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## Global Food Security

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# When early warning is not enough—Lessons learned from the 2011 Somalia Famine

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## ARTICLE INFO

## Keywords:

Somalia  
Famine  
Early warning  
Food insecurity  
Malnutrition  
Mortality

## ABSTRACT

Starting in July 2011, the United Nations made a series of public famine declarations for southern Somalia, based on joint technical analysis by the USAID-funded Famine Early Warning Systems Network (FEWS NET) and the FAO-managed Food Security and Nutrition Analysis Unit for Somalia (FSNAU). During the 11 months prior to the Famine declaration, early warning was provided by FEWS NET and FSNAU, including a specific Famine warning in March 2011. While early warning has been provided in advance of many past food crises, these early warnings were notable in terms of the timeliness, quantity and quality of the warning provided, and the use of a formalized Famine definition. However, in the absence of incentives for early action, preventable food security emergencies are likely to persist, regardless of the quality of the early warnings that is provided.

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## 1. Introduction

On July 20, 2011, the UN Humanitarian Coordinator for Somalia declared that a Famine was ongoing in two regions of southern Somalia. This followed 11 months of increasingly dire warnings, and a technical determination of Famine by the FAO-managed Food Security and Nutrition Analysis Unit for Somalia (FSNAU/Somalia) and the USAID-funded Famine Early Warning Systems Network (FEWS NET). Famine was declared in another four areas in the subsequent the 2 months (see map in [Salama et al., this issue](#)). At the Famine's peak between June and September, four million people were unable to access the basic food and non-food items needed for survival ([FEWS NET and FSNAU, 2011d](#)), nearly four in 10 children in southern Somalia were acutely malnourished ([FEWS NET and FSNAU, 2011e](#)), and refugee flows to camps in Kenya and Ethiopia reached nearly 2000 people per day ([UNHCR, 2011a, 2011b](#)).

The Famine had four key drivers. First, the failure of the 2010 *Deyr* (October–December) and 2011 *Gu* (March/April–June) rainy seasons resulted in substantial livestock mortality and the lowest annual cereal crop production since the 1991–1994 civil war. Second, as of January 2010, the World Food Programme suspended operations in southern Somalia, citing insecurity ([WFP, 2010](#)). This withdrawal severely damaged the operational

capacity of the international community to deliver food assistance and deprived the country of a major source of cereals (roughly 15% of national demand according to FEWS NET estimates). The decline in cereal production, in combination with the decline in food assistance, severely constrained market supply and resulted in an explosion in local staple food prices. In Baidoa (Bay region) for example, red sorghum prices rose 240% between June 2010 and June 2011 ([FEWS NET and FSNAU, 2011b](#)). Third, despite increasing needs during 2010 and 2011, *Al-Shabaab*, a militant Islamic group which controlled large areas of southern Somalia, placed significant limitations on humanitarian access and population movement. *Al-Shabaab's* presence, in combination with US anti-terrorism legislation, also constrained humanitarian funding. Finally, even considering WFP's withdrawal and the various impacts of *Al-Shabaab*, emergency response from the international community was very limited until after the July Famine declaration.

Following a substantial increase in emergency assistance in September/October 2011, a sharp decline in local cereal prices, and an excellent October–December 2011 rainy season, Famine abated in early 2012 ([FEWS NET and FSNAU, 2012](#)). Although a formal estimate of the Famine death toll has not yet been completed, a preliminary review of existing mortality surveys suggests that, at a minimum, tens of thousands of excess deaths occurred during the 2011 Famine, most of them children (unpublished).

During the 11 months prior to the Famine declaration, a series of early warnings were provided by FEWS NET and FSNAU. This early warning predicted the poor performance of the 2010 *Deyr*

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and 2011 *Gu* seasons and its impact on crop and livestock production; highlighted early on the dramatic increase in cereal prices; and publicly warned that Famine was possible in March 2011, 4 months before the official famine declaration. Early warning has been provided in advance of many past food crises; however, the early warning of the 2011 Somalia Famine was notable in terms of the timeliness, quantity, and quality of the warning provided, and the use of a formalized Famine definition.

This article has four aims: to describe this early warning—its providers, the processes, and the products; to discuss which aspects of the early warning process worked well and worked poorly; to comment on the effectiveness of early warning information in catalyzing early response; and to highlight lessons learned for both policy and future programming.

## 2. Food security information and early warning systems in Somalia

Food security analysis and early warning in Somalia is provided primarily by two groups: FSNAU and FEWS NET. The Food Security Assessment Unit (FSAU) was established in Somalia in 1995, following the 1991/1992 Famine. Multi-donor funded, and initially managed by WFP, the unit moved under FAO management in 2000. At the same time, a sister project was established to monitor the nutrition situation. In 2009, the two projects merged to create the Food Security and Nutrition Analysis Unit (FSNAU). The purpose of FSNAU is to provide a broad range of stakeholders with appropriate information on food, nutrition, and livelihood security for improved emergency response and development planning. This multi-donor funded project has a staff of 70, half of whom reside full-time in Somalia. These analysts conduct monthly monitoring of key indicators of nutrition and food security, implement regular national assessments, and generate nutrition, food security, and livelihood situation analyses. This includes an estimation of the size and location of the population in crisis, as well as a determination of its main drivers. This information is then disseminated through a variety of media to inform response decision-making. In addition to this early warning, FSNAU conducts research into the underlying causes of chronic food and nutrition insecurity, and provides capacity development to Somalia authorities and local NGOs. FSNAU coordinates closely with partners such as FEWS NET, WFP, UNICEF and many INGOs.

The Famine Early Warning Systems Network (FEWS NET) is a USAID-funded activity created in response to the 1983–1985 famines in East and West Africa. It aims to inform emergency response decision-making through the provision of timely and rigorous early warning and analysis of potential, emerging, and evolving food insecurity. FEWS NET staff use monitoring data (e.g., remote sensing imagery, price and trade data, nutrition information—much of it from secondary sources), an understanding of local livelihoods, and scenario building to develop projections of future food security outcomes. FEWS NET then uses a suite of decision support products including web content, written reports, and briefings to communicate this analysis to US government, UN, national government, donor, and NGO decision makers. As of early 2011, FEWS NET covered 31 countries in sub-Saharan Africa, Latin America/Caribbean, and Central Asia. This included Somalia, where FEWS NET began working in 1995, as well as the surrounding countries of Ethiopia, Kenya, and Djibouti.

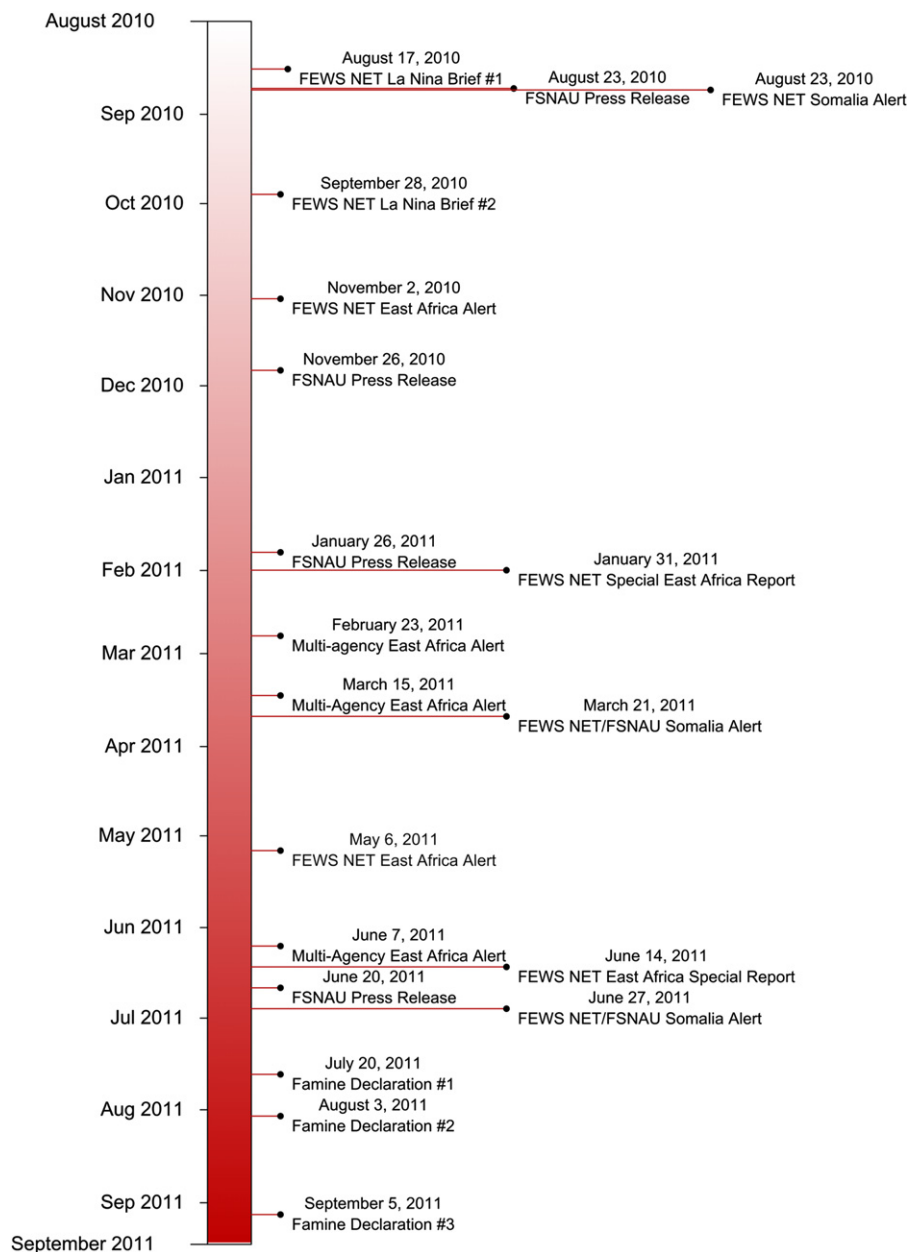
During 2010 and 2011, a number of other groups made a variety of contributions to the food security and early warning analysis developed by FSNAU and FEWS NET. These inputs included primary data collection, the provision of secondary data for verification and triangulation purposes, sectoral analysis, and

participation in multi-agency analysis workshops. Contributing agencies included UN partners (WFP, UNICEF, OCHA, UNHCR, and WHO) as well as a range of other international agencies such as African Development Solutions (ADESO), Danish Refugee Council, Action Contre la Faim, Save the Children, and the Centers for Disease Control and Prevention, amongst others. In addition, the Regional Food Security and Nutrition Working Group hosted by FAO played an important role in hosting briefings and disseminating early warning analysis to a wide group of decision-makers in the East Africa Region.

## 3. Early warning process and products

In a typical year, FSNAU and FEWS NET produce a series of 14 food security analysis and early warning reports. These include seasonal assessment technical series following the *Gu* (April–June) and *Deyr* (October–December) seasons and four quarterly briefs whose production is led by FSNAU, and four Outlook reports and four Outlook updates whose production is led by FEWS NET. Both projects also publish various sectoral products including Climate, Market, and Nutrition Updates (FSNAU), and Rain Watches and Price Bulletins (FEWS NET). FEWS NET also produces monthly early warning reporting for Ethiopia, Kenya, Djibouti, and the larger East Africa region. Between August 2010 and the July 2011 Famine declaration, FEWS NET and FSNAU produced an additional 16 special products focused on the developing crisis (Fig. 1). These products came in four broad phases: August–September 2010 (the earliest warnings), October 2010–January 2011 (implications of *Deyr* season failure), February–March 2011 (*Gu* season warnings), and May–July 2011 (lead-up to the Famine declaration). These written products were complemented by more than 50 FEWS NET and FSNAU briefings, primarily in Nairobi and Washington DC, to USAID and other donors, the Somalia Humanitarian Country Team, UN agencies, INGOs, and other partners. Both projects also provided additional technical analysis related to nutrition, climate, and market functioning. Once the Famine had been declared, FSNAU and FEWS NET provided ongoing Famine monitoring and continued to provide forward-looking analysis.

The brief “La Niña and Food Security in East Africa”, released by FEWS NET on August 17, 2010, was the earliest public warning of a potential food security crisis in Somalia, and in the eastern Horn more broadly. It described the declaration of a La Niña by the World Meteorological Organization (WMO) and the US National Oceanic and Atmospheric Administration’s Climate Prediction Center (CPC/NCEP/NWS, 2010). The brief also presented October–December rainfall forecasts from the European Centre for Medium-Range Weather Forecasts (ECMWF) and Columbia University’s International Research Institute for Climate and Society (IRI). Based on the La Niña declaration and these forecasts, the brief concluded that below-average rainfall totals, delayed onset, and erratic performance were likely during the October–December 2010 period in “Somalia, the northeast pastoral and southeastern marginal agricultural areas of Kenya, the Somali region of Ethiopia, and northeastern Tanzania” (1, FEWS NET, 2010a). The brief also raised concerns regarding the sub-region’s 2011 main season (Mar/April–May) given that “four of the last six October–November–December La Niña events in East Africa resulted in poor March to May rains the following year” (2, FEWS NET, 2010a). In addition to describing the likelihood of poor rainfall, the brief highlighted the likely negative impacts of the forecast on key food and income sources, concluding that a failed October–December season would reverse recent improvements in food security and that a failure of both the October–December and the March–May seasons would have “more far-



**Fig. 1.** Special early warning products produced by FEWS NET and FSNAU from August 2010 to September 2011.

reaching and significant consequences” including “higher levels of food insecurity throughout the region” (3, FEWS NET, 2010a).

Later in August, FSNAU and FEWS NET published a news release and an alert, which highlighted that the poor forecast for the October–December rains raised serious food security concerns, despite the recent above-average harvest, and especially due to the continued impacts of the 2007–2009 drought which were evident in the already high levels of acute malnutrition and increased refugee flows from Somalia into Kenya (FSNAU, 2010a; FEWS NET, 2010b). The August 17 La Niña brief was updated in late September 2010 to incorporate new and updated forecasts, including analysis from the Greater Horn of Africa Climate Outlook Forum (GHACOF) (FEWS NET, 2010d). The updated brief presented a stronger warning, noting the possibility of “significantly below-average or failed [October–December] harvests”, and “a 50–60 percent chance... [of] poor March–May rains in the eastern sector of the region” (1, FEWS NET, 2010d).

Following this first phase of early warning, the October–December rains failed almost completely, with 3-month rainfall totals of less than 10 mm across large areas of Kenya, southern Ethiopia, and Somalia (NOAA/CPC, 2010). Once these rains started poorly, early warning analysis began to shift toward the food security and response implications of a failed season. From October 2010 to January 2011, four special products were released by FSNAU and FEWS NET, in addition to regular reporting. On November 2, 2010, FEWS NET released the East Africa Alert “Pre-emptive livelihood support could mitigate likely La Niña impacts in the eastern Horn”. This alert reiterated earlier concerns related to poor performance of seasonal rainfall and its likely impact on crop and livestock production, highlighting Somalia as an area likely to face the “most severe food security outcomes...particularly after January/February” (1, FEWS NET, 2010e). In addition, this alert raised two new issues. First, that land surface temperatures were likely to be higher than usual, exacerbating the impacts of poor rainfall on crops and pasture.

And second, that early livelihoods support in the form of water point rehabilitation, destocking, nutrition support, and cash transfers could prevent the deterioration in food security that was anticipated to occur over the coming months. A November 26, 2010 press release published by FSNAU corroborated the FEWS NET alert, reporting that the season was performing poorly and that local cereal price increases were likely. The release stated that: “now is the time to build on the gains of the last season and support farmers and pastoralists to maintain their stocks with livelihood support interventions” (1, [FSNAU, 2010b](#)).

On January 28, 2011, FSNAU published a press release highlighting key findings from the Post-Deyr seasonal assessment. These findings included “dramatic increases in local cereal prices”, increased levels of malnutrition (including the highest levels ever recorded among IDPs in the Afgoye corridor and a GAM prevalence greater than 25% in six areas of the south), the collapse of cattle markets in the Juba regions, and a 20% increase in the size of the population in need of emergency assistance ([FSNAU, 2011a](#)). This release was followed by a FEWS NET special update for East Africa. In addition to highlighting the deterioration in food security, the FEWS NET update reiterated the likelihood of a poor start to the March–May season and concluded that a significantly below average March–May season would result in a major crisis, similar in severity to 2005/2006, but covering a larger area ([FEWS NET, 2011a](#)). In 2005/2006, two consecutive seasons of poor rainfall, in combination with conflict, resulted in a severe food security emergency concentrated in Somalia’s Gedo Region. According to both FSAU and FEWS NET, Famine was avoided only due to the onset of rains in April 2006, strong social support networks, and humanitarian assistance ([FEWS NET and FSAU, 2006a, 2006b](#); [FSAU, 2006](#)).

Given the extreme levels of acute malnutrition in southern Somalia reported by FSNAU in early 2011 and continued concerns related to possible poor performance of the 2011 March–May rains, FEWS NET organized a series of three multi-agency scenario building workshops in Nairobi in February, March, and May 2011. The purpose of these workshops was to bring together a core group of technical partners and develop consensus statements on the likely direction of the crisis in the eastern Horn. Key participants at the first workshop included representatives from FEWS NET’s Somalia, Ethiopia, Kenya, East Africa regional, and Washington, DC offices; FSNAU, the World Food Programme’s Regional VAM Unit, and the Kenya Food Security Steering Group. Representatives from Save the Children, the FAO Regional Emergency Office, the FEWS NET Djibouti office, and the WFP Somalia VAM Unit joined later meetings. These workshops resulted in two consensus alerts for the eastern Horn of Africa during the lead-up to the March–May season. The first, released on February 23, 2011, again called for large-scale humanitarian assistance. It projected that the March–May season was likely to be below-average, and indicated that pre-famine indicators, including elevated child mortality, were likely if rains were substantially below average ([FEWS NET et al., 2011a](#)). Southern Somalia, where humanitarian access was most limited, was highlighted as the area of most concern. The second alert, released March 15, presented a deteriorating picture, describing staple food prices that had already surpassed 2008 price crisis levels. The worst case scenario predicted massive livestock death, rising child mortality, and – for the first time – localized Famine. Given the existing high levels of malnutrition, Juba and Gedo were cited as areas of special concern. The alert stated that current humanitarian assistance was inadequate to prevent further decline in food security ([FEWS NET et al., 2011b](#)). The March 15 multi-agency regional alert was followed a week later by a joint FEWS NET/FSNAU alert focused on Somalia. This alert provided more detail on current conditions concluding that “Food deficits, as high as

30–50% of survival needs in some areas, are widespread” (1, [FEWS NET and FSNAU, 2011a](#)) and reiterating the Famine warning of the regional alert. All three alerts during this period stated that even if March–May rains performed well, significant improvements in food security were not anticipated for many months, and that the severity of the current situation warranted immediate response.

Following the February and March alerts, the onset of the April–May rains was delayed by a month. Rains then performed erratically and ended early. A water crisis peaked in April. Heavy livestock mortality occurred, particularly among cattle and sheep. Cropping activities were also severely disrupted; the subsequent Gu harvest was the lowest of the post-war period (1995–present) ([FSNAU, 2011c](#)). Early warning reached its final phase during the May–July 2011 period, during which five special products were released. On May 6, FEWS NET released a regional alert describing the poor performance of the rains to that point and suggesting that the situation was moving towards the worst case scenario. Immediate activation of response plans was recommended ([FEWS NET, 2011b](#)). On June 7, a third and final multi-agency regional alert was released. Describing the current situation as the “most severe food security emergency in the world today”, the alert called for “large-scale emergency assistance... across the eastern Horn of Africa in order to save lives, treat acute malnutrition, and prevent further asset losses.” (1, [FEWS NET et al., 2011c](#)).

During this period, some technical partners and donor representatives questioned how different the current drought was from typical cyclical dryness in the region. In response, FEWS NET published a June 14 special report describing the use of historical rainfall data from Kenya and southern Ethiopia to assess the severity of the drought. This analysis concluded that 2010/2011 was the driest or second driest year since 1950/1951 in 11 of the 15 analyzed zones ([FEWS NET, 2011c](#)).

In June, two final early warning products were released. On June 20, FSNAU published a press release that projected a main season harvest 50 percent below average, reported that 15,000 refugees a month were arriving into Kenyan and Ethiopian refugee camps, and warned that the condition of these refugees was extremely poor ([FSNAU, 2011b](#)). A UNHCR survey at that time found that one in three refugee children were acutely malnourished and that mortality rates were very high ([UNHCR et al., 2011](#)). A week after this release, a joint FEWS NET/FSNAU alert was published. It focused on the extreme level of food prices and their impact on poor household food access in the south. Due to skyrocketing maize and sorghum prices, declining livestock prices, and the erosion of wages, livestock-to-cereal and wage-to-cereal terms of trade had both dropped 40–80% compared to the previous year. In some markets, local cereal supplies were exhausted. The alert again called for “immediate emergency response to save lives” (1, [FEWS NET and FSNAU, 2011b](#)).

#### 4. Declaring famine

Both FEWS NET and FSNAU classify food insecurity using the Integrated Food Security Phase Classification (IPC) protocols. Since 2008, IPC version 1.1 has been used for classification and mapping in Somalia. According to the IPC, a Famine classification (IPC Phase 5) for a given geographical area requires evidence of three specific outcomes: (1) at least 20% of households must face extreme food shortages with limited or no options to cope, (2) the prevalence of Global Acute Malnutrition must exceed 30%, and (3) crude death rates must reach or exceed two deaths per 10,000 population per day. In addition, other characteristics of Famine include large-scale population displacement, disease outbreaks, and social collapse.

Between June 2008 and June 2011, the ability of FSNAU to conduct representative nutrition surveys in southern Somalia faced some limitations due to insecurity. Therefore, analysis was based on a combination of survey data (where possible) and an assessment of other types of information, including non-representative rapid assessments and data from health and selective feeding centers. However, given the significant deterioration in food security outcomes during early 2011, FSNAU field staff were able to negotiate full access across all livelihood zones of Southern Somalia. This allowed FSNAU to conduct 18 nutrition and mortality SMART surveys from late June to early July 2011. The results of the surveys were extremely alarming, with the prevalence of global acute malnutrition (GAM) exceeding the IPC threshold for Phase 5 (Famine) of 30% in 13 of the 18 surveys. In nine surveys, GAM exceeded 40%, peaking at 55% in the Bay agropastoral livelihood zone. Mortality rates were equally alarming, with crude death rates exceeding the Famine threshold of two deaths per 10,000 population per day in five areas. These survey results were complemented by food access analysis using Household Economy methods. This analysis indicated that poor households, representing 25–40% of the populations in riverine and agropastoral livelihood zones across southern Somalia, were facing food deficits large enough to surpass the IPC food consumption threshold for Famine. Evidence of large-scale displacement and disease outbreaks was also present. More specific information on these data is published elsewhere (Salama et al., this issue).

Because the nutrition and mortality surveys described above were implemented over a 4-week period, final, vetted data from these surveys became available, one survey at a time, over a 3-week period from late July to early August. This staggered flow of data informed two Famine determinations by FSNAU and FEWS NET. First, on July 18th, based on an assessment of available food consumption, nutrition, and mortality data, FEWS NET and FSNAU made a technical determination that Famine existed in two areas of southern Somalia: agropastoral and riverine zones of Lower Shabelle and agropastoral areas of Bakool. In line with the IPC process, consultations were held with key technical partners from several INGOs, UN agencies, and ICRC, where FEWS NET and FSNAU presented the evidence for a Famine declaration. Agreement was reached on the classification. On July 19th, FSNAU and FEWS NET briefed the Somalia Humanitarian Country Team, the UN country Team, key donors, and the INGO network on the Famine determination. This analysis underpinned the official declaration of Famine by the Resident Humanitarian Coordinator on behalf of the Humanitarian Country Team and a press release by FSNAU and FEWS NET on July 20th (FEWS NET and FSNAU, 2011c). Two weeks later, with additional nutrition and mortality data available, FEWS NET and FSNAU expanded the Famine classification to three additional areas: two districts of Middle Shabelle, and IDP populations in the Afgoye corridor and Mogadishu (FEWS NET and FSNAU, 2011d).

A further round of nutrition and mortality surveys was conducted in August 2011 in southern Somalia. The results indicated that Bay region had joined the previous areas declared in Famine, with a GAM prevalence of 58.3% and a crude death rate of 2.15/ per 10,000 population per day, bringing the total areas meeting IPC Phase 5—Famine outcomes to six. This led to a third joint press release by FSNAU and FEWS NET and second press conference by the Resident Humanitarian Coordinator on September 5th (FEWS NET and FSNAU, 2011e).

The outlook as of August/September 2011 was bleak, with FSNAU and FEWS NET predicting a spread of Famine across the remaining areas of southern Somalia. However, a substantial scale-up in emergency response, by both formal and informal actors, some improvements in humanitarian access, a small Gu

cereal harvest, and an off-season harvest in September all contributed to increasing cereal supply which reduced local cereal prices and improved household food access. This was reflected in nutrition and mortality indicators from eight surveys conducted in October, which indicated that although acute malnutrition and mortality levels remained extremely high, and above the Famine threshold in three areas, they had declined across the south. With excellent October–December rains, an above-average *Deyr* harvest in January 2012, and a continuation of large-scale humanitarian response, a significant recovery in nutrition and food security outcomes was observed. While Emergency (IPC Phase 4) food insecurity persisted, FSNAU and FEWS NET determined on February 3, 2012, that the Famine had ended (FEWS NET and FSNAU, 2012).

## 5. Successes

A number of specific approaches and tools contributed to the success of early warning analysis in Somalia during 2010/2011. Four are discussed here: scenario building, multi-agency technical cooperation, pre-existing data collection systems, and a technical definition of Famine.

FEWS NET uses a multi-step scenario-building approach to estimate future food security outcomes. In brief, this method is based on an assessment of current food security conditions and outcomes, the development of evidence-based assumptions regarding future behavior of key factors (e.g., rainfall, crop production, food and labor prices, and hazard events), and an analysis of how these assumed events will affect key food and income sources (FEWS NET, 2010c). Typically, FEWS NET uses this method for developing 6-month, most-likely projections, but the duration and type of scenarios developed can vary. In addition to helping to develop stronger early warning analysis, a scenario-building approach (including the clear identification of assumptions) helps to facilitate clear communication of the analysis and allow for relatively easy updating when new information becomes available. During multi-agency meetings in February, March, and May 2011, FEWS NET introduced this method and facilitated its use in developing most-likely and worst-case scenarios through September 2011 for four areas of the eastern Horn: agropastoral areas of southern Somalia and southern Ethiopia, pastoral areas of the greater Mendera Triangle, pastoral areas of Ethiopia's eastern Somali region and central Somalia, and southeast Kenya. These scenarios allowed analysts to more clearly understand where the crisis was headed and to highlight the increasing risk of Famine. Initially, some partners expressed some discomfort with the approach, particularly the need to develop specific assumptions about future events despite limited information. However, as the process progressed and familiarity with the approach increased, participant buy-in to scenario development improved.

A second success of early warning analysis was collaboration and consensus between key technical partners. Crises are often characterized by divergent views of the location, severity, and magnitude of food insecurity (e.g., Niger 2004/2005). In the case of Somalia in 2011, a combination of strong existing relationships and an explicit effort to find consensus through multi-agency scenario-building workshops meant that major technical partners were largely in agreement regarding the severity, scope, and future direction of the crisis in the eastern Horn.

A third success was purpose-built data collection systems that were in place long before the Famine developed, and which provided data essential to the Famine declaration. The FSNAU/FEWS NET market monitoring system, established in 1995, monitors prices on a weekly basis in 47 main markets. With 17

years of price data available, a range of trends analysis was possible. That analysis was vital during 2010/2011 given the key role local cereal prices had in determining food access during the crisis. A second data collection system focuses on nutrition, health, and mortality information using a network of 14 FSNAU nutrition analysts across Somalia who have conducted nutrition and mortality surveys since 2000. The expertise of these Somali staff was essential to the implementation of nutrition surveys under the difficult conditions that prevailed in 2011 and prevented any international staff presence. In addition, as with market information, this historical nutrition data provided important context for the interpretation on 2011 survey data. Beyond these market and nutrition data collection systems, a range of other information is collected, including remote sensing imagery, rainfall data, and multiple assessments of a variety of household and community monitoring data. As a result of these systems, the level, quality, and accessibility of information for food security and nutrition analysis are significantly higher than in other countries where FEWS NET operates.

Finally, a fourth key factor in the success of the Famine declaration was the use of a common classification system, the Integrated Food Security Phase Classification (IPC) protocols, to describe the severity of the crisis. Initially developed by FSAU in 2004, the current IPC is the result of a collaborative process involving CARE, FAO, FEWS NET, JRC, Oxfam, Save the Children, and WFP. During previous crises, such as Ethiopia (Gode) in 2000, Malawi in 2002, and Niger in 2005, a debate regarding the severity of food insecurity was exacerbated by the absence of a common technical definition of Famine. However, the use of the IPC and its Famine thresholds, in combination with the data availability described above, meant that the process of making the 2011 Famine determination in Somalia was relatively straightforward. The IPC's long history in Somalia facilitated its use during 2011 and its use of Famine thresholds that were both evidence-based and relatively clear to a lay audience also meant that it was broadly cited and understood by both technical agencies and the media. This understanding contributed to a broad acceptance of the Famine declaration.

It is useful to note that technicians have debated the specific mortality threshold used by the IPC to define Famine. Some have advocated for a lower threshold, arguing that because "famine" has a unique ability to catalyze response, it should be used more often. Others have argued that the threshold should be higher in order to better describe the most extreme situations, where Crude Death Rates reach levels many times the current threshold. However, based on our experience monitoring food insecurity in Somalia during 2010/2011 and making the technical determination of Famine, we believe that the current crude mortality threshold of 2/10,000/day is reasonable. We do not believe that greater use of the word "famine" will solve the problem of late response. In addition, the purpose of the IPC is to inform real time decision-making, not post-event assessments. In this context, additional, higher famine thresholds are not useful. Any situation classified as Famine requires immediate large-scale response.

## 6. Areas for improvement

Early warning of the 2011 Somalia Famine faced some limitations. First, early warning analysis would have been improved by a better understanding of the impact of WFP's 2010 withdrawal from southern Somalia. Although information on cereal imports and food aid flows is imperfect, FSNAU data from 2007 to 2010 suggest that, on average, national production, imports, and food aid provided 30%, 55%, and 15% of national cereal supply, respectively, during this period (unpublished data). The contribution of food aid peaked at

29% of estimated cereal supply during 2009, a crisis year, but was an important source of supply even in normal years. In addition, the main cereal commodities imported to Somalia are rice and wheat flour, whereas the major cereals consumed by the poor (and distributed by WFP) in southern Somalia were maize and sorghum. Therefore, the suspension of WFP activities in southern regions in December 2009 not only had a substantial impact on overall cereal availability, but particularly on staples eaten by the poor. However, while the absence of food aid distributions was seen as a major concern, the significance of WFP food aid as a major source of cereal supply in the south was not fully appreciated by FSNAU, FEWS NET, or other partners until early 2011, 12 months after the agency suspended activities. An earlier appreciation of this dynamic could have moderated optimism in the wake of an above-average July 2010 harvest and improved the ability of FEWS NET and FSNAU to anticipate 2010/2011 price trends.

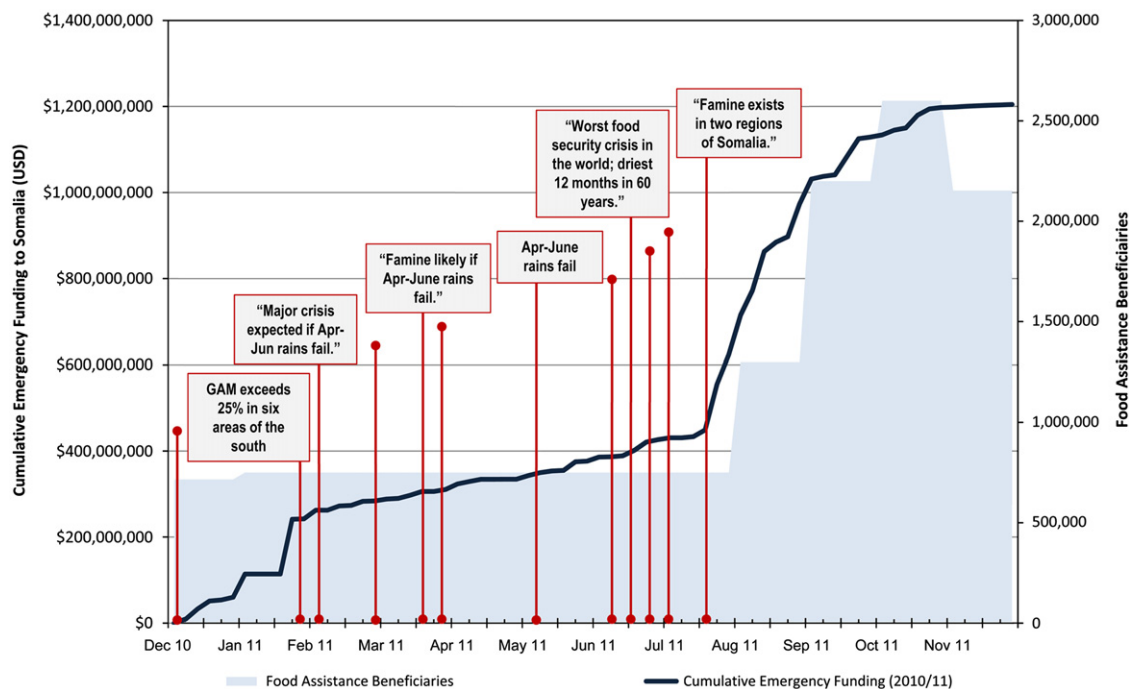
Early warning would have also been improved by stronger analysis of poor households' food security in the surplus-producing cropping areas of Bay and Lower Shabelle. In these areas, a combination of lower quality crop production data due to *Al-Shabaab*-imposed movement restrictions, a possible underestimation of *Al-Shabaab* "taxation" impacts, and food security analyst bias against the possibility of severe food insecurity in surplus producing zones, combined to limit the accuracy of analysis.

Third, movement restrictions in southern Somalia meant that nutrition survey implementation was remotely managed. While most surveys were nonetheless implemented successfully, a reanalysis of nutrition data in October 2011 by CDC identified significant problems with data from a small number of surveys conducted in Bakool and Hiran regions. As a result, the findings of these surveys were recalled by FSNAU. Given available food access analysis, and the nutrition and mortality data from surrounding areas, FSNAU and FEWS NET still believe that the Famine declaration for agropastoral Bakool was warranted. However, better access to this area would have strengthened the early warning system's ability to triangulate analysis with additional data. Nonetheless, even with the limitations on information collection described here, lack of data was not a significant constraint on early warning analysis.

Finally, repeated food insecurity in Somalia over the past two decades has resulted in a normalization of crisis, first described by Bradbury in the late 1990s (Bradbury, 1998). Thus, even as rains failed, food prices tripled, and levels of acute malnutrition reached very high levels, many decision-makers remained unconvinced that 2011 was substantially different from "a typical dry year in the Horn". From the perspective of early warning analysis, this sense of "normalization" was likely supported by an IPC mapping protocol that called for classifying an area based on the most severe level of food insecurity present in that area, even if the affected population was very small. As a result, Somalia food security maps showing large areas of "Humanitarian Emergency", the category one phase below Famine, were very common in Somalia between 2006 and 2010. Maps created in 2011 showing large areas of Humanitarian Emergency were thus less effective at catalyzing action, even though the situation they aimed to reflect was substantially worse than at any time since IPC mapping had begun. Note that this issue has been addressed in the newest version of the IPC, set for release in mid to late 2012.

## 7. The effectiveness of early warning in catalyzing early response

Overall, early warning of the 2011 Famine in Somalia was timely, accurate, and actionable (Darcy et al., 2012; Ververs, 2012). However, emergency response at scale in southern Somalia



**Fig. 2.** Evolution of food assistance beneficiaries and cumulative appeal funding for Somalia in the context of early warning messaging, December 2010–November 2011. Note: Red lines represent FEWS NET and FSNAU Special products listed in Figure 1. Data: UN OCHA Financial Tracking Service and the FA Cluster. Graphic: FEWS NET.

was extremely late. Fig. 2 compares the timing of key early warning messages with trends in emergency funding and the number of people receiving food assistance, highlighting the lack of response to FSNAU and FEWS NET messaging. From the perspective of FSNAU and FEWS NET, this lack of action was driven by a number of factors.

First, *Al-Shabaab* activities limited humanitarian access and US Government anti-terrorism legislation created both real and perceived obstacles to humanitarian funding and operations during 2010/2011. These constraints are explored in more depth elsewhere (Maxwell and Fitzpatrick, this issue). However, while these two issues placed very real constraints on humanitarian action, they do not fully explain why the international community could not have responded in a more timely way. Although donors cited access restrictions as a constraint on response, large-scale emergency assistance was delivered after the Famine declaration, and helped to mitigate food insecurity, despite continued humanitarian access restrictions. In addition, humanitarian response was very late in southern Ethiopia and northern and eastern Kenya, areas where FEWS NET had declared an Emergency (IPC Phase 4) and neither *Al-Shabaab* nor humanitarian funding restrictions existed. The extremely poor response in Dadaab (Kenya) and Dolo Adu (Ethiopia) refugee camps, where levels of acute malnutrition and mortality reached, and at times exceeded, those found inside Somalia, are of particular note. These issues undermine the assertion that international actors had exhausted available response options during the first half of 2011, both in Somalia and in the larger drought-affected region, and suggest that an opportunity to prevent the Famine was missed.

Second, when FSNAU and FEWS NET briefed donors, UN agencies, and other partners on early warning analysis, decision-makers often seemed uncomfortable with the uncertainty inherent in probabilistic early warning analysis and the absence of definitive statements about future outcomes, particularly mortality levels. The complex political/security situation in southern Somalia (including both *Al-Shabaab* and the US government funding restrictions) and the normalization of crisis described above contributed to this reluctance, as did an inability for donors and implementing

partners to triangulate FSNAU and FEWS NET analysis with their own rapid assessments, or media coverage, which was very limited (Provost et al., 2012).

Third, while analytical processes led by FEWS NET and FSNAU achieved consensus among key technicians that a major emergency, and possibly a Famine, were imminent, this technical agreement did not translate into significant advocacy efforts by the NGOs and UN agencies that these technicians represented, nor were any large-scale advocacy efforts initiated by other groups. This, in combination with a lack of media coverage, limited pressure on donors and implementing agencies to act. It is not completely clear why advocacy efforts were so poor, though it is likely that a perceived lack of donor interest and/or ability to fund programming in southern Somalia and security concerns both played a role.

Finally, contingency planning and response analysis were late and lacked an effective process and leadership. These analyses are always important, but were especially critical in this case given the limits on humanitarian access in southern Somalia and the absence of WFP, both of which prevented a typical food aid response. Some initial analysis did occur after the withdrawal of WFP in early 2010, but this process was seemingly abandoned following the subsequent *Gu* harvest in July/August 2010. The absence of this analysis – analysis that is not the primary mandate of early warning systems – hampered response. For example, the feasibility of market-based interventions, like monetization to improve market supplies or cash transfer programs, were not fully explored until the summer of 2011, further delaying response even once Famine had been declared. If well led, such analysis could have also minimized delays in response that were driven by disagreements between various agencies regarding the most appropriate and feasible response options.

## 8. Lesson learned and implications for policy and programming

Many lessons can be drawn from a review of the early warning provided in advance of the 2011 Famine declaration in Somalia.

The timely, actionable and high quality analysis provided by FEWS NET and FSNAU demonstrate that early warning systems can accurately identify emerging crises many months in advance. This success was a result, in part, of heavy investment in information systems over the past two decades. This suggests that early warning and food security information systems should continue to be supported, both in Somalia and in other countries, where high-quality food security and nutrition information systems must be in place before crises emerge. However, it is unlikely that stand-alone systems as large and as well funded as FSNAU/Somalia are feasible in most country contexts. Therefore, in most contexts, a network approach to these information systems that involves national governments is needed. In addition, the specific tools and approaches which supported early warning analysis in Somalia should be more widely adopted. These include institutional commitment to transparent, evidence-based analysis, the use of livelihoods information to interpret monitoring data, scenario development for food security projections, and the use of the Integrated Food Security Phase Classification protocols as a common language for describing the severity of food insecurity.

In spite of recent success, early warning systems must also continue to improve. Efforts to better integrate market data, political/conflict analysis, livelihoods information, and nutrition analysis should continue, as should the further improvement of scenario development techniques. Most importantly, these systems must further refine decision support tools (e.g., written reporting, briefings, and web content) to better communicate complex technical analysis and address decision-maker concerns with uncertainty. This should include greater sensitization of decision-makers to the newest version of the IPC and to scenario development.

Better approaches for early action are also needed, as is an improved structure and approach for response analysis. It is not simply a matter of implementing the same emergency response sooner. A new approach to response analysis should be multi-disciplinary, multi-partner, and evidence-based, yet nimble enough to move quickly during emergencies and independent enough that its work is seen as unbiased.

Finally, no matter how accurate, and how early, warnings may be, there are few incentives for early action. Practical mechanisms which more effectively catalyze early action by governments, donors, and implementing agencies during humanitarian crises must be developed. Until this issue is resolved, preventable food security emergencies will persist and Famine may occur again, even when early warning is provided.

## Acknowledgments

The authors would like to acknowledge the FSNAU and FEWS NET Somalia teams for collection and analysis of nutrition and food security information under extremely challenging conditions and Nicholas Haan who provided IPC technical support to the 2011 Famine determinations.

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