



From insight to action: examining mortality in Somalia

HIGHLIGHTS



This report provides a retrospective analysis of the effect of the drought on population mortality in 2022 and offers forecasts based on different scenarios for the first 6 months of 2023.



The estimates suggest that in 2022 alone, this drought crisis caused 43 000 excess deaths, with half of these deaths occurring in children younger than 5 years. This figure is higher than that in the first year of the 2017–2018 drought crisis, where the death toll was estimated at 31 400 deaths over the first 12 months of this crisis period.



These figures are derived from a statistical model which estimated that the crude death rate increased across Somalia from 0.33 to 0.38 deaths per 10 000 person-days over the period January–December 2022; the rate in children younger than 5 years was nearly double these levels.



For 2023, the crude death rate is forecasted to reach 0.43 deaths per 10 000 person-days by June 2023, and an additional 135 people are projected to die each day due to the current crisis, with a cumulative projection of 18 100 to 34 200 drought-related deaths for the first 6 months of 2023.



With these estimates, the report suggests that the current crisis is far from over and is likely to be more severe than the 2017–2018 drought. It highlights the need for a sustained multisectoral humanitarian response to reduce preventable deaths, particularly among the most vulnerable groups.

Background and methods

A new report by the London School of Hygiene and Tropical Medicine (LSHTM), United Nations Children's Fund (UNICEF) and World Health Organization (WHO), in collaboration with the Federal Government of Somalia, Food and Agriculture Organization of the United Nations (Food Security and Nutrition Analysis Unit – Somalia) and SIMAD University, Mogadishu highlights the disturbing impact of the ongoing drought crisis in Somalia.

The current drought crisis in Somalia is taking place against an already grim backdrop. With nearly half of the population in need of humanitarian assistance in 2023,¹ the situation is exacerbated by extreme weather caused by climate change, political instability, ethnic tensions and insecurity, which continue to worsen public health and nutrition. The drought is a result of six consecutive failed rainy seasons and it coincides with rapidly increasing global food prices, intensification of insecurity in some regions and the socioeconomic consequences of the COVID-19 pandemic. As with previous complex crises, the drought has caused large-scale internal displacement. Given this crisis, the LSHTM was commissioned to produce retrospective and forecasting estimates of overall mortality and mortality attributable to the drought across Somalia.

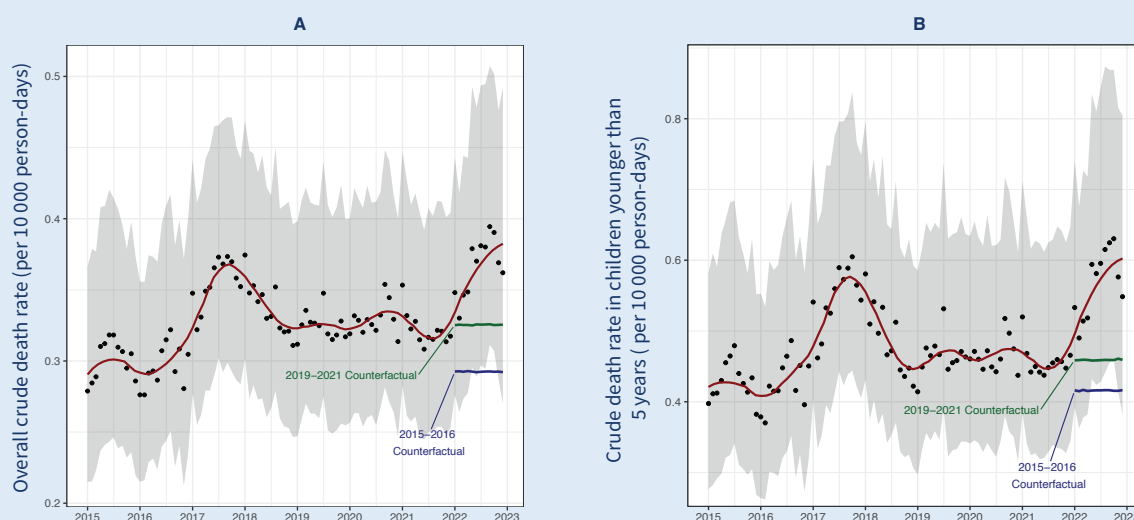
Similar to previous studies,² the report by LSHTM presents estimates of the crude and under-5 death rates, and the death

rate attributable to the drought. Since 2015, 400 standardized monitoring and assessment of relief and transitions (SMART) surveys have been conducted in Somalia. Of these, 238 surveys provided key data inputs for this study. To estimate mortality in districts and time periods not covered by SMART surveys, a statistical model was developed that combined SMART survey data with previously collected datasets which included the following predictors: incidence of armed conflict events, admissions for severe acute malnutrition, incidence of measles and malaria, terms of trade purchasing power and other variables associated with mortality, as well as base population. This model was used to estimate death rates by region and time (month) and to aggregate results to the country level to provide retrospective mortality trends up to December 2022. The same model was then used to forecast the possible evolution of death rates in the first half of 2023, based on different scenarios, to illustrate what actors involved in the Somalia drought response may expect unless further support to affected populations is provided.

Mortality estimates

The current drought has caused an estimated 43 000 more deaths compared with the mortality levels in 2015–2016; half of these deaths were children younger than 5 years (21 800). Figure 1 shows the trends in the crude death rate in Somalia from 2015 to 2023. Panel A shows the overall crude death rate and panel B shows the rate in children younger than 5 years.

Figure 1. Trends in the crude death rate, Somalia, 2015–2022



Notes: Panel A is the overall rate and panel B is the rate in children younger than 5 years. The red line is the estimated rate with 95% confidence intervals (grey shading), the black dots are observed death rates, and the green and blue lines are the counterfactual estimates of deaths in 2019–2021 and 2015–2016, respectively.

¹ Humanitarian needs overview. Somalia. New York: OCHA; 2023 (<https://humanitarianaction.info/plan/1133>).

² Warsame A, Frison S, Gimma A, Checchi F. Retrospective estimation of mortality in Somalia, 2014–2018: a statistical analysis. London: LSHTM; 2020 (<https://reliefweb.int/report/somalia/retrospective-estimation-mortality-somalia-2014-2018-statistical-analysis>).

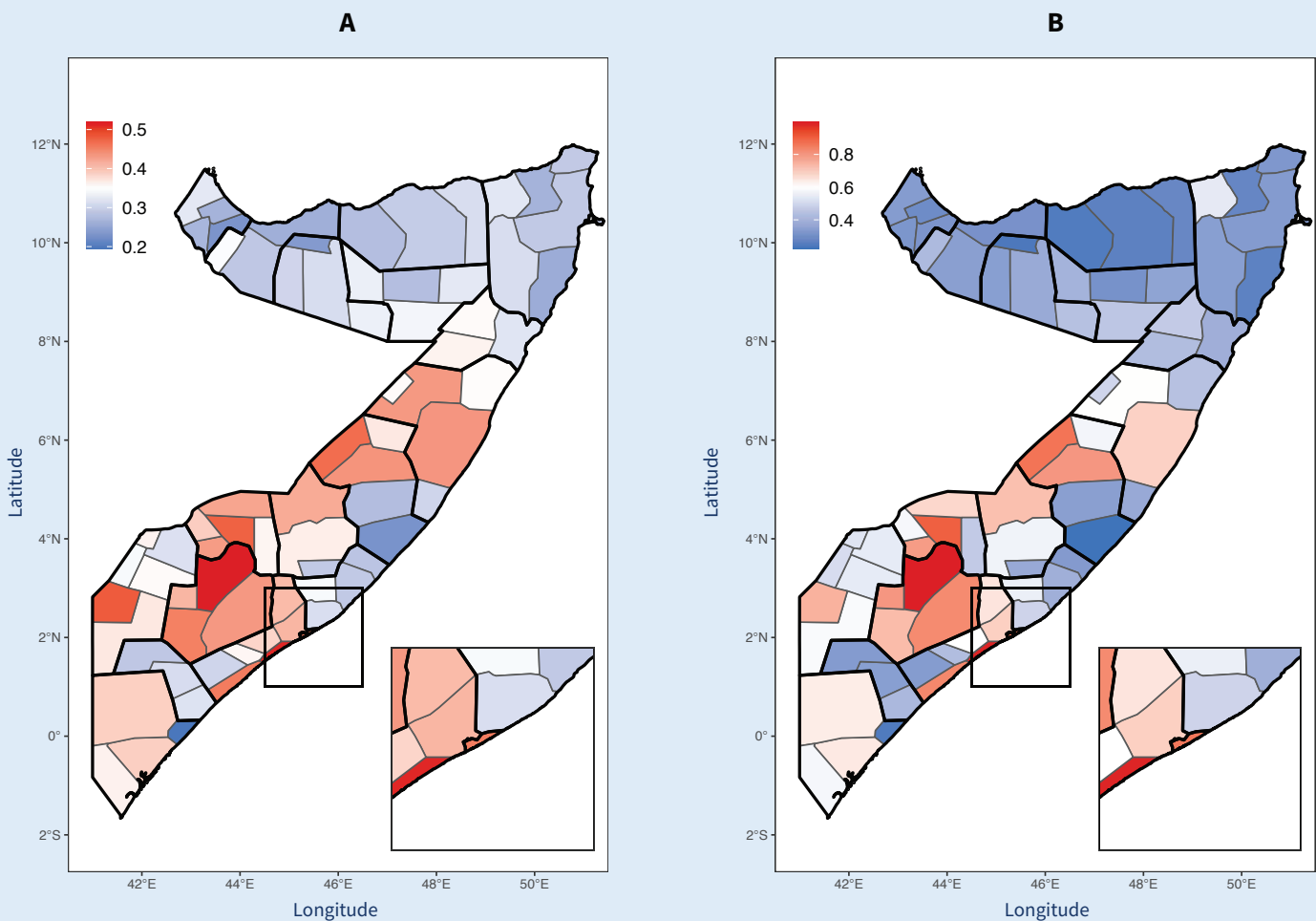
Checchi F, Robinson WC. Mortality among populations of southern and central Somalia affected by severe food insecurity and famine during 2010–2012. Rome: FAO; 2013 (<https://reliefweb.int/report/somalia/mortality-among-populations-southern-and-central-somalia-affected-severe-food>).

The red line is the predicted crude death rate while the black dots indicated the observed death rates obtained from SMART surveys. Two counterfactual estimates of deaths in 2022 were calculated based on 2019–2021 and 2015–2016 death rates. The differences between the death rate estimated by the current model (red line) and the 2019–2021 counterfactual rate (green line) and the 2015–2016 counterfactual rate (blue line) represent the estimated drought-related mortality in 2022, which accumulated to 43 000 compared to 2015–2016 and to 24 200 compared to 2019–2020. Based on these figures, it is evident that the current crisis is at least as severe, if not more severe, than the 2017–2018 drought crises, which caused an estimated 31 400 deaths in the first 12 months of the crisis and a total of an estimated 45 000 excess deaths.

The impact of the current drought is not equally distributed across regions (Figure 2). The highest estimated crude death rates per 10 000 person-days for 2022 are in south and central

regions, especially in Bay (0.49), Banadir (0.46) and Bakool (0.42). It is worth noting that although the extent of crises attributable mortality varies across different regions in the country, wide areas of Somalia show elevated mortality levels. Most deaths attributable to the drought do not occur in the relatively small pockets categorized as Integrated Food Security Phase Classification (IPC) phase 5, but in the much larger sections of the population exposed to IPC phases 3 and 4 over protracted periods. Although drought-related deaths are not confined to areas projected to experience famine according to IPC, the areas that faced a risk of famine had higher mortality³. Moreover, the hotspots of crisis-attributable mortality have shifted since the last drought in 2017 when the regions with the highest estimated crude death rates per 10 000 person-days were Nugaal (0.43), Mudug (0.43) and Banadir (0.42). A more detailed analysis of crisis-attributable mortality by region and a comparison with previous crises are provided in the report.⁴

Figure 2. Estimated mean crude death rates per 10 000 person-days, by district, Somalia, 2022



Notes: Panel A is the overall mean crude death rate and panel B is the rate in children younger than 5 years.

³ Somalia: acute food insecurity situation October–December 2022 and Projections for January–March 2023 and April–June 2023. Rome: IPC; 2022 (<https://www.ipcinfo.org/ipc-country-analysis/details-map/en/c/1156097/?iso3=SOM>).

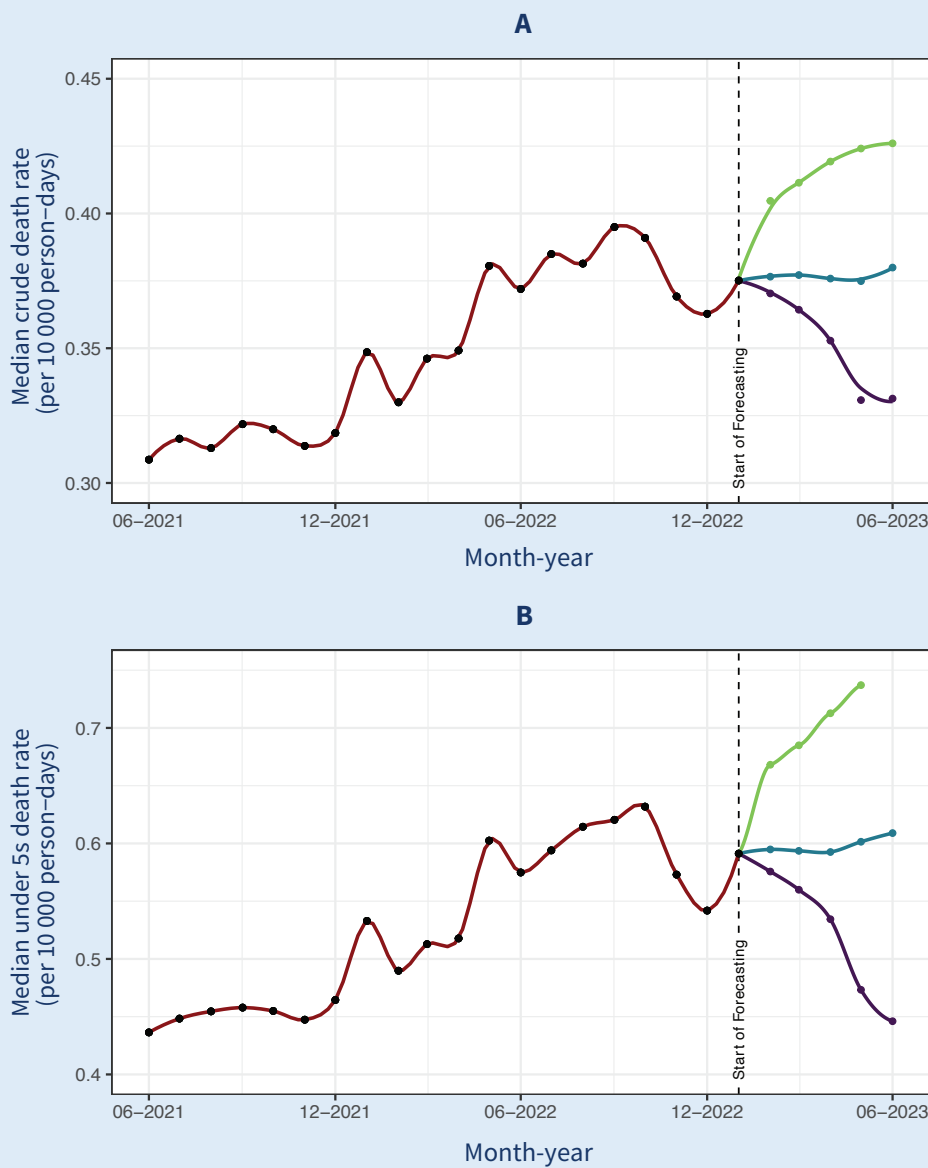
⁴ Watson O, Checchi F: Mortality patterns in Somalia: retrospective estimates and scenario-based forecasting. Forthcoming.

In addition to the retrospective analysis, the report presents a scenario-based forecast to predict mortality rates in Somalia from January to June 2023, based on a well-established model.⁵ These estimates aim to enable anticipatory action by predicting mortality rates in Somalia and identifying possible hotspot regions for humanitarian interventions. Three scenarios were considered to generate three possible trajectories of the crude death rate (Figure 3): green line (pessimistic scenario), blue line (static scenario) and purple line (optimistic scenario). The static scenario estimates crude

overall death rates and under-5 death rates based on the average of predictors in the previous 6 months. Hence, this scenario suggests a relatively stable crude death rate at the high level recorded at the end of 2022. The optimistic scenario assumes that the predictor variables will decrease linearly over the next 6 months and predicts a reduction in the crude death rate to 0.33 per 10 000 person-days by June 2023. The pessimistic scenario assumes that the predictor variables will increase linearly and predicts a rise in the crude death rate to 0.43 per 10 000 person-days by June 2023.

Figure 3. Predicted median crude death rate by scenario, Somalia, December 2022 to June 2023

Forecast scenario: —●— Optimistic —●— Static —●— Pessimistic



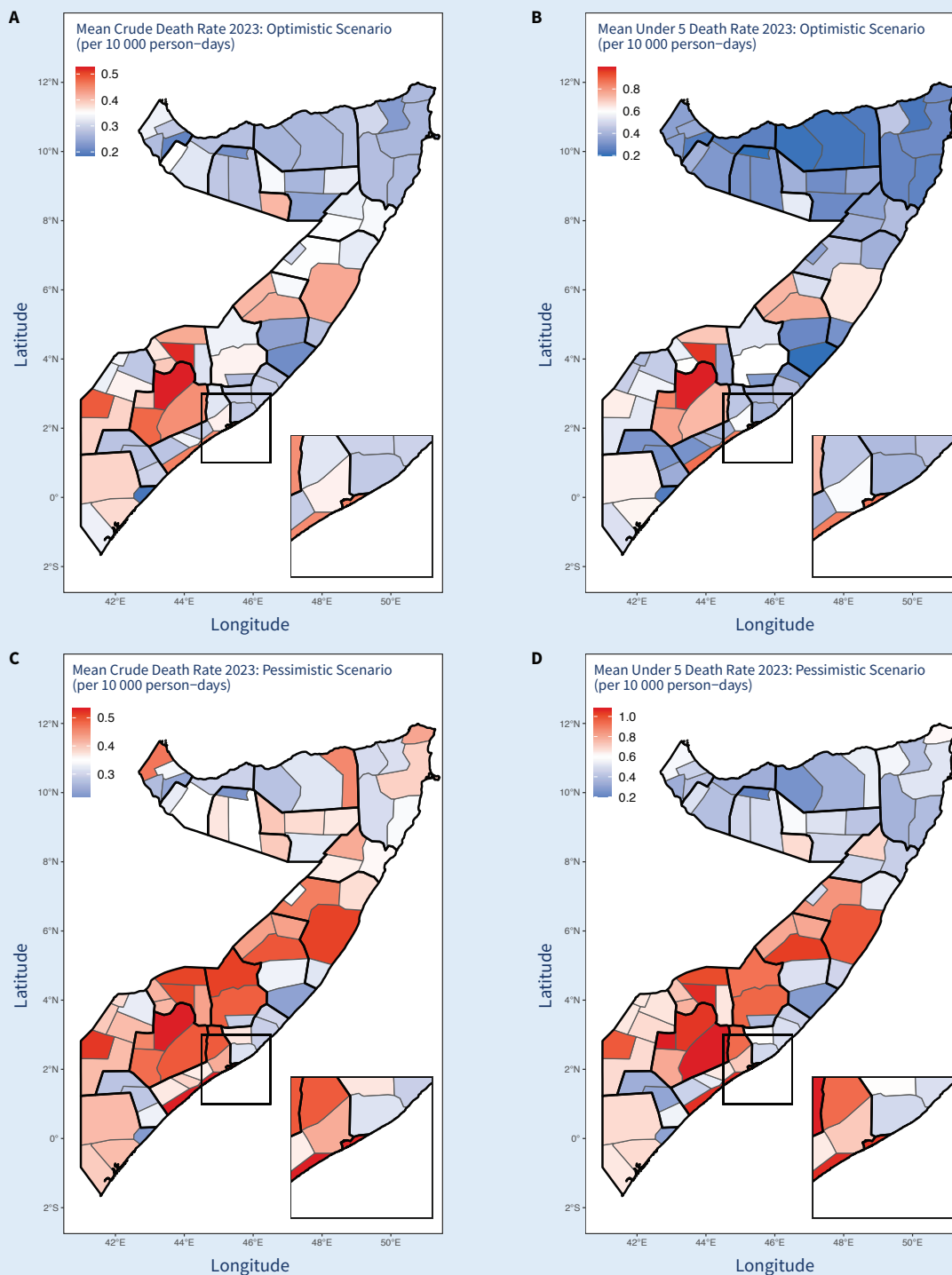
Notes: Panel A shows the overall predicted rate and panel B shows predicted rate in children younger than 5 years.

⁵ Checchi F, Testa A, Gimma A, Koum-Besson E, Warsame A. A method for small-area estimation of population mortality in settings affected by crises. *Popul Health Metr.* 2022;20(1):4. doi: 10.1186/s12963-022-00283-6

The report includes region-specific forecasts to highlight possible hotspots and enable targeted interventions needed to save lives. Figure 4 shows the crude death rate by district under the optimistic scenario (panels A and B) and the pessimistic scenario (panels C and D). Panels b and d show the crude death rates for children younger than 5 years. As

was observed at the end of 2022, the highest crude death rates are forecasted for the Bay and Banadir regions. The forecasts, coupled with previous drought patterns, suggest that the crisis will continue to affect communities across Somalia throughout 2023, and high mortality levels are likely to persist.

Figure 4. Predicted mean crude death rates, by district, Somalia, 2023



Notes: Panel A shows the overall death rates and panel B the death rates in children younger than 5 years based on the optimistic scenario. Panel C shows the overall death rates and panel D the death rates in children younger than 5 years based on the pessimistic scenario.

Limitations and further work

The estimates given here are reasonably accurate but they have wide confidence intervals and hence should be interpreted with caution. There may be bias in the model, particularly in underestimating mortality in the last few months of 2022, but this is expected to be resolved with more data in 2023. Other potential sources of bias, such as errors in household composition or population estimates, cannot be ruled out. Readers and decision-makers must consider the estimates in the context of what is known about the current drought crisis in Somalia and focus on broad patterns and implications for decision-making. Retrospective estimates are different from scenario-based forecasts; while forecasts provide a plausible range of outcomes for the near future, they are not predictions of what will happen and should be used for scenario planning. Subsequent reports on mortality in Somalia will refine this forecasting work.

Call to Action

The estimates of crisis-attributable death significantly advance our understanding of the impact of the ongoing drought on mortality rates across Somalia. With no end to the crisis in sight, a sustained, multisectoral humanitarian response is crucial to reduce preventable deaths, particularly among the most vulnerable groups, including children younger than 5 years and those living in hard-to-reach areas. Strengthening health and nutrition services and undertaking large-scale immunization campaigns will be pivotal to prevent excess mortality.



Region-level estimates of drought-attributable excess mortality show areas in greatest need of an integrated, scaled-up multisectoral response, and UNICEF and WHO will work with partners to deliver in these areas. To ensure UN agencies and other humanitarian actors can continue to provide essential, lifesaving health and nutrition services to those most in need, UNICEF and WHO are calling on the international community to increase financial and in-kind resources for the drought response, in line with OCHA's (Office of the Coordination of Humanitarian Affairs) Integrated Response Framework for the Humanitarian Country Team (HCT) in Somalia.

Beyond immediate life-saving interventions, UNICEF and WHO will strengthen the data system to obtain timely and accurate information on who is at risk, where and why. A systems approach is needed to identify factors affecting health outcomes in Somalia. To this end, UNICEF and WHO will conduct a systems mapping exercise to design interventions that have the potential to improve health outcomes.

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