



Policy Brief: Climate Risk Analysis for Identifying and Weighing Adaptation Strategies in Burkina Faso's Agricultural Sector

Climatic Changes

	Depending on the emissions scenario, temperatures in Burkina Faso are projected to rise between 0.9 °C and 1.3 °C by 2050. Further increases until the end of this century will occur with continuously high future emissions. Extreme temperature events will increase under both emissions scenarios (see Figure 1).
	Precipitation trends are uncertain but an increase in rainfall amounts and extreme rainfall events are projected. The year-to-year variability in rainfall amounts as well as the onset, offset, and duration of the rainy season will remain high (see Figure 2).
	The largest rivers of Burkina Faso , the Black Volta (Mouhoun) and the White Volta (Nakambé), are projected to carry 18–30 % more annual discharge until 2040. Groundwater recharge will increase mainly under the high emissions scenario.

The study provides a detailed assessment of **projected climate parameters and related impacts on agriculture and livestock under different climate change scenarios** (called Representative Concentration Pathways (RCPs) and Shared Socioeconomic Pathways (SSPs)). SSP1-RCP2.6 represents a low emissions scenario that aims to keep global warming likely below 2 °C above pre-industrial temperatures; SSP3-RCP7.0 represents the high emissions scenario built upon the assumption of continuously high future GHG emissions.

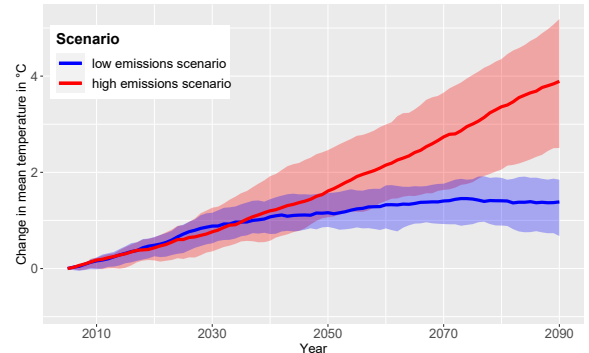


Figure 1: 21-year running mean of change in mean annual temperature in Burkina Faso.

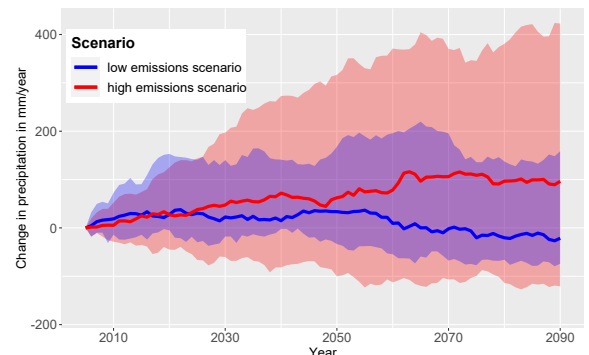


Figure 2: 21-year running mean of change in mean annual rainfall sum in Burkina Faso.

Impacts on Agriculture

Crop suitability will shift towards the south of Burkina Faso due to climate change, with more severe shifts under the high emissions scenario. More specifically, the following climate change impacts on agriculture are projected:

	Under current climatic conditions, more than half of the country's territory is considered suitable for sorghum production. Sorghum yields will increase in a few northern regions (Sahel, Nord, and Centre-Nord) and decrease in the south (Cascades, Haut-Bassins, and Sud-Ouest).
	Today, 60.9 % of Burkina Faso is moderately to optimally suitable for millet production , especially in the southern part of the country. Areas will remain largely suitable for millet production under climate change.

	Only a fifth of Burkina Faso is optimally suitable for maize production , mainly in the south-western and the central-southern parts of the country. Under changing climatic conditions, this will remain largely unchanged .
	Currently, areas in the southern and western parts of the country are suitable for cowpea production. Relatively high net losses in cowpea suitability are expected throughout the century under both emissions scenarios.

Currently, grazing potentials are the highest in the Cascades Region, decreasing towards the north-east following the decreasing precipitation gradient across Burkina Faso. The lowest potentials are found in the Sahel region. With climate change, overall **grazing potentials for livestock will decrease in Burkina Faso** over the course of the century under both emissions scenarios.

Key Recommendations

Climate change impacts will vary across the country. Adaptation strategies should be context-specific and take into consideration those location-specific differences. Well-designed adaptation strategies can **reduce yield losses** induced by climate change. In addition, they can have various **positive economic, social and environmental co-benefits** and **can contribute to combating land degradation**.

The following adaptation strategies carry the potential to mitigate the projected climate change impacts on agriculture:



Climate Information Services (CIS) can help farmers make informed decisions and thereby raise yields with little additional efforts. CIS represent a highly beneficial adaptation strategy with a rather small-scale investment at farm level and a positive return for farmers. Capacities of meteorological hydrological agencies and agro-met agencies need to be strengthened to deliver timely and actionable advice targeted to farmers' needs.



Irrigation has the potential to mitigate climate risks in Burkina Faso as well as to help diversify diets and ensure food security. Yet, in order to avoid over-exploitation of already scarce water resources, raising awareness about water-saving irrigation management is crucial to ensure a long-term responsible use of natural resources. Low-cost irrigation options with low maintenance requirements that are carefully selected based on the local context, are therefore recommended across Burkina Faso.



Integrated Soil Fertility Management (ISFM) includes various traditional practices that hold great potential for climate change adaptation with various co-benefits. To promote the uptake of ISFM, policies towards sustainable land use intensification as well as the rehabilitation of degraded soils and the necessary mechanisms to implement and evaluate these, are recommended.



Improved crop varieties present a high risk-mitigation potential and high cost-effectiveness. Institutional support is needed to increase availability and access to quality seeds, as well as knowledge on their use to increase adoption by smallholder farmers.

General recommendations

In addition to recommendations for the specific four adaptation strategies, some general recommendations regarding adaptation in Burkina Faso can be given:

- Carefully assessed **combinations of multiple adaptation strategies** can be a good option to tap into the merits of more than one strategy.
- Planning for adaptation should always be **inclusive, participatory and location-specific**, as different areas and farmer groups in Burkina Faso will be impacted by climate change differently.
- Policymakers should pay special attention to **conflict dynamics** and the needs of marginalized communities in agriculture.
- Transhumance infrastructure is key to elevating much of the underlying intercommunal tensions. Farmers need support with initial investments until the adaptation strategy becomes profitable.
- **Smart adaptation incentives** built around land tenure systems, credit accessibility and market access are key to induce the uptake of suitable adaptation strategies.
- **Trainings and extension services** should be provided to farmers to support them with the implementation of the adaptation strategies.
- Improved soil and water management should be mainstreamed into all adaptation activities to ensure a **sustainable use of resources and leverage climate change mitigation co-benefits**.

The policy brief is based on the Scientific Report "Climate Risk Analysis for Identifying and Weighing Adaptation Strategies in Burkina Faso's Agricultural Sector" prepared by the **Potsdam Institute for Climate Impact Research (PIK)** for the **Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)** GmbH on behalf of the **German Federal Ministry for Economic Cooperation and Development (BMZ)**.

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