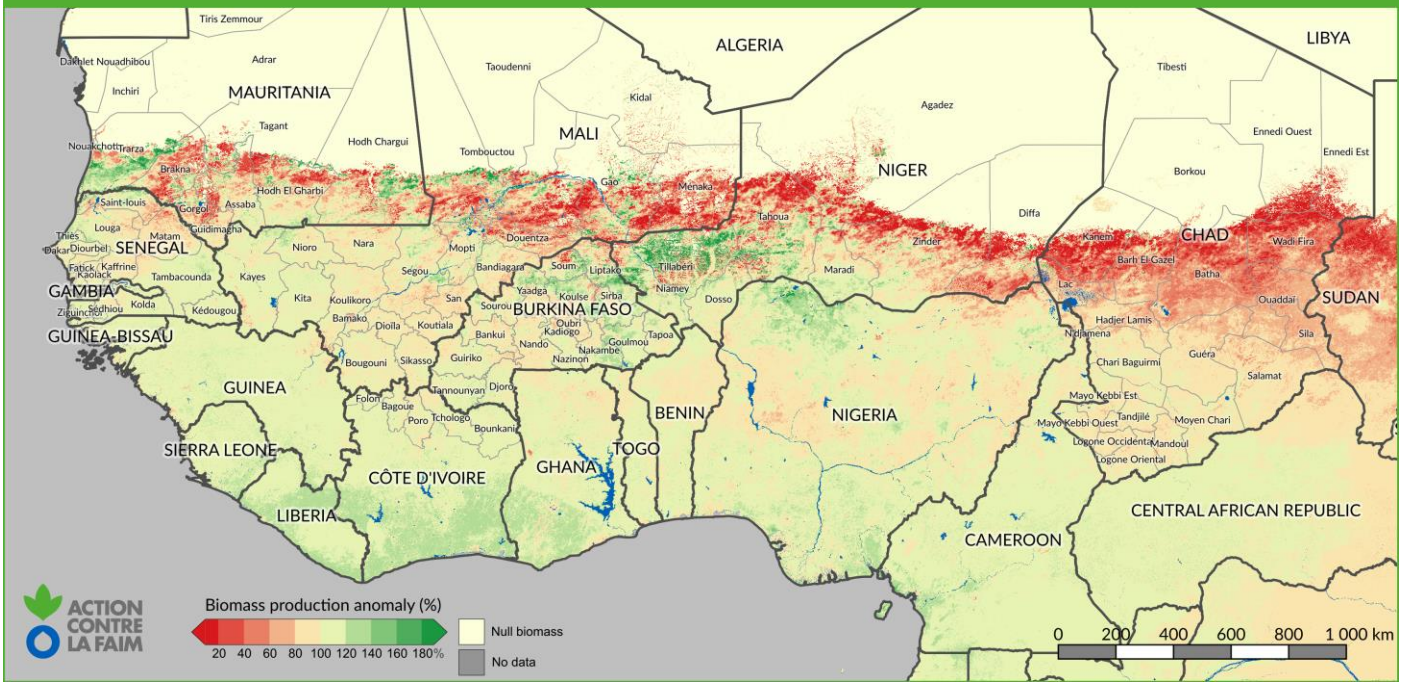
BIOMASS PRODUCTION IN 2026 ANALYSIS AND OUTLOOK FOR 2027

SAHEL REGIONAL REPORT

ACTION AGAINST HUNGER
ACTION CONTRE LA FAIM

MAP 1: ANOMALY OF BIOMASS PRODUCTION FOR YEAR 2026 IN PERCENT



HIGHLIGHTS

- Rainy season characterized by high rainfall variability and with overall below-average conditions, in a context of a return to El Niño-related climatic patterns.
- Biomass production was slightly below average across Sahelian and pastoral areas, showing a sharp decline compared with the 2024 and 2025 seasons.
- Severe biomass deficits were observed in Mauritania, northern Mali, eastern Niger, and across the Lake Chad Basin extending into Sudan.
- Biomass production remained close to or above average in most Sudanian and coastal zones.
- Insecurity and mobility restrictions continue to limit access to grazing resources.
- Risk of livestock concentration and an early pastoral lean season in deficit-affected areas.

INTRODUCTION

The 2026 rainy season unfolded in a context marked by high agroclimatic variability. Despite biomass production remaining generally close to average levels, significant rainfall and pastoral deficits were observed in several areas of Mauritania, Niger, and the Lake Chad Basin. Against a backdrop of the return of El Niño-like conditions, these disparities resulted in an uneven distribution of pastoral resources across the Sahel.

In addition, insecurity continues to restrict access to certain pastoral areas in the Liptako-Gourma region, around the Lake Chad Basin, and across several border areas of the central Sahel. Mobility restrictions, population displacements, and the closure or tighter control of some borders are also disrupting traditional transhumance movements and limiting access to key pastoral resources. In this context, the availability of fodder resources must be assessed not only in terms of production levels but also in terms of their actual accessibility to pastoral communities.

This report analyses the regional biomass situation at the end of the 2026 rainy season, highlights the main production anomalies observed, and identifies areas likely to face increased livestock-related constraints during the 2026–2027 dry season.

DESCRIPTION OF THE SYSTEM

WHAT IS BIOMASS AND HOW IS IT MEASURED?

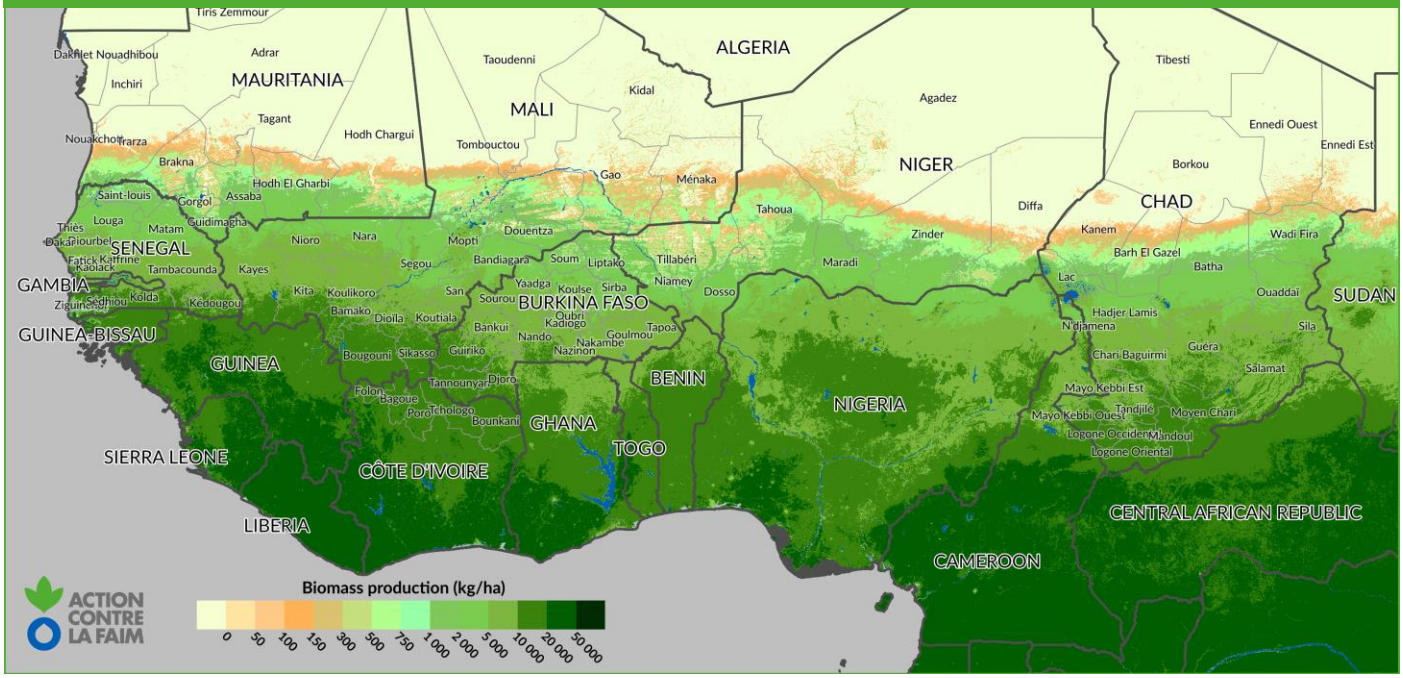
Biomass is the total production of vegetal matter measured in kilograms of dry matter per hectare (kg/ha). The term dry matter is used to describe any form of vegetation above the ground regardless of its water/moisture content. For an analysis of the pastoral situation, biomass is an effective way to measure the availability of fodder resources.

Biomass production is calculated from satellite images collected by the European Space Agency's SPOT-VEGETATION, PROBA-V and SENTINEL-3 satellites and provided, in form of 10-day products, by the European Copernicus Land Monitoring Service CLMS programme.

The method for calculating daily biomass productivity (kg/ha/day) is based on an algorithm integrating biophysical parameters obtained from satellite images as well as climatic parameters of temperature and solar irradiance.

The BioGenerator tool developed by ACF integrates all these data to produce an annual biomass production map calculated over the growing season coinciding with the rainy season in the Sahel. The spatial resolution is 300 m, which corresponds to that of the satellite products used. The period covered is the one of the available satellite archives from 1999 to the present.

MAP 2: AVERAGE ANNUAL BIOMASS PRODUCTION 1999-2026



WHAT ARE THE INDICATORS GENERATED?

The first indicator is the annual biomass production calculated over the growing season:

- Annual production in kg/ha

The annual biomass production is compared to the average calculated over all the years since 1999 to highlight the anomaly which is represented in two ways:

- Anomaly expressed as a percentage of the mean value %
- Normalised anomaly expressed as the number of standard deviations σ from the mean

A vulnerability index linked to biomass availability, named « VI » (Vulnerability Index), is calculated recursively by weighting the most recent years to consider the sequence of dry or rainy events:

- Vulnerability Index VI

Indicators are visualisable and downloadable at the following links:

- geosahel.info
- data.humdata.org/organization/acf-west-africa

BIOMASS PRODUCTION IN 2026

MAPPING OF THE BIOMASS PRODUCTION ANOMALY

Map 1 shows the 2026 biomass production anomaly across West Africa, expressed as a percentage of the 1999–2026 average. Map 3 presents the same anomaly in terms of the number of standard deviations (σ) from the mean, referred to as the standardized anomaly or Z-score.

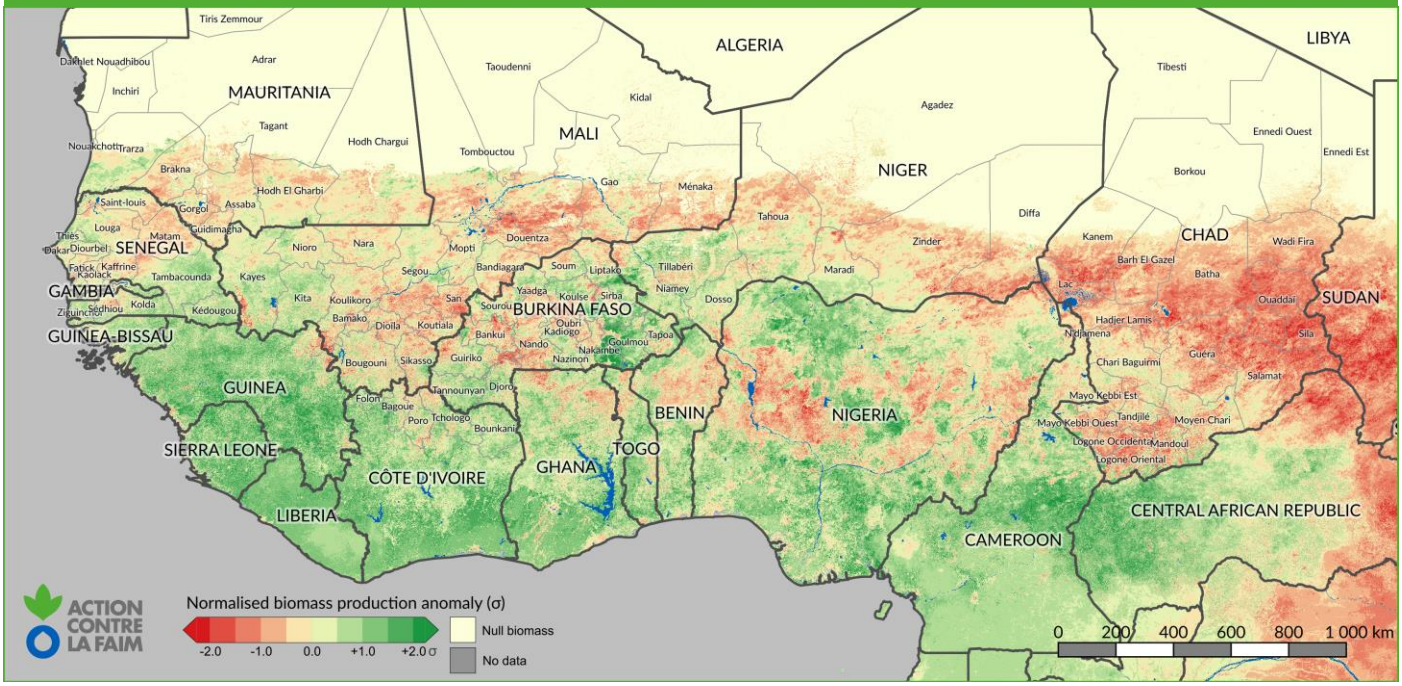
The biomass production anomaly mapping highlights a contrasted situation across West Africa and the Sahel. Positive anomalies dominate in the Sudanian and Guinean zones, particularly in southeastern Senegal, western Mali, eastern Burkina Faso, and western Niger, where production conditions were generally favourable. Localized surpluses are also observed in some agricultural and agropastoral areas of central Burkina Faso and northern Nigeria.

Conversely, a broad deficit belt extends across the Sahel from central Mauritania to western Sudan, passing through northern Senegal, central Mali, Niger, and the Lake Chad Basin. The most pronounced deficits are found in pastoral areas between Tahoua, Maradi, and Zinder in Niger, as well as in the regions of Kanem, Bahr El Ghazal, Hadjer-Lamis, and parts of Ouaddaï in Chad. These areas display strongly negative anomalies, indicating biomass production well below average levels.

The relative anomaly map confirms this spatial pattern. The lowest values, often below 80% of the mean, are mainly concentrated in the pastoral areas of the central Sahelian belt. In contrast, several areas of Burkina Faso, northern Nigeria, Cameroon, and the coastal countries of the Gulf of Guinea recorded biomass production close to or above average, reflecting more favourable growing conditions.

Overall, the maps reveal a marked contrast between generally above-average conditions in the Sudanian zones and deficits of varying severity across parts of the Sahelian pastoral belt. This situation could lead to increased transhumance movements toward areas with better forage availability during the 2026–2027 dry season.

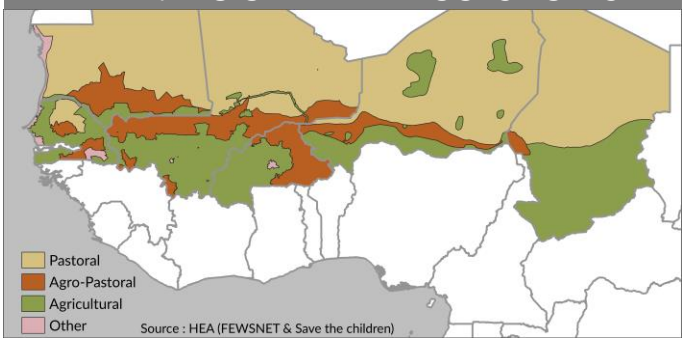
MAP 3: NORMALISED BIOMASS PRODUCTION ANOMALY YEAR 2026



INTERANNUAL VARIATIONS IN BIOMASS PRODUCTION

Based on the division by livelihood zones, it is possible to observe the interannual variation in biomass production depending on land use: agricultural and agropastoral.

MAP 4: REGIONAL LIVELIHOODS ZONES

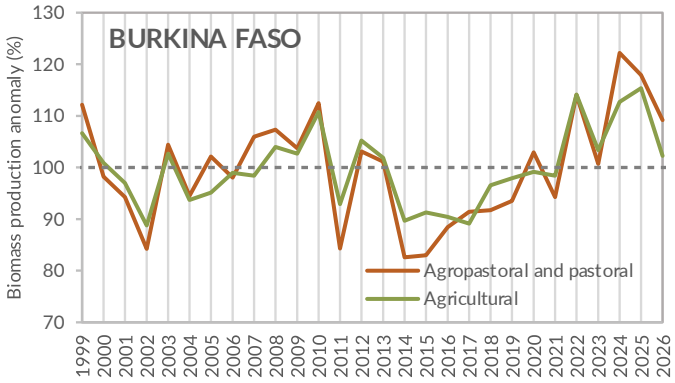


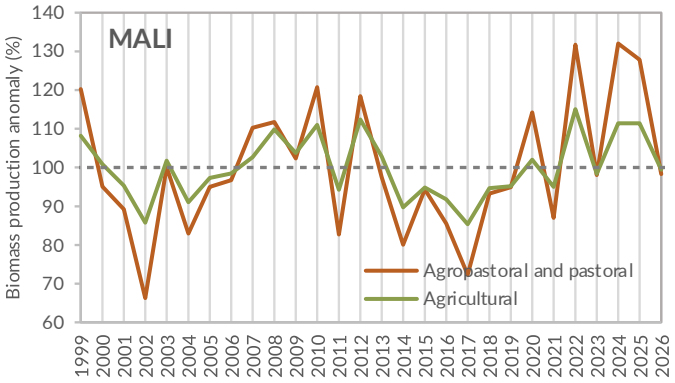
For these comparisons, the initial classes “agropastoral” and “pastoral” were grouped to obtain representative statistics for zones with a pastoral dominance.

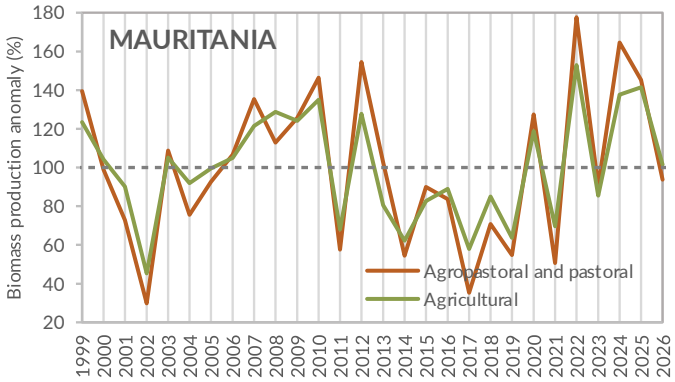
In 2026, biomass production showed greater contrasts than in 2024 and 2025. Relatively favourable conditions were observed in pastoral and agropastoral areas of Burkina Faso and Senegal, while deficits were recorded in Mauritania, Niger, and particularly in Chad.

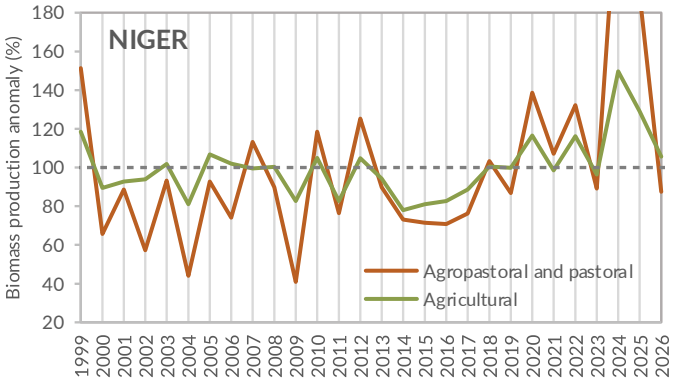
Compared with the very good, and in some cases exceptional, seasons of 2024 and 2025, production levels declined overall and moved closer to average values, broadly comparable to those observed in 2023. Agricultural zones remained close to the regional average, whereas several pastoral areas experienced localized deficits.

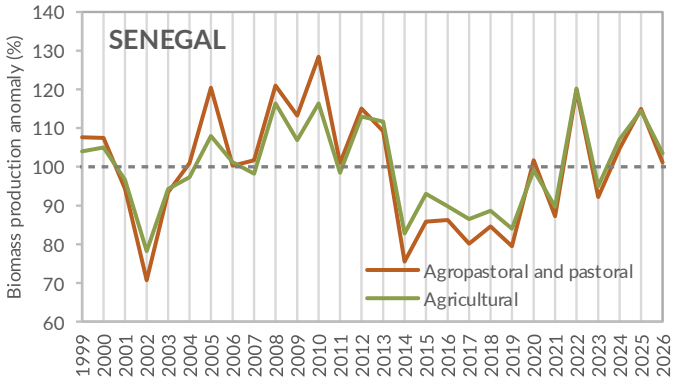
In contrast, Chad recorded particularly severe deficits in its agropastoral and pastoral zones.

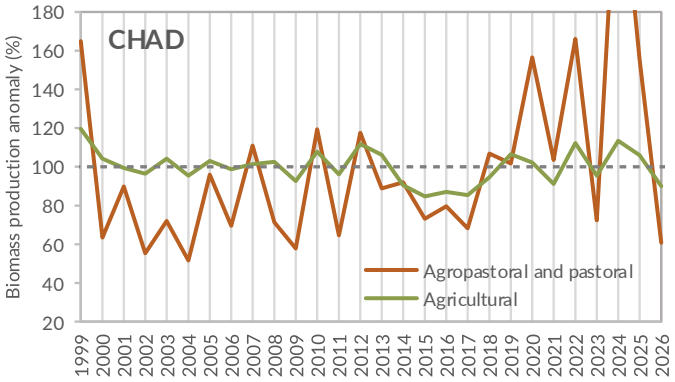










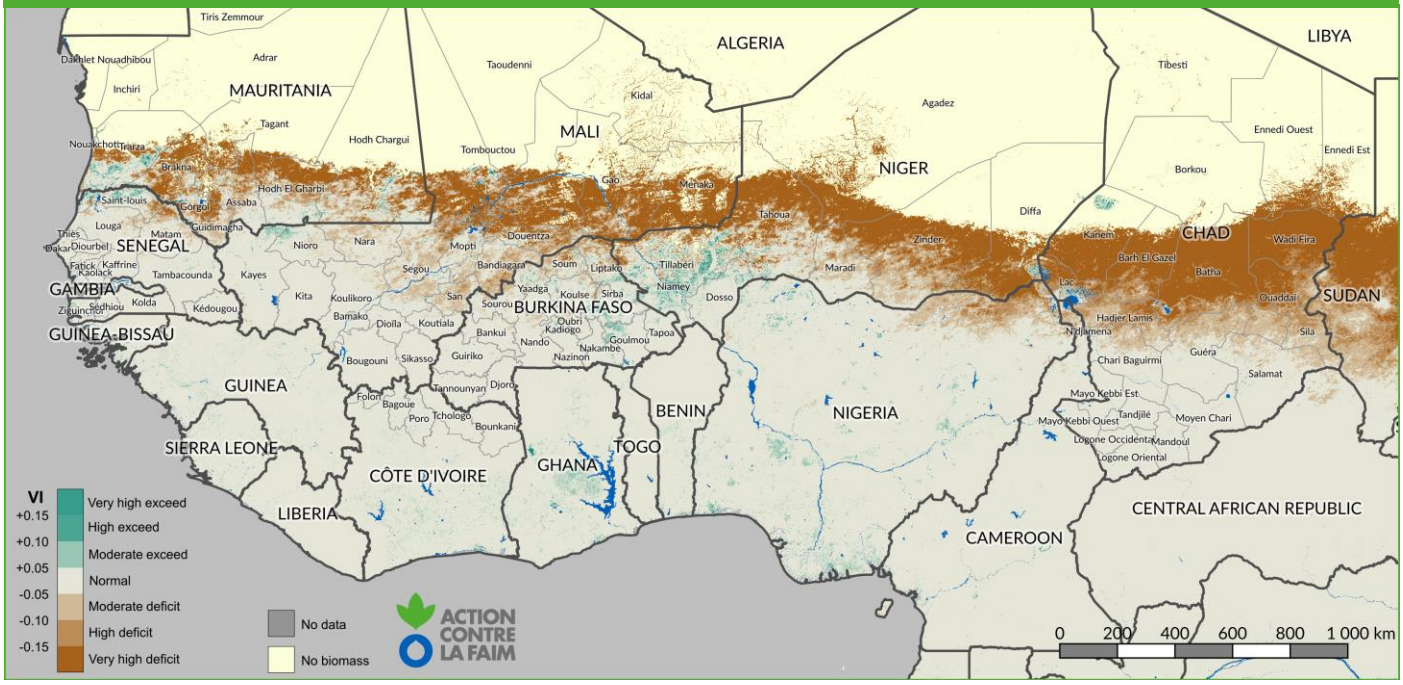


COMPARISON OF 2026 WITH RECENT YEARS

The biomass-related Vulnerability Index (VI), shown in Map 5, is sensitive to production changes recorded over recent years and highlights the pastoral belt, where a marked decline in biomass production has been observed compared with recent seasons.

The favourable production levels recorded in recent years continue to mitigate the impacts of the deficits observed in 2026. However, the significant decline in pastoral resources in parts of Mauritania, Niger, and Chad could lead to increased vulnerability during the 2026–2027 dry season.

MAP 5: BIOMASS VULNERABILITY INDEX 2026



The table below presents biomass production anomalies, expressed both as the number of standard deviations from the mean and as a percentage of the average, for agricultural and agropastoral land-use zones across the six monitored countries.

The table highlights a contrasted situation at the regional level. While agricultural areas generally recorded production levels close to average, several pastoral zones experienced a significant deterioration in forage resources. In Mauritania and Niger, pastoral production declined compared with the favourable seasons of 2022, 2024, and 2025, approaching the levels observed in 2023. Chad stands out with particularly severe deficits in its pastoral and agropastoral areas.

Countries	Livelihood zones	Anomaly 2022	Anomaly 2023	Anomaly 2024	Anomaly 2025	Anomaly 2026	VI 2026
Burkina Faso	Agricultural	+1.9σ (114%)	+0.5σ (103%)	+1.7σ (113%)	+2.1σ (115%)	+0.3σ (102%)	-0.01
	Agropastoral and Pastoral	+1.3σ (114%)	+0.1σ (101%)	+2.1σ (122%)	+1.7σ (118%)	+0.9σ (109%)	-0.01
Mali	Agricultural	+1.8σ (115%)	-0.2σ (098%)	+1.4σ (111%)	+1.4σ (111%)	-0.1σ (099%)	-0.02
	Agropastoral and Pastoral	+1.8σ (132%)	-0.1σ (098%)	+1.9σ (132%)	+1.6σ (128%)	-0.1σ (098%)	-0.15
Mauritania	Agricultural	+1.9σ (153%)	-0.5σ (085%)	+1.3σ (138%)	+1.5σ (141%)	+0.1σ (102%)	-0.04
	Agropastoral and Pastoral	+2.0σ (178%)	-0.2σ (090%)	+1.6σ (164%)	+1.1σ (145%)	-0.2σ (094%)	-0.14
Niger	Agricultural	+1.0σ (116%)	-0.2σ (096%)	+3.1σ (150%)	+1.8σ (129%)	+0.4σ (106%)	-0.04
	Agropastoral and Pastoral	+0.7σ (132%)	-0.2σ (089%)	+3.4σ (249%)	+2.1σ (190%)	-0.3σ (087%)	-0.20
Senegal	Agricultural	+1.8σ (120%)	-0.4σ (095%)	+0.6σ (107%)	+1.3σ (114%)	+0.3σ (103%)	-0.00
	Agropastoral and Pastoral	+1.3σ (120%)	-0.5σ (092%)	+0.3σ (105%)	+1.0σ (115%)	+0.1σ (101%)	-0.01
Chad	Agricultural	+1.4σ (112%)	-0.5σ (095%)	+1.5σ (113%)	+0.7σ (106%)	-1.1σ (090%)	-0.06
	Agropastoral and Pastoral	+1.4σ (166%)	-0.6σ (072%)	+3.6σ (269%)	+1.2σ (155%)	-0.8σ (061%)	-0.33

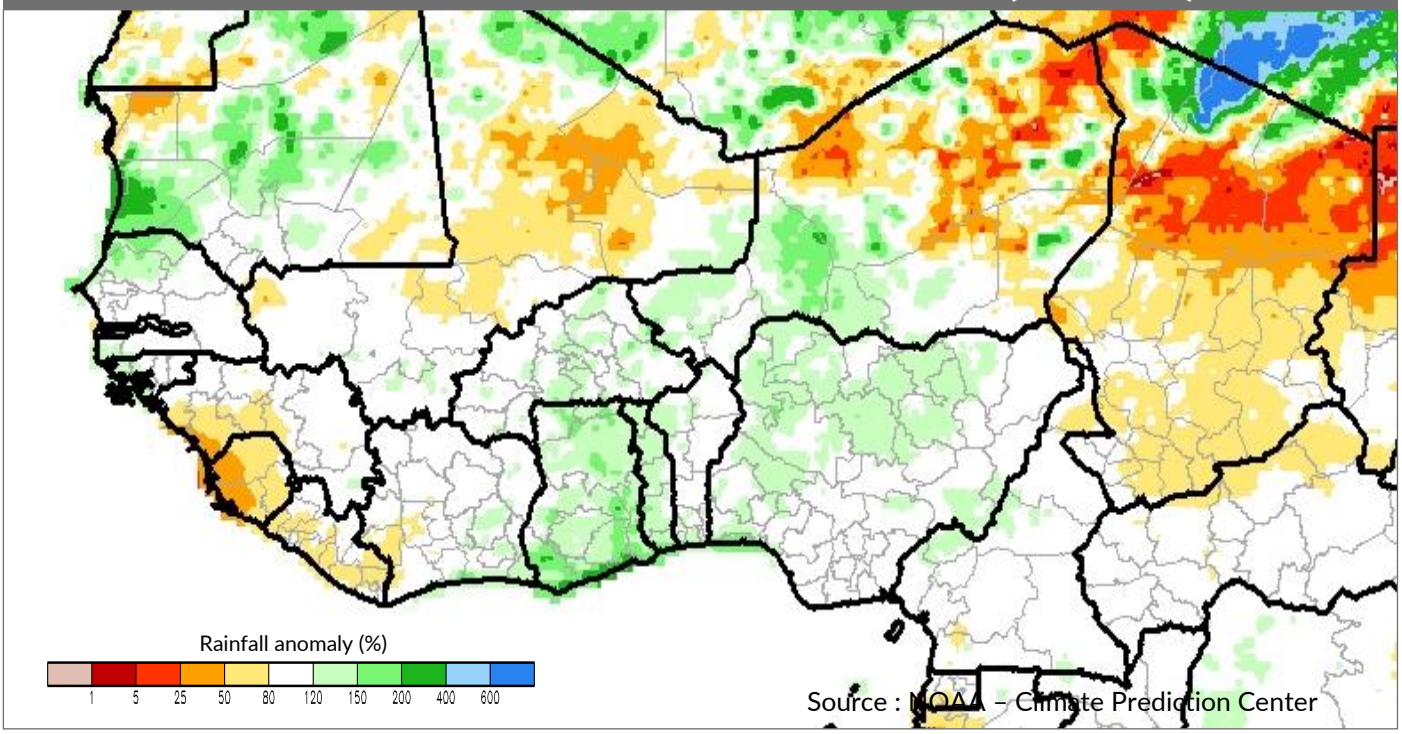
RAINFALL CONTEXT

The 2026 rainy season was characterized by strong spatial variability in rainfall across the region. Rainfall totals were generally close to average in the Gulf of Guinea countries and across parts of the southern Sahelian belt, while deficits affected a broad pastoral zone stretching from Mauritania to Chad. The most pronounced negative anomalies were observed in northern Senegal, central and eastern Niger, the Lake Chad Basin, and across much of Chad extending eastward toward Sudan.

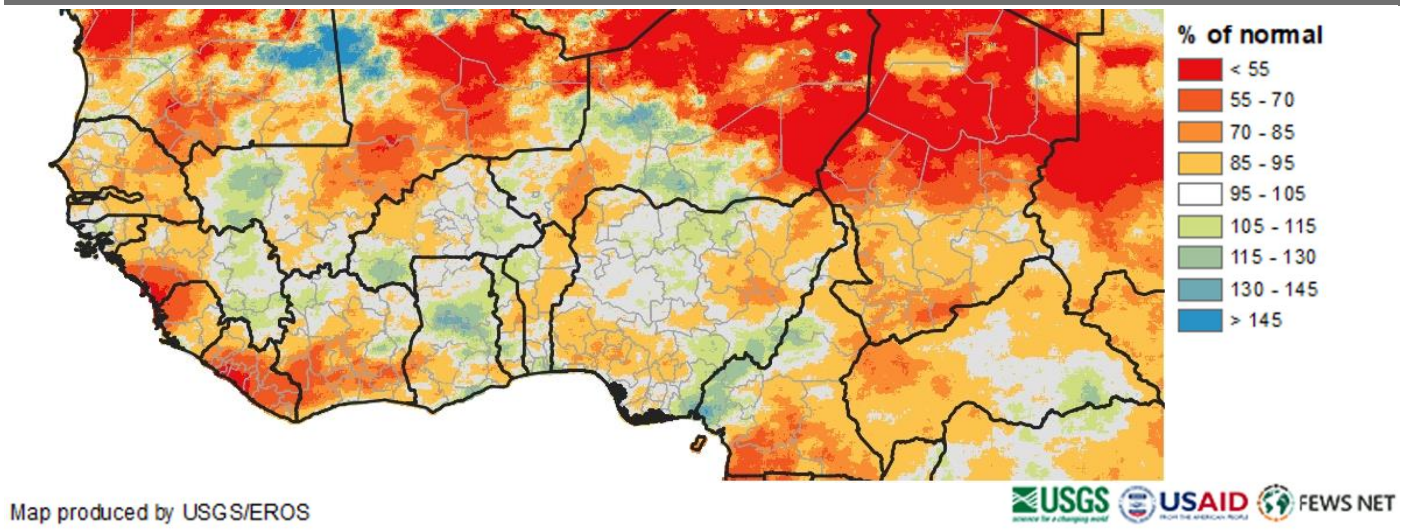
Some localized surpluses were recorded in western Mauritania and northern Senegal, eastern Burkina Faso, Ghana, and west-central Niger. However, these were insufficient to offset the deficits observed in several pastoral areas.

This situation occurred in a context marked by the return of conditions associated with an El Niño event, contributing to a more irregular distribution of rainfall and to rainfall deficits across parts of the region. These conditions largely explain the negative biomass production anomalies observed this year in Mauritania, Niger, and the Lake Chad Basin.

MAP 6: RAINFALL ANOMALIES MAY-OCTOBER 2026 (NOAA-CPC)



MAP 7: RAINFALL ANOMALIES MAY-SEPTEMBER 2026 (USGS)



CONCLUSION

WINTERING SEASON 2026

At the regional level, the 2026 agropastoral season was characterized by biomass availability that remained generally close to average conditions but was significantly lower than the very favourable seasons recorded in 2022, 2024, and 2025.

Biomass production anomalies reveal strong spatial heterogeneity, with average to above-average conditions across much of the Sudanian zone, while several pastoral areas in Mauritania, Niger, the Lake Chad Basin, and Chad experienced marked deficits.

Although the situation remains generally better than during the major pastoral crises of the mid-2010s, the deficits observed in several pastoral areas of Mauritania, Niger, and Chad call for increased vigilance due to the risk of early depletion of resources during the dry season.

Persistent insecurity, mobility restrictions, and limited access to some grazing areas could further increase pressure on available resources. Particular attention should be paid to deficit-affected areas and along the main transhumance corridors.

OUTLOOK FOR 2027

Although regional production remains generally close to historical averages, the decline compared with recent years and the deficits observed in several pastoral and agropastoral areas, combined with insecurity and constraints on access to resources, could increase the vulnerability of pastoral households during 2027.

• Mali-Mauritania-Senegal Area
The 2026 season represents a decline compared with the favourable conditions recorded in 2024 and 2025. In Mauritania, particularly in the two Hodh regions, the observed deficits could lead to the early depletion of pastoral resources. Cross-border mobility restrictions, especially with Mali, are likely to increase pressure on grazing lands and water points and further exacerbate pastoral vulnerabilities.

• Central Sahel
Forage availability remains generally satisfactory in Burkina Faso and parts of western Niger. However, conditions have deteriorated significantly in northeastern Mali and eastern Niger, where biomass deficits in the pastoral areas of Tahoua, Maradi, Zinder, and Diffa could trigger early transhumance movements and increase pressure on the remaining available resources. Insecurity and movement restrictions continue to limit herders' mobility options.

• Central Corridor Zone (Southern Sahelian Countries and Northern Coastal Countries)
Forage resources remain generally adequate and are expected to continue serving as reception areas for part of the Sahelian livestock population. However, increasing insecurity and restrictions on cross-border transhumance are gradually undermining the traditional complementarities between production zones and receiving areas.

• Lake Chad Basin and Sudan
This area appears to be the main hotspot of deficits during the 2026 season. Biomass production is well below average across many pastoral areas of Chad, particularly in the regions of Kanem, Bahr El Ghazal, Hadjer-Lamis, and Ouaddaï, with deficits extending into western Sudan. In this context, early pasture degradation is likely, encouraging premature livestock movements and increased concentration around water points and better-endowed grazing areas. The pastoral lean season could occur earlier and be more severe than in the rest of the region.

At the regional level, insecurity, mobility restrictions, and the temporary closure of certain borders will continue to strongly influence the use of pastoral resources. In several deficit-affected areas, particularly in eastern Niger, the Lake Chad Basin, and western Sudan, livestock mobility and resource conditions will require close monitoring throughout the 2026–2027 dry season and the pastoral lean period.

RECOMMENDATIONS

- Continue implementing long-term measures to support pastoral and agropastoral areas:
  - Strengthen advocacy for the recognition of the strategic role of mobile livestock production and transhumance in Sahelian production systems;
  - Facilitate pastoral mobility and protect transhumance corridors, particularly across borders;
  - Expand services for herders and livestock (animal health, vaccination, pastoral information services);
  - Strengthen and maintain pastoral infrastructure (water points, resting areas, livestock markets);
  - Increase investments in prevention and resilience-building interventions for pastoral systems.
- Strengthen the monitoring of pastoral resources throughout the dry season, particularly in deficit-affected areas of eastern Niger, the Lake Chad Basin, and western Sudan, including surveillance of bushfires and their impact on grazing lands.
- Facilitate cross-border transhumance to enable access to surplus grazing areas and reduce excessive livestock concentrations in deficit-affected zones.
- Establish anticipatory and rapid-response mechanisms in areas at risk of an early pastoral lean season, particularly in eastern Niger and the Lake Chad Basin.
- Identify and monitor key livestock reception areas to anticipate pressure on natural resources and mitigate the risk of resource-related conflicts.
- Adapt support mechanisms for displaced populations and pastoral households affected by insecurity, considering their livelihoods and specific needs.
- Further integrate the livestock sector into national and regional food security, resilience, and climate adaptation strategies.
- Accelerate the operationalization of regional livestock feed support mechanisms, particularly in areas exposed to recurrent fodder deficits.
- Strengthen the capacities of national and regional services in pastoral monitoring, remote sensing, and GIS applications for early warning and decision-making.
- Enhance the monitoring of transhumance movements and pastoral markets in areas affected by biomass deficits to detect early signs of deteriorating pastoral conditions during the 2027 dry season.

The data used for the calculation of biomass production comes from the data generated by the COPERNICUS land service, the European Commission's Earth observation programme. The research that led to the current version of the product was funded by various European Commission research and technical development programmes. The product is based on data from the SENTINEL-3, PROBA-V and SPOT-VEGETATION satellites of the European Space Agency ESA.

Action Against Hunger
Regional Office for West and Central Africa ROWCA
Ngor Almadies N°13 Bis, Rue NG 96, BP 29621, Dakar, Senegal

Surveillance and Data Analysis Department: Erwann FILLOL
Email: erfillol@wa.acfspain.org
Portal: sigsahel.info

Funded by
the European Union

ACTION AGAINST HUNGER ACTION CONTRE LA FAIM