



AGRHYMET RCC-WAS

Regional Climate Center for West Africa and the Sahel



Special Bulletin of the 2024 Seasonal forecasts of the Agro-Hydro-Climate characteristics for the Sahelian and Sudanian zones of West Africa and the Sahel
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.....Generally a wet rainy season is expected in 2024 over the Sahelian belt, with late to normal starting dates of the agricultural season in the Sahel-Central and early to normal s in the Sahel-West and East; late to normal ending dates of the agricultural season; short dry spells at the beginning of the season in the Sahel-West and medium to long dry spells in the Sahel-East and generally long dry spells towards the end of the season over the entire Sahelian belt; and above-average runoff in the main Sahelian river basins.....

I. State of the oceans and outlook

In March 2024, sea surface temperatures (SSTs) in the equatorial Pacific Ocean were slightly above average, but still neutral with a difference between 0 and 0.5°C. However, they continued to decrease compared with previous months, with an anomaly index of +1.24°C over the NINO3.4 (5N-5S, 170W-120W) zone'. Over the Tropical Atlantic

(including the Gulf of Guinea basin), the Indian Ocean and the Mediterranean Sea, warming is generally observed at the surface of these basins. Indeed, North Atlantic Ocean temperature and the Indian Ocean Dipole Index (IOD) remained positive and persistent (Figure 1).

According to ENSO forecasts for the central equatorial Pacific basin, based on initial conditions in April, the trend is towards the onset of La Nina (falling temperatures with anomalies below -0.5°C), which is very likely

to occur during the 2024 rainy season. As for the North Atlantic Ocean, forecasts indicate that warming will continue over the next two months, while the Indian Ocean dipole should also remain positive.

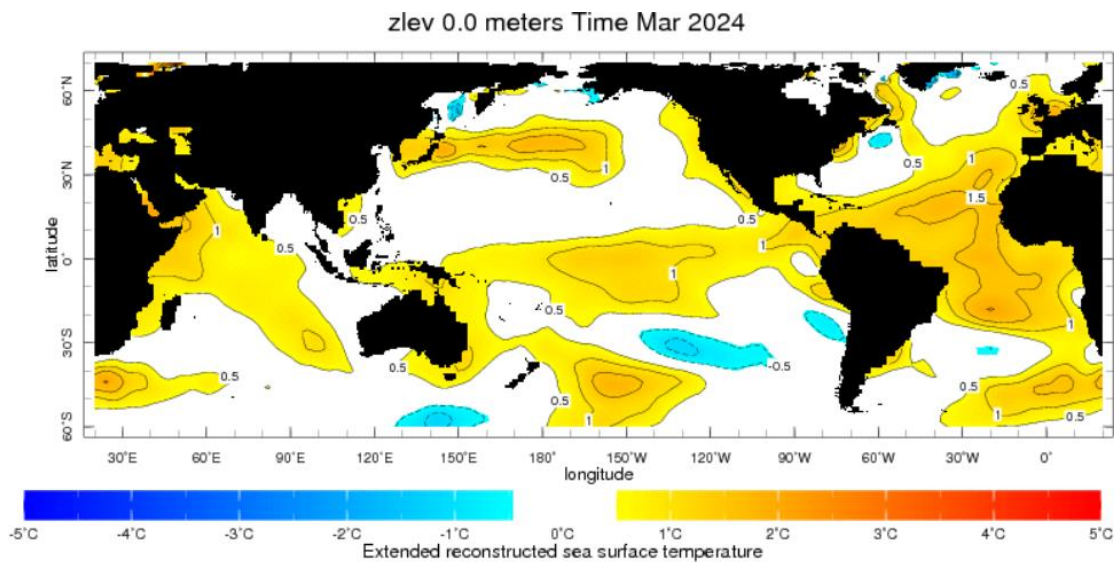


Figure 1: Sea surface temperature (SST) anomalies for March 2024, compared to the average of the 1991-2020 baseline period (Source: NOAA).

II- Seasonal forecast of agro-hydro-climatic characteristics

Seasonal forecasts are developed on the basis of analyses of the current situation, likely changes in Ocean Surface Temperatures (SSTs), statistical models derived from NMHSs data, experts' knowledges of climate characteristics in the region and forecasts from the world's major climate centers. The analyses have led to the following forecasts, based on average values for each parameter over the 1991-2020 reference period.

2.1. Onset of Agricultural season

On the eastern side of the Atlantic (Senegal, Gambia, Guinea Bissau Guinea, northern Sierra Leone and southern Mauritania and Mali), normal to early start dates are forecast for the agricultural season. In the central Sahelian and Sudanian zone (extreme eastern Mali, Burkina Faso, south-western and south-central Niger, extreme north-eastern Cote d'Ivoire, northern

Ghana, Togo, Benin and north-western Nigeria), late to normal start dates are expected. On the other hand, in the extreme east of the region (extreme southeast Niger, northeast Niger and southern Chad), it is highly expected that the season will have a normal starting (Figure 2).

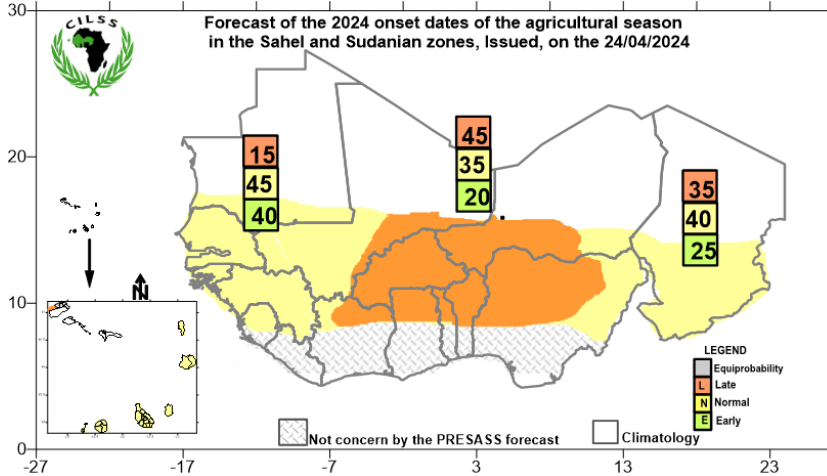


Figure 2: Outlook of the onset dates for the 2024 agricultural season in the Sudanian and Sahelian zones of West Africa

2.2. Length of dry spells at the beginning of the agricultural season

Short to average dry spells are expected at the beginning of the agricultural season, in the western part of the Sahelian and Sudanian strips of West Africa, particularly over southern Mauritania, the southern half of Mali, Senegal, the Gambia, Guinea Bissau, Guinea, northern parts of Sierra Leone and Côte d'Ivoire and in the northwestern part of Ghana and the western part of Burkina Faso. In the western half of Burkina Faso, the agricultural areas of Niger and Chad, the north-east of Ghana and the northern parts of Togo, Benin and Nigeria, dry spells are expected to be average to long at the beginning of the season (Figure 3).

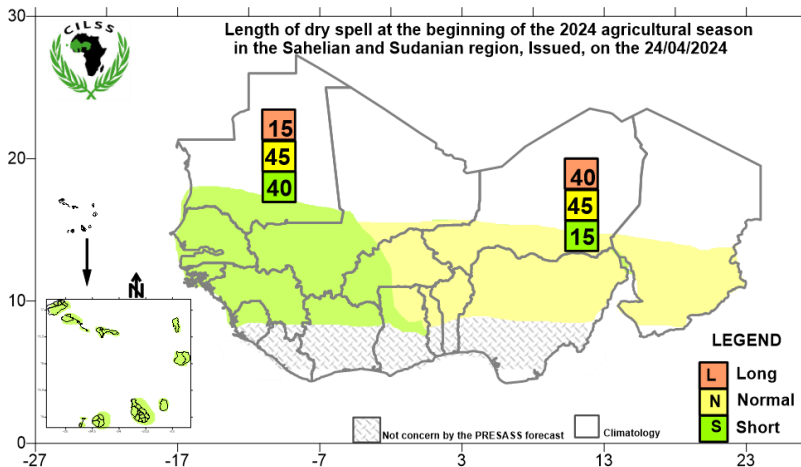


Figure 3: Outlook of dry spells at the beginning of the 2024 agricultural season in the Sudanian and Sahelian zones of West Africa

2.3. Cumulative seasonal rainfall

Average to above-average rainfall totals are expected during May-June-July season in most of the Sahelian belt, from the Cabo Verde Islands to Chad and over the coastal parts of Ghana, Togo, Benin and Southwestern Nigeria. Rainfall total is expected to be below average in Sierra Leone, Liberia, the extreme south-east of Nigeria and the coastal part of Cameroon. Elsewhere, rainfall totals are expected to be close to the climatological average ((Figure 4).

Above-average to average rainfall totals are expected during June-July-August ((Figure 5) and July-August-September (Figure 6) seasons, in the agricultural strips of Chad, Niger, Mali, Mauritania, Senegal, Gambia, Burkina Faso, Guinea Bissau and the northern parts of Guinea, Côte d'Ivoire, Ghana, Togo, Benin, Nigeria and Cameroon. Cumulative rainfalls are expected to remain equivalent to above-average in June-July-August over the coastal parts of Ghana, Togo, Benin and South-western Nigeria and below-average in Sierra Leone, Liberia, and in the extreme South-east of Nigeria. Elsewhere, rainfall totals are expected to be close to the climatological average.

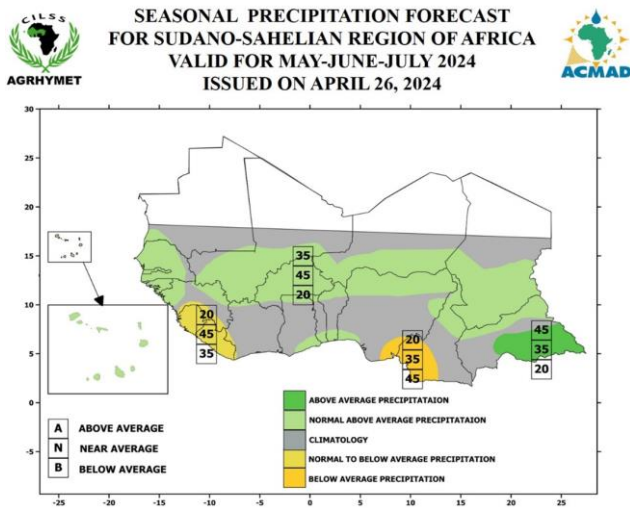


Figure 4: Outlook of cumulative rainfall for the period May-June-July season 2024 over Sudan and Sahel areas of West Africa

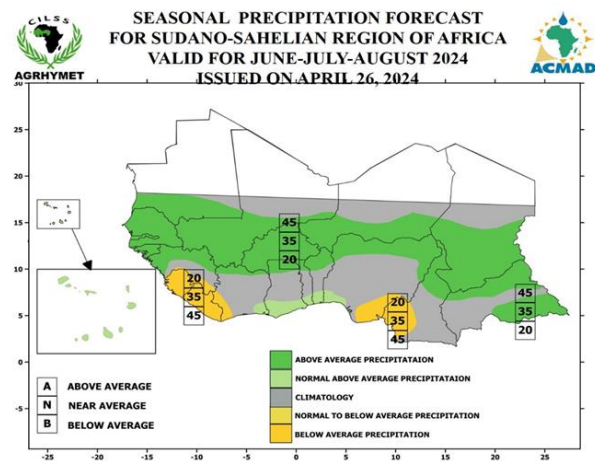


Figure 5: Outlook of cumulative rainfall for the period June-July-August 2024 over Sudan and Sahel areas of West Africa

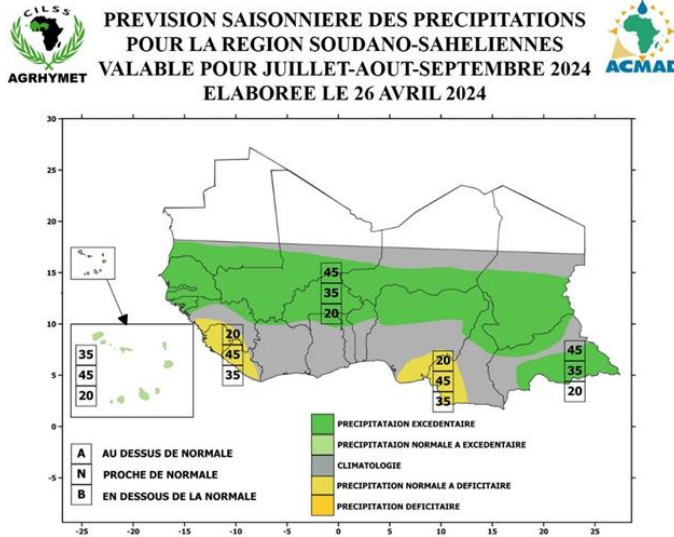


Figure 6: Outlook of rainfall accumulation for the period July-August-September 2024 over Sudan and Sahel areas of West Africa

2.4. Flows of the river basins in the Sahelian and Sudanian zones of West Africa and the Sahel

Generally average to above average flows are expected in all river basins of West Africa, except the Lower Niger, the Lower Volta, the Sassandra and the Mono basins.

Specifically, above-average flows are expected in the Gambia Basin, the Upper Senegal Basin (in Mali, Senegal and Guinea), the Upper Niger River Basin (in Guinea, Côte d'Ivoire and Mali), the Inner Delta of the Niger River (in Mali), the Nigerien and Nigerian portions of the middle basin of the Niger River, the Komadougou Yobé, the Logone Basin, the Upper Volta Basin (in Côte d'Ivoire, Ghana, Togo and Burkina Faso), the Comoé (in Côte d'Ivoire and Burkina Faso) and the Bandama (in Côte d'Ivoire), (Figure 7).

Average to above-average flows (compared to the reference) are expected in lower basin of the Senegal River (in Senegal and Mauritania), the Malian and Burkinabe portions of the middle basin of the Niger River, the Chari basin and the Ouémé basin (Benin). The lower Niger River basin, including the Benue River (in Nigeria) and the Mono basin (in Togo and Benin), are expected to experience average to below-average flows. Finally, below-average flows are expected in the Sassandra Basin (in Côte d'Ivoire) and the Lower Volta (in Ghana), (**Figure 7**).

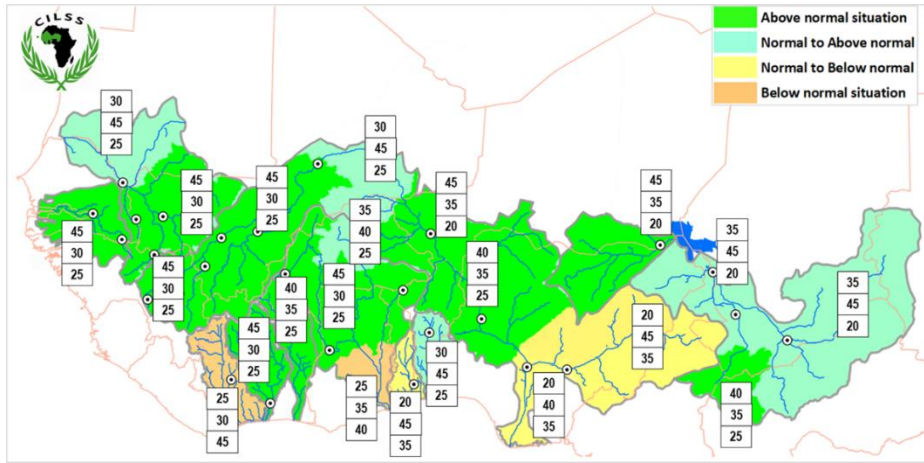


Figure 7: Outlook of 2024 flows of the rivers in the hydrographic basins of the Sudanian and Sahelian zones of West Africa and the Sahel

2.5. Length of dry spells toward the end of the season

Towards the end of the season, short to average dry spells are expected on the Atlantic coast covering southern Mauritania, Senegal, Gambia, Guinea Bissau, Guinea and northern Sierra Leone, central Nigeria and northern parts of Benin and Togo. On the other hand, dry spells are expected to be long to average throughout the rest of the area covering southern Mauritania, the agricultural parts of Mali, Niger and Chad, Burkina Faso and the northern parts of Côte d'Ivoire, Ghana, and Nigeria (**Figure 8**).

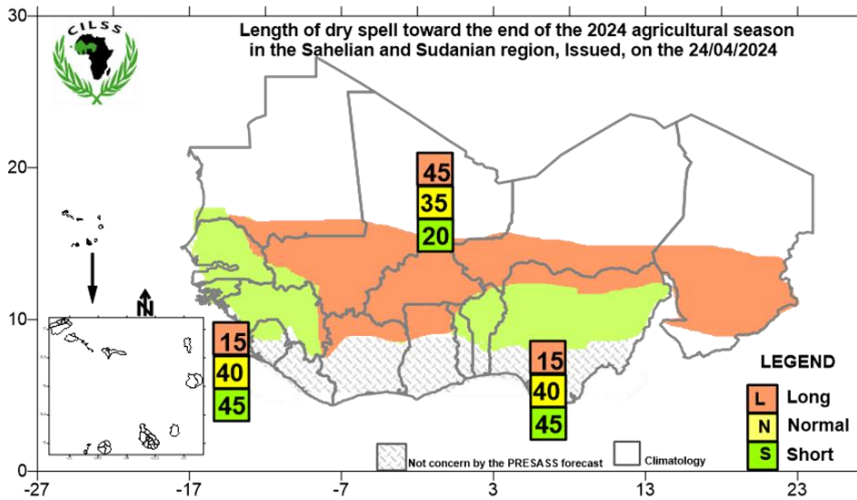


Figure 8: Outlook of the length of dry spells towards the end of the 2024 agricultural season in the Sudanian and Sahelian zones of West Africa

2.6. Cessation of the agricultural season

Generally late to normal cessations of the season are expected in the Sahelian and Sudanian strips of West Africa and Chad (**Figure 9**).

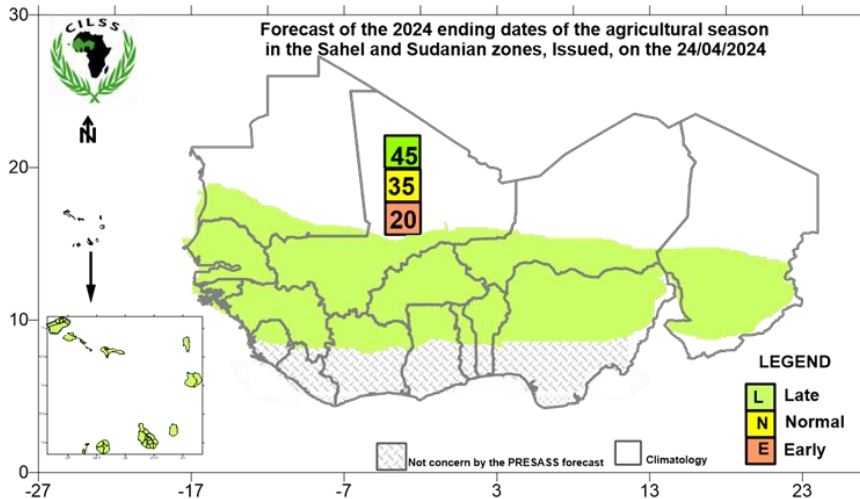


Figure 9: Outlook of the cessation dates of the 2023 agricultural season in the Sudanian and Sahelian zones of West Africa and the Sahel

III. Possible negative implications of the 2024 Seasonal Forecasts

The 2024 seasonal forecast, while predicting advantageous characteristics, may also have negative implications together with or instead of the more expected positive ones. Indeed, in areas where above-average rainfall totals, early onsets of the season, above-average to average runoffs and short length of dry spells are forecast, it is not excluded to observe troublesome situations that can, for example, be linked to excessive humidity, rapid filling of low-pressure areas and overflowing of rivers, the rise of groundwater, the poor preparation of the agricultural season and transhumance movements, the impassability of roads, the difficulties of travel and access to areas of vital, economic and health interests.

Also, in areas where late onset of the season and long dry spells are expected, it is probable that rainfall will be poorly distributed over time and space, which can disrupt the development of crops and fodder plants, crop and transhumance calendars, prolong the lean season, exacerbate the vulnerability of populations and lead to the abandonment of farms and the departure of labor force from rural areas.

IV. Risks related to the negative implications of the rainy season

- The likely risks related to the expected characteristics of the 2024 rainy season can be many and varied depending on the area. The wet nature of the season portends significant risks of flooding, submersion and therefore reduction of arable land, destruction of infrastructure (homes, roads, markets and schools, etc.), loss of crops and fodder, drowning of livestock and human beings, proliferation of germs of waterborne and diarrheal diseases (cholera, malaria, dengue, etc.), crop pest outbreaks, water pollution, restriction of movement of people and animals, soil water erosion, landslides,

silting up of watercourses, weed outbreaks, post-harvest losses, loss of human and animal lives, etc.

- In areas where the onset dates of the agricultural season will be late and the dry spells long, there is also a risk of persistent heat waves and hot winds, delays in the return of transhumant herders, loss of seedlings and harvests, and a drop in agricultural, fodder and fishing yields, food deficits, complication of food and nutrition crises, rising food prices, increased vulnerability, loss of livestock and falling animal prices, etc.
- The combination of these likely climatic risks with situations of poverty and vulnerability of populations could lead to or exacerbate situations of land conflicts related to land use and land use change, conflicts between herders and farmers, conflicts over public infrastructure, social tensions and favor population idleness, begging, social tensions, violence and civil insecurity (banditry, terrorism, etc.).

V. Recommendations

5.1. With regard to the risk of flooding

Generally, the rainfall expected in the Sudanian and Sahelian zones of West Africa and Chad and the above-average flows expected in most of the river basins of the Sahel suggest a high risk of flooding that could lead to loss of crops, properties and animals and human life in the exposed localities. To deal with those risks, it is recommended to:

- Strengthen the communication of seasonal forecasts and their updates in order to inform, raise awareness among communities about risks and strengthen their capacities to avoid disasters, by supporting the efforts of the medias, disasters risks reduction platforms, NGOs and countries EWS;
- Strengthen the monitoring and response capacities of the agencies in charge of flood monitoring, disasters risks reduction and humanitarian aids;
- Advise against and avoid the uncontrolled occupation of flood-prone areas by dwellings, crops and animals;
- Strengthen protective dikes and maintain dams and roads infrastructures;
- Clean the drainage channels in order to facilitate the evacuation of rainwater;
- closely monitor the warning thresholds in sites at high risk of flooding and maintain strong collaboration between hydrological and meteorological services in order to enable anticipatory flood management in exposed areas, particularly in the Gambia Basin, the Upper Senegal Basin (in Mali, Senegal and Guinea); the upper Niger River basin (in Guinea, Côte d'Ivoire and Mali), the inner Niger River Delta (in Mali), the Nigerien and Nigerian portions of the middle Niger River basin, the Komadougou Yobé, the Logone basin, the upper Volta basin (in Côte d'Ivoire, Ghana, Togo and Burkina Faso), Comoé (in Côte d'Ivoire and Burkina Faso) and Bandama (in Côte d'Ivoire);
- reduce large transhumance and avoid the movement of livestock at night and taking care of animals to children;
- Promote the cultivation of crops adapted to the persistence of situations of excess water in the soil

- maintain vigilance and follow the updates of these seasonal forecasts and the short to medium ranges forecasts produced and disseminated by the national meteorological and hydrological services.

5.2. With regard to the risk of diseases

Wetlands and flooded areas can be exposed to the development of disease germs (cholera, malaria, dengue fever, schistosomiasis, etc.). Also, the late onset of the season and the long to average dry spells expected in some parts of the Sahel could cause a persistence of high temperatures and dust favorable to the proliferation of other epidemic disease germs. For that, it is recommended to:

- Strengthen the capacities of national health systems and national disasters risks reduction platforms;
- Disseminate warning information on climate-sensitive diseases and raise awareness among the population, in collaboration with meteorology, water resources and health services,
- Sanitize inhabited areas and avoid contact with contaminated water, through drainage channel cleaning operations;
- Prevent diseases by vaccinating populations and animals;
- Prevent epizootic germs that prefer moist conditions;
- Increase vigilance against crop diseases and pests (armyworm and other insect pests).

5.3. With regard to the risk of drought

In areas where long dry spells are expected to lead to water deficits, particularly in the Sahel, there is a high risk that crop and fodder growth will be affected. To deal with that, it is recommended to:

- Diversify agricultural practices through the promotion of irrigation and market gardening to reduce the risk of shortage of food production;
- Select crop species and varieties that are tolerant to water deficit in exposed areas;
- Adopt cultivation techniques on water and soil conserving;
- Prevent the development of millet leaf miner caterpillar;
- Ensure rational management of surface water resources to meet different uses and prevent conflicts, particularly in the lower Niger River basin including the Benue (in Nigeria), the Mono basin (in Togo and Benin), the Sassandra basin (in Côte d'Ivoire) and the lower Volta (in Ghana);
- Interact with technicians from the national and regional departments of Meteorology, Hydrology and Agriculture to obtain specific information and advice in terms of actions.

5.4. With regard to Conflict Risks

In areas where long dry spells are expected to lead to deficits in agricultural and feed production, it is recommended to:

- Strengthen productive capacities, at all levels by promoting the effective use of adequate strategies for adaptation, yield increase and resilience of the various agro-silvo-pastoral production systems;
- Raise awareness and create the conditions for inclusive, non-discriminatory and equitable management of public infrastructure and productive, environmental and socio-economic resources;
- Promote job creation, private entrepreneurship and income-generating activities for the most vulnerable groups, especially young people, to reduce idleness and ensure harmonious and sustainable development, at the local, national and regional levels. This will enable, among other things, to create the right conditions to strengthen the population's attachment to their land;
- Create and develop basic infrastructure and improve the livelihoods of communities.

5.5. To value the rainy season

Regard to the configuration of the 2024 rainy season predicting a globally wet situation in the Sudanian and Sahelian zones of West Africa and Chad, it is recommended that farmers, herders, water resources managers, projects, NGOs and authorities:

- Take advantage of average to above-average runoff by developing irrigated crops, particularly in the floodplains of the lower basin of the Senegal River (in Senegal and Mauritania), the malian and burkinabe portions of the middle Niger River basin, the Chari basin and the Ouémé basin (Benin);
- invest more in high-yielding crops that are tolerant of wet conditions (rice, sugarcane, tubers, etc.);
- set up systems for the collection and conservation of runoff water for agricultural and domestic use during the dry season,
- support the deployment of climate-smart techniques to increase crops and fodders yields, related to climatic risks, particularly those tolerant to excessive rainwater and drought,
- strength information, supervision and agro-hydro-meteorological assistance systems for producers;
- facilitate farmers' access to improved seeds and agricultural inputs adapted to their needs;
- secure incomes and alleviate agricultural losses through the promotion and subscription of index-based agricultural insurance.

It is recommended that users of the different sectors must be attentive to the updates of these seasonal forecasts that will be made by AGRHYMET CCR-AOS, ACMAD and the national meteorological and hydrological services, throughout the season.

