



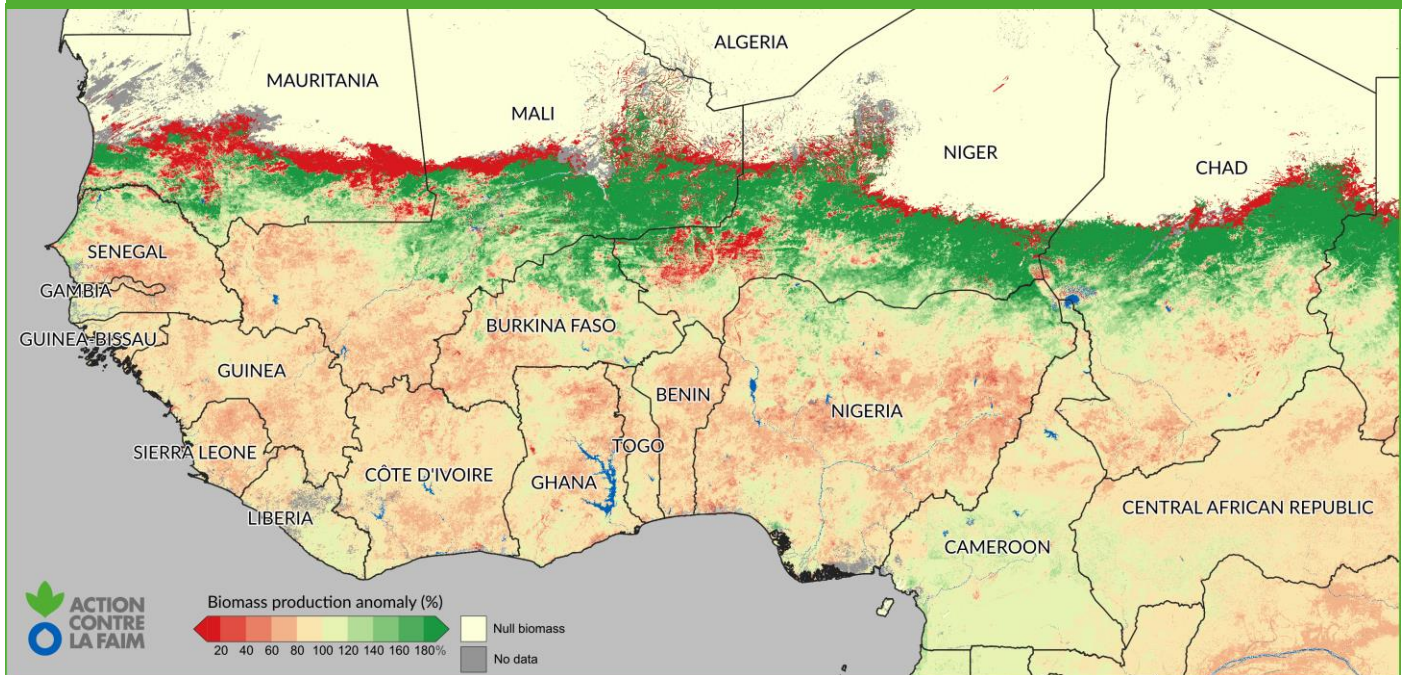
BIOMASS PRODUCTION AT RAINY MID-SEASON 2024

SAHEL REGIONAL BULLETIN

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MAP 1: ANOMALY OF BIOMASS PRODUCTION AT END OF AUGUST 2024



HIGHLIGHTS

- Late start to the rainy season
- Low biomass production across the coastal countries
- Above-average biomass production in the eastern Sahelian belt
- Below-average biomass production in western Mali, Burkina Faso, and central Senegal
- Above-average runoff causing significant flooding, particularly in the Sahelian zone
- Expected favourable end to the rainy season across the Sahel
- Potential vulnerability for herders in the western part of the region

INTRODUCTION

This document provides an overview of the biomass production in the Sahelian zone of West Africa at mid-season of the rainy season, at the end of August 2024.

The rainy season of 2024 follows a generally average year in 2023, although some areas recorded low to very low rainfall, leading to average to low biomass production. During the dry season of 2024, the pastoral lean season began early and was particularly challenging for herders.

In addition to interannual variability in rainfall, pastoral and agropastoral communities in the region face environmental challenges related to climate change, including extreme weather events and ecosystem degradation. Furthermore, they must also contend with social, political, economic, and security issues.

The regional context is marked by persistent insecurity and fragmentation of territorial units. This situation affects herders by limiting their mobility, making access to resources and markets difficult, and creating uncertainty about their future.

DESCRIPTION OF THE SYSTEM

WHAT IS BIOMASS AND HOW IS IT MEASURED?

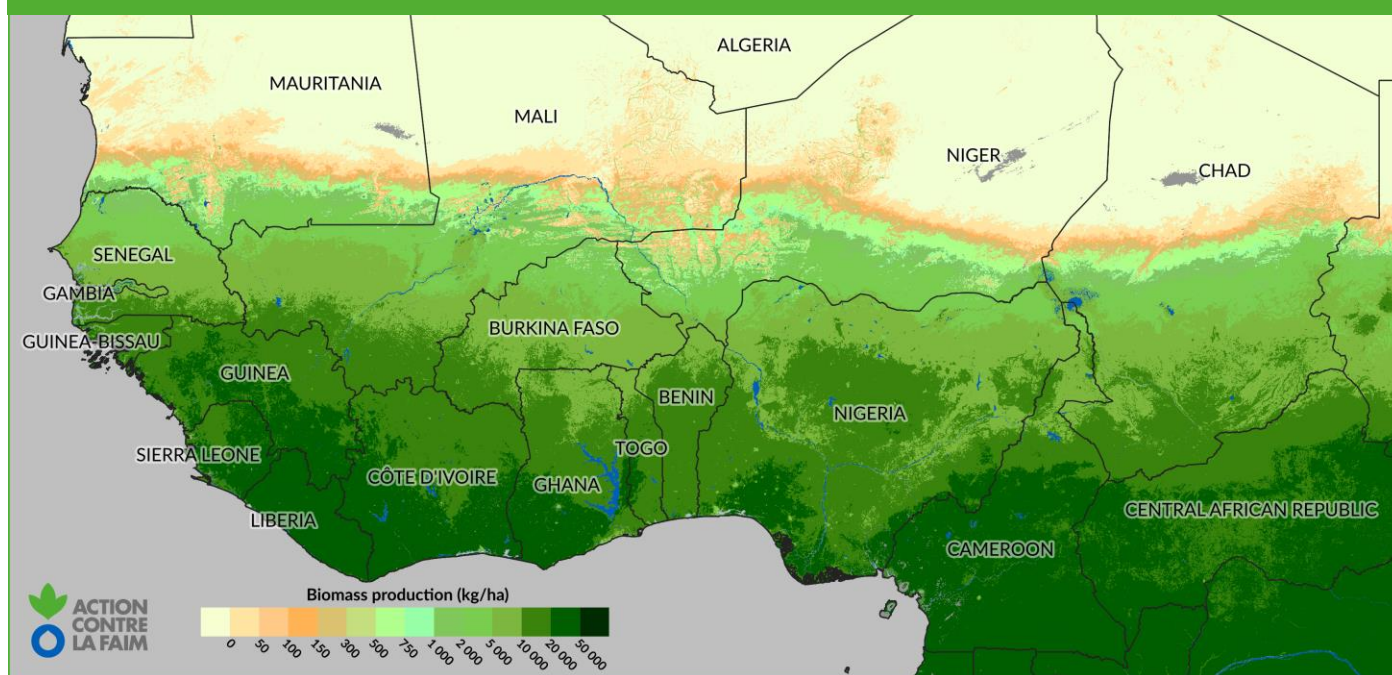
Biomass is the total production of vegetal matter measured in kilograms of dry matter MS per hectare kg/ha. The term dry matter is used to describe any form of vegetation above the ground regardless of its water/moisture content. For an analysis of the pastoral situation, biomass is an effective way 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 programme through the Flemish Institute of Technology VITO.

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 1 km, 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 1999-2023



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 1998 in order 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 in order to take into account the sequence of dry or rainy events:

- **Vulnerability Index VI**

The methods used and details of how BioGenerator works are available at:
www.sigsahel.info/knowledgebase/biohydrogenerator-users-guide

BIOMASS PRODUCTION AT MID-SEASON 2024

MAPPING THE BIOMASS PRODUCTION ANOMALY

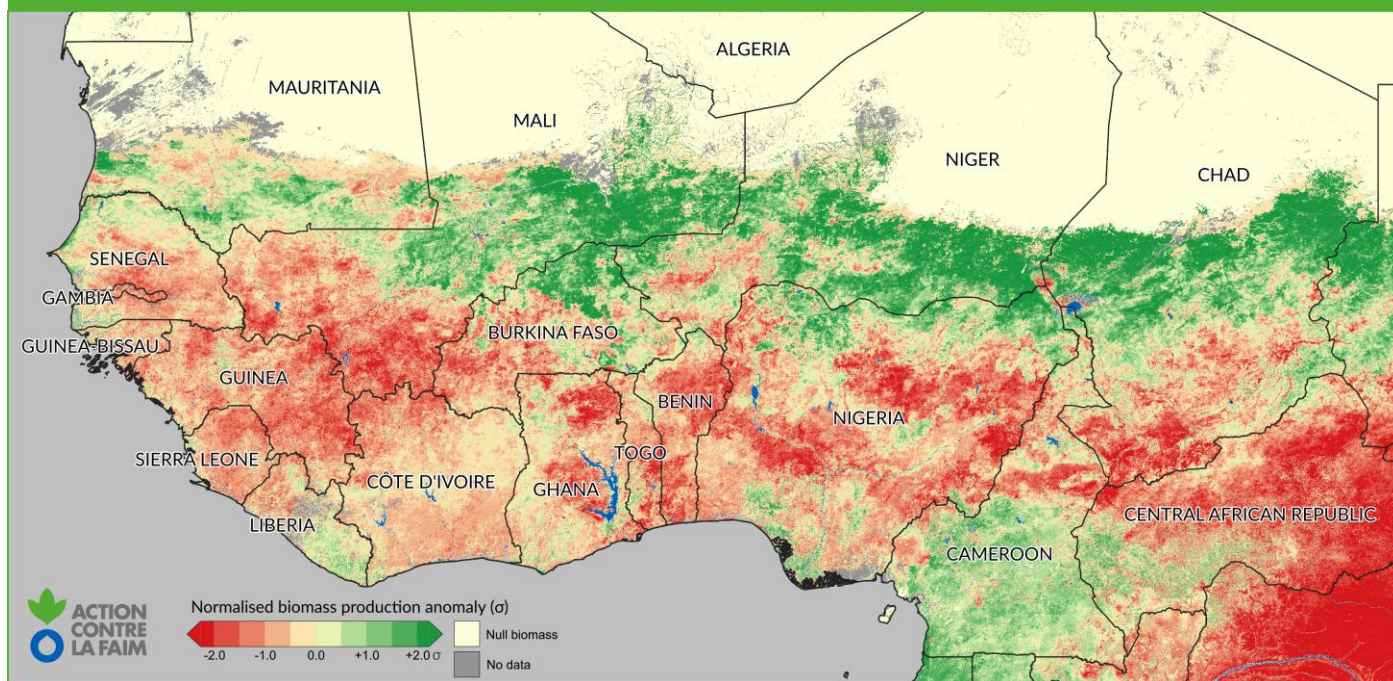
Map 1 shows the biomass production anomaly calculated at mid-growth season in the Sahel, expressed as a percentage of the average and sensitive to absolute variations in the quantity of biomass produced. Map 3 presents the same anomaly but expressed in terms of standard deviations (σ) from the mean, referred to as the normalised anomaly, which is sensitive to relative variations in biomass production.

Across the region, only a few localized areas, primarily in the central Sahel, notably western Mali, northern Burkina Faso, Niger, and Chad, exhibit positive biomass production anomalies due to the heavy rainfall received.

The most significant deficits are recorded in the western Sahel, particularly in western Mali, Burkina Faso, and Senegal. The late start of the rainy season and dry spells are the causes of these low productions.

In the coastal countries, the downward trend in biomass production has been confirmed once again this year. Except for northern Nigeria, this part of the region shows negative anomalies. However, despite below-average production, this area still offers forage potential for local livestock as well as for those coming from the northern Sahelian regions.

MAP 3: NORMALISED BIOMASS PRODUCTION ANOMALY AT END OF AUGUST 2024



THE 2024 GROWING SEASON

The figure on the following page shows the profiles of instantaneous biomass production in a few selected regions (administrative level 1 divisions) chosen as representative.

In Burkina Faso, the Sahel region displays a normal start to the season, followed by very good production that exceeds the average.

In the Mopti region of Mali, vegetation growth is excellent. At mid-season, biomass production is satisfactory, and the abundant rainfall received so far, along with anticipated precipitation, should further enhance it.

In Niger, the Tillabéri region experienced a normal start to production, with growth slightly above average. An improvement in production is expected by the end of the season.

In the Wilaya of Hodh Ech Chargui in Mauritania, growth began late; however, at mid-season, it exceeds the average despite a dry spell observed between July and August.

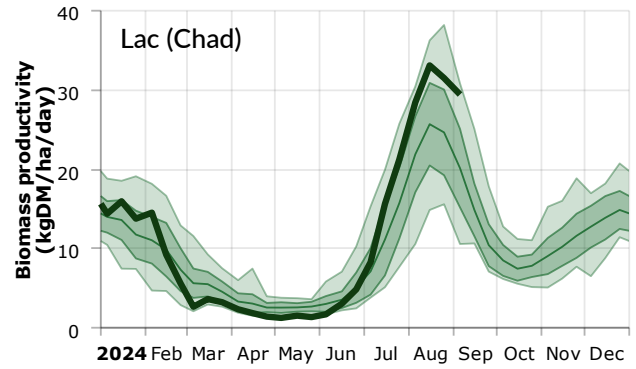
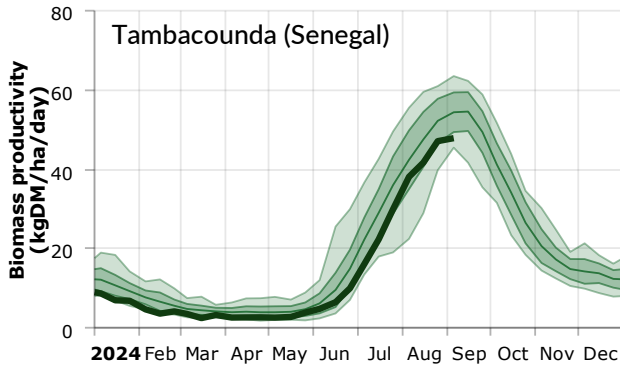
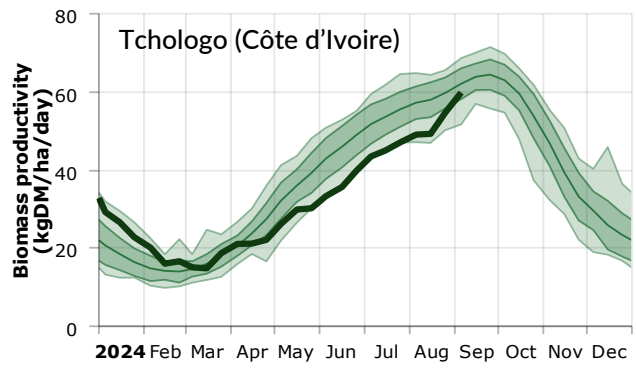
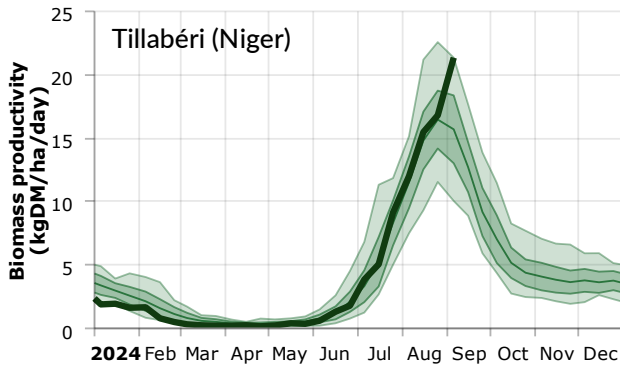
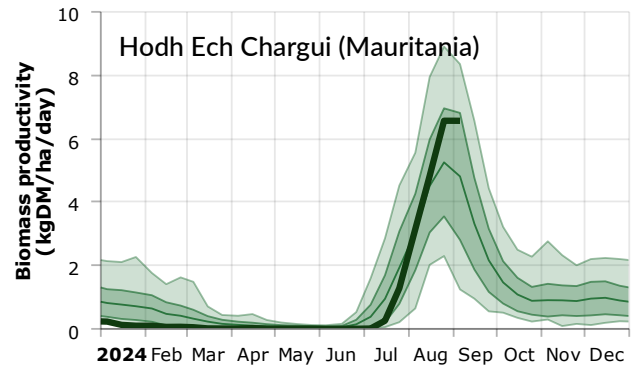
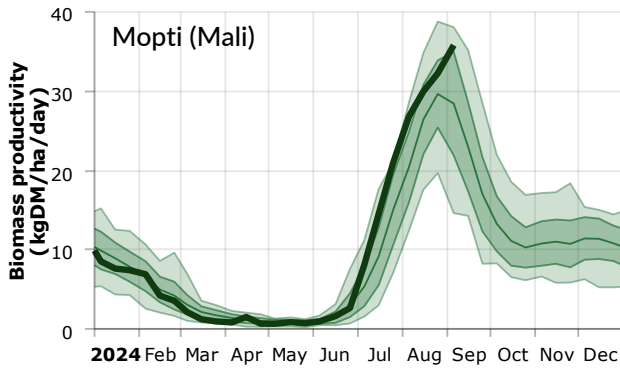
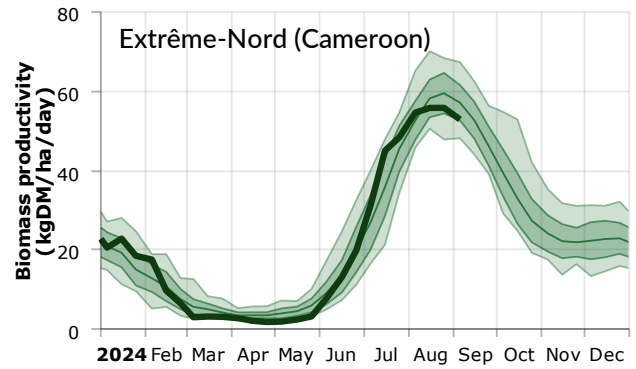
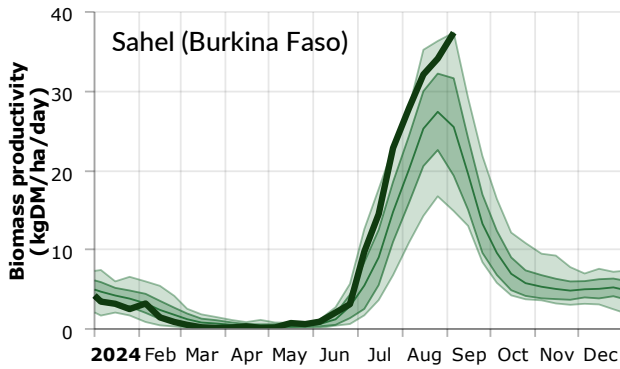
In the Tambacounda region of Senegal, production started late and was affected by periods of drought, resulting in below-average growth. However, the

low production observed at mid-season could still improve by the end of the season.

In the region Extrême-Nord of Cameroon, the season began late with very good growth, but it was followed by a slowdown from mid-August. Similarly, in the Lake region of Chad, initial growth was strong, but it was also followed by an early decline from mid-August.

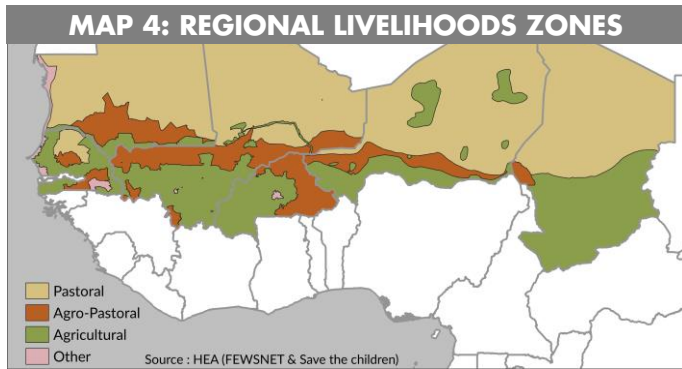
In Côte d'Ivoire, the Tchologo region experienced a normal start, but the subsequent growth has remained significantly below average.

Except for the countries situated in the eastern Sahelian belt, where production is either surplus or exceptional, the growth trend is weak, particularly in the coastal countries.



INTER-ANNUAL VARIATION IN BIOMASS PRODUCTION

Based on the livelihood zone breakdown (Map 4), it is possible to observe inter-annual variations in biomass production according to land use: Agricultural, Pastoral and Agropastoral (source: Household Economy Analysis HEA / FEWSNET & Save the children).

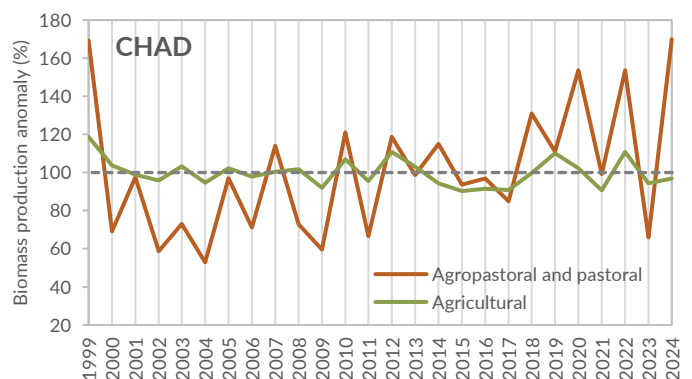
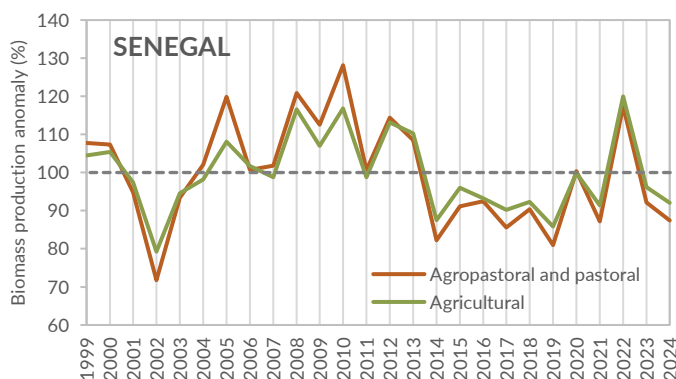
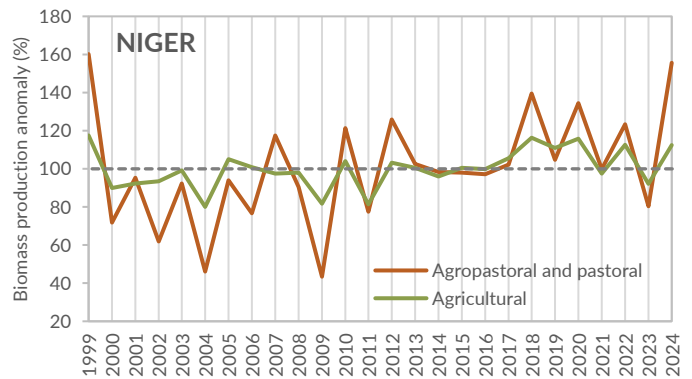
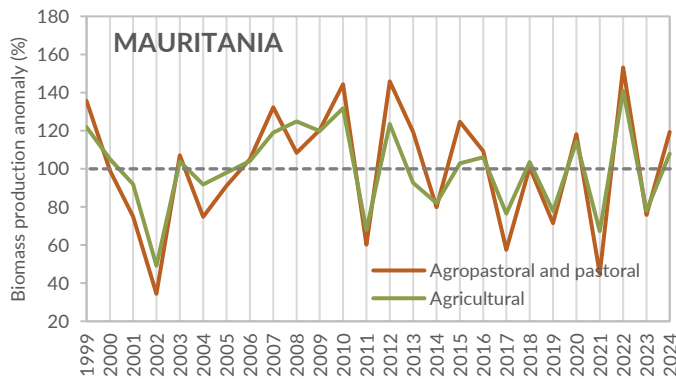
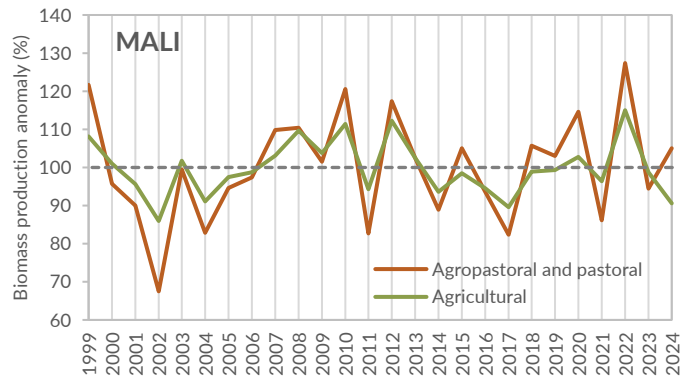
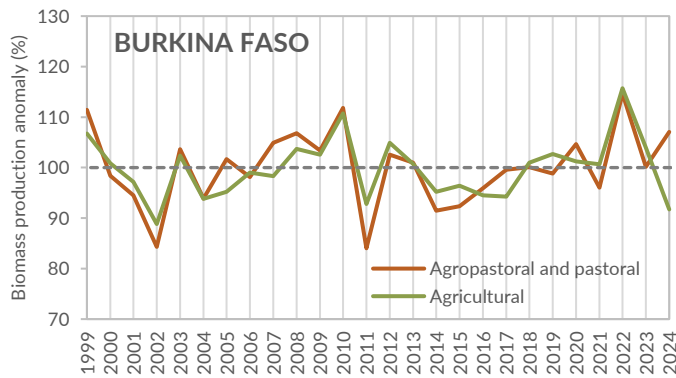


For the purpose of these comparisons, the initial Agropastoral and Pastoral classes are merged to provide a statistic for the entire pastoral utilisation area.

The graphs below indicate that the overall average for 2024 slightly exceeds normal values (1999-2023), showing slight improvement compared to 2023, but remains below the levels of 2022.

An observation at the country level shows that the agropastoral areas of Niger and Chad are experiencing exceptional production, while those in Burkina Faso are showing good production to a lesser extent.

In contrast, the agropastoral and agricultural zones of Senegal are experiencing deficits similar to those of 2021.



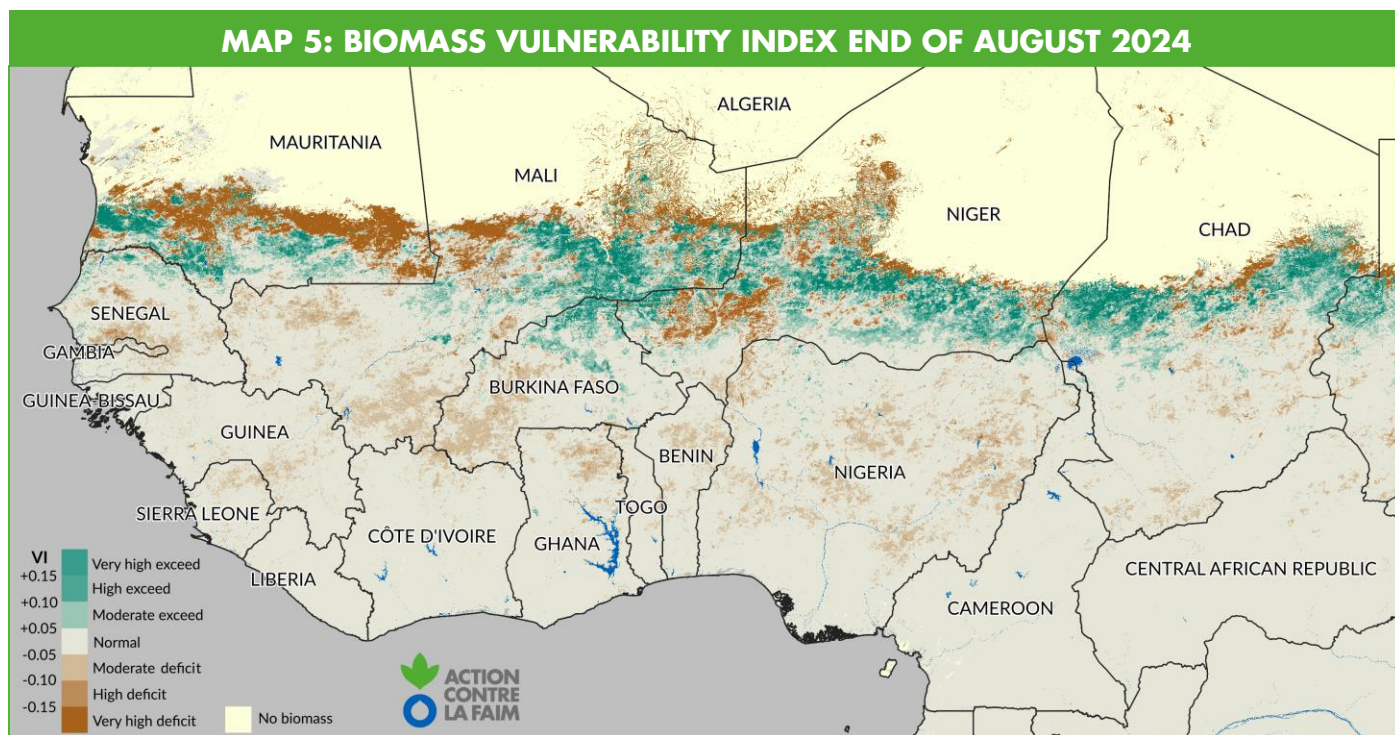
COMPARISON OF 2024 WITH RECENT YEARS

The vulnerability index (VI) related to biomass, as shown in Map 5, is sensitive to the production variations recorded in recent years and highlights areas with successive biomass deficits.

The VI calculated at the end of August 2024 reveals neutral to negative values in the southern part of the coastal countries due to a deficit in rainfall.

The index is positive in the Sahelian belt from eastern Mali to northern Chad, reflecting good biomass production this 2024 season, which has significantly improved compared to the previous year.

In contrast, western Mali, central Senegal, and northern and eastern Mauritania display negative vulnerability values.



The following table displays biomass production anomalies, expressed in terms of standard deviations (σ) from the mean and as a percentage of the mean, for the six monitored countries according to the administrative level 1 divisions (regions or wilayas). This table highlights very contrasting anomalies for 2024 from one region to another.

The regions with the best production are primarily in northern Burkina Faso (Centre-Nord and Sahel),

eastern Mali (Gao, Kidal, and Menaka), Niger (Agadez, Diffa, Zinder), and northern Chad (Barth-El-Gazel, Borkou, Ennedi Ouest and Est, Kanem), where production levels are exceptional.

In contrast, eastern Mali (Sikasso, Kayes), central Senegal (Kaffrine, Kaolack, Kedougou, Kolda), and southern Chad (Logone, Mandoul, Mayo, Tandjilé) show deficient production levels.

Country	Region/Wilaya	Superficie (km ²)	Anomaly 2020	Anomaly 2021	Anomaly 2022	Anomaly 2023	Anomaly 2024	VI 2024
Burkina Faso	Boucle du Mouhoun	33614	+0.2 σ (102%)	-0.4 σ (97%)	+2.4 σ (118%)	+0.4 σ (103%)	-1.0 σ (92%)	-0.03
	Cascades	18054	+0.4 σ (103%)	+1.1 σ (107%)	+2.6 σ (117%)	+1.6 σ (110%)	-2.0 σ (87%)	-0.05
	Centre	2773	+0.2 σ (101%)	+0.8 σ (107%)	+2.6 σ (123%)	+0.2 σ (101%)	-0.2 σ (99%)	-0.02
	Centre-Est	14234	+0.3 σ (102%)	-0.1 σ (100%)	+1.7 σ (111%)	+0.4 σ (102%)	+0.1 σ (101%)	-0.01
	Centre-Nord	19180	+0.6 σ (107%)	-0.4 σ (95%)	+2.0 σ (124%)	+0.7 σ (108%)	+1.9 σ (122%)	+0.04
	Centre-Ouest	21433	-0.8 σ (95%)	-0.0 σ (100%)	+1.3 σ (108%)	-0.5 σ (97%)	-1.6 σ (90%)	-0.03
	Centre-Sud	11742	+0.2 σ (101%)	+0.5 σ (103%)	+2.0 σ (112%)	+0.4 σ (103%)	+0.1 σ (100%)	-0.01
	Est	46592	+0.1 σ (100%)	-0.6 σ (95%)	+1.5 σ (110%)	-0.6 σ (96%)	+0.2 σ (101%)	+0.00
	Hauts-Bassins	25729	+0.4 σ (103%)	-0.2 σ (99%)	+1.7 σ (111%)	+0.1 σ (101%)	-2.4 σ (85%)	-0.05
	Nord	16421	+0.4 σ (105%)	-0.9 σ (90%)	+2.3 σ (127%)	+0.5 σ (105%)	+0.4 σ (104%)	+0.00
	Plateau Central	8977	-0.1 σ (99%)	+0.2 σ (102%)	+2.3 σ (120%)	-0.5 σ (96%)	-0.6 σ (95%)	-0.03
	Sahel	36088	+1.2 σ (122%)	-0.4 σ (94%)	+1.7 σ (130%)	+0.4 σ (107%)	+1.9 σ (133%)	+0.06
	Sud-Ouest	16327	+0.3 σ (102%)	+0.7 σ (105%)	+2.7 σ (119%)	+1.6 σ (111%)	-1.4 σ (90%)	-0.04
Entire country	272386	+0.4 σ (102%)	-0.1 σ (99%)	+2.5 σ (115%)	+0.5 σ (103%)	-0.6 σ (96%)	-0.01	

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Country	Region/Wilaya	Superficy (km ²)	Anomaly 2020	Anomaly 2021	Anomaly 2022	Anomaly 2023	Anomaly 2024	VI 2024
Mali	Bamako	200	-0.9σ (085%)	-1.0σ (083%)	-0.8σ (088%)	-1.5σ (075%)	-1.2σ (081%)	-0.00
	Gao	100820	+0.9σ (140%)	-0.4σ (083%)	+0.8σ (138%)	-0.4σ (083%)	+2.4σ (205%)	-0.02
	Kayes	121931	+0.0σ (100%)	-1.1σ (089%)	+1.5σ (116%)	-0.5σ (095%)	-1.2σ (088%)	-0.03
	Kidal	148391	+3.6σ (468%)	+0.4σ (141%)	+0.7σ (174%)	-0.0σ (095%)	+1.4σ (246%)	-0.28
	Koulikoro	89917	+0.6σ (105%)	-0.7σ (093%)	+1.8σ (117%)	-0.8σ (092%)	-0.9σ (091%)	-0.03
	Menaka	77489	+1.6σ (188%)	+0.5σ (129%)	+0.4σ (120%)	+0.0σ (100%)	+2.0σ (213%)	-0.11
	Mopti	79584	+1.4σ (124%)	-0.4σ (093%)	+2.1σ (137%)	+0.4σ (108%)	+1.0σ (117%)	+0.01
	Segou	61972	+1.0σ (112%)	-0.5σ (095%)	+2.0σ (125%)	+0.3σ (104%)	+0.4σ (105%)	+0.00
	Sikasso	71877	-0.1σ (100%)	-0.2σ (099%)	+2.0σ (111%)	-0.0σ (100%)	-2.6σ (085%)	-0.05
	Tombouctou	498297	+1.5σ (155%)	-0.7σ (073%)	+1.6σ (158%)	-0.4σ (085%)	+1.2σ (142%)	-0.08
Entire country	1257151	+0.7σ (106%)	-0.7σ (093%)	+2.1σ (119%)	-0.3σ (097%)	-0.6σ (095%)	-0.05	
Mauritania	Adrar	220687	-0.5σ (020%)	-0.6σ (006%)	+0.6σ (206%)	-0.2σ (063%)	+0.0σ (102%)	-0.04
	Assaba	35239	+0.5σ (114%)	-1.7σ (050%)	+2.2σ (164%)	-1.0σ (073%)	+0.5σ (113%)	-0.04
	Brakna	32734	+0.2σ (109%)	-0.9σ (054%)	+1.4σ (167%)	+0.4σ (117%)	+0.0σ (102%)	-0.13
	Dakhlet-Nouadhibou	37920	-0.3σ (005%)	-0.3σ (004%)	-0.0σ (088%)	-0.3σ (006%)	-0.0σ (097%)	-0.02
	Gorgol	13812	+0.1σ (102%)	-0.9σ (071%)	+1.5σ (148%)	-0.5σ (083%)	+1.0σ (134%)	+0.08
	Guidimakha	10914	+0.4σ (108%)	-1.2σ (073%)	+2.5σ (155%)	-0.7σ (085%)	+0.6σ (114%)	+0.02
	Hodh Ech Chargi	182159	+0.8σ (129%)	-1.2σ (056%)	+0.9σ (133%)	-1.0σ (063%)	+0.2σ (108%)	-0.22
	Hodh El Gharbi	50287	+0.5σ (113%)	-2.0σ (041%)	+1.5σ (144%)	-1.0σ (070%)	+0.6σ (117%)	-0.03
	Inchiri	31504	-0.4σ (011%)	-0.4σ (000%)	+0.2σ (154%)	-0.4σ (003%)	-0.0σ (097%)	-0.06
	Nouakchott	1137	-0.5σ (032%)	-0.6σ (015%)	-0.2σ (067%)	-0.0σ (097%)	+0.1σ (115%)	+0.03
	Tagant	99789	+0.4σ (135%)	-1.0σ (019%)	+1.6σ (222%)	+0.0σ (102%)	-0.0σ (096%)	-0.21
	Tiris-Zemmour	258552	-0.3σ (000%)	-0.3σ (000%)	-0.3σ (000%)	-0.3σ (000%)	-0.0σ (099%)	-0.04
	Trarza	66032	+0.6σ (121%)	-0.5σ (083%)	+1.3σ (144%)	+0.6σ (119%)	+0.8σ (126%)	-0.04
	Entire country	1040397	+0.6σ (117%)	-1.7σ (055%)	+1.8σ (148%)	-0.8σ (078%)	+0.5σ (114%)	-0.10
Niger	Agadez	622088	+1.8σ (212%)	+0.5σ (128%)	+0.3σ (119%)	-0.4σ (075%)	+1.8σ (213%)	-0.18
	Diffa	145423	+1.3σ (134%)	+0.3σ (108%)	+1.7σ (145%)	-1.0σ (075%)	+2.4σ (163%)	-0.01
	Dosso	30935	+1.6σ (115%)	-0.6σ (094%)	+0.5σ (105%)	-2.3σ (077%)	-0.3σ (097%)	-0.03
	Maradi	38874	+0.6σ (110%)	-0.4σ (093%)	+1.2σ (121%)	+0.2σ (103%)	+1.2σ (121%)	+0.02
	Niamey	506	-0.2σ (096%)	-1.3σ (077%)	-1.0σ (082%)	-1.4σ (075%)	-0.5σ (091%)	+0.01
	Tahoua	107482	+1.5σ (138%)	+0.0σ (101%)	+0.3σ (107%)	-0.9σ (076%)	+1.3σ (134%)	-0.04
	Tillabéri	91413	+1.2σ (115%)	-0.5σ (094%)	-0.3σ (097%)	-1.0σ (087%)	+0.4σ (105%)	-0.05
	Zinder	146807	+0.9σ (122%)	+0.0σ (101%)	+1.4σ (132%)	-0.1σ (099%)	+2.1σ (149%)	+0.04
	Entire country	1187491	+1.4σ (122%)	-0.1σ (098%)	+1.0σ (116%)	-0.7σ (088%)	+1.7σ (127%)	-0.04
Senegal	Dakar	606	-0.2σ (097%)	-0.2σ (096%)	-0.1σ (098%)	-0.6σ (090%)	-0.7σ (088%)	-0.01
	Diourbel	4586	+0.4σ (106%)	-0.9σ (087%)	+1.7σ (125%)	-0.3σ (096%)	-0.6σ (091%)	-0.03
	Fatick	7080	+0.3σ (104%)	-0.4σ (095%)	+2.4σ (127%)	+0.1σ (102%)	-0.0σ (100%)	-0.01
	Kaffrine	10878	-0.1σ (099%)	-1.0σ (085%)	+1.4σ (122%)	-0.7σ (089%)	-1.3σ (079%)	-0.05
	Kaolack	5541	+0.3σ (104%)	-0.9σ (089%)	+2.6σ (132%)	-0.2σ (098%)	-1.1σ (087%)	-0.04
	Kedougou	16821	-0.3σ (097%)	-0.6σ (096%)	+1.5σ (111%)	-0.4σ (097%)	-1.0σ (092%)	-0.02
	Kolda	13778	-0.4σ (097%)	-1.0σ (091%)	+1.6σ (115%)	-0.5σ (096%)	-1.6σ (085%)	-0.04
	Louga	25653	+0.9σ (116%)	-0.7σ (088%)	+0.9σ (116%)	-0.7σ (089%)	-0.2σ (096%)	-0.01
	Matam	28560	-0.3σ (094%)	-1.1σ (077%)	+1.3σ (126%)	-0.5σ (091%)	-0.5σ (091%)	-0.00
	Saint Louis	19615	+1.0σ (123%)	-0.2σ (096%)	+0.6σ (115%)	-0.2σ (095%)	+0.6σ (114%)	+0.02
	Sedhiou	7398	-0.5σ (096%)	-0.6σ (095%)	+2.5σ (119%)	-0.1σ (099%)	-0.6σ (096%)	-0.02
	Tambacounda	43144	-0.2σ (097%)	-1.0σ (087%)	+1.5σ (119%)	-0.5σ (094%)	-1.1σ (085%)	-0.04
	Thies	6924	+1.0σ (113%)	+0.1σ (102%)	+2.0σ (125%)	+0.9σ (111%)	+0.7σ (109%)	-0.00
	Ziguinchor	7592	-0.2σ (098%)	+0.8σ (106%)	+2.9σ (121%)	+0.5σ (104%)	+0.1σ (101%)	-0.01
Entire country	198320	+0.0σ (100%)	-0.8σ (091%)	+1.7σ (119%)	-0.4σ (096%)	-0.8σ (091%)	-0.02	
Chad	Barh-El-Gazel	49876	+1.2σ (138%)	-0.7σ (078%)	+1.6σ (150%)	-0.5σ (083%)	+1.9σ (162%)	+0.03
	Batha	90543	+1.4σ (134%)	-0.0σ (100%)	+2.0σ (149%)	-1.1σ (072%)	+1.3σ (132%)	-0.01
	Borkou	149318	+1.7σ (270%)	+0.4σ (135%)	+1.1σ (207%)	-0.7σ (027%)	+2.5σ (345%)	-0.22
	Chari-Baguirmi	46298	+0.6σ (106%)	-0.7σ (093%)	+1.7σ (117%)	+0.3σ (103%)	+0.1σ (101%)	-0.01
	Ennedi Ouest	123959	+0.8σ (184%)	+0.2σ (117%)	+0.4σ (139%)	-0.6σ (043%)	+3.1σ (422%)	-0.04
	Ennedi-Est	83306	+1.6σ (262%)	+0.1σ (114%)	+0.5σ (155%)	-0.3σ (068%)	+3.1σ (416%)	-0.09
	Guera	60921	+0.1σ (101%)	-1.0σ (091%)	+1.4σ (113%)	-0.5σ (095%)	-0.7σ (094%)	-0.02
	Hadjer-Lamis	29085	+1.5σ (123%)	-0.3σ (095%)	+2.1σ (132%)	+0.0σ (100%)	+1.2σ (118%)	+0.01
	Kanem	72851	+1.3σ (150%)	-0.6σ (076%)	+1.6σ (164%)	-0.6σ (076%)	+2.9σ (215%)	+0.10
	Lac	21746	+1.5σ (120%)	+0.7σ (109%)	+2.5σ (132%)	-0.8σ (090%)	+1.0σ (113%)	-0.02
	Logone Occidental	8640	-1.2σ (091%)	-1.8σ (087%)	-1.2σ (091%)	-0.5σ (096%)	-2.2σ (084%)	-0.03
	Logone Oriental	23840	-0.5σ (098%)	-1.6σ (092%)	+0.1σ (100%)	+0.3σ (101%)	-2.6σ (088%)	-0.03
	Mandoul	17388	-0.4σ (098%)	-1.4σ (092%)	+0.5σ (103%)	-0.9σ (095%)	-2.9σ (084%)	-0.04
	Mayo Kebbi Est	18395	-1.0σ (092%)	-2.0σ (084%)	+0.4σ (103%)	-0.1σ (099%)	-0.7σ (095%)	-0.00
	Mayo-Kebbi Ouest	12551	-1.7σ (088%)	-2.2σ (085%)	+0.0σ (100%)	-0.3σ (098%)	-1.5σ (090%)	-0.01
	Moyen-Chari	40810	-0.5σ (097%)	-1.4σ (092%)	+1.4σ (108%)	-0.8σ (095%)	-1.3σ (093%)	-0.02
	N'Djamena	471	+0.7σ (110%)	-1.2σ (082%)	+0.5σ (107%)	-0.3σ (096%)	-0.1σ (098%)	-0.01
	Ouaddai	29689	+1.2σ (121%)	-0.1σ (099%)	+2.2σ (138%)	-0.9σ (085%)	+0.3σ (105%)	-0.03
	Salamat	68151	-0.2σ (098%)	-1.7σ (085%)	+0.5σ (105%)	-1.2σ (089%)	-0.4σ (097%)	-0.00
	Sila	36285	+0.6σ (107%)	-0.8σ (091%)	+1.2σ (114%)	-1.2σ (087%)	-0.2σ (098%)	-0.02
Tandjile	17850	-1.0σ (093%)	-2.0σ (087%)	-0.7σ (096%)	-0.8σ (095%)	-1.4σ (091%)	-0.01	
Tibesti	210958	-0.1σ (082%)	-0.6σ (024%)	-0.7σ (015%)	+0.1σ (113%)	+0.1σ (115%)	-0.13	
Wadi Fira	52068	+1.5σ (156%)	+0.2σ (107%)	+1.2σ (145%)	-0.7σ (075%)	+1.6σ (158%)	+0.05	
Entire country	1272128	+0.6σ (104%)	-1.1σ (091%)	+1.6σ (113%)	-0.9σ (093%)	-0.0σ (100%)	-0.01	

RAINFALL CONTEXT

The West Africa and Sahel region, like many other rainfall-dependent areas, experiences variations in precipitation. These irregularities weaken local communities.

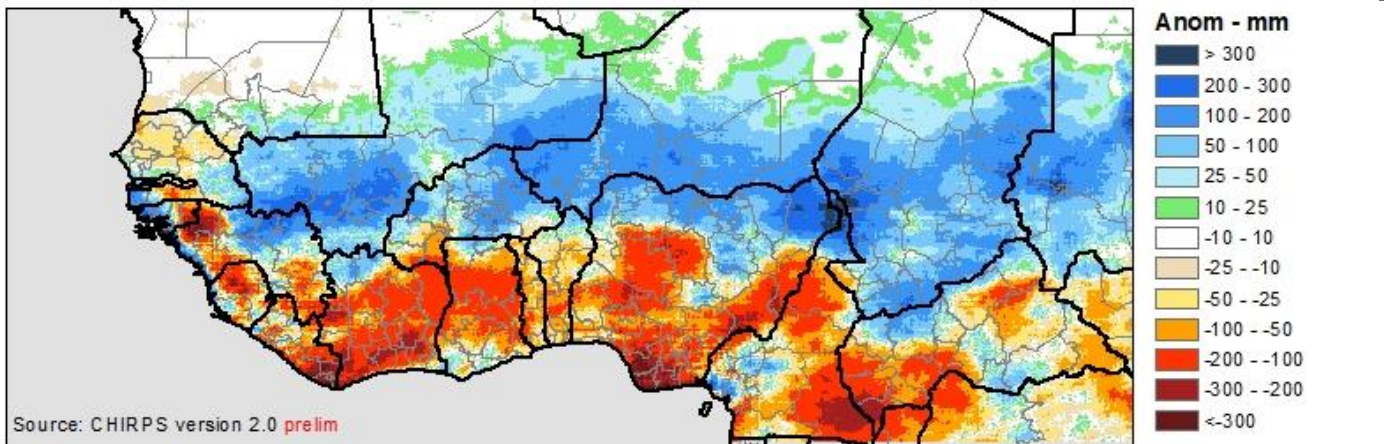
The first part of the 2024 rainy season is characterised by erratic rainfall patterns. Following a late start to the rainy season, particularly in the coastal countries, there were some lengthy dry spells, for example in Mauritania, followed by significant rainfall that caused flooding, especially in Mali, Niger, northern Chad, and northern Nigeria.

Map 6 shows the anomaly of cumulative precipitation derived from satellite imagery for the 2024 rainy season (May to August) provided by the United States Geological Survey (USGS).

In the western part and the coastal countries, rainfall is deficient. In contrast, the Sahelian zone has benefited from above-normal precipitation, promoting the development of forage resources, replenishing water points for livestock, and aiding the growth of rain-fed crops. However, these heavy rains have also caused flooding in urban centres and overflowed rivers.

Map 7 presents the precipitation forecasts for September 2024, provided by the Climate Prediction Center (CPC) of the National Oceanic and Atmospheric Administration (NOAA). This map indicates expected rainfall for the end of the season, which is projected to be above normal across most areas, except for the ocean-facing coastal regions.

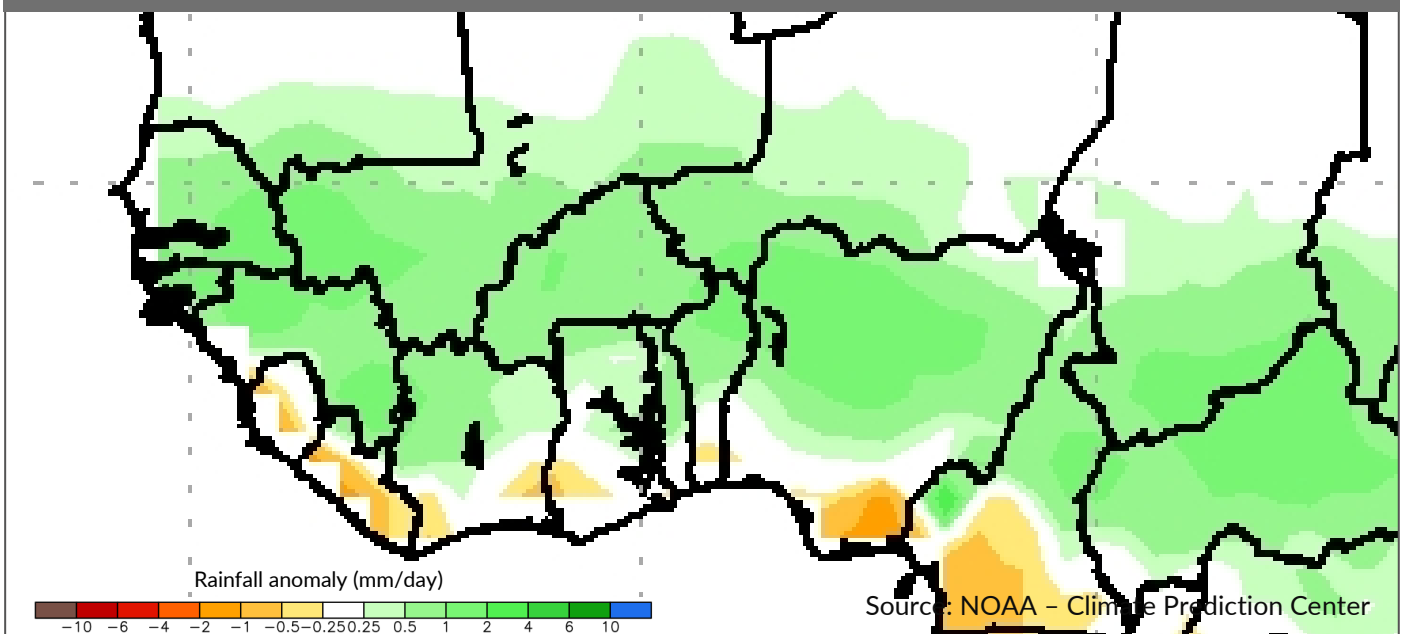
MAP 6: RAINFALL ANOMALIES MAY-AUGUST 2024 (USGS)



Map produced by USGS/EROS



MAP 7: RAINFALL FORECAST FOR SEPTEMBER 2024 (NOAA-CPC)



CONCLUSION

WINTERING SEASON 2024

At mid-season of the 2024 rainy season, biomass production shows a marked contrast between the coastal countries and those in the western Sahelian belt, which are experiencing deficits, and the eastern countries where production is in surplus.

The central region, comprising western Mali, northern Burkina Faso, Niger, and northern Chad, has recorded exceptionally good production levels.

In contrast, the rest of the region has seen biomass production below average. The lowest production levels are observed in western Mali, eastern Mauritania, and central Senegal. This production deficit can be attributed to a late start and interruptions in rainfall. The rainfall trends at the end of the season will determine the overall production balance.

Biomass production in the coastal countries continues to follow a declining trend in recent years. At mid-season, only northern Nigeria exhibits positive anomalies across this area. This situation

further complicates transboundary transhumance between this region and the northern Sahelian countries.

Following a late start to the rainy season, the region has generally experienced abundant rainfall, despite some localized dry spells. These heavy rains have led to above-normal river flows, causing flooding mainly in Mali, Niger, northern Chad, and northern Nigeria.

The end of the rainy season will be crucial for accurately assessing biomass production. Except for the ocean-facing coastal zone, forecasts indicate a positive trend for the entire region, with a humid and late end to the season.

From a broader perspective, while the international context plays a role, it is the geopolitical and security situation in the region that has a more significant impact on herders, particularly due to cross-border movements and high concentrations in certain receiving areas.

RECOMMENDATIONS

- Follow general recommendations in support of pastoral and agropastoral sectors:
 - Advocate for the recognition of the importance of transhumant livestock for the functioning of the Sahelian agrarian system
 - Facilitate pastoral mobility
 - Develop services for herders and livestock (animal health, vaccination, etc)
 - Improve pastoral infrastructure, which should be considered a priority for stability and socio-economic development in the countries covered by the monitoring system
- Conduct regular monitoring at the end of the rainy season in targeted areas, particularly in western Mali, eastern Mauritania, and central Senegal
- Facilitate transhumance, especially cross-border, to reduce the vulnerability of pastoral communities facing biomass production deficits and persistent insecurity
- Establish a rapid response and anticipation mechanism for agropastoral communities in the tri-border area
- Follow specific recommendations that will be formulated during the end-of-season analysis in the regional and national reports produced by ACF, expected in November 2024
- Operationalise the regional livestock feed reserve

The data used for the calculation of biomass production comes from the data generated by the COPERNICUS ground 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.

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