlooking the valleys, were one of the earthquake's most extensive destructions, only adding to the challenge of relief for remote villages, which could no longer be reached by land.

The first 72-hour window is crucial for rescuing trapped and injured victims. As the national military and rescue teams stormed the area, the extent of the damage surpassed their capacity. The incapacity to reach certain areas, as well as the relatively slow start to official rescue initiatives, due to the hours of silence preceding King Mohammed the VI's first statement, which initiated the response. Following the El Hoceima Earthquake precedent, the efforts could only be launched once the king's approval had been given (Rashwan, N., & Alami, A., 2023). It took several hours for the monarch to address the crisis and the first nationwide official communication was issued on September 9th, almost 24 hours after the earthquake. In such urging circumstances, every hour is crucial to enhance the chances of successful rescues. The royal cabinet's communication of September 9th expressed the priorities in the governmental response as being reinforcing search and rescue teams, provisioning affected areas with drinkable water, distributing food and shelter, and reestablishing public services (*Communiqué Du Cabinet Royal*, 2023).

Witnessing the need for adequate technology and equipment in the earliest and most crucial hours to initiate rescue initiatives, the international community mobilized and rescue teams from across the world offered their help and immediate deployment to the disaster zone. Expert mountain rescue teams from Switzerland offering to go with helicopters and Germany putting together a 50-person civil defense team are just two examples of the rapidly assembled humanitarian initiatives worldwide (Boxerman, 2023). However, the monarch only allowed four

countries to deploy their humanitarian help on Moroccan territory: the United Kingdom, Spain, Quatar, and the United Arab Emirates. The Moroccan ministry of interior justified this decision as being a coordination issue: “A lack of coordination in these situations could be counterproductive” (Boxerman, 2023), but speculations on the logistical and political motivations behind this decision rose around the world, some experts supporting the coordination facilitation argument and others blaming an opportunity to send a message on the state of Moroccan international relations through the crisis management, others suggesting an intention of preserving a strong independent image and keeping poorer less developed areas of Morocco away from the international eye (Abdelmoumni, F. 2023).

## Response Perception from Survivors

Meanwhile, the communities in the villages and cities of Al Haouz suffered from extreme destruction, injuries, deaths, trauma, and fear of an aftershock. Different villages were impacted differently depending on the type of construction in the villages, the location of the villages compared to the earthquake’s trajectory and the impact on infrastructures surrounding the villages, such as access roads. The various characteristics in the villages where interviews were conducted allowed a different set of perspectives on disaster relief to be heard. The interviewees ranged across varying levels of direct impact from the earthquake. Still, results show that despite the differences in socioeconomic status and in the level of destruction endured, the public opinion regarding the response in Al Haouz is homogenous. All interviewees reported severe unsatisfaction with the governmental response and reported a feeling of abandonment by their governing authorities. Some differences between villages emerged in the perceived effectiveness of NGO aid, where generally, more rural villages demonstrated greater satisfaction than the most accessible villages. This difference may be due

to the nature of the organizations reaching the furthest and neediest villages compared to the ones acting in the most accessible, thus easiest places. The phenomenon of competition between NGOs and performative humanitarian help was observed in some of the most accessible villages, while more remote villages required well equipped, motivated teams to be reached, thus waited longer for help to arrive, but received more comprehensive help.

The villages can be grouped in different categories according to their proximity to developed cities and infrastructure and the intensity of the destruction. In the first category are accessible and moderately to severely destroyed villages, in the second category are accessible and severely to entirely destroyed villages, in the third one are remote and moderately to severely destroyed villages and in the fourth category are remote and severely to entirely destroyed villages.

### *Category 1*

Within the first category, villages had a wide range of variety in the help they received and the level of reconstruction they were at seven months after the earthquake. The city of Amizmiz and the villages of Ait Bourde, Ouadakar and Ineghede had similar characteristics. Amizmiz is the main city in the area. All others were located within 3 kilometers of a paved, accessible road, had around 300 residents and suffered a moderate to severe level of destruction. This level of destruction is characterized the collapse of buildings and the severe damage to others amongst a significant number of buildings still standing, as well as a 5% or less casualty rate among villagers (see figure 1.1 and figure 1.2). Constructions that withstood the shock of the earthquake vary in severity of damage and some of them remain dangerous to inhabit or will need to be destroyed due to severe foundational damage. These villages are considered accessible for the Atlas Mountains due to their proximity to a main road and the short distance

(less than 20km) from the region's main city: Amizmiz. All villages were left on their own for 48 hours following the earthquake, with villagers sleeping outside in fear of an aftershock. Amizmiz, was the first city in the area to receive help and the least impacted residents also participated in the humanitarian response. The city and all 3 villages ultimately got humanitarian help from NGOs. The nature of the help differed between villages but resulted in similar levels of satisfaction.

Ait Bourde got a variety of different NGOs coming in and out of the village to provide food, water, and shelter over the course of the following weeks. The supplies lasted the village two months. Villagers reported receiving disproportionate help and donations across different levels of intervention, creating an over flux of selected items and a deficiency in others. This imbalance led to the initiative to sell some of the donations they received to buy the items they lacked.

All residents in Ait Bourde were moved to tents after the earthquake, some provided by NGOs, others, by the Moroccan government, but the lack of organization and comfort in this new set up pushed the majority of the population to move back into their homes about 5 months following the disaster, despite the heavy structural damage and the government's prohibition to do so following evaluation of architectural safety of all affected buildings. Families report the unbearable living conditions in the tents, with the mountainous desert conditions driving extremely cold temperatures in the night and the winter and extremely hot temperatures in the summer and day. In April, as 30-degree Celsius weather was the norm outside, the interior of the tents could get as hot as 45-degree Celsius. Way above the tolerable temperature for human conditions. Most villagers had returned to their damaged homes or moved into another family's home for the time being but felt lost as to the next steps in the disaster recovery.

A quarter of the village's population had not received the initial 2,500 dirhams government financial aid, nor any of the reconstruction funds yet, and did not have the means to do the repairs their homes needed or buy the supplies they had lost. For those whose homes were destroyed, reconstruction was not yet allowed, as government architects had to approve the reconstruction plans before they could be enacted, and the reconstruction stipend would be issued. Villagers were stuck in a game of waiting for government actors to allow the rebuilding process to start and lived in dangerous conditions in the meantime. Villagers reported feeling grateful for NGO help and abandoned by their government.

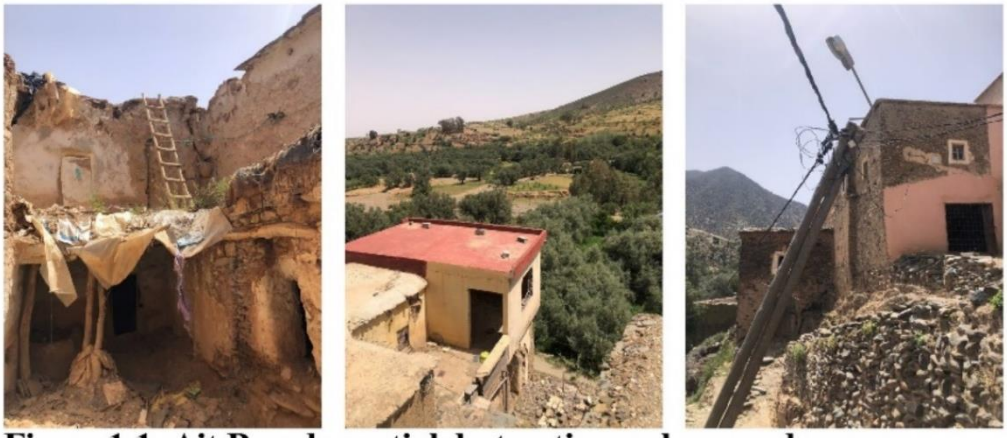

**Figure 1.1. Ait Bourde partial destruction and severe damage**

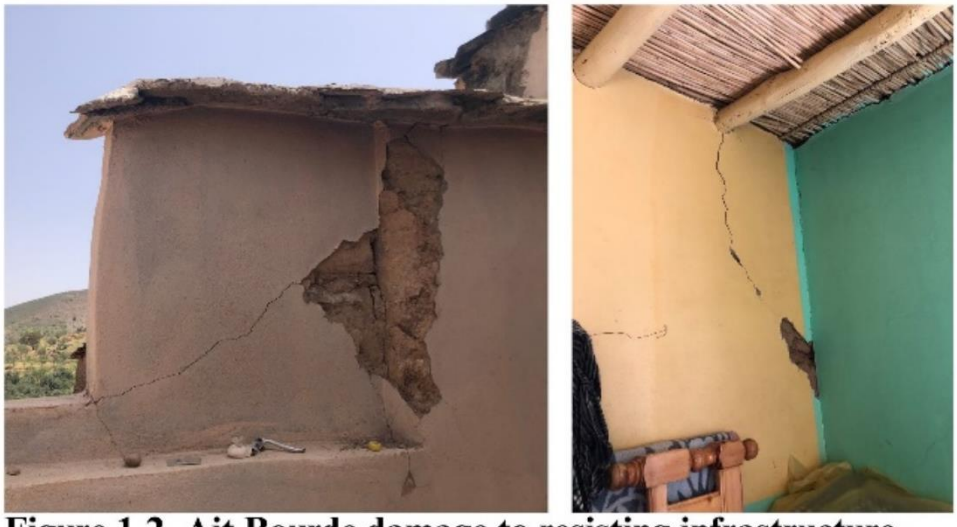

**Figure 1.2. Ait Bourde damage to resisting infrastructure**

In Ouadakar, while most of the buildings resisted the earthquake, their severe damage made them inhabitable, and the destruction of all resisting buildings has been ordered (see figure 2.1.). The village has been entirely relocated to a thoroughly organized shelter tent village put together by FMECIM: Foundation Miftah Essad pour le Capital Immaterial du Maroc (see figure 2.2.).

The village was taken in charge by the association 48 hours after the earthquake and got all services from this same association. The refugee camp featured running water, electricity, organized community kitchens, bathrooms, showers, and laundry rooms, as well as a gated entrance with an identification system. Villagers described the organization as similar to a military camp with all the services they needed, but rudimentary level of comfort. In the initial weeks, the NGO had put together a community grocery store and a pharmacy under shelter tents, creating hope that a sense of normality and societal organization could return to the village. However, these promising infrastructures were never finished. The pharmacy tent was decorated on the outside, but never filled with any medication or never offered any services. The NGO shared the results of its work on their social media platforms and the village got media attention as a successful response example and help started deserting. Villagers report feeling like a part of a performative humanitarian response. Some declared that the appearance of organization in the village discouraged other NGOs from offering their help, ultimately leaving the village in an unsustainable state on the long-term.

When FMECIM left the camp, the organization started falling apart. Villagers build outside and around the camp, the owner of the land the camp was on started demanding vacancy of the land, reconstruction efforts could not start due to political disagreements, the representative of the village responsible for the transmission of governmental information moved to the country's capital and left villagers without communication means, etc. The villages that had represented a success response in its initial days demonstrated the fragility of the perennity of the response and the need for continued help.

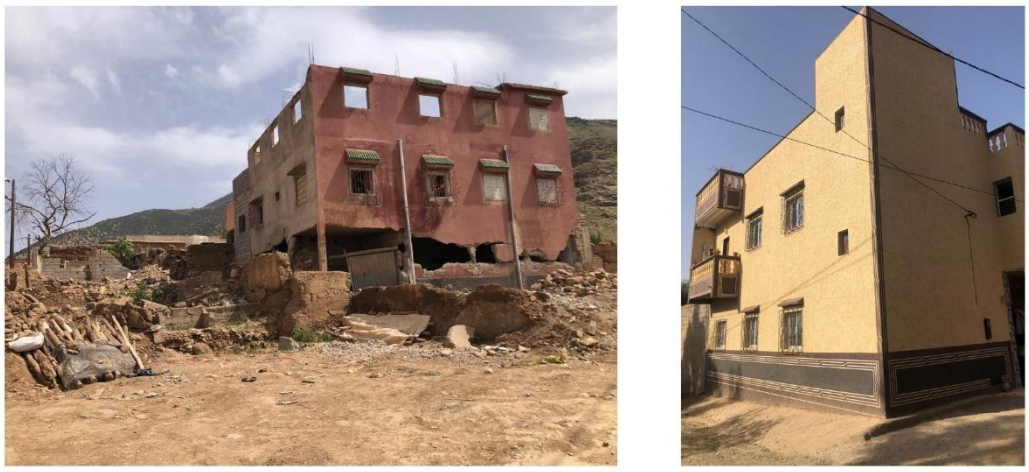

**Figure 2.1. Ouadakar partial destruction and severe damage**

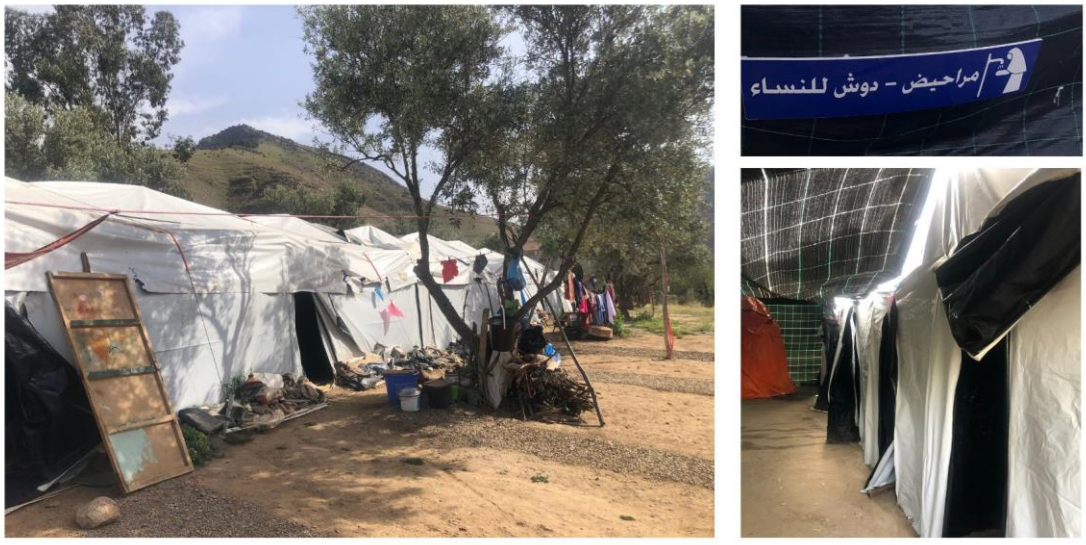


**Figure 2.2. Ouadakar refugee encampment**

In Inghede, the first village in the Anougal commune, the damage was similar to that of Ait Bourde and Ouadakar. The village was the last easily accessible one on the road from Amizmiz to Tamaloute, the closest village to the earthquake's epicenter. After Inghede, the road collapsed, and the following villages were inaccessible for days. The small village lost 14 residents to the collapsed buildings on September 8th and other constructions were severely damaged (see figure 3.1).

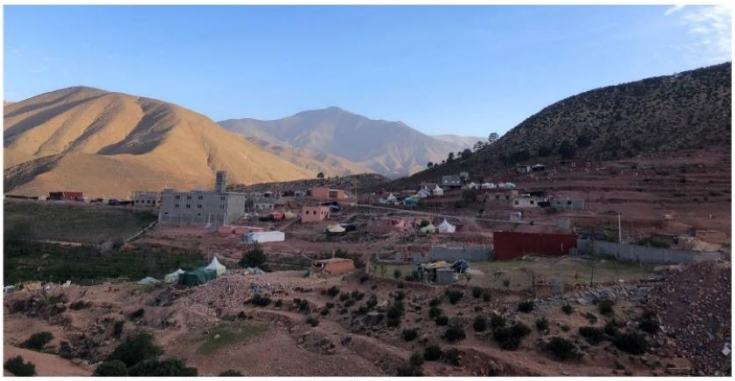

**Figure 3.1. Inghede partial destruction and severe damage**

The village received significant NGO help from Saphir Humanitaire and MedGlobal and large amounts of food and shelter in the first days. In the weeks following the earthquake, the village became a point of reliance for further villages down the road who suffered more significant damage. Tent camps were set up in disorganized camps around the village and the town became host of a shelter school for the entire commune, due to the heavy damage the commune suffered from (see figure 3.2). Kids from all surrounding villages attend school from Monday to Friday and live in the village during this period. NGO help was crucial in putting together this academic system and ensuring the proper resources to host children from the area.

While the village does not have reconstruction permits yet and most houses remain unusable, pushing residents to live in tents, the community benefits from sturdy infrastructure in term of shelter buildings for social services and access to water and electricity. The villagers

in Inghede also reported feeling stuck in their ability to move forward with reconstruction efforts, some awaiting governmental permits to reconstruct, others still awaiting the initial financial aid announced months ago.

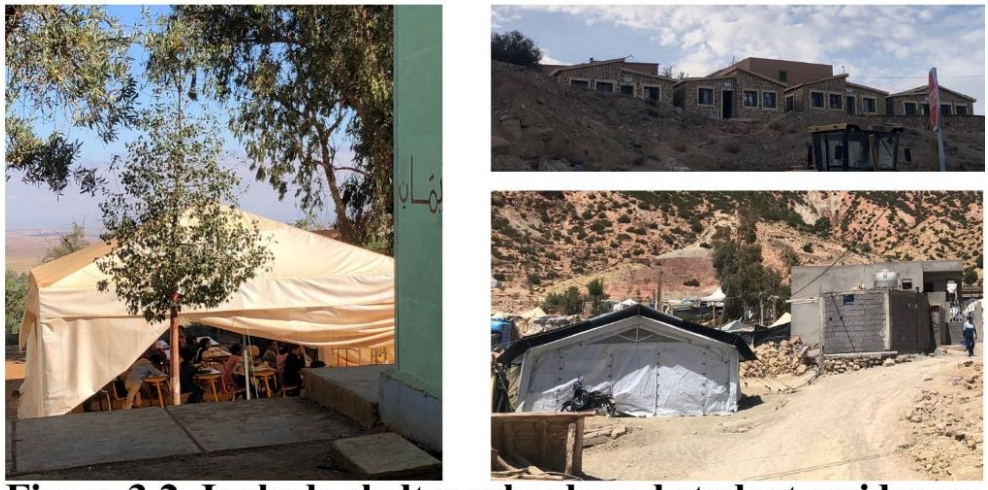

**Figure 3.2. Inghede shelter schools and student residences**

Amizmiz showcases a different dynamic from its surrounding smaller neighbors. As the biggest city in the region and point of contact with the Marrakech region, it has a broader variety and disparity in the extent to which different people have been affected. Some houses were entirely destroyed, while others were barely affected. The city has been able to regain a relatively normal life beat after a few months, with the exception of several earthquake refugee camps set across the city.

In these camps, dozens of tents are lined up and organized to share some amenities such as running water, but the conditions are far from enjoyable. The daylong exposure to the high-altitude sun of Amizmiz creates an oven effect inside the tents, where families have reunited their belongings and used every tool, they could to create shade and shelter. Carpets, blankets, towels, umbrellas, every possible item is now integrated into the city's decor (see figure 4.1.).

In less affected parts of the city, life seems to be back to pre-earthquake standards: residents working in the souks, kids taking the bus to school, etc. As a point of assembly for all the villages in the area and the region's economic hub, it was important for Amizmiz to get back on its feet quicker to allow other villages to restart their socio-economic activities too. However, this restart came at the expense of refugee seekers in the city who have barely seen any improvement in their living conditions since the days following the earthquake and now remain in some of the worst camps in the region.

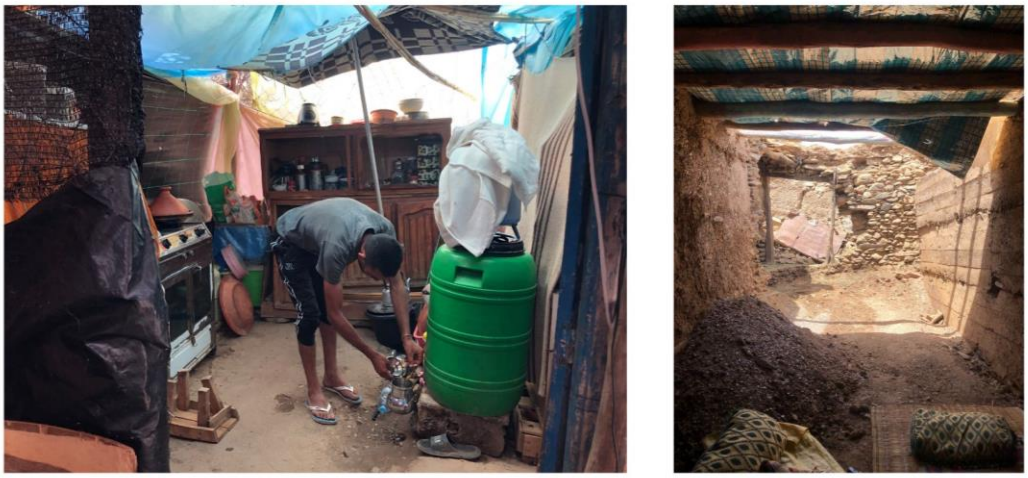

**Figure 4.1. Improvised shelters in Amizmiz**

*Category 2*

The second category features accessible and severely to entirely destroyed villages. The villages of Tafeghaghte and Sidi Hssain stand in that category with very few buildings resisting the shock (≤10), a need for the entire population to relocate to a temporary refugee camp, and death rates exceeding 50% of the population. Despite the similar casualties and destruction, the villages stand in very different places seven months after the catastrophe.

Sidi Hssain, a picturesque town welcoming visitor from the area and tourist from around the world as a gateway entry to the Djebel Gourza national park, fell to rumbles on September 8$^{th}$ 2023. The village saw all its infrastructure, apart from one house, collapsing or enduring

damage severe enough to render the resisting buildings unsafe to use. Almost half the population died in the first few days following the earthquake and while humanitarian help was received, it allowed the villagers to reorganize into a refugee camp right outside the village, but in highly precarious conditions. The villagers found shelter in basic tents that were donated by various NGOs and were able to use a land leased by Association Chabab Anmanar de Dévelopemment to set up the refugee encampment. The encampment lacks proper robust equipment, and the villagers are mostly using donated items to create shelter (see figure 5.1.). There is a severe lack of infrastructure in the town as some disagreements over the right to use the land and the impossibility to rebuild where the village initially was. This reality is challenging as residents lost their homes and lands simultaneously and must completely relocate their families to find housing again. With the precarious financial situation of most villagers, this proves to be a great source of hardship. Reconstruction efforts have not started in Sidi Hssain and residents do not know when or where these efforts will begin. There is great uncertainty around the future of the village.

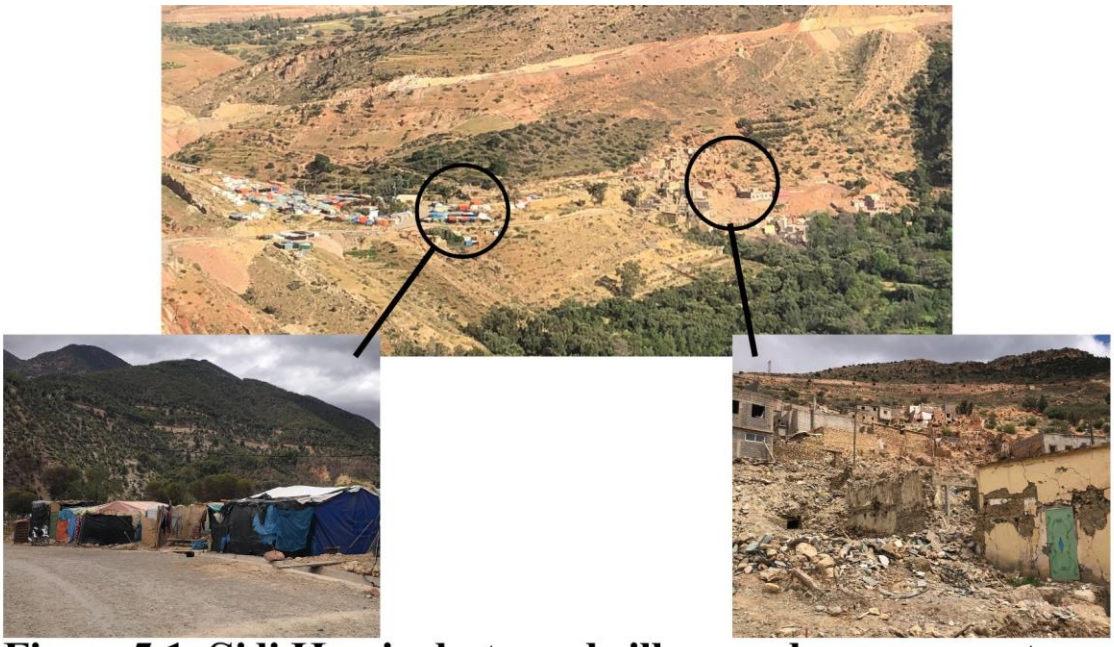

**Figure 5.1. Sidi Hssain destroyed village and encampment**

In Tafeghaghte, the earthquake's damage was absolute. The town, right outside of Amizmiz, lost over half of its resident in the earthquake with a total of 87 deaths for a population of 160 residents. The village's school has a deserted feel as the class size as been lessened by 34 spots. Despite the atrocity with which the village was impacted, it is a model of reconstruction and regrowth after the earthquake. The entire village is undergoing construction efforts, and some houses are starting to appear, with many villagers reporting plans to finish the construction before the end of the summer, thus within 9 months of the earthquake (see figure 6.1.). The village received a great amount of humanitarian help in the immediate response as it was one of the most accessible and greatly impacted villages. This humanitarian help set up the villagers for success as they reorganize and rebuild their community, but three main points set the village apart in its ability to bounce back quicker than all other locations.

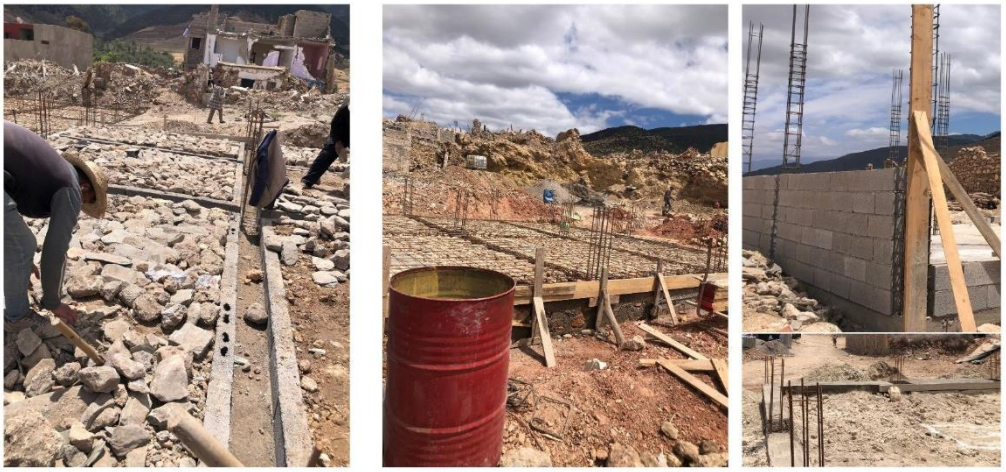

**Figure 6.1. Tafeghaghte reconstruction efforts**

First, the village is located on a flat terrain overlooking the city of Amizmiz. Not being deep into the Atlas Mountains, the village has a safer terrain to rebuild on and was not slowed

down by land evaluation measures and interdiction to rebuild where the village initially was. This also simplifies financial worries for locals as their lands remain their property and can be used to rebuild. Dimensions do not have to be re-evaluated and there is a clear definition of what belongs to who and where everyone is allowed to rebuild.

Second, the village has a strong and driven sense of community that elevates the standard for reconstruction and allows for more substantial a stronger reconstruction standard and allows for a more substantial negotiating power. As a matter of fact, even before the earthquake, Tafeghaghte was a model in the region for a village with like-minded people who stood up for themselves. The atrocities of the earthquake only reinforced this trait in the villagers who do not stay inactive when facing their faith. When some of the villagers did not receive the first payments of governmental financial aid, the whole community went to Marrakech to protest. As a result, 90% of the villagers have received their stipend: a record for the region. The 90-minute commute to Marrakech to protest different injustices or shortcomings in the response became a habit for the villagers, and one by one, they fought the hurdles standing in the way of reconstruction and got the process started in a way no other village has been able to so far. Villagers report elevating and motivating one another, from protesting together, to helping each other in reconstruction efforts, a real sense of community was palpable in Tafeghaghte.

Third, villagers prioritized reconstruction at all costs. The reconstruction standards established by the Moroccan authorities are stringent and strongly regulated. To access reconstruction stipends of 80,000 to 140, 000 dirhams, depending on the severity of damages to the property, reconstruction must be executed according to a government house plan. All houses will be one floor houses between 50 and 80 m2 and made from concrete (see figure

6.2.). No flexibility or individuality is allowed in the reconstruction, which has, in other villages, stopped people from initiating the reconstruction efforts. They do not want to compromise on the size, style, and identity of their homes, but need the financial aid to rebuild. In Tafeghaghte, the priority has been set on rebuilding, despite the concessions that must be made. A man building his new 70m2 home within the perimeters of his old 140m2 house explained (see figure 6.2.): “We have suffered enough and just want a safe place to live now. We are tired of fighting and delaying the reconstruction process, so we are ready to do anything to have a place for our families to live.” Overall, the early on humanitarian help and the tenacity and solidarity of the community in the response are what allows Tafeghaghte to lead the way in reconstruction efforts.

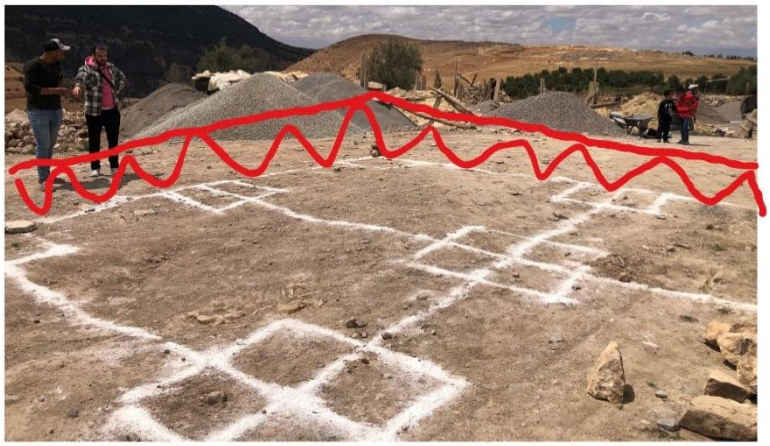

**Figure 6.2. Tafeghaghte houses reconstructed within the perimeter of the old construction**

*Category 3*

The third category constitutes remote and moderately to severely destroyed villages. These villages and the response they received are symptomatic of the challenges accessing them represents. In Tamaloute, the last village on the road from Amizmiz to the hiking trails of Djebel Dourza National Park, the damage to the infrastructure was relatively limited. Only a few houses were completely destroyed, and some suffered damage that did not compromise

the safety of the structure. The biggest challenge layed in the collapse of the only existing road to reach the village, which isolated the village for days. Despite the limited destruction, several villagers needed healthcare, which they had to go to Marrakech for, using the destroyed road. Villagers were stuck without any help for days making the first days of the disaster brutal. Most of the villagers whose houses survived the impact did not go back inside for days in fear of an aftershock and suffered the brutal conditions of sleeping outside, without any shelter for days. When humanitarian help reached the location, the villagers were equipped with proper shelters and infrastructure. Water and electricity access were quickly re-established, and the road was cleared of debris so that the village would be more easily accessed. Ultimately, the village has some of the sturdiest equipment for residents who lost their homes. Some of the most well-established NGOs acting in the region provided help to the village, such as Medglobal. Months after the earthquake, the refugees have moved into small trailer-like shelters. While not being a permanent replacement for a house, these shelters have access to electricity and provide solid protection against natural elements that can constitute a true challenge at the 2500m altitude of the village, such as wind and cold. While the response took longer to arrive in the remote location, when help did arrive, it was more comprehensive of the reality of life in the area.

### *Category 4*

The fourth category features remote and severely to entirely destroyed villages. These villages were the ones that suffered mass destruction and were located on the same road, from Amizmiz to Djebel Dourza, that was destroyed. Imi n Tala and Adrouz are two examples of villages that have almost disappeared on September 8$^{th}$. Death tolls in both villages combined reach over 100 for a remaining population of just as many. The buildings in both neighboring villages were organized on the edge of a cliff overlooking the valley where local communities have access to water and lands for agriculture. With the strong impact of the earthquake,

infrastructure collapsed, and the hard terrain was unforgiving. The fragilized ground also makes it impossible for reconstruction to occur in these villages (see figure 7.1.). There will never be an Imi n Tala or an Adrouz again.

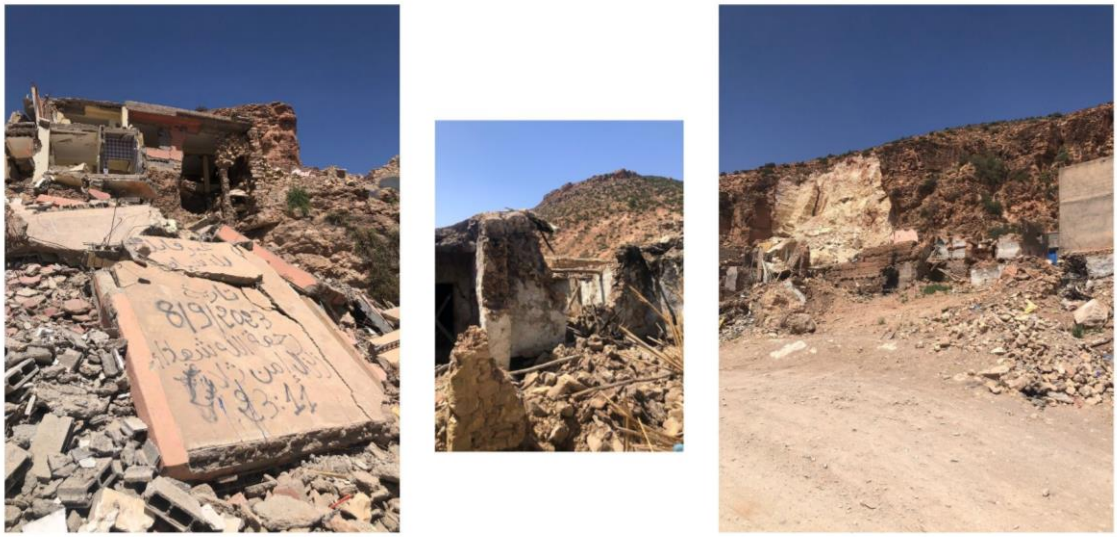

**Figure 7.1. Imi n Tala and Adrouz villages 7 months after the earthquake**

The communities were left without help for over 48 hours, the time it took to clear the road and access them. By the time help came, it was too late for many of the severely injured and trapped victims. Food, water, and shelter were urging for the survivors, as all amenities in these villages had been wiped away. Villagers organized themselves in refugee camps by the river, where they could keep working on their lands and produce food to feed their families. The authorities have prohibited reconstruction in the area as it is deemed unsafe and prone to more natural disasters, but the families report an incapacity to leave as their lands, often long-lasting family heritages, are located in the area and the commute to these remote locations would not be possible for most villagers who do not have cars or transportation means. While a permanent solution is in the works, villagers live in a mix of tents and trailer shelters with shared community amenities like bathrooms that were donated by NGOs and governmental

organizations. There are no social services in the area and children must leave from Monday to Friday to go to school and return on the weekends. Men also leave about once a week to go sell their produce in cities such as Marrakech and Agadir and make a living for their families.

The standard of living in these villages remains extremely precarious. Despite the appropriate material donated by different organizations, the villages lack a permanent solution preventing them from starting reconstruction and accessing governmental financial aid. Villagers, who are also grieving the loss of their friends and relatives, fear that the worst is yet to come for them. As months go by and very few progress is made, hope of returning to a pre-earthquake standard of living is low: “People here were already suffering, they didn’t need an earthquake on top of it!”, shared one of the villagers.

## Governmental Response

From a political and administrative perspective, the response to a disaster can never be easy and straightforward. The high stakes and high urgency of crisis management force difficult decisions to occur and the prioritization of some measures is at the detriment of others. Governments must act quickly and act as coordinators of the various actors coming into play nationally and internationally. A successful crisis management should always have the well-being and recovery of its vulnerable population at the heart of its decision making. However, political and economic factors come into play, often, at the detriment of the vulnerable populations.

The Moroccan governmental response to the Al Haouz earthquake has been the subject of a high amount of criticism. The first wave of criticism came on September 9$^{th}$, when the king, Mohammed VI took hours to address the situation. As the highest ruler in the country, the king

cannot be overruled by anyone. His silence was thus synonym of inaction for all public services. The Royal Army Forces (FAR) were only deployed on September 9th, after the first meeting of the royal administration occurred. The meeting, which was the first of a series on the subject, established the priorities in the response and ordered the immediate deployment of "extensive human and logistical resources, both airborne and ground-based, as well as specialized intervention modules based on search and rescue teams and a field medical-surgical hospital." (Communiqué du cabinet royal, 2023). The September 9th meeting established the committee in charge of the crisis response and members of all following meetings: Chief of Government Aziz Akhannouch, minister of interior, M. Abdelouafi Laftit, minister of health and social protection, M. Khalid Ait Taleb, Armed forces General, Mohammed Berrid, general Inspector of the FAR and commander of the southern zone, General, Mohamed Haramou, From the royal gendarmerie, commander of medical field, Mohamed Elabbar, Inspector of military health services, Colonel-Major Ihssane Lotfi, General Director of Civil Protection, M. Abdellatif Hammouchi, General Director of National Security, General Director of National Surveillance on the Territory, and M. Mohamed El Azami, coordinator and member of the board for the Foundation Mohammed V for Solidarity (Communiqué du cabinet royal, 2023).

The next meeting held by this committee was on September 14th. At this second meeting, the official recovery plan for the affected population was established. Some of the main measures affecting impacted communities were concerning financial aid, reconstruction measures and public services reestablishment. A financial aid of 2500 dirhams monthly for a year-long period per household for the families that suffered damage due to the earthquake was the first financial measure to be announced and launched. This measure applied to all families in the affected areas and a census took place to create a database with all the impacted families,

their medical needs, the extent of the damage to their properties and the death rates. This census took two weeks where government officials toured all affected regions and collected the necessary data to establish the aid programs in place with the help of local officials and government representatives in affected regions. Almost 30, 000 beneficiaries were originally identified, however, the local population protested this census claiming that many families in need had been left out. Two more rounds of evaluation allowed for more families to be identified as beneficiaries, but with each round taking approximately two weeks, the process delayed the start of the interventions. By January 31st, 2024, a total of 59, 438 families were identified as financial aid beneficiaries.

For these families, after the immediate response, medical treatment and need for food, the biggest priority had become shelter. A financial aid program for reconstruction was put in place by the government on September 14th, 2023, but only started to have visible results on the ground months later. On the 9th reunion of the council of the Al Haouz earthquake response, on March 15th, 2024, the reconstruction of 8,694 houses had started. Meaning very few houses were fully constructed and, within the first 6 months of the earthquake, only 15% of homeless families had a foreseeable permanent housing option.

This time-consuming process can be explained by several factors. First, the government established a thorough process that aimed to address the long-term management and prevention of similar crises by strictly controlling and monitoring the reconstruction. A financial aid program of 80,000 dirhams for partially destroyed houses and 140,000 dirhams for destroyed houses was put in place. However, this financial help is distributed in phases that are separated by inspections to ensure the respect of government issued reconstruction plans. These plans allow for single floor houses with dimensions ranging between 50 and 70m2 (about twice the

area of a parking space) to be built following an earthquake protection construction plan. A first payment of 20,000 dirhams is issued for the foundation, then a governmental inspection allows an additional 40,000 dirhams to build the structure, followed by an inspection, and the process continues until the house is fully completed and in alignment with the government-issued plan.

This plan presents its set of successes and challenges. The government issued plans that allowed for anti-seismic housing to be built in the region and monitors the proper utilization of the financial aid into direct investment in reconstruction. The process is time consuming with multiple levels but is closely monitored and easily followed. The challenges come in the restauration of authentic housing and the lack of individuality in the reconstruction. The Al Haouz region is characterized by its unique mountain climate and traditional constructions that allow thermo-regulation inside the houses and blend beautifully with the rocky landscapes. The reconstruction plans do not consider the previous size of houses, the necessary thermo-regulation for the very cold and hot extremes of the region and the authenticity sought by local populations. These discords with local desires create tensions and hesitation to start reconstruction for beneficiary populations. Many villagers were concerned about the house sizes, some having lost homes up to three times as large and with multiple floors. A family in Ouadakar reported having to move 11 people previously living in a three-story house of 140m2 (about half the area of a tennis court) into a one-story house of 70m2. They deplored their 400m2 (about half the area of a basketball court) land to be a waste if not used for the housing of their family and declared the plan to be inconsiderate of the local realities. As a matter of fact, many families have several children and the multi-generational housing format is

extremely popular in the region, making the average number of people per household higher than other regions in Morocco.

From an execution perspective, financial aid strictly covers the materials used for reconstruction. Families must pay out of pocket to clear their lands from the debris as only public infrastructure, such as roads, is cleared by the government. The labor for the reconstruction also must be paid out of pocket and any addition to the house or individualized feature must be self-funded. Families not adhering to the reconstruction restrictions must sign a risk assessment waiver and, by doing so, give up their access to financial aid. These challenges create a blockage for efficient and rapid reconstruction.

Finally, despite the thorough census, some challenges arise in financial aid distribution. Through all the different programs, from the monthly 2,500 dirhams per household to the reconstruction aid, disparities in distribution are occurring and the payments are neither timely nor reliable. In visited villages, between 10% and 30% of villagers had not received the financial aid they were entitled to and found themselves delayed in their capacity to return to pre-earthquake standards of living. In the reconstruction efforts, some workers reported being limited by the incoming of payments. As homeowners await financial aid to be able to afford the next reconstruction phase, the rebuilding efforts are delayed and unpredictable.

A recurring theme in governmental meetings is the praising of the royal response: "Through the vision and actions of its Sovereign, Morocco is once again demonstrating the resilience that characterizes it, enabling it to face trials and challenges with strength, wisdom and determination, thanks to the strength of its institutions and the solidarity and generosity of its people." and the statement of the priorities within the response. The response is described as efficient, in close collaboration with community needs and proactive. The governmental

statements seem to contradict the popular opinion of the response and seek to please an international audience (Communiqué du cabinet royal, 2023).

In fact, Morocco is extremely concerned with its international image. As a symbol of exceptionalism in the MENA region and close ally to European countries, Moroccan politics have sought global praise and westernization in the past decades. The development of infrastructures such as the highspeed train has allowed the country to stand out in its development, but the least developed regions, such as the Al Haouz region, are hidden within the national borders and are not part of the portrait painted to the world. The attention brought to the least developed parts of the country and the challenges Morocco faces due to the earthquake created a challenge for the government. Some speculations by academics and journalists blamed this care for the protection of the Moroccan image as reasoning behind the very careful selection of international helpers. Internally, the search for international praise is observed in the glorifying image of the response to the crisis and the prioritization of projects and initiatives attracting international attention.

For example, the language used around the response is extremely positive, highlighting the efficiency and responsibility the authorities have taken in the response. A high importance is attributed to the projects and laws aiming to modernize and develop the Atlas Mountain region through the reconstruction. The statement announcing a 2,5 billion dirham fund opened for reconstruction and development of the region on October 18th, 2023, used glorifying vocabulary and emphasized the comprehensive governmental response : “ all the departments concerned are mobilized, in accordance with the High Royal Directives, to meet the expectations of the local population and provide them with appropriate solutions, emphasizing the government's commitment to implementing this program swiftly and efficiently, in order

to ensure the success of the reconstruction operation, in parallel with the upgrading of territorial areas and the acceleration of the absorption of the social deficit in these regions." However, two days later, when Morocco was confirmed host of the 2030 FIFA WorldCup, a fund four times as large was issued for the restoration of football stadiums in the country: « Thus, under the terms of the agreement, a budget of some 9.5 billion dirhams will be mobilized for the implementation of investment projects relating to the upgrading of these stadiums, in compliance with CAF standards in the period 2023 - 2025.. » The contradictions between the government's communications and actions demonstrates a misalignment between the national needs and political priorities. Prestige is sought after, and developed zones get increasing funding as less developed regions are forgotten and hidden from international attention (Communiqué du cabinet royal, 2024).

Overall, the Moroccan government demonstrated a crisis response that was representative of political tendencies and shortcomings that characterize the political and developmental climate of the country. Solutions were presented as humanitarian answers prioritizing the recovery and development of the Atlas Mountain region in close coordination to the local needs and desires. However, the application of the measures falls short of truly aligning with local priorities, demonstrating the greater governmental interest in pleasing an international audience than a local one. This discord between the legislative and executive applications of power is seen on a broader scale in Morocco and is not exclusively applicable to the earthquake response. Several human rights are constitutionally protected, but factually, still persecuted. For example, while freedom of speech exists in the Moroccan constitution, state severely controls public media and independent media outlets are often led to economic suffocation if they do not align with the monarch's best interest. Thus, reporting on the governmental

response throughout the earthquake has been extremely positive, proudly announcing every new measure in sensational numbers that do not paint a complete picture of the challenges in the response.

## Non-governmental response

Nongovernmental organizations played a crucial role in the managing of the Al Haouz Earthquake. In disaster relief, NGOs typically play a role of support to local authorities and intervene in complement to the governmental response. In the Al Haouz earthquake, a wide variety of NGOs stepped in to procure relief aid to local communities creating some successes and some failures in humanitarian relief (Idrissi, H. K., 2023). The well-established national and international NGOs with experience in disaster relief successfully delivered a comprehensive and coordinated response, while some NGOs offered rushed relief that contributed to an overall lack of coordination and efficiency in the response. As per risk management precedents in Morocco, the Red Crescent has priority over other NGOs in the emergency response sector, while NGOs are responsible for reconstruction efforts (OECD, 2017). This order of coordination was challenged as many NGOs stepped in immediately after the earthquake (Idrissi, H. K., 2023). In humanitarian aid and disaster relief, coordination is a signifier of enhanced efficiency and quality of aid due to collective organization and collaboration of the actors involved in the response. Optimal results are reached when coordination is well-established between NGOs and the government, between different NGOs, between NGOs and local communities and between government and local communities (Nabi, P. G. 2014).

To optimize humanitarian aid, a well-coordinated system must be established. The evaluation of the needs in different areas is crucial to coordinate help efficiently and according to local needs. An evaluation and assessment of the situation prior to help deployment can allow energy and

resources to be distributed on a need-based basis (Daar, A. S., Chang, T., Salomon, A., & Singer, P. A., 2018). Oppositely, the urgency to help and the lack of specialization in specific areas can lead some NGOs to deploy uneducated efforts and create suboptimal results. As Jonathan Katz stated regarding the 2010 earthquake response in Haiti: "the urge to help seemed to have overpowered the desire to do so thoughtfully" (Katz. J., 2013). Moreover, some non-governmental actors are strictly bound to their sources of funding. This dependant relationship can contribute to rushed responses under pressure to demonstrate results (Fawcett, A. M., & Fawcett, S. E., 2013). The challenges in coordination and disparity of help in different sectors and at various levels of need in the Al Haouz earthquake were symptoms of this urgency.

The interviews with local populations demonstrated how the different categories of village dictated the quantity and nature of the nongovernmental assistance that was received. Categories 1 and 3, accessible villages, received more help than categories 2 and 4, remote villages, in the first few days of the earthquake. Their fatality rates were lower as immediate rescue was more easily accessible, and an abundance of aid and donations was received in the first few days. The challenges appeared to be in the nature of the help and donations and the lack of continuity in the response. NGO help was uncoordinated in the easily accessible villages resulting in the work of several NGOs in the same areas and the lack of help in other areas. Some NGOs who specialized in the same type of relief served the same areas, duplicating the work that would have been necessary in other zones and limiting adequate and equal distribution of resources (Gao, H., Wang, X., Barbier, G., & Liu, H., n.d.). An urgency to help however and wherever it was possible deprived the local communities from a thoughtful coordinated response that could have optimized the quantity and quality of help received. This incoordination came from the mobilization of various

independent actors and organizations and the lack of structural coordination and authority in the response.

Additionally, some humanitarian organizations specializing in fields outside of disaster management decided to help. In some cases, this well-intentioned decision resulted in negative outcome. The punctual help these organizations offered was not always appropriately tailored to the rural communities (Amil Biladi, 2024). For example, some of the shelters that were donated were enhancers of temperature extremes featured in the region. As a result, some villages received an abundance of suboptimal shelters, which prevented them from having access to appropriate shelter when more adapted materials arrived later, as their needs had supposedly been addressed. Months after the disaster, it became obvious that the villages that got the most help in the first days ended up having the worst long-term living conditions (see figure 8.1.). This result is also an

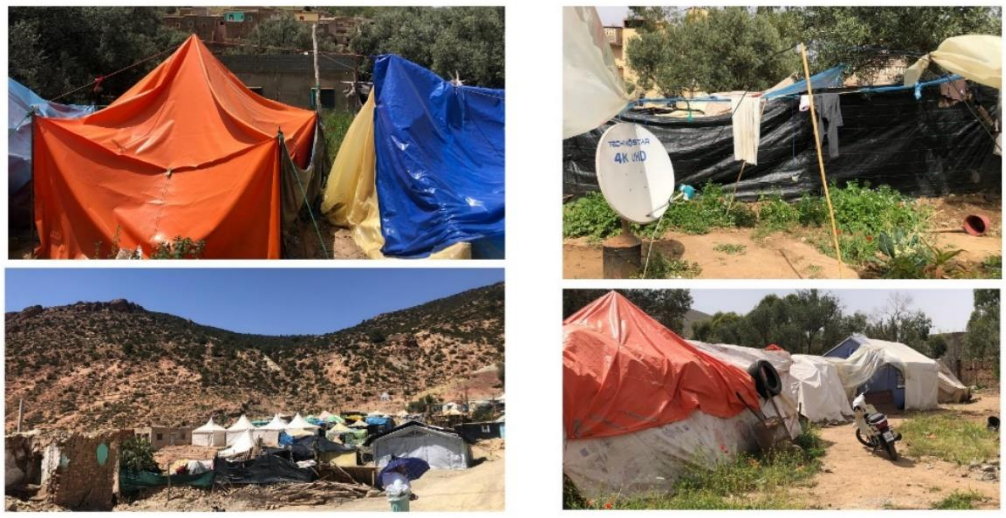

**Figure 8.1. Difficult living conditions in refugee camps**

indicator of the lack of continuity in the NGO response, as months after the earthquake, few organizations remained actively involved.

On the other hand, villages in categories 2 and 4, which were more rural and presented severe challenges in accessibility, received a humanitarian response that was more adequately tailored to

their needs, despite being less timely. The fatalities in these villages were higher as the first 72 hours were mostly spent accessing the villages. The organizations that reached the villages had to create an action plan to reach the remote location and optimize their response ounce on the ground. The difficulty in access created a better organization with specific groups accessing pre-determined regions based on local needs and group qualifications and specialities (Association Salsabil, 2024).

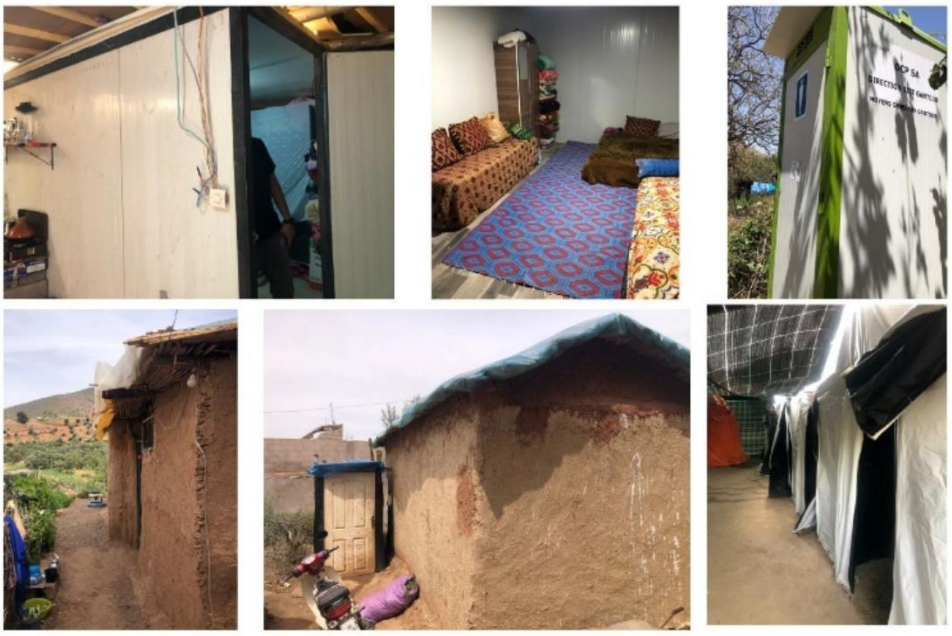

**Figure 8.2. Resistant and climate-appropriate temporary housing**

The response in these remote areas proved to be more comprehensive and fitting on the long term (see figure 8.2.).

In terms of inter-NGO coordination, international NGOs, such as the UNDP and Red-Cross and Red Croissants Organizations have pre-established protocols and codes of conduct for disaster relief ( الهلال الأحمر المغربي., n.d.). Their intervention in the Al Haouz earthquake was responsive to the national authorities', as demonstrated the initial UNDP statement on the disaster by Achim Steiner: "As subsequent recovery efforts begin, the UN Development Programme (UNDP) stands

ready - with the rest of the United Nations family - to support national efforts for rescue and relief, and to work with affected communities to cope with this tragedy and build forward." *Statement by UNDP Administrator on Earthquake in Morocco|United Nations Development Programme*., n.d.). The response these actors, and other experienced NGOs, offered stood out due to the evaluation of needs and the rescuer training provided prior to the response. These preparatory measures, established in accordance with the humanitarian code of conduct, allowed a comprehensive action plan to be created and enacted ( الهلال الأحمر المغربي., n.d.). In this context, comprehensive characterizes the consideration of various factors such as urgency of varying relief actions, assessment of need in different communities, assessment of risk factors in help delivery and evaluation of help impact on receiving actors prior to the establishment of the action plan to optimize all spheres of humanitarian help in relation to the local communities' needs (Lofquist, L., 2017). The pre-established system allows for effective coordination to occur through procedures that are clearly defined and decision making that is dictated by a set of values and conditions. Due to the urgency of disaster responses, the process to follow these values and conditions can be accelerated and the coordination moves from authoritarian to consensual and by default (Donini, A. 1996). NGOs with more expertise and knowledge of the area can take on the role of coordinators for other actors. Thus, NGOs collaborate with each other based on a collective goal, but do not benefit from a structural decision-making process.

It is governmental responsibility to procure this structural and centralized decision-making and authoritarian coordination in a time of conflict. In Morocco, the Ministry of Interior is the leader in coordination of crisis management and emergency responses. The ministry of Interior created the Monitoring and Coordination Centre (CVC) following the Al Hoceima earthquake of 2004 in prevention of future risks. The CVC operates with regional and provincial levels to coordinate risk

prevention, response, and reconstruction (OECD, 2017). All coordination roles lay in the hand of governmental actors in Morocco: thus, NGOs do not hold any executive power and depend on higher approval to carry out their operations. The government-NGO coordination becomes crucial for the organization of the response and the optimization of all efforts. In this dynamic, due to lack of proactivity from the government in direct coordination of efforts and engagement with actors, NGOs compete against each other to obtain governmental attention and approval and launch their initiatives. Being well connected to Moroccan authorities in the department of intervention becomes crucial for successful and timely intervention. In the emergency phase, the Ministry of Equipment, Transport, and Logistics and the Ministry of Health become important actors due to their coordinating powers (OECD, 2017). NGOs must act within the realm of intervention of these ministries. For example, NGOs reported that donations of aid items such as blankets had to undergo strenuous border control clearance of goods procedures (Amil Biladi, 2024). In the reconstruction phase, the Ministry of Economy and Finance becomes the leading force. All ministries and governmental agendas are reinforced locally by Walis. In times of emergency and reconstruction, the Walis are the main coordinators as the most accessible actors in the vertical governmental system. However, the strongly reinforced top-down political system in Morocco limits the power and agency of Walis. Local and regional actors, although having a comprehensive knowledge of governmental interests and local interests, are bound to a centralized system limiting their agency (OECD, 2017).

In the non-governmental actors' side, the lack of organization between NGOs and civil societies, without any platform or system to coordinate, creates limitations in the efficiency of the emergency response. Actors independently work on the same goals and overload the local governmental actors, who are already stuck in a centralized governance: "The absence of a

dedicated space, where stakeholders can define a common vision, contribute to designing policies, share experiences, refine priorities and launch new initiatives, is hindering integrated action." (OECD, 2017). Great initiatives are unable to meet their full humanitarian potential due to a lack of governmentally instituted structure and support and an absence of inter-non-governmental actor collaboration system.

Despite all the challenges in help coordination, some NGOs have successfully integrated initiatives. A common point between interviewed organizations who qualified their response as successful or optimal was the concertation of the local population prior to the launch of the initiatives. Successful initiatives in all axes of intervention often reached the most remote villages, as a need-based analysis was conducted. These initiatives also took into consideration the long-term impacts of the disaster. An example of successful initiatives is in the mental health domain. Various organizations such as the NDE and Amil Biladi offered mental health support to children and families in prevention of post-traumatic stress disorder and to express emotions and reduce symptoms of depression and anxiety. Villages where the destruction was especially brutal and fatality rates were high were prioritized for the implementation of mental health programs. Additionally, local actors were trained to ensure a continued help ounce the organizations left the area. Other comprehensive projects such as the Nouala house models from Arbre de Vie and the weather resistant tents large specifically designed to host entire families by Salsabil are examples of successful intervention that is geared towards the needs and desires of local communities. Both initiatives also stood out due to the locally hired manufacturers and workers, creating a financial stress relief, whilst also resolving housing creation needs.

## Conclusion

Modern crisis management and disaster relief systems in Morocco are the result of reactive policies following natural disasters. The 1960 Agadir earthquake and the 2004 Al Hoceima earthquake are the nation's precedents in earthquake management and the reference for the 2023 Al Haouz earthquake management (OECD, 2017). The disaster management cycle involves four stages: mitigation, preparedness, response, and reconstruction. The precedent earthquakes allowed for work to be done in the mitigation and preparedness stages of the 2023 earthquake, while the response and the reconstruction phases of this earthquake add to the mitigation and preparedness of future crises (Cozzolino, A., 2012). Despite an improvement on the crisis management compared to previous disasters, Morocco's response can be optimized and more adequately tailored to the affected communities through all four phases.

First, the mitigation phase addresses social vulnerability in the nation. Morocco is a developing country, and the Al Haouz region showcases the challenges in development. The remote location and generalized poverty and lack of infrastructure in the region amplified the damage when the disaster occurred. As stated by interviewees in affected communities: "In this region, we did not need an earthquake to suffer. We already did." Nationwide development is necessary to reduce vulnerability and poverty amongst selected populations. Investment in public services and infrastructure enhancing economic opportunities and raising the standard of living outside major cities is key to mitigating future disasters.

Second, the preparedness phase has been established because of lessons learned from Agadir and Al Hoceima Earthquakes. In 2004, a royal commission for disaster management was created, establishing the governmental chain of command and attributing roles and responsibilities

to selected ministries in times of crisis (OECD, 2017). Additionally, seismic regions of Morocco had been subject to para-seismic constructions, but as the High Atlas Mountains had, historically, not been subject to seismic movement, the region did not benefit from these measures. The established chain of command did act as coordinator of the response and the roles within governmental actors were clearly determined before the disaster.

Third, the response phase of the disaster management cycle is reactive to the occurrence of the disaster. The main challenges in the response phase of the 2023 Al Haouz earthquake consisted of timeliness and coordination of the aid. The first subphase of the response phase occurs in the first 72 hours post disaster and consists of rescue work (Cozzolino, A., 2012). A third of this phase was wasted as all actors awaited the royal command to activate initiatives. Then, the nature of the terrain and the damage inflicted by the disaster complicated access to several affected villages. Efforts were dedicated to the accessibility of isolated villages where rescue was needed as the injury and death rates were high, meanwhile the second subphase, restoration, was activated in accessible zones. The restoration of basic needs, such as water, food, and shelter was characterized by a lack of coordination. Duplication of efforts and disproportionate and uneven allocation of resources created chaos in the response.

Two solutions paths are available to remediate this lack of coordination. The first one is establishing a nationwide coordination system between non-governmental actors that clearly and effectively communicates governmental needs from non-governmental actors. Such a system would avoid the independent initiatives from non-governmental actors seeking approval from regional governmental actors who do not hold the executive power to make effective decisions. Coordination platforms where the nature and quantity of aid needed are communicated to stakeholders and stakeholders can claim different responsibilities, which will also be visible on the

platform are common solutions in experienced relief effort organizations. These systems avoid duplication of help, ensure a response that is geared towards the needs and allows effective coordination across all stakeholders. The second solution is for governmental actors to allow experienced non-governmental actors to take the lead on the response. For example, specialized disaster response organizations such as the red cross and red croissant from all around the globe offered their help. These organizations have pre-determined and optimized preparation and expertise that allow an effective action plan to be enacted once on the ground. However, these organizations need to be empowered by national authorities to operate freely and reach the full potential of their operations.

The fourth stage of the disaster management cycle is reconstruction. This stage should be characterized by continuation and comprehensiveness for optimal results (Cozzolino, A., 2012). The reconstruction phase is tightly related to the mitigation phase, as the reconstruction dictates the nature of local infrastructure and services. The Moroccan government created a reconstruction program that reinforces the local infrastructure and prepares the region against future seismic movement. The reconstruction is accompanied by financial aid allowing a 50 to 70m2 single floor house to be constructed free of charge for every household identified through the census. The challenges arise in the disparity between local priorities and ways of life and government created plans. Some villages saw reconstruction completely forbidden due to the high risk for future disasters and the need to relocate to nearby cities. However, most residents in these Berber villages live from agriculture and had established their villages in close proximity to their lands. Other villagers lived in multi generation houses made in traditional Berber crafts that have temperature isolating properties. They are now forced to reconstruct significantly smaller houses that do not have the same climatic benefits. These disparities between government issued plans and local

community needs create hesitancy and pushback against reconstruction efforts and not only obstruct efficiency of reconstruction, but also force affected communities to live in precarious conditions and dangerous areas for prolonged and indefinite time periods.

Moreover, reconstruction must be individually organized and coordinated. Affected communities are facing emotional, physical, and financial hardship after the earthquake and may not be disposed to take on the fastidious task of reconstruction. Some individuals are physically able to participate in reconstruction but cannot take time off from work without any remuneration to participate in reconstruction efforts. This factor also amplifies delays in reconstruction and leaves families in precarious conditions. A reconstruction approach considering the socio-cultural identity of the affected population could eliminate the pushback against reconstruction and mobilize communities around the efforts. Finally, a remuneration system for reconstruction work could motivate local populations to engage with the process and take an active participant role. Initiatives such as cash for labor have been successful in other disaster zones, such as Haiti in 2010. The remuneration of reconstruction work allows for the financial burden to be eliminated and for local communities to take rebuilding efforts in charge.

Overall, all stakeholders actively participated in resolving the crisis with efficiency and solidarity. The nationwide mobilization was impactful, and the international media attention gathered around the Al Haouz earthquake allowed for generous donations to make their way to Morocco. Areas of improvement revolve around coordination, continuity, and adaptation to socio-cultural realities of the affected population.

## Limitations and Recommendations for Further Research

This research was conducted in April and May 2024, seven months after the earthquake. The reconstruction phase is ongoing and will expose more successes and challenges in the next months and years. As the response is not entirely completed, an analysis of the finalized results is missing. Further research will allow an assessment of the complete response and may highlight shortcomings that have not manifested in the first seven months of the response.

Additionally, the number of villages visited was limited was restricted to the Amizmiz region. The terrain of the Atlas Mountain features various climates and geographies that create different realities for local communities. A limit in the number of communities interviewed was imposed by time constraints and further research would benefit from expanding the range of perspectives to a wider geographic area.

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