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Projected Impact of El Niño on Acute Food Insecurity by 2027

Methodology and Results Note

Summary

This analysis estimates the potential increase in acute food insecurity associated with the ongoing El Niño event through the end of 2027. Building on regional analyses conducted across Asia and the Pacific, Eastern and Southern Africa, Western and Central Africa, and Central America, South America and the Caribbean, the assessment examines how El Niño-related climate shocks may translate into deteriorating food security outcomes.

The analysis covers 45 countries for which comparable baseline food insecurity estimates (IPC Phase 3+ or equivalent) are available. Under the central scenario, an estimated **49 million additional people** could fall into acute food insecurity by the end of 2027, representing an increase of approximately **22 percent** relative to the baseline population already experiencing crisis-level food insecurity or worse. The total number of acutely food insecure people across the countries covered by the analysis would rise from approximately **225 million to 274 million people**.

The largest absolute increases are projected in **South America and the Caribbean and in**

Southern Africa. The largest relative increase is projected in **Central America**. Significant impacts are also expected across parts of **Eastern Africa**, and in **South and Southeast Asia**, where El Niño-related rainfall deficits are expected to affect agricultural production and rural livelihoods.

Introduction

El Niño is one of the most important drivers of global climatic variability. It influences rainfall patterns, temperatures, and the occurrence of floods and droughts across many food-insecure regions of the world.

El Niño conditions were officially declared on 11 June 2026 and the [latest outlook](#) indicated a high probability that the event will intensify further, potentially becoming one of the strongest El Niño episodes observed in recent decades. The direction (drier or wetter) and timing of the effects depend on seasonal rainfall patterns. The food security effects of these climate shocks depend on the timing and characteristics of the lean seasons, which are the periods of the year when household food deficits are highest.

August 2026

Although the relationship between El Niño intensity and food security outcomes is not linear, stronger events increase the likelihood of adverse climatic conditions, including prolonged droughts, crop failures, heat stress, flooding, and disruptions to agricultural production systems. These impacts can translate into declining food availability, reduced agricultural incomes, higher food prices, and increased humanitarian needs.

The ongoing 2026 El Niño has the additional characteristic of being hard to predict, due to its magnitude.

Regions currently exhibiting the greatest climatic concern include:

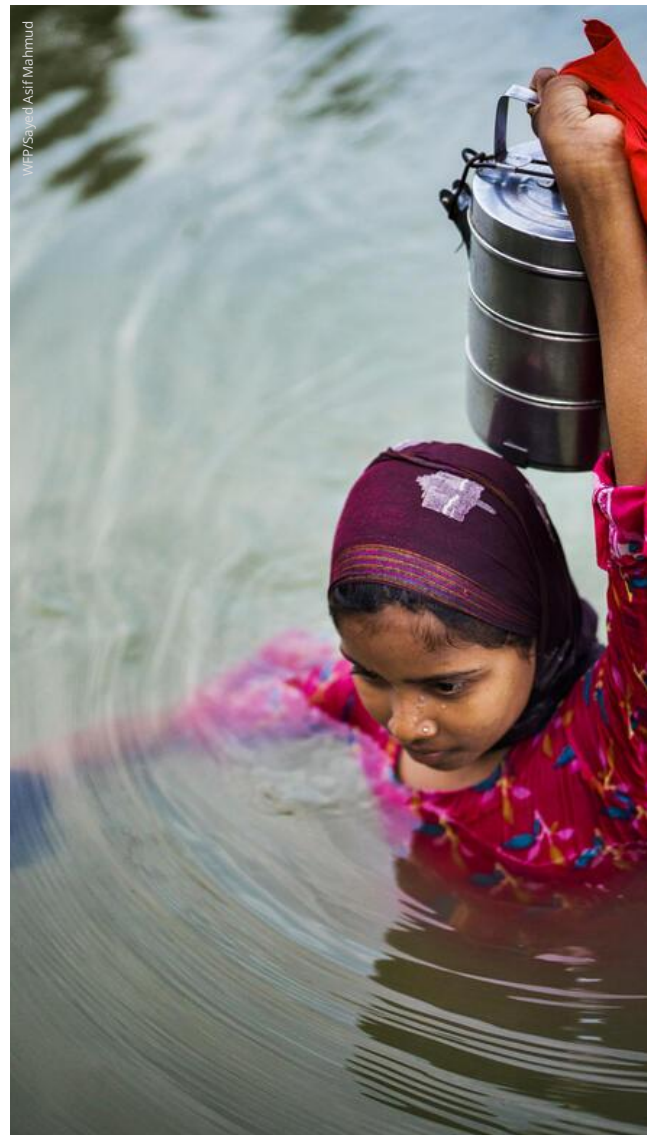
- Areas of the **eastern Sahel**, where seasonal rainfall deficits may emerge during critical stages of crop development.
- The **Dry Corridor and other drought-prone areas of South America and the Caribbean**, where rainfall shortages threaten staple crop production.
- **South and Southeast Asia**, where uneven monsoon performance may result in both drought and flood-related production losses.
- Parts of **Eastern Africa**, where below-average rainfall and above-average temperatures are increasing crop water stress.

Given the already elevated levels of food insecurity in many of these regions, even moderate climatic shocks can substantially increase the number of households unable to meet minimum food requirements.

Methodology

Because the pathways through which El Niño affects food security differ across regions, the analysis combines several complementary approaches while maintaining a common objective: estimating the number of people who may be pushed into IPC Phase 3 or equivalent (Crisis) or worse due to El Niño-related shocks.

The overarching approach is to consider baseline food insecurity levels as per the most recent IPC, the *Cadre Harmonisé* for West Africa and the CARI (Consolidated Approach to Reporting Indicators) - all of which are data sources for the annual Global Report on Food Crises.



Purpose

This analysis constitutes an initial modelling exercise applied to a limited subset of countries and relies on the precipitation data currently available. As additional climatic observations become accessible, the model will be recalibrated and the estimates updated accordingly.

The purpose of this exercise is to provide an indicative assessment of the magnitude and timing of potential adverse effects on food security. In line with this objective, the analysis deliberately excludes countries for which El Niño conditions are expected to result in neutral or beneficial outcomes. The estimates therefore represent a targeted assessment of negative food security impacts among countries considered susceptible to adverse El Niño-related climatic shocks and should not be interpreted as reflecting the net global consequences of the phenomenon.

East and Southern Africa, Central America, South America and the Caribbean

The statistical model relies on an IPC-compatible baseline, a World Bank World Food Security Outlook forecast and expert judgements on likely El Niño impacts, informed by evidence from previous El Niño events. It then assesses the transmission channels (impact pathways) through which El Niño influences food security, such as crop production, and examines the factors that may amplify or mitigate these effects to estimate the most likely consequences for affected populations.

The model combines an algorithm with an AI analyst. The algorithm provides the initial evidence-based assessment, while the AI analyst provides a layer of contextual interpretation, drawing on country-specific conditions, historical analogues, and current risk factors. Through a structured review of the model outputs, the AI analyst identifies where local dynamics may strengthen, weaken, or alter projected impacts, helping to improve the accuracy and plausibility of the final estimates.

The statistical model factored in risk factors associated with ongoing tensions in the Middle East, including observed fuel prices, reliance on fertilizer imports, and domestic food price levels.

Baseline IPC Phase 3+ projections are generated in three-month intervals, beginning with the most recent IPC assessment. These projections are

designed to reflect expected seasonal patterns and trends, while isolating them from any additional impacts attributable to El Niño conditions.

The potential impact of El Niño is then modelled under three alternative scenarios corresponding to moderate, strong, and very strong El Niño events. For each country, the model requires the selection of one of six consecutive three-month periods representing a likely window of impact. Given that the El Niño impacts vary across the regions according to local rainfall seasons, the most appropriate three-month period was selected at the country level in consultation with regional experts.

The resulting impact estimates are expressed as incremental increases relative to the projected baseline IPC Phase 3+ population, thereby representing additional food insecurity expected under each El Niño scenario. This approach recognizes that food security impacts typically emerge several months after production shocks, often becoming most visible during the subsequent lean season.

Asia and the Pacific

The methodology applied in Asia and the Pacific builds on the core principle of estimating the likely strength of El Niño and its impact on the number of people expected to be pushed into IPC Phase 3 (Crisis) or above.

The methodology uses a country-specific multidimensional risk framework that combines four dimensions associated with El Niño-related food security deterioration: hazard exposure, structural vulnerability, current levels of acute food insecurity, and response capacity. Each country is assigned a score across these dimensions and a final risk score is calculated as:

$$\text{Final Risk Score} = \text{Hazard} + \text{Vulnerability} + \text{Current Hunger} - \text{Response Capacity}$$

The final risk score is combined with the anticipated strength of the 2026 El Niño event to derive an estimated impact percentage. Historical evidence from previous El Niño episodes is subsequently used to calibrate these estimates based on country-specific experience and expert review.



Similar to the previous model, the resulting percentage ranges are then applied to the latest available IPC Phase 3+ population figures to derive the projected number of additional people likely to experience crisis-level or worse food insecurity under different El Niño scenarios.

The framework aims to estimate the incremental impact associated with El Niño-related climatic shocks. However, food insecurity outcomes are shaped by multiple interacting drivers, including conflict, economic conditions and policy responses. The resulting estimates should therefore be interpreted as indicative of the likely deterioration in food security under the combined influence of these factors, including El Niño-related shocks, rather than impacts attributable solely to El Niño.

Western and Central Africa

In West Africa, the analysis draws on Cadre Harmonisé baseline estimates and historical evidence from previous El Niño events.

Given the region's specific vulnerability patterns, impacts are estimated using an analogue-based scenario approach, with the 2023-24 El Niño episode selected as the primary reference because of its widespread and well-documented effects across the region. Three scenarios are considered, assuming that a future El Niño event would have impacts that are less severe than, comparable to, or more severe than those observed in 2023-24. The corresponding impact factors are applied to current food insecurity baselines to estimate the additional population likely to experience CH Phase 3 (Crisis) or worse acute food insecurity.

The resulting estimates were validated through comparison with outputs from the statistical model, which produced broadly consistent results for West Africa.

Limitations

The analysis covers 45 countries for which IPC-compatible food security data are available and where there is documented evidence of vulnerability to adverse El Niño impacts. It does not cover all geographies.

The estimates presented here represent the peak IPC3+ needs. It's important to note they vary by region, occurring earlier in West Africa, later in South America and Southern Africa.



Owing to limitations in the modelling framework, results are presented at the level of country groups rather than individual countries. This approach has the additional benefit of smoothing country-specific variability and highlighting broader regional patterns.

Because of structural limitations of the model, results refer to IPC3+ figures overall. The model does not allow disaggregation across IPC Phases 3, 4 and 5.

While these projections provide an early indication of potential impacts, forecast accuracy improves as the event approaches. Updated long-range and subsequent short-range forecasts will therefore support progressively more precise estimates of the expected impacts on food security. Finally, we acknowledge that there may not be analogues to the current El Niño event in the IPC era. This introduces uncertainty in any projection of future food security impacts.

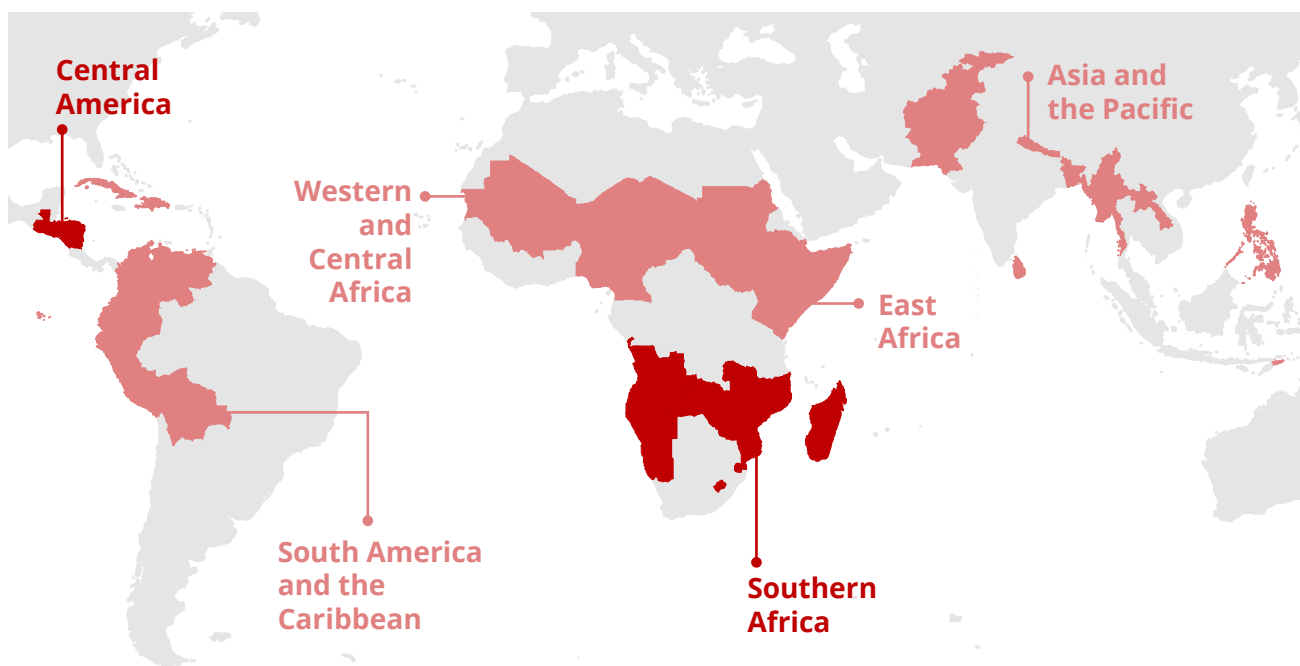


Results

The assessment estimates that approximately **49 million people** could be pushed into acute food insecurity by the end of 2027 across the 45 countries included in the analysis. This corresponds to an increase of approximately **21.6 percent** relative to the baseline population already facing crisis-level food insecurity.

Regional results

Figure 1: Projected El Niño-Related Increase in Acute Food Insecurity by Region



Region	Baseline (millions)	Additional people (millions)	Increase (%)
Asia and the Pacific	73.3	8.2	11.1
Central America	5.0	4.2	83.1
South America and the Caribbean	28.7	12.2	42.6
East Africa	52.9	5.9	11.2
Southern Africa	16.3	12.2	74.9
Western and Central Africa	48.9	6.0	12.2
Total	225.2	48.7	21.6

Geographic Patterns

Southern Africa is projected to experience one of the largest absolute (12.2 million) and relative (74.9%) increases in food insecurity. In **Eastern Africa** the model projects that 5.9 million people will be affected, an 11.2% increase. Persistent rainfall deficits, elevated temperatures, and high levels of pre-existing vulnerability contribute to substantial projected impacts across both agricultural and pastoral areas.

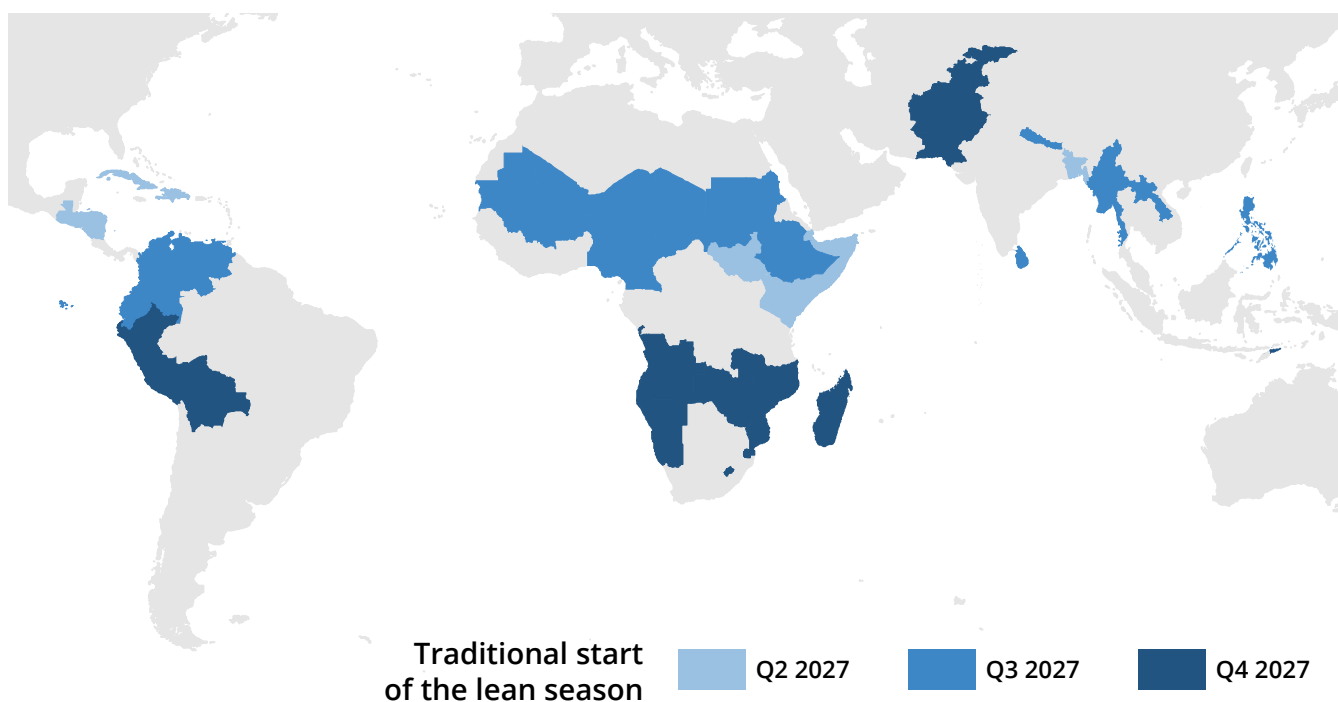
South America and the Caribbean shows among the largest absolute increases (12.2 million). Particularly, **Central America** is projected to have the largest proportional increase (83.1%) of all analyzed areas. Rainfall deficits across drought-prone agricultural zones are expected to reduce staple crop production and accelerate food insecurity deterioration among vulnerable rural households.

In **South and Southeast Asia**, the projected increase reflects a combination of drought risks, uneven monsoon performance, and localized flooding. The region's large population means that even modest percentage increases translate into substantial numbers of additional people experiencing food insecurity.

In **Western and Central Africa**, impacts are expected to be more moderate overall, although localized rainfall deficits in parts of the Sahel may result in significant deterioration in specific areas. Historical evidence suggests that El Niño impacts in this region are variable, which contributes to greater uncertainty around projections.

Temporal Patterns

Figure 2: When the Lean Season Typically Begins



Food Security and Nutrition Analysis Service (VAM)

World Food Programme

Via Cesare Giulio Viola 68/70,
00148 Rome, Italy - T +39 06 65131

wfp.org

For more information, please
contact wfp.vaminfo@wfp.org