

# Machine learning forecasts of child malnutrition integrated into Kenya's drought early warning system for first time

LYON, FRANCE, April 6, 2026 /EINPresswire.com/ -- A new machine learning tool for forecasting incidents of acute child malnutrition will support Kenya's national drought early warning system for the first time, Community Jameel and the International Livestock Research Institute (ILRI) announced today in Lyon, France, at the One Health Summit, a high-level international gathering convened by French President Emmanuel Macron.



The success of this forecasting tool demonstrates the power of a 'community of practice' and targeted investments to accelerate promising tools and solutions."

*Prof. Appolinaire Djikeng, ILRI  
Director General*

The machine learning tool, which generates forecasts of child malnutrition that are translated into a dashboard, was originally developed by the University of California, Berkeley (UC Berkeley) in collaboration with researchers at Cornell University, with expansion and testing in Kenya supported by the [Jameel Observatory for Food Security Early Action](#), an international partnership led by the University of Edinburgh with ILRI, Save the Children, the Abdul Latif Jameel Poverty Action Lab and Community Jameel.

Co-developed with Kenya's National Drought Management Authority (NDMA), the dashboard has been formally integrated into the authority's drought early warning processes and is used during meetings of the Kenya Food Security Steering Group, which brings together government departments, United Nations agencies, donors and non-governmental organisations to coordinate food security analysis and response.

It is the first forecasting method within Kenya's early warning system designed to anticipate child-specific food security emergencies ahead of time.

Kenya is home to over 6 million children under the age of five and acute malnutrition remains a major concern, particularly in arid and semi-arid areas. Recent national food and nutrition analysis [estimated](#) that over 740,000 children in Kenya aged 6 to 59 months required treatment for acute malnutrition between April 2025 and March 2026.

Yet many early warning systems have historically struggled to anticipate sudden spikes in

malnutrition caused by droughts, conflicts or compound shocks, relying on outdated or one-time data that limits timely response.

Kenya's drought monitoring and food security systems rely on data collected by the NDMA which collects regular anthropometric data on children under five, including monthly mid-upper arm circumference (MUAC) measurements used to estimate global acute malnutrition (GAM) prevalence. While this routine high-frequency data provides a strong foundation for prediction, it has not historically been used to generate forecasts of malnutrition risk.

The machine learning approach developed by Susana Constenla-Villoslada, a doctoral researcher at UC Berkeley, addresses this gap directly. Historical GAM rates are combined with data on weather patterns, conflict and food prices to train models that learn to recognise how risk accumulates over time. Because malnutrition changes gradually and the underlying drivers tend to persist, past GAM levels are strongly predictive of future ones; a property that enables reliable forecasts at one, three and six-month timeframes. Rather than predicting drought directly, the approach anticipates nutritional risk based on observed trends in child measurements, giving government and partners earlier sight of where wasting is likely to rise before conditions deteriorate.

The research team's findings, published in the Proceedings of the National Academy of Sciences last year, demonstrate that this methodology substantially outperforms previous approaches - which struggled to predict malnutrition even in the present day - by training on high-frequency longitudinal data that captures how conditions evolve in near real-time.

Deployment of the forecasting tool was supported by the University of Edinburgh and the Jameel Observatory's community of practice, of which NDMA is a member. Bringing together scientists, humanitarian professionals, pastoralists and international organisations, the community of practice supported knowledge sharing and provided feedback, helping to adapt and refine the machine learning model for operational use within Kenya's early warning systems.

The forecasting model is updated on a monthly basis and technology transfer has enabled the NDMA to operate, update and maintain the tool independently, with outputs used to support analysis at both national and sub-national levels.

Professor Appolinaire Djikeng, Director General of the International Livestock Research Institute, and Professor at the University of Edinburgh, said: "The success of this forecasting tool demonstrates the power of a 'community of practice' and targeted investments to accelerate promising tools and solutions in tackling the intertwined challenges of food security and climate volatility.

"At ILRI, we recognise that protecting child nutrition in the drylands requires precision and foresight. By bridging the gap between academic research and operational early warning systems, this collaboration ensures that evidence-based insights are in the hands of those who need them most to safeguard livelihoods and health."

George Richards, Director of Community Jameel, said: “Young children are especially vulnerable to disruptions in access to nutritious food, with malnourished children rapidly losing weight and facing severe acute malnutrition or severe wasting.

“This is the problem being tackled head-on by UC Berkeley, the Jameel Observatory and the NDMA: harnessing machine learning to forecast when children in Kenya are at risk of acute malnutrition, informing how the government can respond effectively – and turning complex data into life-saving action.”

Scaling anticipatory approaches

Work is now underway to explore how the forecasts could support the development of trigger mechanisms for anticipatory action, with piloting planned across three counties in Kenya: Isiolo, Tana River, and Marsabit.

Deployment of the new machine learning tool and the dashboard are closely aligned with global efforts for anticipatory, data-driven actions in strengthening food security systems as set out at the 2025 Nutrition for Growth (N4G) Summit, hosted by the Government of France in Paris. With record commitments from governments to accelerate progress on nutrition around the world, the N4G Summit’s International Advisory Group, on which Community Jameel served, emphasised the value of data in decision-making.

Brieuc Pont, Secretary-General of the 2025 N4G Summit, said: “The 2025 Nutrition for Growth Summit in Paris set a clear mandate: we must harness innovation and artificial intelligence to close the nutrition gap. This forecasting dashboard, supported by Jameel Observatory, is an embodiment of the 'paradigm shift' we are calling for.

“As we work towards reaching the Summit’s targets such data-driven tools will be essential to ensuring that every euro invested in nutrition delivers the greatest possible impact for children in need.”

The scale of the challenge globally underscores the urgency of this work. The 2024 SEASNUT report by the Jameel Observatory, in collaboration with UNICEF, estimated that 45 million children under five were wasted globally, with wasting associated with around 13% of deaths among children under five each year.

[Read here](#) the journal article on this work.

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