

CASE
STUDY

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The impact of climate change, environmental degradation and conflict in Mandarounfa



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ACRONYMS AND ABBREVIATIONS

AS	Al-Shabaab
CDSF	Defence and Security Forces
NSAG	Non-State Armed Group
UNHCR	United Nations High Commissioner for Refugees
NGO	Non-Governmental Organisation
CSO	Civil Society Organisations
UNCCD	United Nations Convention to Combat Desertification

Executive Summary

While climate change is not a direct cause of conflict, it does have a direct impact on natural resources and can cause many additional problems for human security. For example, climate change affects pastoral and agricultural calendars, disrupting production activities and community incomes. The numerous climatic crises have led people to adopt extreme strategies such as the abusive cutting of wood cover for energy, medicine, construction, etc. This destruction of already limited natural resources has reduced soil fertility and lowered agricultural productivity, leading to food insecurity. This demonstrates the vulnerability of communities to the harmful effects of climate change and environmental degradation.

In our study, most communities interviewed in Madarounfa commune recognize the impacts of climate change on local resources. Once an important landmark, Lake Madarounfa is now drying up, worsening the region's food production challenges and jeopardizing livelihoods. This strain is driving rural migration, cattle theft, and tensions between communities that depend on lake related activities. In some cases, women have turned to prostitution as a last resort for income.

Despite these hardships, communities show resilience and are actively seeking solutions to environmental challenges, with support from the government, community organizations, and civil society. Young people, in particular, are leading efforts to promote environmental awareness, eco-citizenship, and peace, while also participating in conservation initiatives. Many communities remain hopeful that, with training and support, they can adapt to these challenges and manage or prevent potential conflicts.

1. Introduction



Niger, a Sahelo-Saharan country with a hot, dry tropical climate, faces significant challenges from climate change, which is impacting the environment and natural resources. This situation has severe consequences on the livelihoods of Niger's primarily rural population, whose main activities focus on agriculture and livestock farming. Agriculture dominates Niger's economy, contributing 39.2% of the country's GDP in 2018.¹ However, environmental conditions are deteriorating rapidly. According to the United Nations Convention to Combat Desertification (UNCCD), key drivers of land degradation in Niger include irregular rainfall patterns—sometimes insufficient, other times torrential—that are unevenly distributed across time and space, as well as frequent, strong winds that erode the land. Environmental degradation in Niger takes various forms, such as desertification, deforestation, soil erosion, and the shrinking or drying up of water sources.

A study by the International Organisation for Migration (IOM) and the National Council for Sustainable Development in February 2021 revealed that 93% of respondents had observed recent environmental changes. The population identifies soil degradation, biodiversity loss, water scarcity, and recurrent droughts as the most severe environmental changes affecting their lives.

1 www.adaptationcommunity.net Niger's climate risk profile

The pressure on increasingly scarce resources is also sparking conflicts that undermine social cohesion and intensify the vulnerability of communities. Former United Nations Secretary-General Ban Ki-Moon (2007) described climate change as a root cause of conflicts between communities.² Intensifying this issue is the lack of socio-economic opportunities for young people, who represent the main labour force in agro-pastoral activities.³ Young people, especially young women, are deeply affected by the intersecting impacts of climate and security crises. These challenges have led to rising levels of marginalization, unemployment, rural exodus, migration, idleness, banditry, and the development of criminal networks, including cattle rustling. These issues are especially acute in border areas with Nigeria, such as the Madarounfa and Guidan-Roundji departments in the Maradi region. Armed bandit groups from Nigeria frequently cross the border at night, often targeting residents and taking refuge in wooded areas like the Baba Rafi Forest along the border. In 2021 alone, 2,735 animals and 91 individuals were kidnapped, with victims' families paying a total of 51 million CFA francs in ransom.

The power dynamics involved in managing shared resources raise critical questions about the roles young people and women could play in mitigating conflicts. This points to a need for participatory local management mechanisms that actively include marginalized groups, who are disproportionately affected by the impacts of climate change on both the environment and local conflicts.

Climate change, environmental degradation and societal tensions pose a serious threat to the country's economic and social development and undermine efforts to reduce poverty and promote sustainable development. Internationally, climate change is a growing concern due to its far-reaching impacts on human populations and ecosystems. Responses are being developed by local communities, civil society organizations (CSOs), researchers, and governments.

This study, titled ***"Impacts of Climate Change, Environmental Degradation and Conflict on Young People in the Madarounfa Department of Niger,"*** aims to analyse how marginalized young people are affected by the intersecting effects of climate change, environmental degradation and violent conflict. To achieve this objective, the following research questions are posed:

- How do climate change and environmental degradation influence conflict or the risk of conflict in Niger, particularly in the Maradi region?
- How are marginalized young people affected by the combined impact of conflict, climate change and environmental degradation?
- How can we respond to the interconnected dynamics of climate change, environmental degradation and conflict, and support the strengthening of prevention and mitigation capacities in a changing environment?

2 <https://www.washingtonpost.com/wp-dyn/content/article/2007/06/15/AR2007061501857.html>. Consulté on 31/05/2024

3 More than 80% of Niger's population is employed in the agricultural sector, according to Niger's climate risk profile. www.adaptationcommunity.net

2. Country Context



2.1 NATIONAL LEVEL

For nearly a decade, Niger has faced a security crisis exacerbated by the Libyan and Malian crises. The tri-border area between Mali, Burkina Faso, and Niger is marked by high crime rates, attacks by non-state armed groups, and escalating tensions between communities. Extremist groups, such as Boko Haram in the Diffa region (active since 2015) and the Islamic State in the Tillabéry region (active since 2018), have further destabilized the country. Additionally, organized crime, including cattle rustling, kidnapping, and abduction, has surged, particularly along the Nigerian border in the Tahoua and Maradi regions.

As in other Sahelian nations, Niger is also subject to the rigours of the climate – the rainy season does not last more than three months, and rainfall is irregular from one year to the next, with occasional floods causing major damage to activities and the meagre resources available. Activities that are affected include the legendary transhumance caravan, nomadism, movement of encampments around grazing areas in the dry season, livestock, off-season market gardening, fishing and the practice of extensive and dispersed farming to ensure survival. Drought is the biggest agricultural risk in Niger, with a high probability of occurrence and a severe impact on both crop and livestock production.

Niger's rapid growing population, estimated at 3.7 percent in 2022 according to the World Bank⁴, with an average age of just 15 years old, intensifies human activities and accelerates environmental degradation such as air, water and soil resources. This is generating interand intra-community conflicts and increasing the vulnerability of Niger's mainly rural populations as result.

2.2 MARADI REGION

The Maradi region has a population density of 112.3 inhabitants per km², compared to Niger's national average of 18.6,⁵ and is an important economic hub. The dominant activities are agriculture, livestock farming, trade and crafts, which are practiced traditionally and informally.⁶ Agriculture and livestock farming allow the region to rank first in the export of livestock, hides and skins, second in cowpea production, and accounts for a fifth of the country's total cereal production. However, climate change and rapid population growth have increased challenges for traditional farming and herding practices.

In recent years, the phenomenon of landless farmers is becoming increasingly common. After inheritance, many families are forced to sell their inherited land, because they might not have enough to grow crops, and also because land is becoming increasingly expensive to develop and harvest. A study carried out in 2018⁷ showed that "88% of the land is owned by the wealthy and the middle classes, while the poor in general, who represent 65% of the population, own only 12%." As the land becomes saturated, fallowing is no longer practiced and there are no more grazing areas. The only way for animals to move between hamlets, watering holes and small pockets of preserved grazing land is through a network of corridors. The result is friction and conflict, often fatal.⁸ A case in point is the conflict between farmers and herders in Dandja,⁹ which resulted in three deaths and seven injuries in November 2023.¹⁰

According to OCHA's March 2023 report, security incidents and casualties have risen compared to the same period in 2022, with 38 incidents and 85 victims recorded in the first quarter of 2023. This includes killings, injuries, abductions, and livestock theft. Ransom payments for abducted individuals are also common.

Since the beginning of the year, the humanitarian situation in the region has been dominated by the regular movement of Nigerian populations towards the Maradi region. These people are settling in localities along the border strip, particularly in the departments of Madarounfa and Guidan-Roundji. Repeated incursions by armed groups have led to both internal and external migration of populations. These movements are at time also preventive as people try to escape the atrocities

4 https://datacommons.org/place/country/NER?utm_medium=explore&mprop=count&popt=Person&hl=fr. Accessed on 12 April 2024

5 INS 2021 projection

6 www.initiative3n.ne/maradi.php#:~:text=L Agriculture%2C0Livestock,the%20traditional%20and%20informal. Accessed on 12 April 2024

7 <https://hea-sahel.org/wp-content/uploads/2018/02/NE-profil-niger-ne-07-madaroufa-octobre-20097987208.pdf>consulté on 29 July 2024.

8 www.eda.admin.ch/countries/niger/fr/home/cooperation-internationale/strategie/zones-d-intervention/maradi.html. Accessed on 12 April 2024

9 Danja (Niger): is a village in Niger in the Maradi region on the RN9, the tarmac road leading to Nigeria via Dan Issa. The village is 13km from Maradi on the RN9.

10 Studio Kalangou, November 2023

of these armed groups. According to the UNHCR, 1,417 people (mostly women and children) from Nigeria have found refuge in the Maradi region.¹¹

In response, Niger's Defense and Security Forces have been active, successfully preventing some incursions and returning stolen livestock when cases proceed legally. The region has been classified as a "Military Operations Zone," imposing restrictions on humanitarian access. For example, humanitarian workers in Madarounfa department, 20 km from the Nigerian border, must use military escorts, limiting the reach of aid operations in these vulnerable areas.



3. Methodology and Case Study Selection



This study used qualitative research methods from the exploratory phase to data analysis, with data gathered through semi-structured interviews, focus group discussions, and field observation. The methodology prioritized a participatory approach, involving key players and community members from the areas studied to ensure inclusivity and relevance.

To lay the groundwork, the research began with a pre-survey to confirm the relevance of selected themes in the chosen location and to define a representative sample. This was followed by a literature review, which included online sources, relevant reports, articles, and audiovisual materials.

3.1 CASE STUDY SELECTION

The study focused on the commune of Madarounfa, located in the Maradi region. The commune is located around 20 km south of Maradi and 650 km east of Niamey, Niger's capital. The population is predominantly Haoussa people, with a minority of Peulh and Touareg agro-pastoralists who are predominantly Muslim. The main activities of these communities are agriculture, livestock farming, fishing and trade.

The municipality is home to the largest permanent surface body of water in the Maradi region. Lake Madarounfa is a significant socio-economic and cultural resource, spanning 524.32 hectares in normal conditions and up to 800 hectares during floods, with depths ranging from 1.5 to 5 meters. The lake has been designated a Ramsar site since December 2019 and holds unique value as a combined cultural and ecological site, encompassing the lake itself, the tombs of 99 saints¹² and a forest. The lake is a special ecosystem, unique to the area, and plays a vital role in the life of the local people, contributing to improving food security, providing a source of income for households and maintaining the ecological balance. It also plays an important function in meeting the water needs of local people and livestock. As described by religious leader from the Kaffi district,

“Lake Madarounfa is a blessing, a protection, an identity and a symbol for us. All our economic activities depend to a large extent on this resource. We grow off-season crops, fish, produce livestock feed, water all the local animals, engage in tourism, etc. In short, it means everything to us.”

However, this lake is under serious threat from climate change. During droughts, the lake shrinks causing losses in agricultural and fishing yields.¹³ According to a local fisherman, *“the fishermen of Madarounfa, in Niger, rely on Lake Madarounfa for their livelihood and food. But both are threatened by drought”*.

This study specifically targets the five villages bordering the lake. These are the villages of Dan Toudou, Yan Radi, Gamdji, Saoulaoua and one of the districts of the urban commune of Madarounfa, called Kaffi. The five villages are inhabited by Haoussa communities and a minority of Peulh Muslims, whose activities include fishing, farming, livestock rearing and beekeeping. The five villages were chosen for their proximity with Lake Madarounfa and are therefore the direct victims of the lake's drying up.



12 The tombs are located in and around the lake. The first manifestation of the saints' dates back to the dawn of time, while the last was 15 years ago (around 1990), according to tradition. It is the spirit of a saint that takes up residence on the site through an apparition of light visible at night, particularly on Thursday evenings. Following this "announcement", the local people build a tomb on the designated spot, which becomes the saint's living quarters. Ritual ceremonies and donations are then organized on this "sacred" site.

13 Ramsar fact sheet, May 2021.

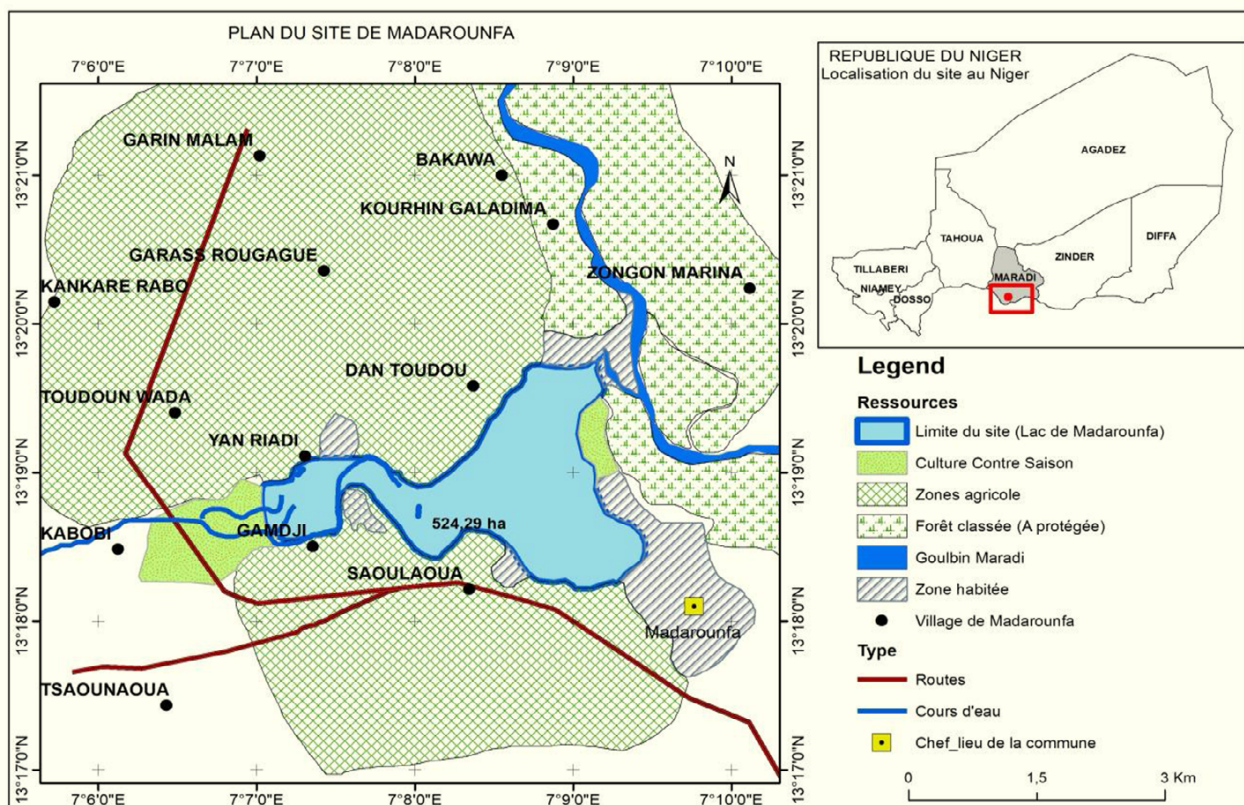


FIGURE 1 | Map of the region

The purposive sampling technique identified two main target groups for data collection: direct lake users (young farmers, stockbreeders, fishermen, beekeepers, and youth from civil society) and other stakeholders (religious leaders, traditional chiefs, landowners, NGOs, local government, and various community councils and commissions such as the Communal Land Commission, the Vulnerability Monitoring Observatory, the Departmental Land Commission, survey units, the Department of Agriculture, Livestock and the Environment, and the Departmental Youth Council.)

3.2 METHODOLOGY

Field data collection was conducted over four days in May 2024, facilitated by local focal points who assisted in assembling participants and organizing transport. Data was gathered through focus groups and individual interviews, supported by note-taking and audio recordings.

3.2.1 FOCUS GROUP DISCUSSIONS

The focus group discussions were conducted by two teams of two researchers, consisted of seven participants per group. A total of 20 focus groups were conducted, involving 140 individuals in total, (105 men and 35 women) between the ages of 15 and 35. The difference in the number of young men and women interviewed reflects the higher involvement of men in agriculture, livestock farming and fishing. Even if women are involved, it is through secondary activities such as the sale of agricultural and fishing by-products, the small-scale rearing of small ruminants, and the processing of agricultural products into food for consumption.

3.2.2 INDIVIDUAL INTERVIEWS

Four different interviews guides were developed according to the categories of people that were surveyed: one for youth groups, one for regular lake users, one for traditional leaders, religious leaders and landowners, and one for technical services and NGOs. In total 28 individual interviews were conducted with 26 men and 2 women. The low number of female interviewed reflects the limited presence of women in religious and customary leadership roles, as well as land ownership, which remains rare for women in Niger.

3.2.3 FIELD OBSERVATIONS

The research team visited the lake to observe and document the physical impacts described by respondents, capturing photographs to visually illustrate the changes and challenges affecting the lake and its surrounding communities.



4. Analysis of research results



4.1 THE EFFECTS OF CLIMATE CHANGE AND THEIR CONSEQUENCES

The study revealed that all five villages around Lake Madarounfa are experiencing the same effects of climate change, which impact agricultural productivity, water resources, and local livelihoods. Key issues identified include:

4.1.1 LATE ONSET AND EARLY STOP TO THE RAINY SEASON

Niger has a uni-modal rainfall pattern (only one rainy season a year) which normally runs from May to October. The Maradi region is one of the wettest every year. Classed as a Sahelian zone, it records an average rainfall of 300 to 600 mm.¹⁴ The communities we met were unanimous in emphasizing the late start to the rainy season. Compared to a few years ago, there is a delay of several weeks each year. When contrasted with the 1991-2020 normal, cumulative rainfall is lower at all the weather service's stations, with the exception of Diffa.¹⁵ This is having a negative impact on agricultural production as communities are no longer able to predict the rainfall, and sometimes

¹⁴ Niger's National Climate Change Adaptation Plan, October 2022

¹⁵ CNSC_Niger_Bulletin_7_Bilan_2023_Climat-RESSOURCES_EN_EAU.

end up having to sow successive crops, as their first attempts usually fail because the rain is late to arrive. This has a direct impact on their means of subsistence during the dry season. In addition, during the discussions, one participant, a livestock breeder, stated that they were also experiencing insufficient rainfall compared to the community's needs. Watercourses were no longer being replenished properly, leading to drought, and impacts the watering of livestock. This, in turn forces livestock breeders to be more mobile and interact more with farmers. The proximity of livestock to cultivated land causes damages to farmer's fields and generates conflict between the farmers and livestock breeders.

The discussions also raised the issue of violent winds that often accompany heavy rains. The land, dried out by the droughts and smeared by the low rainfall, can no longer quickly absorb the exceptional torrential rainfall. This leads to flash floods and inundations that cause extensive damage to infrastructure, homes, crops and livestock. This increases the level of poverty among the local population, prompting migration. A farmer in Kaffi shared that heavy rains cause flash floods that inundate the gardens around the lake, wiping out all the effort and resources invested in a single day. In such situations, solidarity between the various stakeholders plays an important role. Support is given to victims as a gesture of compassion. From time to time, they receive support in cash or in kind from NGOs working in the area, but very rarely from the state.

4.1.2 INTENSE HEAT

During the interviews, the participants highlighted the increase in intense heat episodes as a major challenge facing the area. As one participant stated:

"Our big problem now is really the heat, we've never experienced such heat except in recent years, and this year is the worst".

In 2024 Niger recorded peak temperatures of 47.2°C in Tillabéry, higher than in 2023 and the 1991-2020 normal according to the meteorological department. The Maradi region recorded a peak of 44.7°C in March 2024, while the average temperature was 43.2°C. All the regional stations recorded days where the maximum daily temperature reached or exceeded the 40°C threshold. People are having to cope with increasingly high temperatures, reaching levels never seen before. This rise in temperature, combined with other disruptions, is exacerbating the production challenges faced by communities. Higher temperatures make food preservation more difficult, leading to losses for women selling fish, fruits, and vegetables. The added expense for cooling or preservation reduces already minimal profits, impacting livelihoods, especially for women. Environmental degradation of resources

The majority of participants identified two main causes of the multifactorial degradation of the environment: climatic causes and anthropogenic causes (human action). The communities we met unanimously supported the hypothesis that climate change and certain human practices are having a negative impact on their resources. According to the manager of the Young Volunteers for the Environment association, the effects of climate change are leading to the depletion of resources, and young people are becoming increasingly aware of this.

4.1.3 ANTHROPOGENIC CAUSES

Among the causes attributed to human action, several key elements were identified by the participant such as **deforestation** through the uncontrolled felling of trees and **demographic pressure** which means that areas suitable for cultivation, grazing and fishing are becoming insufficient and weakened. The growth in human needs increases the pressure on resources. For example, land designated for fallowing, a traditional practice that is essential for soil regeneration, is no longer respected, leading to the continued ageing of the land. As one interviewee put it:

A portion of land that used to be given to one person is now divided between several people. What's more, there's no longer enough to fertilize the land now that fedherbia,¹⁶ considered the main fertilizer, is disappearing.”¹⁷

According to the Director of Agriculture, the “law of restitution” is not being respected, because the communities no longer carry out fertilization; the same applies to irrigation. The law of restitution consists in restoring to the soil the nutrients removed during the harvest, using compost or fertilizer.

4.1.4 CLIMATIC CAUSES

Climatic changes are driving the disappearance of several animal and plant species, which has particularly affected local beekeepers. Concerned about their future, the beekeepers reported that honey production has become increasingly difficult as bee populations have sharply declined. This decline is linked to the loss or distance of plant species essential for bees’ food and pollination.

Another major issue raised during the discussions was the shrinking and gradual silting-up of Lake Madarounfa, the main source of water for the area. A community leader explained, **“This year, we are witnessing something unprecedented: the extraordinary separation of Gora and Madarounfa”** the local name for the two main parts of Lake Madarounfa. The lake is critically close to drying up completely, putting fish stocks at serious risk. The last time the lake reached this state was over 80 years ago, and no one alive today has seen it in such a condition.

During our visit, the traditional chief shared recent footage showing the lake’s severely shrunken state. He noted that this change has deeply impacted the lives and activities of local residents.

The ongoing drought has rendered water resources fragile, leading to soil hardening and tree desiccation, which has made agricultural conditions increasingly challenging, especially for women. Farmers, fishermen, and herders now face the difficult task of sharing the last remaining water resource as it steadily diminishes, straining livelihoods and resources in the community.

16 Fedherbia is a plant found in semi-arid zones, but its phenology is reversed in relation to the rains. It buds at the end of the rainy season, fructifies and grows during the dry season, then loses its leaves at the start of the new rainy season. At the juvenile stage, the stomata close very quickly in response to moderate edaphic drought, demonstrating a drought-avoidance strategy (Olivier Rounsard, 1997, Écophysiologie et diversité génétique de fedherbia albida, CIRAD).

17 Interview conducted with a traditional leader in dan Toudou on 18 May 2024

4.2 IMPACT OF CLIMATE CHANGE AND ENVIRONMENTAL DEGRADATION ON YOUNG PEOPLE

Respondents highlighted that environmental degradation is causing significant hardships for the community of Madarounfa, particularly impacting farmers, herders, and fishers. These groups, whose main sources of income are now at risk, are experiencing worsening poverty levels. Insecurity in the area further aggravates these challenges, especially for farmers, who are often unable to work their fields due to safety concerns. Similarly, herders can no longer drive their livestock into certain pastoral areas due to frequent thefts.

The study identified several key impacts: reduced agricultural yields, lower incomes, food shortages, rural exodus, and migration to other regions or neighbouring countries. These issues affect all residents of the five villages studied but particularly weigh on young boys. Young girls also feel the impact, as the products they typically process become scarcer and more expensive.

The lack of economic opportunities and activities for young girls and boys sometimes leads them to engage in risky behaviour and harmful practices such as theft, prostitution and drug use. Faced with this deterioration in their sources of income, many young people both girls and boys turn to migration. Young men often head north to Agadez's Djado gold-panning sites, or to Nigeria, Mali, and as far as Algeria and Libya, seeking better prospects. Young girls, in contrast, tend to migrate to regional capitals, where they work as housekeepers or beggars. Some women migrate further to countries like Ghana and Benin for housekeeping or petty trading. This female migration trend is new to the area and has harmful consequences for social cohesion and household stability. Group discussions and interviews revealed that this exodus is destabilizing families, sometimes leading to divorce. Environmental pressures also contribute to girls dropping out of school, as parents who face declining incomes and reduced food supplies often need their children to help in family businesses. Only one village, Saoulaoua, seems to be relatively unaffected by this phenomenon of migration among young people. This is due, firstly, to the fact that it is a sparsely populated village, and there are not enough young people to leave and empty the village of its workforce. Also, the situation seems less precarious than in other villages because this community is less affected by the spectacular shrinking of the lake. This has not greatly hindered the normal functioning of production activities.

The village of Saoulaoua seems to be an exception to this migration trend. As a sparsely populated community, Saoulaoua has fewer young people leaving, and its production activities have been less impacted by the shrinking lake, allowing for more stable livelihoods.

According to majority of those interviewed, women and girls are a very vulnerable group. As one community leader from Yen Radi explained,

"Women are the most vulnerable, firstly because social pressure forces them not to move, meaning they must stay put no matter the situation, especially if they have children. Those who do leave often resort to begging, which brings its own disadvantages."

Young girls and women play an essential role in the marketing of agricultural and fishery products produced by men around the lake. However, they are bearing the brunt of the shrinking of Lake Madarounfa, which is leading to a drop in yields from these activities. They are also experiencing increased difficulties in their traditional activities of raising small ruminants. Feeding livestock is becoming increasingly expensive, and it is no longer safe to let animals graze in the bush because of the frequent thefts in the area.

4.3 IMPACT OF CLIMATE CHANGE AND ENVIRONMENTAL DEGRADATION ON CONFLICT

The farming, fishing, and livestock-raising communities around Lake Madarounfa consistently reported that climate change is worsening the availability of essential resources, including water, farmland, and grazing areas. A livestock farmer from Gamdji highlighted the critical issue:

"The reduction in water resources and straw in grazing areas is the crux of the problem we're facing with other groups in the area. Just a few years ago, we never worried about water or feed, especially with the lake being permanent. Of course, there were disputes, but not like now, when the lake has dried up and bandits make it unsafe to graze or water animals freely."

The scarcity of resources has led to drops in productivity, income, and overall livelihood security across communities. In this increasingly vulnerable environment, competition for limited resources fuels frustration and resentment, particularly among young people. This has created conditions where some are turning to illegal or violent means, further intensifying a climate of tension and instability, and raising the risk of escalating conflicts.

The main conflicts reported by respondents in the villages surrounding the lake are inter-communal mainly by cattle theft, sometimes leading to acts of violence between the various groups of actors in the community. Armed livestock theft, especially of small ruminants, has become a serious challenge, making it difficult for communities to protect their animals. Traditional herding practices, where livestock graze during the day and are brought home to huts each night, are under threat as the presence of bandits limits the areas herders can safely access. These conflicts involve the five Haoussa communities living around Lake Madarounfa, who are farmers, herders and fishermen, as well as a community of Peulh herders from a neighbouring village located around ten kilometres away. A significant risk exists for these inter-ethnic tensions to explode, as Haoussa farming communities often blame the Peulh agro-pastoralist communities for livestock theft rather than attributing it to the armed bandits that operate in the region.

In addition to conflicts over cattle rustling, another recurring source of tension between these same communities concerns the damage caused by Fulani cattle to the fields and gardens of Haoussa populations. The women interviewed suspect that these intrusions are sometimes premeditated, as they occur more frequently at night. During the day, the rare animals caught in the act are taken to the pound, where their release is conditional on payment of a tax and compensation by the owner of cattle, for the damage caused – only if this is claimed by the owners of the damaged crops. Although violent conflicts have not yet broken out, Haoussa farmers are becoming increasingly frustrated by this repeated damage. This situation fuels a latent tension between these two communities, with the risk of violent escalation at any moment.

On the lake, fishing communities claim to be victims of damage caused by animals around their fishing nets. In addition, the shrinking of the lake has led animals to move closer to the fishing grounds. Their passage makes the water muddier, which considerably complicates fishing and even crop irrigation. A local fish seller shared that her days without any fish to sell have grown more frequent, impacting her livelihood of over 23 years. Though tensions exist between fishermen and farmers, traditional and religious leaders have so far managed to prevent these interactions from escalating into open conflict.

Despite these mounting pressures, there appears to be relative social cohesion within the farming and herding communities, who report limited conflicts within their own fields and grazing areas. While cases of violence between farming communities and livestock breeders over grazing animals or crop damage are common in the broader Maradi region, these incidents have not significantly impacted the Madarounfa area. Here, the local land commissions play an essential role in maintaining peace, providing mediation and helping manage land-use disputes effectively.

4.4 RESPONSES TO CLIMATE CHANGE, ENVIRONMENTAL DEGRADATION AND CONFLICT

The communities of Madarounfa feel largely powerless in the face of these cumulative challenges they face, especially with the growing insecurity in the area and the ongoing military operations. Since 2019, several incursions by non-state armed groups have led to kidnappings and cattle theft across the department, sparing only the commune of Djirataoua. Since the area has become a military zone of operations, which is synonymous with restrictions on freedom of movement, economic activities have been affected. Limited resources, lack of knowledge, and the worsening effects of climate change have left locals feeling they have few options to improve their situation. This sense of frustration is compounded by what they perceive as a low level of responsiveness from the government. The environment department and local management committees are attempting to regulate access to resources, but these efforts fall short of alleviating local concerns. Administrative authorities, however, remain open to collaborating with partners who can provide meaningful solutions.

Despite these challenges, young people in Madarounfa demonstrate resilience. In Saoulaoua, for instance, youth work collecting clay from the lake for brick-making, contributing to local construction. In Kaffi, young volunteers regularly sweep and clear waste from the lake's banks to reduce waterborne disease risks. However, these initiatives struggle with sustainability due to limited material support. One young volunteer in Kaffi shared,

"When we started, it was exciting and ambitious. People even thought we were being paid. But without support from the authorities or partners, we couldn't continue. We've made many complaints to the town hall, but nothing has come of it."

Similarly, in the village of Gamdji, young people have organized themselves into night patrols to try and prevent cattle theft – a recurring scourge that greatly affects small-scale domestic or hut rearing enterprises and comprises an important source of income for women. These night-time surveillance patrols deter and inform the security forces and are encouraged by local leaders. The village chief says that these initiatives are much appreciated, as they bring young people and

village leaders closer together. It is a way for them to keep abreast of the activities in which young people are involved in, but also gives young people a reason to stay in the village to help make property safer.

In other communities, people regularly dig new water passages as the rainy season approaches to limit flooding and direct run-off towards the lake. The local youth council has been proactive, mobilizing young people for environmental protection initiatives, including tree planting and conservation awareness, with support from the environmental department and civil society organizations (CSOs) in the area.

CSOs are also working to raise awareness about climate change, promoting the adoption of climate-sensitive crops and sustainable agricultural practices to preserve the environment. These efforts align with Niger's National Adaptation Plan, adopted in October 2022, which advocates for community-based adaptation to climate impacts.

4.5 YOUTH-LED RESPONSES

The participants involved in the research display a strong understanding of the disruption affecting their lives. Their proposed solutions are aimed at building responses that are adapted to the reality of their environment, in the face of climate-related changes they are experiencing. They aim to build on knowledge and initiatives that are already existing within the communities. At the same time, they request support for the efforts they are undertaking, or within the framework of programs and projects set up by the State and other players/organizations working in the area. Key actions include preserving and protecting the environment, improving security, promoting peaceful coexistence between communities, empowering young people and involving women in management committees. The president of the youth council remains firm on the fact that the management of local resources must involve the entire community without exclusion. He also emphasized that everything concerning Lake Madarounfa must be dealt with by the five villages in collaboration with the departmental environment directorate.

The CSOs involved in protecting and preserving the environment emphasized the commitment and meaningful participation of young boys and girls. They noted that grassroots perspectives—especially those of youth, women, and marginalized groups—must be shared with national and international decision-makers to ensure policies address community needs effectively. To support this, they emphasized the importance of capacity building and broad access to national strategies on climate adaptation.

TABLE 1 | Recommended actions based on the various data collected

ACTIVITIES/ACTIONS	COMPONENTS	STAKEHOLDERS
Developing agricultural and pastoral activities	<ul style="list-style-type: none"> → Intensifying farming and grazing practices → Developing agricultural value chains → Intensifying market gardening → Developing production spaces for girls and women → Training in climate-sensitive production 	Farmers, livestock breeders, women's groups, technical agricultural and livestock services
Managing natural resources	<ul style="list-style-type: none"> → Preserving and regenerating vegetation → Refurbishing water resources and infrastructure → Desilting the lake → Increasing the lake's fish count → Efficiently channelling water during the winter season 	Local authorities, technical services, communities
Training and capacity building	<ul style="list-style-type: none"> → Training on the effects of climate change → Training young people in eco-citizenship → Implementing mitigation strategies for the negative effects of climate change → Training young people in sales techniques, and how to process and preserve local produce → Training in mediation and negotiation → Skillset training for girls and women → Revitalizing community structures (land commission, community early warning structure, local infrastructure management committee) → Developing mentoring programs for young girls and boys to encourage them take part in decision-making 	Training centres, NGOs, technical services, local and traditional authorities, young people, VSOs
Raising awareness and mobilizing young girls and boys	<ul style="list-style-type: none"> → Raising young people's awareness on the importance of their involvement in intensive production → Increasing literacy amongst girls and women → Building an entrepreneurial culture and spirit among young girls and boys → Organizing community actions → Sensitizing on behaviours to adopt in the event of animals wandering in the fields 	Local authorities, youth associations, NGOs/community associations

ACTIVITIES/ACTIONS	COMPONENTS	STAKEHOLDERS
Modernizing infrastructure and equipment	<ul style="list-style-type: none"> → Supporting the use of solar instead of electric machines → Modernizing the fishing industry → Renovating the fish farm 	Local authorities, fishermen, technical services
Security and surveillance	<ul style="list-style-type: none"> → Creating a local 'vigilance brigade' to protect and preserve the environment → Raising awareness around proper etiquette for lake usage 	Local authorities, environment, communities, youth organizations
Direct support for production activities	<ul style="list-style-type: none"> → Investing in fish feed → Planting seeds that are sensitive to climate change 	Fish farmers, technical services

5. Conclusion



The study provides an alarming picture of the effects of climate change and environmental degradation on rural communities in the Maradi region of Niger. Young people, especially girls and boys, are among the most affected by these climatic changes. The main impacts are the late onset of the rainy season, intense heat, drought and environmental degradation. These environmental changes have a critical impact on young people who struggle to find alternative economic opportunities in this context. This leads to rural exodus, migration and idleness, and makes them more vulnerable to recruitment by bandit groups operating in the area. Whilst the discussions did not reveal whether any young people in the commune have already joined bandit groups, the worsening situation certainly presents a strong incentive.

The impact on girls and women is even more severe. Their income-generating activities are linked to those of men, leaving them without their own means of subsistence. When men migrate, women are left with the heavy responsibility of caring for their families on limited resources. Increasingly, women themselves are joining the rural exodus and migrating in search of work—a trend that raises concerns within the community, as it weakens family bonds. Even if women often return with money, they also return with a new way of life and a desire to return for the most part.

Faced with these major challenges, coordinated action is needed to enable these vulnerable communities to overcome the devastating impacts of climate change on their livelihoods. Young people are already starting promising local efforts with the support of traditional leaders and local authorities, but persistent challenges call for strengthened adaptation and resilience measures. It is critical to involve all members of society in close collaboration with local authorities. Key actions include raising awareness, offering training, promoting climate-sensitive and sustainable agricultural and pastoral practices, preserving natural resources, and providing targeted support for young people, especially girls and boys, to enable them to pursue alternative and resilient livelihoods.

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Appendixes

APPENDIX 1 | Summary table of focus groups

FUNCTION	MEN	WOMEN	15-35	35 +	OBSERVATION
Farmers	28	0	28	0	4 focus groups of 7 people with young farmers aged 15 to 35 in the 5 target villages
Breeders	28	0	28	0	4 focus groups of 7 people with young livestock farmers aged between 15 and 35 in the 5 target villages
Fishermen	28	0	28	0	4 focus groups of 7 people with young farmers aged 15 to 35 in the 5 target villages
Beekeepers	7	0	7	0	A focus group with young beekeepers. Group made up of young people from the 5 target villages
Regular users	0	28	28	0	4 focus groups of 7 young girls and women using the lake (in connection with the lake's activities) aged between 15 and 35 in the 5 target villages
Young men	14	0	14	0	2 focus groups with young boys aged 15-35
Young women	0	7	7	0	1 focus group of young women aged 15-35
Total	105	35	140	0	
	140		140		

APPENDIX 2 | Summary table of individual interviews

FUNCTION	MEN	WOMEN	15-35	35 +	OBSERVATION
Traditional Chiefs	5	0	0	5	5 individual interviews with the traditional chiefs of the 5 target villages
Religious Leaders	5	0	0	5	5 individual interviews with religious leaders in the 5 target villages
Landowners	6	1	1	6	7 individual interviews with landowners around the lake in the 5 target villages
National Guard	1	0	0	1	1 individual interview with a National Guard Officer
Departmental Land Commission (CONFODEP*)	1	0	0	1	1 interview with a representative of the Madarounfa departmental land commission
Livestock Directorate	1	0	0	1	1 interview with the representative of the Departmental Livestock Directorate
Vulnerability Monitoring Observatory	1	0	0	1	1 interview with the Vulnerability Monitoring Representative
Gendarmerie	1	0	0	1	1 interview with a representative of the National Gendarmerie
Red Cross	1	0	0	1	1 interview with the Red Cross Representative
NGO Yau da Gobé	0	1	1	0	1 interview with the representative of the local NGO Yau da Gobé
Departmental Youth Council	1	0	1	0	1 interview with the President of the Local Youth Council
Environmental Ministry	1	0	0	1	1 interview with an Environmental Representative
Young Volunteers for the Environment	1	0	1	0	1 interview with the executive secretary of the Young Volunteers for the Environment Association
Youth Network Against Climate Change	1	0	0	1	1 interview with the Network Chairman
Total	26	2	4	24	
	28		28		