DEVELOPMENT OF CLIMATE RISK REGISTER FOR ADAMAWA STATE

FINAL REPORT

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Presented By
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INTRODUCTION

Climate change impacts on communities are nothing new. These impacts affect each individual, community, or region in unique and varying ways. Most communities in Northern Nigeria that rely primarily on environmental components for their livelihood and survival require tools to prioritize actions that can help them cope with or reduce the effects of climate change in their respective domains.

Adamawa state, located in the sahel region of Nigeria, is home to diverse ethnic groups with significant economic potentials. The people are notable for farming, fishing and herding. Established on August 27, 1991, the state was carved out of the defunct Gongola State. It shares borders with Borno State to the northeast, Gombe State to the east, Taraba State to the south, and Cameroon to the north and west. The state's landscape is diverse, encompassing savannahs, plateaus, and mountainous areas. The Benue River, one of Nigeria's major rivers, flows through the state, contributing to its agricultural fertility.

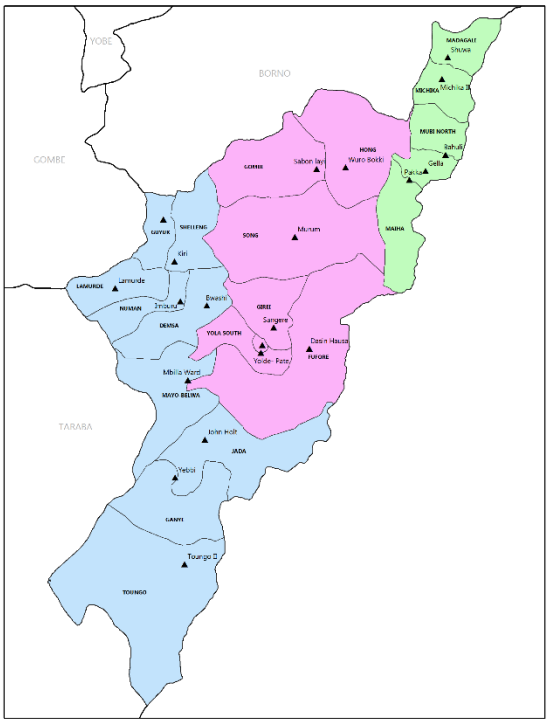


Figure 1. Map of Adamawa State Showing the Communities where CRR was Conducted

The major ethnic groups include the Fulani, Gude, Gbaya, Bachama, Bata, Higi, and Kilba.[1][2] This ethnic diversity enriches the cultural tapestry of the state, creating a harmonious coexistence of traditions and languages. The capital of Adamawa State is Yola, a city that serves as a melting pot for the various ethnic communities. Agriculture is the backbone of Adamawa State's economy, with the fertile soil supporting the

[1] Bleambo, Pete K, (1999). Languages in Adamawa. In *Language Endangerment and Language empowerment in Nigeria*: Theory and Reality. Vol. 1, edited by E. No Emenanjo and Peter K. Bleambo, 91-112. Aba: National Institute for Nigerian Languuages

[2] Fakuade, G., Gambo, M., & Bashir, A. (2003). Language shift from mother tongues towards fulfulde in Adamawa state, Nigeria: Causes and consequences. *Anthropological linguistics*, 296-315.

cultivation of crops such as maize, millet, yams, and groundnuts. Livestock farming, especially by the Fulani nomads, also plays a crucial role in the state's economy. Additionally, the state has untapped mineral resources, including limestone and granite, which have the potential to contribute significantly to its economic development.

Adamawa State boasts several landmarks that reflect its historical and cultural significance. Lamido's Palace in Yola, the capital, stands as a testament to the traditional architecture of the region. The Mubi Rock, a prominent natural formation, attracts tourists and serves as a symbol of the state's geological diversity. The Sukur Cultural Landscape, a UNESCO World Heritage site,[3] is another notable landmark, showcasing the unique cultural practices of the Sukur people.

Methodology for the Development of the Climate Risk Register

The climate risk register (CRR) methodology is a risk assessment tool, based on risk management designed to improve the resilience of the various levels of population to climate related hazards. A risk register highlights climate risks that have the highest likelihood and potential to have a significant impact on local communities resulting in wide-scale disruption. Community risk register identifies the risks that have the highest likelihood of happening in a community. Being aware of these and the consequences of these incidents will help communities to be prepared should such an incident occur.

Mobilization and Training of Community Activists

Community activists were identified and trained in a comprehensive training session to equip them with the necessary knowledge and skills in areas such as climate change, data collection methodologies, risk assessment techniques, and community engagement strategies.

Engagement of Community Stakeholders

Community activists visited communities to inform residents about the purpose and benefits of the Climate Risk Register (CRR), encourage participation, gather input, and organize community meetings for the CRR's development.

Climate Risk Register (CRR) Development Sessions

The deployed trained activists gathered data on climate-related risks in the community using the tools provided to gather information on the community's climate risks, assess them, and prioritize identified climate risks. This includes assessing the level of severity and likelihood of each risk. The entire process was carried out in a participatory manner, with community members identifying, prioritizing, and evaluating the severity and likelihood of the risks**.**

[3] Sham, A. (2023). Extension of Sukur Cultural Landscape in Nigeria to incorporate the 16 DGB sites on the Wandala Cultural Landscape in Cameroon as a serial transboundary World Heritage site. In *Managing Transnational UNESCO World Heritage Sites in Africa* (pp. 157-165). Cham: Springer International Publishing.

Handover of Climate Risk Registers to Communities

Climate risks and other findings were compiled into a Climate Risk Register document, which provides clear documentation of identified risks, prioritization, and recommended adaptation and mitigation actions. To ensure that the CRR is easily accessible to all community members, the document was handed to the leadership of each community on the spot. Meanwhile, the community CRR and local government CRR were combined into a comprehensive document to serve as the Adamawa State Climate Risk Register.

Implementation of Recommendations

A public presentation of the Adamawa State Climate Risk Register was held to bring community leaders and stakeholders together to develop action plans based on CRR recommendations, prioritize actions based on urgency and feasibility, and establish partnerships for long-term support for the recommended actions' implementation.

Figure 2: Climate Risk Register (CRR) Development Session at Bahuli Community, Mubi North LG

FINDINGS AND OBSERVATIONS FROM THE COMMUNITY CRR

This section presents summarized findings from the community climate risk register development conducted in the 21 local government areas of Adamawa state.

Climate Risk in the Communities

The communities identified four climate risks that affect them on average. Farmers, fishermen, and herders predominate in these communities. They identified climate risks that are particularly harmful to their source of income. Flooding, Drought, Pest Infestation, Heat Waves (Excessive Temperature), Storms, Dry Spells, Erosion, Deforestation, Desertification, and Erratic Rainfall Patterns are examples of such risks identified.

Flooding is the most prominently identified risk across all 21 local government areas. This was identified as a climate risk affecting 17 of the 21 communities visited. While they acknowledged that the causes were both natural and anthropogenic, they also suggested some ways to mitigate the risks. Constructions on waterways, deforestation, poor drainage systems, bush burning, waste dumping in drainages, and dam opening are some of the anthropogenic causes of flooding identified by the communities. Excessive evaporation due to high temperatures, excessive rainfall, dam overflows, high frequency of rainfall, and heavy rainfall are among the natural causes identified.

Current community coping strategies include using sandbags as embankments, community construction of drainages, clearing of drainages, providing a site for proper refuse disposal, temporary relocation from flood-prone areas, changing the direction of ploughing on the farm, planting of shrubs and trees, and community support to affected victims.

Climate Risk Definition

Flooding (Ambaliya)

Flooding is the overflow of water onto normally dry land, often caused by heavy rainfall, tropical storms, or the failure of dams or levees. It is a natural phenomenon that can have significant and sometimes devastating impacts on communities and the environment.

When rainfall or other factors exceed the capacity of rivers, or drainage systems to handle the water, it leads to the inundation of adjacent areas. Floods can vary in size and severity, ranging from localized and minor events to large-scale, catastrophic disasters. The impacts of flooding include damage to infrastructure, loss of property, displacement of people, disruption of transportation, and potential harm to human health.

Dry Spell (Fari)

Water Deficiency: Dry spells are marked by a significant reduction in the availability of water, whether it be in the form of rainfall, surface water, or groundwater. Dry spells can be triggered by natural climate variability, such long-term climate change. Anthropogenic factors, including over-extraction of water resources and land-use changes, can exacerbate drought conditions.

Pest infestation (Adaban kwari)

Pest infestation refers to the widespread and uncontrollable presence of pests in a particular area, causing damage to crops, property, or adversely affecting human health. Pests are organisms, usually insects, rodents, or microorganisms, that pose a threat to agriculture, forestry, households, and public health. The infestation occurs

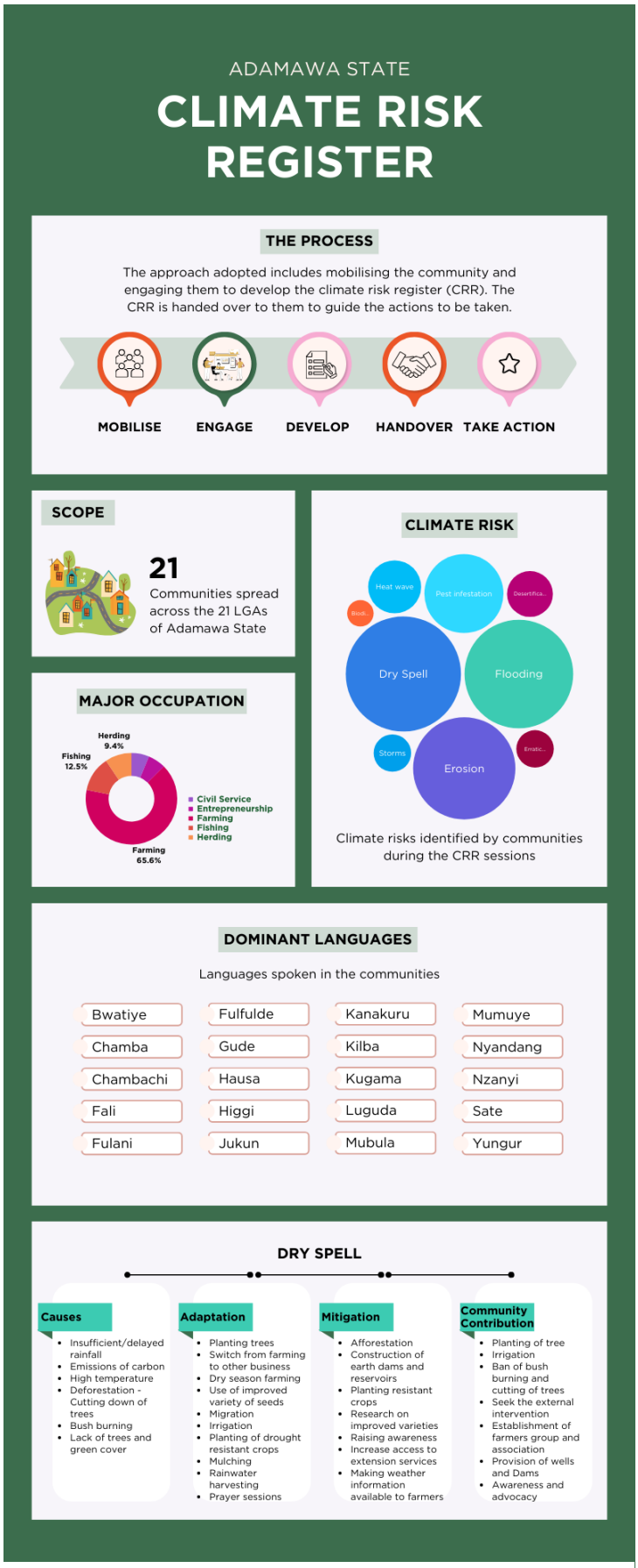


Figure 3: The overall summary of the community climate risk registers in Adamawa State and the biggest risk identified by the communities.

when these pests multiply rapidly and exceed the threshold where they can be controlled effectively.

Excessive temperature/Heatwave (Zafi mai yawa)

Increased temperature, often referred to as global warming or climate change, is the long-term rise in the Earth's average surface temperature. This phenomenon has been predominantly attributed to human activities, particularly the emission of greenhouse gases like carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) into the atmosphere.

Erosion

Erosion is a natural process involving the removal and transport of soil, rock, or other materials from one location to another by various agents such as water, wind, or gravity. It is a gradual and continuous process that can shape and modify the Earth's surface over time. Erosion occurs when external forces act on the Earth's surface, wearing away and transporting particles or materials from one place to another. Major erosion types within the communities includes; Water, Wind and Biological Erosion.

Some Coping Strategies by the Communities

- Afforestation, particularly the planting of windbreakers such as eucalyptus, neem, and masquerade trees
- Change of building styles and architectural designs
- Changes in dressing style
- Community collaboration in waterway cleaning and dredging
- Community members and relatives provide victims with shelter and other forms of assistance.
- Contour ploughing
- Crop rotation
- Dry season farming
- Early planting
- Irrigation (hand drill borehole)
- Making of heap and changing direction of ridges
- Mixed farming
- Mulching
- Planting of drought-resistant crops
- Planting of trees, special flowers, carpet grass and shrubs to reduce surface runoff
- Practicing zero tillage
- Rainwater harvesting
- Sandbags and Terraces
- Scarecrows (human-like statues or objects) are used on farms to scare away pests such as birds.
- Use of clay pots for water storage
- Use of improved variety of seeds

SPOTLIGHT ON COMMUNITIES

BAHULI

Local Government Area: Mubi North
Dominant Language: Fali
Major Occupation: Farming
Climate Risks Identified: Flooding and Erosion

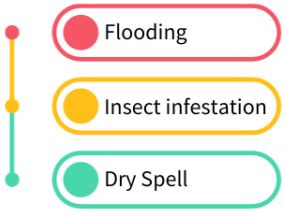
The Bahuli community has identified water-related climate risks such as flooding and erosion. This is partly due to their proximity to the river and mountainsides. They highlighted the community's need for a drainage system and afforestation as the lack of these increases their vulnerability to flooding. Also, the activities of illegal miners and deforestation activities frequently exacerbate this. The community's constant erosion and flooding have washed away the topsoil layer, resulting in poor performance of agricultural land and farm harvest.

Community members have been constructing temporary drainage lines to mitigate the effects of flooding, but a comprehensive drainage system is required. The community advocates the planting of more trees as they will act as windbreaks and slow the velocity of the water.

BWASHI

Local Government Area: Demsa
Dominant Language: Mubula
Major Occupation: Farming, Fishing, Herding
Climate Risks Identified: Flooding, Dry spell, and Insect Infestation

Members of the community identified erratic rainfall patterns and intensity as the primary source of the climate risk they face in their community. It is made worse by the practice of building houses along floodplains and waterways, which has been a long-standing practice among people, particularly those who need to build a shelter with limited resources. The continuous opening of upstream dams also contributes to their vulnerability to flooding.



Farmland, houses, plants, and water have been destroyed or contaminated as a result of the risk, resulting in hunger, poverty, sickness, and displacement. In the face of a dry spell, residents of the community practice water harvesting and storage, irrigation, pesticide

use on the farm, and the planting of drought-resistant plants.

It is believed that planting more trees in the community will mitigate the impact of climate change, and that an increase in climate education in the form of sensitisation and awareness is critical in ensuring the community's resilience.

DASIN HAUSA

Local Government Area: Fufore
Dominant Language: Hausa
Major Occupation: Farming
Climate Risks Identified: Flooding, Heatwave, Drought, Pest infestation, and storms

The community-identified causes of climate risk are interconnected and frequently result from a combination of human activities and natural processes. Human activities include construction in and around waterways, bush burning, and poor agricultural practices such as leaving farms unweeded and widespread tree felling. They identified rising temperatures and changing rainfall patterns as natural causes.

The following are the immediate consequences of climate risk in the community: farm and house destruction, food shortage, disease outbreak, low crop and animal yield, farmer-herder clashes, disruption in livelihood, and reduction in animal productivity. Displacement, poverty, hunger, impaired sources of livelihood, and disease outbreaks are among the consequences of the risks.

Meanwhile, the community has taken the following steps to cope with the challenges they face, such as, filling sacks to prevent flooding, construction of drainages to allow free flow of water, farming during the dry season, planting of crop varieties that mature early, pesticide application on farms, and improved storage of farm produce.

GELLA

Local Government Area: Mubi South
Dominant Language: Gude
Major Occupation: Farming
Climate Risks Identified: Dry Spell, Flooding and Erosion

This community identified the causes of the climate risk they face as anthropogenic, which include carbon emissions from fossil fuel combustion, deforestation, bush burning, overgrazing, unsustainable farming activities such as ploughing of soil. Large-scale tree felling, insufficient drainage lines, dumping of refuse along drainage lines, and building along waterways are the other causes identified.

As a result of the risk, they face crop drying, water shortages for animals and crops, food shortages, house destruction, and road deterioration. However, they practice irrigation, planting improved seed varieties, early planting, organic fertilizer use, bush fallowing, and crop rotation to cope with the impacts of climate change in the community. All as means to circumvent the impacts of climate change in their community. They also make suggestions for mitigation measures that can have a long-term impact on resolving climate issues in the community. Planting of trees, planting of grasses and shrubs, strict laws to prevent indiscriminate tree felling, excavation of soil, and construction in and around waterways are among the mitigation measures.

Figure 4: Participants at the Community CRR development at Gella, Mubi South LG.

CLIMATE RISKS IN REGIONAL DIVISIONS IN ADAMAWA STATE

The climate risk register was developed in four sample local government areas in each of Adamawa state's three senatorial districts. It brought together stakeholders from local government secretariats and communities to identify risks specific to their locality.

Adamawa North Senatorial District

Local Government Areas: Madagali, Maiha, Michika, Mubi North and Mubi South
Tribes: Bwata, Fali, Fulani, Godogodo, Gude, Gwoza, Hausa, Janyi, Kamwe (Higgi), Kanuri, Kilba, Marghi, Nzanyi
Traditional Institutions: District head, Village head and Ward head
Major Occupation: Farming
Significant Natural Resources: Cobalt, Game reserve, Gold, Graphite, Land, Madrid Trees, Monazite, Mountains, Precious Stones, Tin, Uranium, and Water
Climate Risks Identified: Flooding, Erosion, Dry Spell, Heatwave, Storms and Pest Infestation

Adamawa North Senatorial District is rich in natural resources, as evidenced by the area's unique landscapes of forests and hills. The district includes urban and rural areas, with various agricultural activities contributing to the local economy. The district's residents are primarily engaged in various livelihood activities, such as agriculture, trade, and other forms of economic endeavours. Among all of their activities, farming stood out.

However, climate change and security challenges have continued to impact the people and their livelihood activities. The people identify three major climate risks: flooding, erosion and dry spells. There has been records of hunger, diseases, displacement, loss of household income and loss of improtant ecosystem services due to climate change, especially in communities with little or resilience.

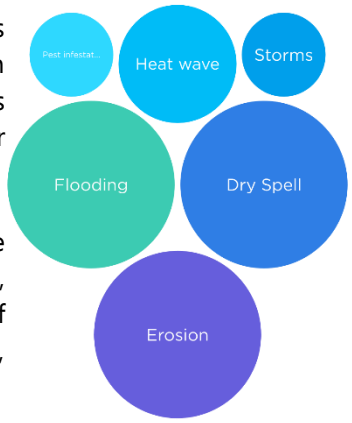


Figure 5: Climate Risks in Adamawa North Senatorial District

Adamawa Central Senatorial District

Local Government Areas: Fufore, Girei, Gombi, Hong, Song, Yola North, Yola South
Tribes: Bachama, Batta, Fulani, Fulfulde, Gudu, Hausa, Laka, Mboi, Mbula, Verre, Yungur
Traditional Institutions: Ditera, Lamido, Mai Angwa, Mai Jimila, Mboi, Song, Suktu, Uban doma, Waltadi, Zumo, District head, Village head, Ward head
Major Occupation: Business, Civil servants, Farming, Fishing, Herding, Hunting, Trading
Significant Natural Resources: Arable land, Forest reserve, Gypsum, Laterite, Manganese, Mountains, Precious stones, River Benue, Sphalerite, Tantalum, Trona, and Wetlands
Climate Risks Identified: Flooding, Heatwave, Dry Spell, Erosion, Storms and Pest Infestation

Adamawa Central Senatorial District is home to the state administrative headquarters. The River Benue runs through much of the area, thus making fishing is a popular practice among the locals. The region continues to see more urbanization than other districts in the state. Nonetheless, climate change impacts in the regions continue to be known ranging from high temperatures to disease outbreaks, crop failure, water scarcity, low crop yield, and a lack of income.

To meet the challenges, certain regions have implemented dry season farming, the use of synthetic pesticides, the planting of improved and resistant varieties, irrigation, and improved farming practices.

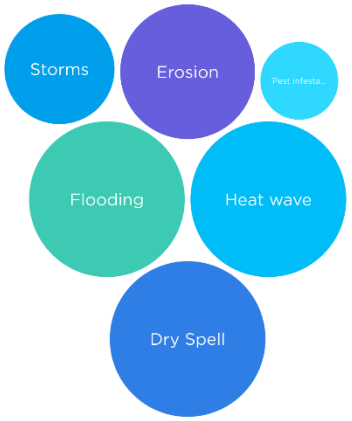


Figure 6: Climate Risks in Adamawa Central Senatorial District

Adamawa South Senatorial District

Local Government Areas: Demsa, Ganye, Guyuk, Jada, Mayo-Belwa, Numan, Shelleng, Toungo
Tribes: Bachama, Balli, Bandawa, Batta, Bille, Bwaza, Chamba, Fulani, Hausa, Jenjo, Kutin, Mbula, Mumuye, Nyadand, Yandang
Traditional Institutions: Bachama Traditional Council, Chamba, Danaba, Fulani, Hama-Batta, Jada, Kilbayo, Kojoli, Koma, Mapeo, Mayo Kalaye, Mbangan, Mbulo, Mumuye, Murum- Mbul, Nyibango, So'o, District Head, Village Head, Ward Head
Major Occupation: Business, Farming, Fishing, Herders, Hunting
Significant Natural Resources: Biotite, Diorites, Feldspar, Forest reserve, Gneisses, Gorodong pond, Granites, Nwambo Seed (food seasoning), Quartz, River Benue, River Gongola, Timber Trees
Climate Risks Identified: Dry Spell, Erosion, Heatwave, Pest Infestation, Flooding and Storms.

The Adamawa South senatorial district is most severely affected by the climate crisis in terms of livelihood and agricultural activities. Farmers and herders, who make up the majority of the population, have suffered greatly from crop destruction, poor harvests, animal malnutrition, and endangering situations brought on by climate change, which they reported is caused by both natural and man-made processes. n the meantime, district-wide communal efforts to lessen the impacts of climate change have been emphasized by communities within the district. In addition, the enforcement of current climate laws as well as the donation of land for the planting of trees are encouraged.

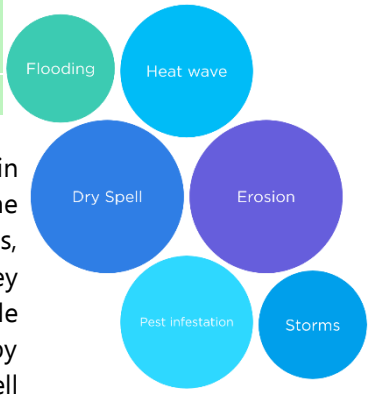


Figure 7: Climate Risks in Adamawa South Senatorial District

ADAMAWA STATE CLIMATE RISK REGISTER

S/N	Climate Risk	Risk Definition	Causes of Risk	Result of Risk	Impact	Risk Probability	Risk Level	Current Community Coping Strategies	Risk Mitigation Strategies	Community Contribution
1.	**Dry Spell**	A long period of no rain or a sudden and prolonged cessation of rain in the middle of a rainy season which results in increased competition for water for home and agricultural use and the visible drying of crops.	• Insufficient/delayed rainfall • Emissions of carbon • High temperature • Deforestation - Cutting down of trees • Bush burning • Lack of trees and green cover	• Destruction of soil and land infertility • Low food production • Poor agricultural and livestock output • Shortage of water for domestic and animal use • Crop failure • Insufficient pasture for livestock grazing • Wilting of crops • Dehydration • Pest outbreak	• Increase in cost of production • High cost of living • Poverty • Poor harvest • Death of plants and animals • Hunger and starvation • Malnutrition • Migration • Conflict	Almost Certain	Medium	• Planting trees and nurturing till maturity • Switch from farming to other business • Dry season farming • Early planting • Use of improved variety of seeds • Migration • Irrigation (hand drill borehole) • Planting of drought-resistant crops • Mulching • Rainwater harvesting • Use of improved crops that are drought resistant • Organise group prayer sessions	• Afforestation • Construction of earth dams and reservoirs to store water for use at critical stages • Planting drought resistant crops and trees. • Research on improved varieties • Raising awareness among community members on impact of deforestation and other activities of man that contribute to climate change • Increase access to extension services to educate farmers • Making weather information available to farmers at the grassroot early enough • Rainwater harvesting	• Planting of tree • Irrigation • Community will mobilize to enforce ban on bush burning and felling of trees • Community will seek the intervention from the federal, state government, INGOs and NGOs • Establishment of farmers group and association • Provision of wells and earth dams • Awareness and advocacy on the use of drought and disease resistant varieties • Provide useful and latest weather information to farmers • Community leaders will encourage local farmers to shift to dry season farming • Community members will raise awareness on climate smart agriculture
2.	**Erosion**	Washing away of the fertile top soil by rainwater and wind.	• Lack of green cover and trees • Heavy storm • Farming practices such as bush burning and the use of herbicide • Overgrazing • Construction on waterways • Deforestation • Excessive tractor use • Illegal mining activities	• Poor farm yield • Land and boundary disputes • Destruction of land, houses and roads • Trenches and deep gullies • Destruction of farmlands • Destruction of farm produce. • Blockage of drainage systems • Siltation of streams, ponds and rivers • Loss of soil fertility	• Hunger • Poverty • Displacement • Loss of life during land conflicts • Road vehicle accidents due to bad roads • Dry streams during the dry season • Low per capita income	Likely	Medium	• Sand filling • Planting of trees, special flowers, carpet grass and shrubs to reduce surface runoff • Sandbags and Terraces • Unblocking of drainages • Re-enforcement of building • Contour ploughing • Crop rotation • Mixed farming • Practicing zero tillage • Making of heap • Changing direction of ridges	• Planting of trees and cover crops • Ban bush burning • Regulated use of herbicides • Ban against illegal quarrying • Construction of drainages • Construction of embankments to control gully erosion. • Minimise grazing activities by creating ranches • Avoid deep ploughing • Re-establishment of cattle routes • Regulate use of chemical fertilizers and herbicides	• Community will raise awareness and sensitize Community members Community will intensify tree planting efforts by launching a tree planting campaign • Community leader will enforce ban against Bush burning and felling of trees • Planting trees • Cleaning of drainages • Communal work, building channels for water ways • Construction of local drainages • Planting of trees • Filling washed land with gravel

S/N	Climate Risk	Risk Definition	Causes of Risk	Result of Risk	Impact	Risk Probability	Risk Level	Current Community Coping Strategies	Risk Mitigation Strategies	Community Contribution
3.	**Flooding**	Excessive overflow of water onto a normally dry landscape, causing damage to farmlands, crops, and homes.	• Deforestation • Lack of adequate waterway • Waterway redirection • Illegal building construction along waterways • Building on natural drains • Dumping of refuse in natural drains • Excessive rainfall • Opening of dams • Siltation of river Benue, Njuwa and Chochi • Overflow from Lagdo dam	• Outbreak of diseases • Dilapidated road network • Destruction of farmlands • Loss of lives and properties • Death of livestock • Gullies • Displacement of humans and animals • Damage to stored crops	• Hunger, Poverty, and Death • Contamination of water bodies • There will be little or no harvest. • Sickness	Almost Certain	High	• Community Collaboration in waterway cleaning and dredging • Sandbags are used to protect farmlands. • Planting cover crops, grasses, and shrubs • Relocation/Migration to a hilly area • Terracing and contour building	• Construction of Dams • Environmental sanitation laws to clean drainages • Construction of drainages and good road network • Building and development control • Designation of a refuse dumping site • Dredging of river • Afforestation • Awareness • Implementation & enforcement of laws by State urban planning development agency	• Environmental sanitation • Sandbags to prevent heavy water • Safe agricultural practices • Communal laws to stop indiscriminate dumping of refuse • Community leaders will desist from selling lands situated on waterways or low-lying areas • Campaign to raise public awareness about the importance of following the laws of the land • Establishment of nurseries in LGA • Construction of drainages • Rendering help to one another • Land donation for tree planting
4.	**Heat wave**	A continued rise in atmospheric temperature, resulting in unusually hot weather.	• Desertification • Insufficient tree cover • Industrial activities • Emission of carbon from automobiles and machines • Over-population • Indiscriminate felling of trees • Bush burning	• Drying of Rivers • Reduced farm yield • Shortage of rainfall • Dehydration • Skin diseases e.g. CMS, skin rashes, meningitis • Change in skin pigmentation • Excessive sweating • Increased cases of blood pressure	• Diseases • Poverty • Famine • Intolerable living conditions • Extra resource burden for cooling • Increased risk of theft at night	Almost Certain	High	• Change of building styles and architectural designs • Changes in dressing style • Improve ventilation in the house • Sleeping outside in the open • Tree planting to provide shade • Drinking water frequently • Swimming • Use of clay pots for water storage	• Tree planting and raising awareness on the importance of afforestation • Enforce the law that banning bush burning and tree felling of trees • Use of climate-friendly building materials • Use of low-cost alternative source of energy • Change in building patterns	• Tree planting • Awareness/sensitization • Community members will embark on afforestation drive • Intensify campaign for the restoration of the ecosystem • Environmental education and awareness • Land donation for afforestation • Involvement of traditional institution • Afforestation • Raise nursery
5.	**Pests Outbreak**	A sudden rise in the population of insect pests, which occupy farmlands and destroy crops and animals.	• Dry spell • High Temperature • Foreign seeds and seedlings • Cutting down of trees • Bush burning • Poor waste management • Shortage of rainfall • Migratory birds (granivorous)	• Destruction of plants and crops • Dried pasture • Reduced farm yield • Loss of livestock • Outbreak of diseases • Bacterial, fungal infections on maize and guinea corn • Poor harvest • Destruction of stored Farm produce	• Hunger • Poverty • Starvation • Death of livestock and sometimes man • Malnutrition • Migration • High cost of living • Inflation	Likely	Medium	• Planting of improved and resistant varieties • Spraying of agrochemicals such as Otapiapia • Early planting • Use of gongs or sound bells • Scarecrows (human-like statues or objects) are used on farms to scare away pests such as birds.	• Planting of resistant varieties • Comprehensive weather information should be shared so that farmers can plan when and what to plant. • Mixed cropping • Seed treatment before planting • Planting of trees • Extension services be made accessible to farmers in rural and hard to reach areas	• Adoption of new innovations to combat pest outbreaks in the future. • Agrochemical awareness and the promotion of effective good cultural methods • The community will follow the ban on bush burning and tree felling • The community will provide local insect traps, the government should provide adequate insecticides, and the government should also recruit skilled extension agents to combat insect effects.
6.	**Windstorm**	A strong wind that blows dust and particles around with little or no rain and has the potential to destroy property.	• Deforestation • Bush burning • Land clearing for agricultural or construction purposes	• Deaths and property destruction • Crop destruction due to eroded topsoil • Electricity power line destruction • Bodily harm such as eye diseases leading to sight impairments	• Hardship • Poverty • Loss of farm leading to hunger • Displacement • Sight impairment	Likely	Medium	• Patterns of construction are changing • Afforestation, particularly the planting of windbreakers such as eucalyptus, neem, and masquerade trees • Community members and relatives provide victims with shelter and other forms of assistance.	• Afforestation (the planting of indigenous tree species such as black plum, Shea butter, tamarind, and Parkia biglobosa, as well as exotic species such as black currant and umbrella tree) • Alternative energy for cooking • Awareness • Installation of shelter belts • Ban the burning of trees. • Change the architectural and roofing styles.	• Environmental education and awareness • Raise nurseries • Community leaders will mobilize residents to plant trees that serve as windbreakers. • Community leaders will enforce the prohibition on bush burning.

OPPORTUNITIES FROM THE CRR

Beyond identifying and documenting climate risks, the Climate Risk Register is positioned as a key resource for the development of adaptive strategies, policy formulation, and education initiatives in Adamawa state.

Opportunities

Adaptation and Resilience in Adamawa State:

The people of Adamawa state have demonstrated the potential to adapt and develop resilience against the impacts of climate change, as indicated by the information contained in the Climate Risk Register. This include documented instances of successful adaptation strategies and resilience-building efforts within the communities in the state.

Scalable Nature of Indigenous Knowledge:

The CRR underscores the scalable nature of indigenous knowledge, indicating that traditional practices and local wisdom can be expanded to address broader climate risks. This recognizes the value of incorporating local knowledge systems into climate change mitigation and adaptation plans.

Figure 8: Facilitation of the CRR in Girei LGA, Adamawa State

Influence on Policy Formulation:

With the Climate Risk Register providing valuable insights into the specific climate risks faced by Adamawa state, the recommendations derived from this register can significantly influence the formulation of policies. Policymakers can use the register's data to tailor strategies that effectively address the identified risks and vulnerabilities.

Foundational Instrument for Climate Education:

The CRR can serve as a foundational instrument for climate education by providing a comprehensive understanding of the climate risks specific to Adamawa state. This knowledge can be disseminated across different sectors of society, contributing to a better-informed populace and fostering a collective understanding of the importance of addressing climate-related challenges.

Recommendations

These recommendation will collectively address various aspects of climate resilience, sustainable development, and community engagement needed in Adamawa State for a holistic approach to climate action.

Infrastructure for Climate Resilience:

1. **Expansion of Sustainable Infrastructure**: There is the need for government and private sectors to develop and invest in infrastructure that enhances climate resilience, including sustainable water management systems, flood barriers, and eco-friendly development planning.
2. **Integration of Climate-Resilient Technologies**: Incorporate innovative technologies such as green infrastructure, renewable energy, and resilient building designs into development projects especially in the rural communities.

Authority Dedication to Climate Action:

3. **Public Commitment and Awareness**: Authorities should not only publicly express commitment to climate action, but also implement and create monitoring mechanisms for climate action projects like reforestation across the state.
4. **Transparency and Accountability**: Establish mechanisms for transparent reporting and accountability in implementing climate action initiatives, ensuring that promises translate into tangible results.

Climate-Smart Training for All Social Classes:

5. **Inclusive Training Programs**: Government, CSOs and private sectors should develop training programs accessible to people from all social classes, emphasizing climate-smart agriculture, sustainable resource management, and eco-friendly practices.
6. **Partnerships with Local Governments**: Collaborate with local governments to integrate climate change education as part of their estension services to foster a culture of environmental responsibility.

Enforcement of Climate-Related Laws:

7. **Stringent Regulatory Measures**: Strengthen and enforce laws related to carbon emission reduction, sustainable resource management, and climate change mitigation.
8. **Incentives for Compliance**: Provide incentives for businesses, communities and individuals adopting sustainable practices, encouraging widespread adherence to climate-related regulations.

Continued Research into Indigenous Climate Solutions:

9. **Support for Indigenous Knowledge**: Allocate resources for research that explores and scales indigenous climate solutions, recognizing the valuable insights and practices of local communities.
10. **Partnerships with Indigenous Communities**: Foster collaborations between research institutions and indigenous communities to ensure that their knowledge is integrated into broader climate strategies.

Protection of Natural Resources:

11. **Establishment of Protected Areas**: Designate and protect critical natural resources, such as biodiversity hotspots and water catchment areas, through the creation of protected areas and conservation initiatives.
12. **Community Engagement in Conservation**: Involve local communities in the protection and sustainable use of natural resources, recognizing their role as stewards of the environment.

Establishment of Community Climate Committees:

13. **Localized Climate Information Centers**: Establish community climate committees in communities across the local government areas to disseminate climate information, facilitate community-driven initiatives, and provide a platform for sharing best practices.
14. **Community-Based Adaptation Programmes**: They can also initiate and Implement community-led adaptation programs, ensuring that interventions are tailored to the specific needs and vulnerabilities of each locality.

ACTION PLAN FROM STAKEHOLDERS

At the public presentation of the Adamawa State Climate Risk Register, the action plan was developed with input from stakeholders from communities, local government secretariats, state ministries, and the state House of Assembly.

- Follow-up on community contributions by establishing self-care groups in communities
- Strengthen government agencies' capacity to develop state risk management policies and integrate risk management into other policies.
- Establish a structural framework to hold the federal government accountable for the ecological funds allocated to Adamawa state.
- Awareness creation on climate change in affected communities and establishment of school environmental clubs
- Mobilize local government climate change risk registers to build nurseries for increased afforestation.
- Engage the media and other communication platforms, such as social media, to raise awareness of climate risk and mitigation strategies, and collaborate with the Ministry of Information to reach a larger audience.
- Academia should be involved in managing indigenous knowledge and conducting research on climate change adaptation and mitigation.
- The relationship between local government climate change Desk Officers and traditional institutions should be established for collaboration on climate solutions.
- Promulgation of a law prohibiting the sale of waterway lands
- Train locals in climate adaptation techniques such as using fuel-efficient cooking stoves.
- Create a pressure movement and increase their capacity to ensure that the Dasin Hausa Dam is completed by the appropriate authority.
- Climate issues in the state should be addressed through interministerial collaboration.

Annexes

- Photo gallery of the development of the community climate risk registers https://drive.google.com/drive/folders/1diZxz4KrAWFx8oP1mh93hlNZvtHkSMGv?usp=sharing

- Photographs of Climate Risk Registers at the community and local government levels https://drive.google.com/drive/folders/1yypz1pxj6ELVfo_01vTMKhM1RlPbk8GG?usp=sharing

- Climate Risk Registers https://drive.google.com/drive/folders/113D3g3_qjNhTGSFEURj-mdEqvfkZH600?usp=sharing