MALAWI
IFPRI

STRATEGY SUPPORT PROGRAM | POLICY NOTE 61 NOVEMBER 2026

Preparing for El Niño under uncertainty

The case for adaptive planning

Jan Duchoslav and Tamuka Magadzire

Understanding forecast uncertainty

The ongoing El Niño event is influencing weather patterns around the world including in Malawi, where it is expected to affect the 2026/27 rainy season. Although its typical effects on rainfall and temperature are well-established, their precise timing, location, and severity cannot be predicted with certainty.

Weather depends on many interacting atmospheric and oceanic processes, and a forecast made months ahead cannot determine with absolute certainty which outcome will occur. To reflect this uncertainty, seasonal forecasts are typically expressed as probabilities. They show how the likelihood of a drier, normal or wetter season has shifted from the typical one-in-three chance of each. For the first quarter of 2027, the Department of Climate Change and Meteorological Services (DCCMS) assigns most of southern and central Malawi a 40 percent probability of below-normal rainfall, compared with 35 percent for normal rainfall and 25 percent for above-normal rainfall (DCCMS, 2026). Below-normal rainfall is therefore more likely than either of the other two outcomes, but there remains a 60 percent probability that rainfall will be normal or above-normal.

Although forecast confidence for southern Africa's summer rainfall outlook tends to be higher during El Niño years, particularly when the event is strong (Magadzire et al., 2026), it generally decreases as forecasts become more geographically or temporally specific. Broad rainfall patterns across Malawi's regions can be predicted more reliably than rainfall in a particular district or village. Similarly, a three-month seasonal outlook is generally more reliable than a forecast for an individual week.

Uncertainty does not mean that forecasts lack value. Imperfect forecasts can still improve decision-making by identifying risks that are more likely than usual and providing opportunity to prepare. Forecasts should thus be viewed as tools for managing risk, not predicting the future with certainty.

What the 2026/27 forecast tells us

Within these limits, the current forecast provides several clear signals for planning. DCCMS reports that most global climate models assign a probability of more than 90 percent to a strong El Niño persisting throughout the rainy season (DCCMS, 2026). El Niño generally brings below-normal rainfall to southern and central parts of southern Africa and above-normal rainfall to the north-east, placing northern Malawi in a transition zone. During past moderate-to-strong events, hotter conditions and

water deficits occurred in more than 70 percent of December-to-February seasons across the core of the region, including southern Malawi, compared with 33 percent in an average year. These historical frequencies provide additional information because consensus outlooks seldom assign more than 40 percent to any one rainfall category (Magadzire et al., 2026).

Consensus outlooks combine information from several forecasting models and express the result as probabilities across broad rainfall categories. Because the models may disagree, and because seasonal rainfall is influenced by factors other than El Niño, these outlooks often show relatively small shifts from the one-in-three climatological probability assigned to each category. Historical analysis asks a different question: how frequently particular conditions occurred during past El Niño events. The two sources of evidence are therefore complementary.

Historical experience shows that El Niño poses risks to Malawi, particularly in the Southern Region. Analysis of past El Niño episodes indicates that approximately two-thirds were associated with below-trend food production, and maize harvests declined by an average of 22.5 percent in negatively affected years. During the 2015/16 El Niño, national maize production fell by roughly 30 percent, contributing to widespread food insecurity. More recently, the 2023/24 El Niño was associated with a 22.7 percent decline in national maize production and left an estimated 4.2 million Malawians facing acute food shortages (Duchoslav et al., 2026).

Current forecasts suggest an elevated risk of below-normal rainfall and prolonged dry spells, especially in southern districts. DCCMS estimates that the risk of below-normal rainfall is relatively modest early in the season but rises during the January-March period, when crops are particularly sensitive to moisture stress (DCCMS, 2026). The north is likely to receive normal to above-normal rainfall, except Mzimba and parts of Rumphi. In most of the south and center, rain onset is expected to be delayed and warmer temperatures to increase crop water stress. These signals are sufficient to justify preparation, but not precise enough to determine in advance exactly where, when, and at what scale every intervention should be implemented.

What the forecast cannot tell us, and what that means for action

Forecasts cannot reliably predict which district will receive less rainfall than another or whether a dry spell will occur in a particular week. They also cannot rule out a milder season, since not every past El Niño resulted in below-trend food production in Malawi (Duchoslav et al., 2026). These limits shape how to act: preparedness and response measures should be staged, flexible, and adjusted as the season unfolds (Table 1).

Table 1. Acting on what the forecast cannot tell us

The forecast cannot tell us	What to avoid	What to do
The exact onset date	• Setting fixed planting dates or rigid input delivery schedules	• Deliver inputs early • Advise farmers to plant once rains are confirmed • Encourage staggered planting and retention of seed for possible replanting
Which district or week will be driest	• Making costly district-level allocations based solely on the seasonal forecast	• Pre-position essential supplies across the Southern and Central Regions • Maintain flexible contingency funds • Target using in-season monitoring.
Whether the season will be poor	• Making large, irreversible commitments based solely on the seasonal forecast	• Stage commitments • Pre-arrange responses linked to agreed triggers • Help farmers spread risk across crops and varieties

Towards adaptive planning

Policymakers should therefore prepare for a range of possible outcomes and adjust the response as conditions evolve. This requires distinguishing among three types of action: measures that should be implemented immediately because they are beneficial under a wide range of conditions; measures that should be prepared now but deployed flexibly as broad risks emerge; and costly or highly targeted measures that should be activated only when more precise in-season information becomes available. The appropriate timing depends on the cost and reversibility of the action, the range of conditions under which it is useful, and the precision of the information required to target it effectively (Table 2).

Table 2. Priority actions

Decision stage	Characteristics	Illustrative actions
Act now	• Broadly beneficial • Relatively inexpensive • Easily incorporated into existing programs	• Strengthen extension messaging • Promote sound soil-moisture, soil-health, and fertilizer management • Maintain flood readiness
Prepare now and deploy flexibly	• Require advance procurement, financing, or logistical preparation but can be adjusted as broad conditions emerge	• Prepare social-protection scale-up, • Establish contingency financing • Arrange procurement and possible pre-positioning of short-season and drought-tolerant planning material
Activate using agreed triggers	• Costly, difficult to reverse, or dependent on precise information about location and affected populations	• Distribute free or subsidized inputs • Expand social protection • Issue targeted advice on planting dates or crop choices

Measures that are broadly beneficial across a range of weather outcomes should proceed immediately. These include using the existing extension system to strengthen farmers' understanding of agronomic principles and promote improved soil-moisture, soil-health, and fertilizer management. Such measures can reduce vulnerability to dry conditions while also improving productivity in more favorable seasons.

Other measures should be prepared now but implemented in stages. Actions can be activated earlier when they depend only on broadly defined information, such as evidence of an elevated risk of damaging dry spells somewhere in southern Malawi. Measures that are costly, difficult to reverse, or dependent on knowing precisely where and whom adverse conditions affect should generally be activated only when agreed in-season triggers are met. Relevant triggers could include delayed rainfall onset, accumulated rainfall deficits, deteriorating crop conditions, rising maize prices, and worsening food-security indicators.

Malawi already has a foundation for this approach. In August 2026, following a DCCMS forecast, the Department of Disaster Management Affairs activated Tier 1 drought actions in 23 districts and city councils under the National Anticipatory Action Framework, and advised cooperating partners to activate their drought early action plans (Nsanama, 2026). Government has also developed a National El Niño Preparedness Plan (Government of Malawi, 2026). The plan includes a budgeted list of activities, but little detail on when, where and under what conditions these activities should be carried out. Moreover, the plan faces a funding gap of more than MK300 billion. The priority is therefore to sequence the plan, clearly defining activation points, trigger indicators, and approving authorities. The plan should also be clear on which activities will be prioritized if the funding gap is not closed. This would allow preparation to proceed before the location and severity of impacts are known, while keeping the targeting and scale of the response flexible as in-season evidence emerges and financing permits.

Recommendations

1. **Implement broadly beneficial measures immediately.** Use existing extension systems to strengthen advice on planting, soil-moisture conservation, soil health, and fertilizer management.
2. **Prepare contingent measures before they are needed.** Put financing, procurement, delivery arrangements, and plans for scaling up social protection in place now.
3. **Agree on triggers and decision responsibilities.** Specify how rainfall, crop-condition, maize-price, and food-security indicators will trigger particular measures and who will authorize activation.
4. **Preserve flexibility in targeting and scale.** Avoid committing large resources to narrowly defined locations before in-season evidence shows where needs are greatest.
5. **Link early action to scalable systems.** Build anticipatory action into government delivery and social-protection systems rather than relying primarily on ad hoc stand-alone projects.

ABOUT THE AUTHORS

Jan Duchoslav is a Research Fellow with the Development Strategy and Governance Unit at the International Food Policy Research Institute based in Lilongwe, Malawi.

Tamuka Magadzire is a FEWS NET Regional Scientist with the University of California Santa Barbara Climate Hazards Center and an Affiliate Research Scholar at the University of Botswana. He is based at the Southern African Development Community Secretariat in Gaborone, Botswana.

REFERENCES

Duchoslav, J., A. Jamali, G. Kumchulesi, and J. Nagoli. 2026. El Niño preparedness and response. MaSSP Policy Note 51. Washington, DC: International Food Policy Research Institute. https://hdl.handle.net/10568/183710

Department of Climate Change and Meteorological Services (DCCMS). 2026. 2026/2027 Climate Outlook for Malawi. 2 September. https://www.metmalawi.gov.mw/publications/the-2026-2027-seasonal-outlook/

Magadzire, T., S. Ramessur, S.M. Gamedze, N.C. Mbangiwa, K. Mphale, G. Husak, L. Harrison, and C. Funk. 2026. A multi-indicator framework for assessing the likelihood of ENSO impacts across southern Africa. Climate Services 44: 100756. https://doi.org/10.1016/j.cliser.2026.100756

Government of Malawi. 2026. 2026-2027 National El Niño Preparedness Plan.

Nsanama, W. 2026. DoDMA activates drought action in 23 districts. Malawi24, 28 August. https://malawi24.com/2026/08/28/dodma-activates-drought-action-in-23-districts/

All policy notes published by the Malawi Strategy Support Program (MaSSP) are available at https://massp.ifpri.info/publications/policy-notes/

This work was made possible through financial support from the Embassy of Ireland, Coefficient Giving, FCDO and the CGIAR Science Program on Policy Innovations. It has not been independently peer reviewed. Any opinions expressed here belong to the authors and are not necessarily representative of or endorsed by IFPRI or its funders.

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

A world free of hunger and malnutrition

IFPRI is a CGIAR Research Center

IFPRI Malawi, Area 14 Office, Plot 14/205, Lilongwe, Malawi | http://massp.ifpri.info

© 2026 International Food Policy Research Institute (IFPRI). This publication is licensed for use under a Creative Commons Attribution 4.0 International License (CC BY 4.0). To view this license, visit https://creativecommons.org/licenses/by/4.0.