GULF OF GUINEA NORTHERN REGIONS SOCIAL COHESION (SOCO) PROJECT

Climate Resiliency in Northern Ghana Policy Brief

Title: Climate-Proofing Northern Ghana's Future: Investing in Resilient Livelihoods and Infrastructure

November 2025

Prepared by: National Development Planning Commission (NDPC)

Executive Summary

Northern Ghana is home to about 5.5 million people, and roughly half of Ghana's food production is now one of the country's most climate-exposed regions. It has a single rainy season, rising temperatures (about 0.04°C per year), and increasingly erratic rainfall. Agriculture is almost entirely rain-fed, with over 97% of households engaged in crop farming, making livelihoods highly sensitive to droughts, floods, and bushfires.

This policy brief draws on the SOCO Project Climate Resilience Scoping Study in 48 districts across the five northern regions and Oti, using mixed methods, including interviews with 210 residents and geospatial analysis. The study finds that drought, bushfires, and floods are the dominant climate hazards, with drought alone accounting for nearly 40% of reported issues. In two sample districts, there were over 20 drought years between 1981 and 2019, and a three-month drought in 2024 cut yields by almost 50%. Recurrent Bagre Dam-related floods have displaced hundreds of thousands of people and destroyed tens of thousands of farms, while bushfires, which account for around 30% of wildfires nationally, can cut crop yields by up to 40% and accelerate land degradation.

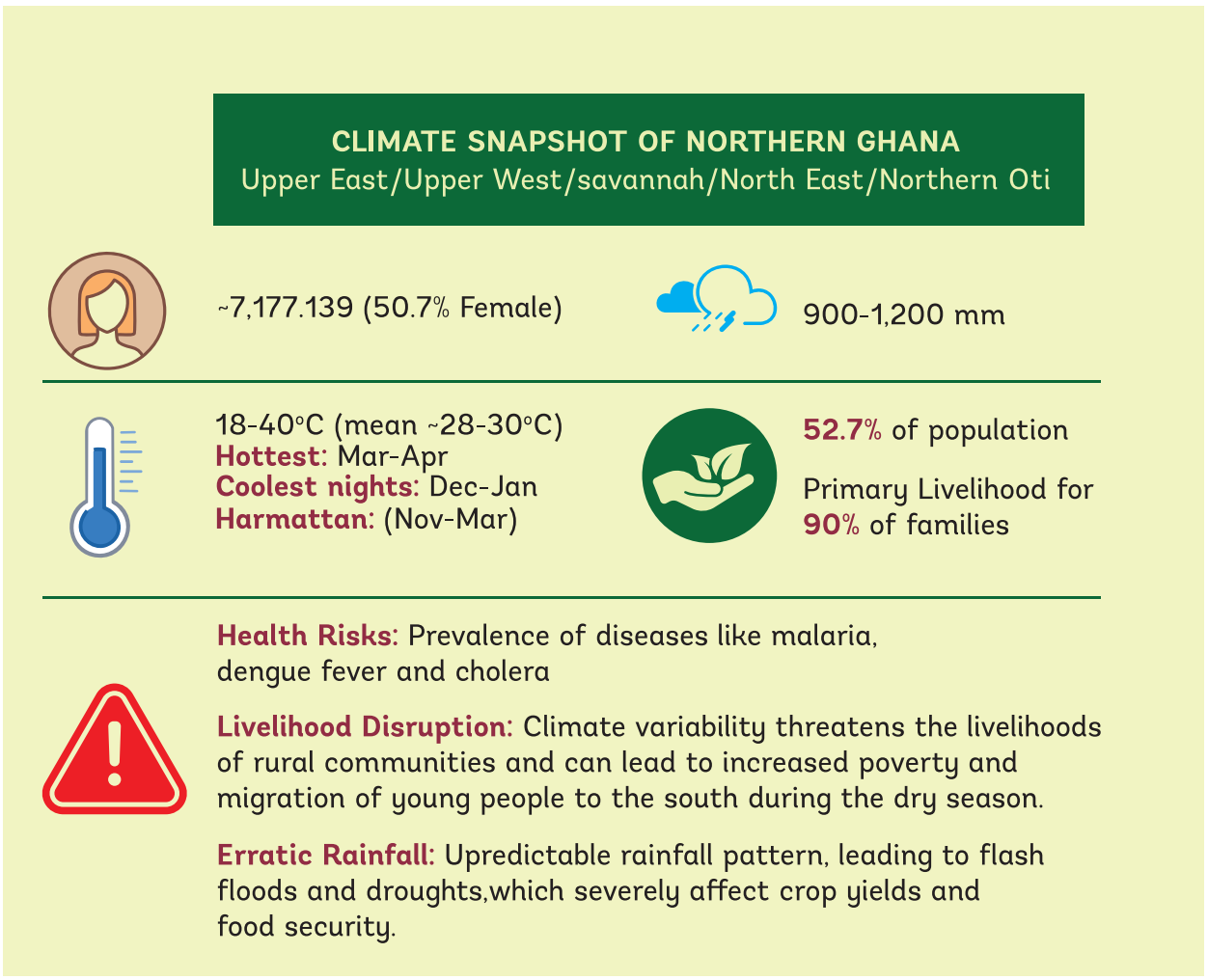
Despite a strong policy and institutional framework, including the National Climate Change Policy, NAP, NDCs, NDA, NADMO, and multiple donor-funded projects, current action remains fragmented and often short-term. This Policy Brief calls for a climate-resilient development compact for Northern Ghana: mandatory climate risk screening for major investments, scaled climate-smart agriculture and ecosystem restoration, and climate-proof infrastructure and early-warning systems, anchored in the SOCO Project. This approach protects a critical food basket, reduces poverty and migration pressures, and safeguards public investment from the escalating impacts of climate change.

1. The Development Challenge

Northern Ghana's semi-arid climate, with one short rainy season delivering 800–1,100 mm of rainfall and long, hot, dry periods reaching 35–40°C, was always challenging. Climate change is turning this into a structural brake on growth. Warming trends, delayed rains, more frequent dry spells, and intense downpours are already straining food systems, water resources, and infrastructure.

The 2024 three-month drought cut crop yields by nearly 50%, jeopardising food security and incomes in a region where agriculture is the primary livelihood for about 90% of families, as illustrated in the climate snapshot graphic. Recurrent Bagre Dam-related floods in 1999, 2007, 2015, 2018, 2023, and 2024 have repeatedly displaced communities, destroyed farms and homes, damaged roads and bridges, and imposed heavy fiscal costs on disaster response. Bushfires and land degradation further erode soil fertility, reduce yields, and deepen rural poverty.

Figure 1: Climate Snapshot of Northern Ghana



Source: Culled from SOCO Project Climate Resilience Scoping Study (2024)

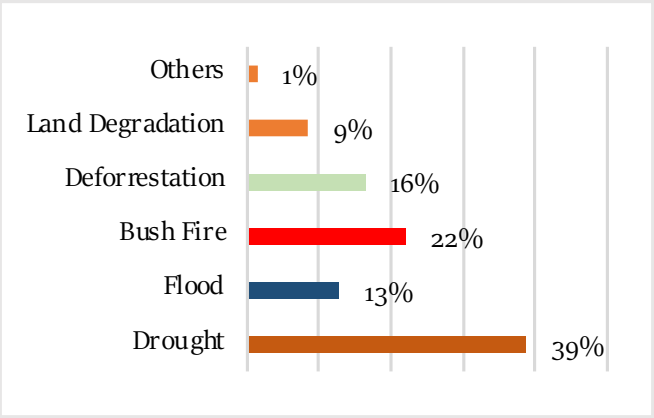
Projections to 2080 suggest minimum temperatures could rise by 0.5–2.5°C and maximums by 1–2°C, with rainfall remaining erratic. If Northern Ghana's food system becomes chronically unreliable, Ghana faces lower national growth, higher food import bills, rising rural–urban and south–north disparities, increased migration, and heightened conflict risks over land and water. The cost of inaction is therefore not only local hardship; it is long-term development stagnation and a direct threat to Ghana's goals of poverty reduction and shared prosperity.

2. Key Findings from the SOCO Climate Resilience Study

2.1. Climate hazards are frequent, overlapping, and economically damaging.

Field data show drought (39%), bushfires (22%), and floods (16%) as the leading climate issues reported by communities.

Figure 2: Share of reported climate issues by type (drought, flood, bushfire, deforestation, land degradation

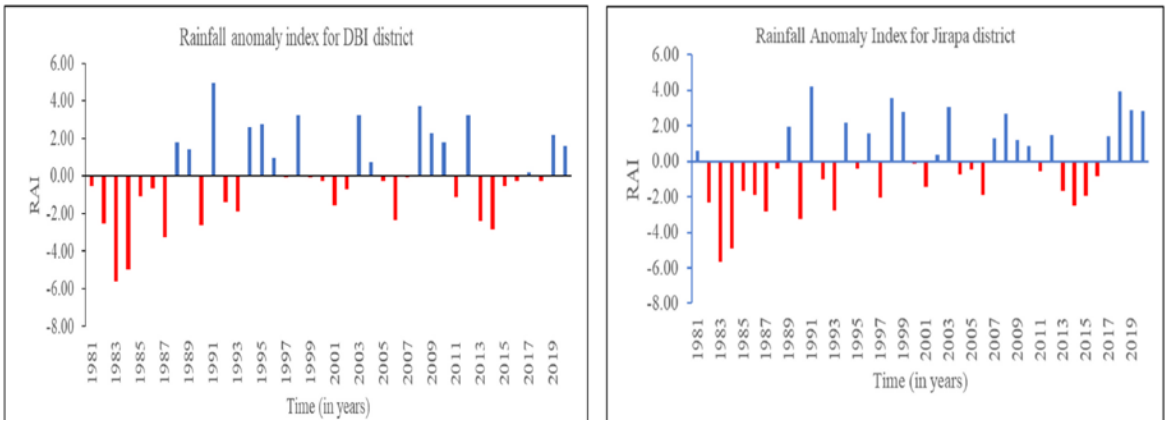


Source: SOCO Project Climate Resilience Study, 2024

2.2. Drought risk is now chronic, not occasional.

Rainfall anomaly analysis for two districts shows 21–22 drought years between 1981 and 2019. The 2024 drought reduced yields by almost 50%, threatening household food stocks, incomes, and nutrition.

Figure 3: Rainfall Anomaly Index for Jirapa and DBI, 1981–2019



Source: Kpenekuu et al., 2024

2.3. Floods are recurrent, cross-border, and fiscally costly.

Major flood events (1999, 2007, 2015, 2018, 2023, 2024) have affected hundreds of thousands of people, destroyed tens of thousands of farms and houses, and required large emergency outlays.

Table 1: Major flood events in Northern Ghana

Year	Event (Northern Ghana)	Effects (People & Farms)	Development Impact
1999	First major "Northern Floods"	≈300,000 people affected; damages recorded in multiple regions	Exposed systemic vulnerability along the White Volta
2007	Northern Floods (Bagre spillage + heavy rains)	307,127 people affected; ≈12,000 ha of farmland destroyed	Large shock to food production and rural incomes
2015	Bawku West floods	1,200 farmers affected; >650 ha farmland submerged	Localised but acute livelihood disruption
2017	Bagre spillage floods	At least 2 deaths; displacement reported (no consolidated data)	Continued unmanaged transboundary flood risk
2018	Operation Thunderbolt (Bagre-related floods)	81,532 people; 17 deaths; 10,676 houses; 75,607 farms damaged	One of the worst recent events: large-scale asset loss
2023	Kpandai floods	>2,000 residents displaced; 43 communities submerged	Shows expanding flood footprint beyond traditional hotspots
2024	Bagre spillage impacts along White Volta (Kubore)	Communities and farmlands affected (no consolidated figures)	Confirms that uncoordinated dam releases remain a major risk

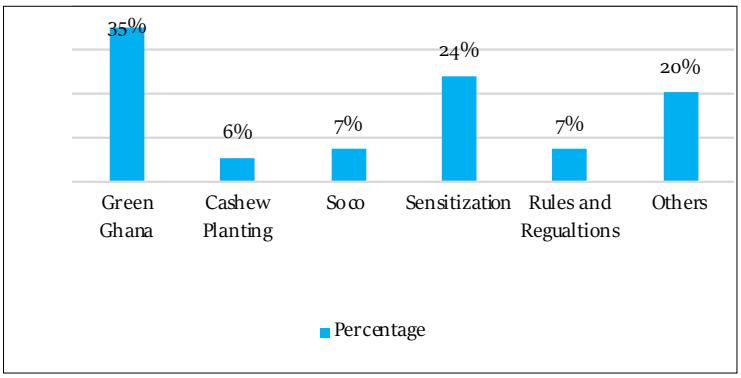
Source: NDPC's compilation based on data from the National Disaster Management Organisation (NADMO); Ghana Statistical Service, *Compendium of Environment Statistics of Ghana, 2019*; Ministry of Finance, *Budget Statement and Economic Policy of the Government of Ghana, 2019*; and NADMO district assessments reported in official media (1999–2024).

2.4. Bushfires and land degradation undermine long-term productivity.

Bushfires account for about 30% of wildfires nationally and can reduce crop yields by up to 40%, while driving biodiversity loss, farmer–herder conflict, and respiratory health risks.

Policy frameworks are strong on paper but fragmented in practice. Ghana has a dense climate governance architecture NCCP, NAP, NDCs, NDA Act, NADMO Act, forestry and water laws, and decentralisation frameworks—which all recognise Northern Ghana as a climate hotspot and call for climate-smart agriculture, disaster risk reduction, and ecosystem restoration. Yet implementation remains projectised and siloed, with limited integration into local investment decisions.

Figure 4: Distribution of reported climate resilience initiatives



Source: SoCo Project Climate Resilience Study, 2024

2.5. Existing initiatives are promising but uneven and often short-lived.

The Green Ghana Initiative is the most visible resilience activity reported by communities (35%), followed by rules and regulations enforcement, sensitisation, and some cashew planting and SOCO-related activities. Numerous projects (RING, REACH, USAID, MOAP, SRMP, GROW, WLE, FAO, GEF/EPA, NRGP) and stakeholders (SARI, IUCN, NDA, Ghana Meteorological Agency (GMet), Rainforest Alliance) are active, but their efforts are not consistently coordinated or scaled through a common framework.

3. Policy Options

3.1. Scenario A: The Status Quo (Fragmented Climate action and rising losses)

Northern Ghana continues to rely on scattered projects (tree-planting days, isolated Climate-Smart Agriculture (CSA) Project pilots, ad hoc flood response) and on weak cross-border coordination for Bagre Dam releases. Climate risk assessments are not systematically applied to significant investments; local planning and budgeting treat climate shocks as exceptional rather than structural.

The consequences of letting the status quo persist include recurrent drought and flood shocks keep eroding harvests, rural incomes, and assets, driving up poverty, food insecurity, and migration; public and donor funds repeatedly go into emergency relief and rehabilitation rather than long-term risk reduction; and productivity in the part of the country that supplies nearly half of Ghana's food stagnates or declines, dampening national growth.

3.2. Scenario B: Incremental Change (Scaling Projects without System Change)

Government and partners increase funding for existing programmes, more Green Ghana seedlings, more CSA training, additional water points, expanded safety nets without embedding climate risk into core investment and planning systems or significantly upgrading early warning and resilient infrastructure.

The consequences of using this scenario include improved local resilience in some communities, farmers adopting better practices, and some landscapes being restored. However, gains are uneven and vulnerable to major shocks; infrastructure remains exposed to flood and heat damage, and Bagre-related flood risks persist. Development may remain project-dependent, with limited leverage on macro-level poverty and shared prosperity.

3.3. Scenario C: Recommended Innovation (Climate-Resilient Development Compact for Northern Ghana)

This scenario proposes a climate-resilient development compact, [1]anchored in the SOCO Project and national climate frameworks, built around three shifts.

1. Move from ad-hoc to mandatory climate risk management on policies, plans, programmes and projects.

All major public investments in Northern Ghana (roads, dams, schools, health facilities,

1 This is a strategic agreement or framework, often involving governments and international partners, to systematically integrate climate change considerations (both mitigation and adaptation) into national and local development planning, policies, and investment decisions.

markets, etc) must undergo climate risk assessments and are designed for drought and flood resilience, as reflected in the SOCO Project design. A good practice is the Strategic Environmental Assessment (SEA) process conducted by the SOCO Project for yet-to-be-constructed physical projects, as required by the World Bank.2

2. Modify standalone pilots to integrate climate-smart livelihoods considerations

Climate-smart agriculture (drought-tolerant crops, small-scale irrigation, conservation agriculture, etc) should be reflected and mainstreamed with ecosystem restoration (riparian buffers, reforestation) and adaptive livelihoods (agro-processing, renewable energy services) at scale.

3. A shift from reactive response to anticipatory systems.

Update and, where necessary, establish ICT-based early warning and disaster preparedness with NADMO and GMet, and formalise Ghana–Burkina Faso cooperation on Bagre Dam spillages, reduce human and economic losses incurred from perennial floods and annual bushfires. This shift should be extended to Côte d'Ivoire and Togo, which share water boundaries (the Black Volta, the Volta River and the Todzie-Aka basins, respectively) with Ghana.

The expected outcomes of accepting this scenario for implementation include;

- Public and private investments are better protected, agricultural productivity stabilises and grows, and long-term poverty risk falls.
- Northern Ghana becomes a resilient growth pole instead of a recurrent emergency hotspot.

2 https://documents1.worldbank.org/curated/en/922351468139198880/pdf/379530ESN140SEA.pdf

4. Recommendations

4.1. The Ministry of Finance, the Ministry of Works, Housing and Water Resources, the Ministry of Local Government Chieftaincy and Religious Affairs (MLGCRA) and NDPC should make Climate Risk Assessment mandatory and linked to budget financing.

The Ministry of Finance, in collaboration with NDPC, and other MDAs should:

- Require climate risk assessments for all major public investments in the six northern and Oti regions, as envisaged in the climate-sensitive governance recommendations.
- Establish a dedicated "Northern Climate Resilience Window" in the public investment programme, prioritising projects that integrate drought and flood resilience, CSA, and ecosystem restoration.
- Use climate risk and resilience indicators to guide access to concessional and climate finance

4.2. The MLGCRA, NDA, and MMDAs should integrate Climate Resilience into Local Planning and SOCO Delivery in line with the Planning Guidelines (2026 – 2029) issued by the NDPC.3

The Ministry of Local Government, the Northern Development Authority, and District Assemblies should:

1. Embed climate-smart agriculture, ecosystem restoration, and resilient infrastructure as core priorities in District Medium-Term Development Plans, using the six-pillar framework for SOCO delivery (governance, community ownership, livelihoods, climate integration, MEL, and social cohesion).

2. Establish SOCO climate desks in all 48 participating MMDAs to coordinate stakeholders (Forestry, Agriculture, NADMO, EPA, NGOs) and track resilience indicators such as yield stability, tree survival, and flood damage avoided.

3. Allocate a fixed share of local and project resources to community-driven adaptation (water harvesting, small dams, fire management, land restoration).

3 https://ndpc.gov.gh/media/Rev._2026-2029_Planning_Guidelines_for_MDAs_RCCs__MMDAs.pdf

4.3.Ministry of Food and Agriculture (MoFA), Forestry Commission, NADMO, GMet and Development Partners: Scale Climate-Smart Livelihoods, Early Warning, and Ecosystem Protection

Sector ministries and partners should:

- Scale climate-smart agriculture packages (drought-tolerant varieties, small-scale irrigation, conservation farming) across SOCO districts, building on proven CSA and RING/REACH/NRGP experiences.
- Reorient Green Ghana in the north toward agroforestry and native, economically valuable species, with financed after-care and livelihood incentives to raise tree survival rates.
- Deploy community-based early warning systems and disaster preparedness with NADMO and GMet for floods and bushfires, coupled with investments in flood-resilient roads, bridges, and water systems.

5. Conclusion

Investing now in a climate-resilient development compact for Northern Ghana will protect a national food basket, safeguard critical infrastructure, and create more stable incomes for millions of poor and vulnerable households. The return on this investment is a future where climate shocks no longer derail growth and public spending, but instead catalyse a transition to resilient, inclusive, and shared prosperity across Ghana.