# Innovation history of the CMAM Surge approach
## Towards a shock-responsive health system in Kenya

Working paper 2

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## About Maintains

## Acknowledgments

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# Executive summary

Given the increasing incidence of shocks, from droughts to COVID-19, and the weak capacity of most health systems to adequately respond to them, there is an urgent need to develop and scale up health system innovations that build shock-responsiveness. The Community-based Management of Acute Malnutrition (CMAM) Surge approach is one such innovation that aims to build the responsiveness of government health systems to seasonal and shock-related surges in demand for nutrition services in low-income contexts.

Essentially, CMAM Surge involves health facilities setting thresholds ('normal', 'alert', 'alarm', and 'emergency') for acute malnutrition caseloads, based on a self-diagnosis of their capacity; monitoring trends in caseloads against these thresholds; and actioning internal health facility surge actions or seeking support from higher levels of government, the United Nations Children's Fund (UNICEF), or non-governmental organisations (NGOs) when higher thresholds are crossed.

This working paper advances the current knowledge on CMAM Surge (which is limited to country evaluations and perspective articles) by conducting an innovation history analysis of the approach, to understand the enablers of, and barriers to, its emergence and development; and its perceived potential (and limits) for building health system shock-responsiveness in Kenya. Developing this innovation history involved analysing the memories, reflections (through interviews), and documents of key implementing stakeholders in Kenya and internationally. Data were analysed using a widely applied social innovation conceptual framework that identifies six phases to a social innovation (Murray *et al.*, 2010): diagnoses and prompts; proposals; piloting; scale-up; sustaining; and system change (towards a shock-responsive health system). The findings provide critical insights that can inform the scale-up of CMAM Surge to new contexts, improve the shock-responsiveness of CMAM Surge in Kenya, and guide the development of emerging adaptations to CMAM Surge, such as Health Surge, which seeks to adapt the surge approach principles and tools to build the shock-responsiveness of the entire health system.

## CMAM Surge innovation history

**Diagnosing the problem and prompts for innovation**. CMAM Surge was inspired by an article by Hailey and Tewoldeberha (2010) (in a publication that is widely read by practitioners) that identified problems with the status quo of nutrition responses to emergencies. The development of the approach was then prompted by evaluations that found the response to severe drought in 2011 in Kenya to be weak. The findings of the innovation history analysis demonstrated the importance of practitioners taking time out from routine work to diagnose and conceptualise problems and share solutions with broader audiences. It also showed that shocks (political, climate, or other) provide windows of opportunity for health system innovation that might otherwise be difficult to bring about in 'normal' times.

**Piloting.** Concern Worldwide (Concern) piloted the CMAM Surge approach in Kenya from 2012. The approach was designed drawing on the experience of international technical advisers working across countries facing similar challenges, and was then further developed, refined, and tested using the contextual knowledge of local NGO staff and the

Ministry of Health (MoH) in Kenya. This meant that CMAM Surge was designed in such a way that it met local needs and built upon and was integrated with existing government structures and capacities in Kenya. The pilot was made possible by existing programming funds being sufficiently flexible to be repurposed. The findings of the innovation history analysis suggest co-development with, and early engagement of government, at all levels in proposal development and piloting through learning-by-doing helps contextualise and build ownership of surge innovations, and flexible programme financing enables NGOs to operationalise and pilot new promising ideas.

**Scaling up**. After the pilot was successfully evaluated, the national MoH in Kenya and UNICEF endorsed CMAM Surge for roll-out across 10 arid and semi-arid lands (ASAL) counties in Kenya. By 2020, 469 health facilities had set it up. At the same time, CMAM Surge was diffused to other countries and NGOs, especially in West Africa. In Kenya, national government leadership and inclusion of CMAM Surge in nutrition policy secured the buy-in of MoH staff at various levels, from the county level down to health facility level, and encouraged uptake by a wide pool of NGOs. UNICEF's dominance in nutrition programming, its technical and financial capacity, and its embeddedness in government made it an important partner for taking the approach to scale. The diffusion of CMAM Surge to West Africa, and its rapid scale-up there, was said to have been driven to a large extent by donor buy-in of the approach. The simplicity and cost-effectiveness of the approach, and the fact that it built upon the existing health system to address a problem found in many ASAL contexts, made CMAM Surge attractive across countries, and ensured that it was understood and supported by health workers. Its scale-up was aided by global guidelines, the sharing of best practice, momentum being maintained through coordination mechanisms (especially in West Africa), and guidelines and tools being open source so that it could be adapted to fit new contexts and implemented by an increasing number of NGOs.

**Sustaining CMAM Surge**. Government ownership of the approach from the outset, and the long-term commitment of UNICEF and Concern, has resulted in CMAM Surge being sustained to date in Kenya. The predominantly project-based approach to CMAM Surge in West Africa afforded less time for government engagement, which resulted in perceptions that the approach is led by partners, who do not always have a long-term commitment across funding cycles. A key lesson from West Africa was that it is important to nurture government ownership from the beginning to ensure sustainability, rather than rushing to scale up. Nevertheless, government taking full responsibility for the implementation of the approach will not be achieved until the set-up, maintenance, and packages of surge support are government-financed. However, despite the relatively low cost of CMAM Surge set-up and surge actions, sustainable financing of the approach remains a challenge. While the Kenya government has strengthened nutrition services substantially in the past decade, there remains an expectation that implementing partners finance most nutrition programmes, including CMAM Surge. In particular, county and national government contingency funds do not include pre-agreed allocations for surge actions, meaning health facilities still mainly turn to partners to resource surge actions.

## System change towards shock-responsive health systems

The study analysed the extent to which CMAM Surge has built health system capacities for shock-responsiveness – and the limits of, and challenges to, this. Shock-responsiveness is

determined by capacities in formal and community health systems, and connected systems, including in the domains of governance, information systems, finance, products and infrastructure, human resources, and social capital (e.g. social networks). The analysis found that the CMAM Surge approach has strengthened the shock-responsiveness capacities of the formal health system in Kenya to support absorptive, adaptive, and transformative responses. Of course, CMAM Surge focuses on nutrition-specific components, but it was also found to have built more general health system capacities that confer shock-responsiveness.

The approach has improved capacities to **absorb** surges in caseloads of acute malnutrition by strengthening the ability of information systems to assess and monitor health system capacity and risks based on seasonal and interannual peaks in malnutrition admissions. Governance capacities have also been developed by the approach defining roles and responsibilities for responding to acute malnutrition surges, and by creating a social contract between health facilities and higher levels of government that support be provided to health facilities before absorptive capacities are exceeded.

The study also found that the **adaptability** of the health system (to an extent) has been enhanced by improving (to a degree) the flexibility of human resource and product distribution systems, adjusting seasonal preparations based on admission trend analysis, and the alteration of health facility capacity thresholds to account for changing circumstances. The approach has strengthened lines of communication between levels of the health system, providing opportunities to adjust responses based on surge data and dialogue. During a shock, surge information was also perceived to support NGOs and UNICEF to better target geographic locations with nutrition service support, as compared to early warning information that provides information at larger scales.

**Transformative** elements of the approach were cited as unintended benefits for shock-responsiveness. Health workers have been empowered to use their own admissions data, set thresholds, and plan for and manage spikes in caseloads themselves. The mindset of participating health workers is also perceived to have shifted from being reactive to admission surges to recognising that they can prepare and act themselves in response to surges, using their improved understanding of malnutrition drivers, seasonality, and their local area. Health workers feel capable to act when lower-level thresholds are passed because they have agreed actions in advance that they can undertake without needing external resources. CMAM Surge data have also helped increase the prominence of nutrition in county emergency planning and response, with surge actions sometimes supported with national contingency funds.

While the approach is clearly building shock-response capacities, the study demonstrates that innovations for shock-responsiveness can come up **against barriers in the health system within which they are implemented**. CMAM Surge is building certain capacities but its effectiveness depends on the strength and responsiveness of health system capacities not targeted by the approach. A **lack of contingency budgeting or other financial mechanisms to support health facility surge actions** means they are often not implemented, and staff become demotivated by their requests for support being unmet. In Kenya, the tendency is for funds to be used for outreach and mass screening (which are attractive, as stipends supplement salaries), rather than lower-cost surge actions, such as transport to supply additional products or out-of-office allowances for staff transferred to

hotspots. Higher-level surge actions during drought are allocated through county and sub-county cross-sector discussions, becoming one of several priorities competing for resources, including livestock feeding, water trucking, and integrated outreach services.

The ability to deliver surge actions is also inhibited by the **availability of nutrition products to preposition at and restock health facilities, and the lack of spare human resources** to redeploy to health facilities experiencing surges. Lack of redundant resources and shock-responsive financing therefore creates barriers to providing additional capacity to health facilities to manage surges. Thus, to date, health facilities were perceived to implementing surge actions themselves to deal with minor spikes in admissions (such as leave management), but there is now a need to move to wider system change to ensure support is available from the sub-county, county, and national level when absorptive capacities at each level are exceeded.

## Enabling the scale-up of surge approaches to new contexts

The innovation history revealed **several factors that are critical for success, which should be considered in ongoing and future efforts to scale up CMAM Surge**.

The relevance and feasibility of the CMAM Surge approach in contexts without predictable seasonal spikes in malnutrition or fragile health system contexts was questioned. However, there is almost always some degree of health system capacity that can be targeted with support, even if that support is NGO-led. **More research and piloting is needed to assess the feasibility of the CMAM Surge approach in different contexts.**

Open source approaches permit guidelines and tools to be adopted by diverse NGOs, and adapted to meet local needs and to build upon existing capacities. However, there is a need to **balance formalising and institutionalising the tools, processes, and identity of CMAM Surge to provide consistency and quality assurance with making the approach agile in new contexts and able to capitalise on new ideas and opportunities**.

The lesson from Kenya is to **institutionalise leadership and best practice in government structures and positions to reduce dependence on champions, while keeping space for innovative leadership** to address challenges, and thus avoid the risk of innovation stagnating. **Deeper engagement with large NGOs and United Nations agencies at the global level** is likely to be required for the approach to be rolled out and embedded in health systems across low- to middle-income countries. To secure global endorsement, **qualitative or alternative evaluative methods are required to capture the intangible benefits of the approach** that elude quantification but that are critical for building shock-responsiveness (e.g. empowerment and social network strengthening).

Collaboration with, and ownership of, CMAM Surge by the government and engagement of health workers is critical throughout the innovation phases. Unlike in Kenya, where the MoH co-designed the approach itself, when diffusing the approach to other countries **securing government ownership in each country of implementation needs to be a priority** to avoid it being regarded as an external intervention. In this respect, governments should adapt the approach to fit their health system and specific needs.

To secure long-term funding, CMAM Surge should **transition from humanitarian to development funding, given that it is a long-term health system strengthening approach**; humanitarian-development nexus funding opportunities should be explored. In the long run, government-led **sustainable financing is needed for CMAM Surge**, especially for financing surge actions.

## Improving the shock-responsiveness of CMAM Surge in Kenya and elsewhere

The findings suggest that there is a need to better integrate CMAM Surge into the health system in Kenya (and elsewhere), and to strengthen health system shock-responsiveness capacities in finance, product supply chain, and human resource management systems.

While it currently features in some policy documents, **CMAM Surge could be further institutionalised in key county government emergency policies and strategies** and **integrated into routine nutrition and health programming**.

**The development of tiered, automated financing mechanisms could trigger the resourcing of surge actions at each level based on thresholds** (e.g. percentage of health facilities at 'alarm' and 'emergency' thresholds) to address capacity gaps at each level of the health system, depending on the magnitude and scale of caseload surges. Such a tiered approach would require accurate costing of surge actions and fulfilled commitments to allocate and release contingency funds when needed.

To address issues with the supply of staff to health facilities experiencing surges, there is a need for a **shock-responsive component within sub-county, county, and national MoH human resource strategies**. Such a strategy could assist sub-county and county health teams to allocate human resources more efficiently and, when linked with tiered financing, facilitate temporary recruitment of staff to scale up capacity.

Sub-county CMAM Surge data, such as the proportion of health facilities at threshold levels, could be **integrated into monthly National Drought Management Authority (NDMA) county and national Early Warning Bulletins**, now that a majority (<50%) of health facilities are implementing the approach in eight ASAL counties in Kenya. This has the potential to provide early warning of health system absorptive capacities becoming overwhelmed by demand surges, and could increase the prominence of health in county emergency decision-making and resource allocations.

To build health system shock-responsiveness in its entirety, there is a need to strengthen basic health system capacities (e.g. adequate human resources and finance), **expand the CMAM Surge approach to manage surges in multiple common morbidities** through the proposed Health Surge approach**, and to expand to the community health system** to monitor and manage surges in the need for services in the community. Moving to health and community surge approaches implies moving from a single-issue vertical programme to a health system approach, whereby shock-responsiveness is built across health system capacity domains. **The insights from this innovation history analysis of CMAM Surge can provide critical lessons to take forward in the development of such new surge innovations.**

In Section 5.3, specific recommendations are made for those setting up CMAM Surge in new contexts, the CMAM Surge Global Technical Working Group (TWG), and the Kenyan government and its implementing partners.

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# List of abbreviations

| | |
|---|---|
| ASAL | Arid and semi-arid lands |
| CHA | Community Health Assistant |
| CHC | Centre for Humanitarian Change |
| CHMT | County Health Management Team |
| CHV | Community Health Volunteer |
| CIDP | County Integrated Development Plan |
| CMAM | Community-based management of acute malnutrition |
| Concern | Concern Worldwide |
| DHIS | District Health Information System |
| DHMTs | District Health Management Teams |
| ECHO | European Civil Protection and Humanitarian Office FCDO          UK Foreign, Commonwealth and Development Office |
| GoK | Government of Kenya |
| HIP | Humanitarian Implementation Plan |
| IMAM | Integrated Management of Acute Malnutrition |
| Maintains | Maintaining Essential Services After Natural Disasters |
| MAM | Moderate acute malnutrition |
| MoH | Ministry of Health |
| MUAC | Mid-upper arm circumference |
| NDMA | National Drought Management Authority |
| NGO | Non-governmental organisation |
| SAM | Severe acute malnutrition |
| SCHMT | Sub-County Health Management Team |
| SMART | Standardised Monitoring and Assessment of Relief and Transitions |
| TWG | Technical Working Group |
| UNICEF | United Nations Children's Fund |
| WHO | World Health Organization |

# 1    Introduction

Health systems can experience sudden escalations and intensification of demand for health and nutrition services, known as 'surges'. Surges in caseloads can be caused by seasonal factors (e.g. climate variability) and shocks, such as natural hazards, epidemics, insecurity, and displacement, that cause physical harm, undernutrition, and morbidity (FAO and Tufts University, 2019; Hick *et al.*, 2009; WHO, 2015). At the same time, shocks can disrupt service delivery (e.g. by damaging the water supply) and public access to services. Internal health system shocks (e.g. breaks in product supply chains) can also disrupt the availability of services, causing a surge once supplies become available. A 'shock-responsive' health system can 'scale up' to meet additional demand that arises due to a shock, while maintaining the quality and coverage of essential service delivery despite disruptions (Newton-Lewis *et al.*, 2020a). Given the increasing incidence of shocks and the weak capacity of most health systems to adequately respond to them (as exposed by the COVID-19 pandemic), there is an urgent need to develop and scale up health system innovations that build shock-responsiveness.

The CMAM Surge approach is one such innovation that aims to build the responsiveness of government health systems to seasonal and shock-related surges in demand for nutrition services in low-income contexts. CMAM Surge involves health facilities setting thresholds for acute malnutrition caseloads based on a self-diagnosis of their capacities; monitoring trends in caseloads against these thresholds; and actioning internal health facility plans and/or seeking additional resources (such as medical and nutrition products) from higher levels of government or NGOs when thresholds are crossed. The approach was developed and piloted by Concern, a humanitarian NGO, in the ASAL of Kenya in 2012. Since then, it has been adopted by the national government in Kenya and is being scaled up across 10 ASAL counties in the country. Moreover, the innovation has been diffused to other international NGOs and countries in East and West Africa, and as far afield as Pakistan.

Presently, plans are underway to expand the approach from CMAM Surge to Health Surge, which would apply the principles and steps of the approach to common childhood morbidities, such as diarrhoea and malaria, that result in admission surges and that are a driver of malnutrition. It is therefore an important point in time to learn from CMAM Surge's development and scale-up so far, to inform the design of Health Surge, and to understand how the future evolution of the approach (through Health Surge and other adaptations) could better contribute to transforming entire health systems so that they are more shock-responsive.

To date, the literature on CMAM Surge has been limited to country evaluations and perspective articles (notably, a recent *Field Exchange* special issue (Yourchuck and Golden, 2021)). For Kenya, the literature only includes an evaluation of the initial pilot in Marsabit (including its effectiveness, impact, efficiency, acceptance, and sustainability) and a recent perspective article (Ngetich *et al.*, 2021) that focuses on the key successes, lessons learnt, and challenges in Kenya from the perspective of the authors.

This working paper advances knowledge of CMAM Surge through an innovation history analysis of CMAM Surge, with the aim of understanding the processes involved in its emergence and development, and the enablers of, and barriers to, that development; and its

potential and limits in regard to building health system shock-responsiveness. The innovation history method involved analysing the memories, reflections, and documents of stakeholders involved in the establishment, implementation, and roll-out of CMAM Surge in Kenya and internationally. This working paper presents the practical lessons learnt to inform: (i) the diffusion and scale-up of CMAM Surge to new contexts; (ii) improvements to the approach, to integrate it into, and to influence, health systems more widely so that they become more shock-responsive; and (iii) the development and piloting of new surge innovations, such as Health Surge. The global knowledge contributions of the research will be presented in forthcoming scientific publications and associated policy briefs.

The working paper is structured as follows. First, the paper outlines the background to CMAM Surge, the concepts underpinning the research, and the methodology. Second, it analyses the innovation history of CMAM Surge as a series of phases from inspirations and prompts for the idea and piloting to its scale-up and its being sustained. Third, it presents an analysis of the contribution and limitations of the approach in regard to bringing about change towards a shock-responsive health system in Kenya. Finally, the working paper discusses how lessons learnt from the innovation history can inform the future scale-up, improvement, and adaptation of CMAM Surge.

# 2   Background

## 2.1   The CMAM Surge approach

CMAM is a community-based approach for detecting and providing care to severe and moderately acutely malnourished children under five. This involves the provision of nutrient-dense foods at home and the treatment of children with medical complications at health facilities (WHO, 2007). At first, CMAM was introduced as an innovative emergency, vertical programme implemented by NGOs/the United Nations, but it is now integrated into routine health service delivery in 70 countries (FANTA, 2018).

The CMAM Surge approach (referred to as CMAM Surge in this paper) builds on CMAM programming to:

> *'make health systems more resilient over time by making them better able to cope with [seasonal and] periodic peaks in demand for services for acute malnutrition […] without undermining the capacity and accountability of government health actors.'* (Concern, 2016, p. 11)

Concern developed and piloted the approach in Kenya and then formalised it in global guidelines and practical tools for application by governments and their implementing NGO/United Nations partners globally. Health system shock-responsiveness is built through the facilitation of eight steps undertaken by health facility staff (and sometimes Community Health Volunteers (CHVs)) with support from sub-county/district health teams (Figure 1).

Step 1 involves a contextual analysis of local seasonal trends and drivers of acute malnutrition, and Step 2 involves an analysis of health facility capacity. Based on this analysis, health facility-specific thresholds are set ('normal', 'alert', 'alarm', 'emergency') (Step 3) according to the capacity of the health facility to absorb additional caseloads of malnutrition. Surge actions to be undertaken when thresholds are passed are pre-agreed and costed by government actors, and formal commitments are made to trigger and fund those actions (Steps 4 and 5). Thresholds are monitored on an ongoing basis by health facility staff using routine health facility data (Step 6). When a threshold is passed at a health facility, the surge actions are triggered (Step 7): first at the health facility with its own resources when lower thresholds are passed (e.g. when moving from normal to alert phase), and then with external support (from government or implementing partners) when higher thresholds are passed. In some places, the threshold status of each health facility is monitored by sub-county/district health management teams on dashboards, which request higher-level government or implementing partner support if the situation continues to deteriorate (Concern, 2016; Yourchuck and Golden, 2021).

Through this process, CMAM Surge aims to improve health workers' use of facility nutrition data and knowledge of the local context to better anticipate, plan for, respond to, and bounce back from surges in demand for acute malnutrition treatment services. As such, the approach can be regarded as a health system innovation that aims to build shock-responsiveness.

In Kenya, Integrated Management of Acute Malnutrition (IMAM) programming is the term used for CMAM programming[1]; therefore the CMAM Surge approach in Kenya is called IMAM Surge. Because IMAM Surge is the same approach as CMAM Surge, from this point forward we refer to both as CMAM Surge.

**Figure 1:   The CMAM Surge approach steps**



Source: Yourchuck and Golden (2021)

## 2.2    Key concepts

### 2.2.1    Health system shock-responsiveness

The concept of shock-responsiveness (defined in the introduction) is closely allied with the concept of resilience, which refers to a system's ability to respond and adapt to all kinds of change and stress, not just shocks. According to Newton-Lewis (2020b), shock-responsive capacities are found in interconnected formal (public and private sector) and community health systems, and the connected social services and public systems that influence public health and that service the formal and community health systems. Table 1 provides examples of capacities of formal and community health systems that confer shock-responsiveness, grouped under capacity domains.

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[1] The use of the terms CMAM and IMAM for the same approach is a result of the history of its development. IMAM was used because the approach integrates the management of moderate acute malnutrition (MAM) and severe acute malnutrition (SAM), but it was later renamed CMAM to emphasise the importance of community management. However, some countries continue to use IMAM, in part reflecting the fact that few programmes are implemented at the community level.

**Table 1:** **Capacities for health system shock-responsiveness**

| Capacity domain | Formal health system capacities | Community health system capacities |
|---|---|---|
| **Information systems and knowledge** | Ability to monitor health system risks and capacities by integrating different areas of information and knowledge to provide early warning of shocks, and to inform early actions and the scale-down of responses. | Information and knowledge base of communities in relation to health risks and vulnerabilities, access to external information (e.g. weather forecasts), and ability to critically reflect on information. |
| **Human resources and wellbeing** | A strong, committed, well-distributed, experienced, skilled, and adequately staffed and inclusive workforce that is supported, protected, recognised, encouraged, and appropriately deployed to cope with additional demands during shocks. | Physically and mentally healthy and nourished caregivers in communities and households are better able to respond and care for those communities/households during emergencies. |
| **Products, technologies, and infrastructure** | Health technologies, products, and facilities are able to withstand shocks so that they can continue to function and are sufficient to meet spikes in admissions due to shocks. | Diverse and functioning physical assets and services in a community, including tangible resources (food banks, water, medical kits) and technical resources (shelter, automobiles, machinery). |
| **Finance and economies** | Adequate and predictable finance, with fiscal stabilisers, reserve accumulation mechanisms, robust expenditure management systems, and flexible access to financing. | Diverse livelihoods, household savings, emergency funds, and/or accessible social protection in order to maintain food security and nutrition status, and to be able to afford medicines and healthcare during shocks. |
| **Governance** | Inclusive legal, policy, and other institutions that promote collective action, while enabling sufficient agency for adaptability to changing situations; effective communication of information to decision makers; leadership to shape and mobilise support for strategies, bridge diverse actors and connected systems, and coordinate collective action; valued involvement and empowerment of all workers to address health and nutrition risks; and values and beliefs that underpin collective action and learning. | Inclusive community institutions that link organisations and individuals and that facilitate equitable coordination and conflict resolution to foster collective action; responsible leadership with decision-making skills that can foster community action; valued involvement and empowerment of all community members to address health and nutrition risks. |
| **Social capital** | Social networks for efficient sharing of knowledge and information, and access to resources for use in response strategies; cohesive and inclusive social networks and trusting relations to facilitate collective action. | Assistance from informal networks of friends and family through established norms and trust, social cohesion to act together and pool resources, and self-belief to manage prospective situations. |

Sources: Fortnam *et al.* (in prep.), and Gilson *et al.* (2017)

Note: The capacity domains listed largely align with the World Health Organization (WHO) health system building blocks, but highlight additional capacities that are important for shock-responsiveness that are not addressed in the building block framework, including (but not limited to): software components of governance (e.g. norms, values, and empowerment); social capital; the economies of communities; the use of knowledge; and the wellbeing of staff and community members.

Drawing upon health system capacities, when shocks occur, absorptive strategies involve a health system continuing to deliver the same quantity and quality of services without major changes or a redistribution of resources. With more intense shocks that place bigger demands on health systems, adaptive strategies involve continuing service delivery with fewer or different resources through reallocating resources or changing policies and procedures. Transformative strategies involve more substantial changes to health system functions, structures, and ways of working (FCDO, 2020; Blanchet, 2017).

The capacities and strategies deployed are defined, shaped, and constrained by the wider political, socioeconomic, and governance context, including the resources available for health, the legal and policy frameworks and modes of governance (e.g. decentralised or centralised), distributions of power, political priorities, the capacity of the state in relation to non-state actors (such as humanitarian organisations), and the culture and norms of the broader public system and of communities (e.g. inclusivity and readiness to accept change and belief in ability to overcome stresses). Which response strategies are implemented, and who wins or loses from them, will depend on the distribution of power embedded within the context of formal and community health systems (Topp, 2020).

This paper (Section 4) considers the contribution and limitations of CMAM Surge in regard to strengthening capacities for shock-responsiveness, and it (Section 5) considers ways forward to develop the approach further to build shock-responsive health systems.

### 2.2.2    Social innovation

CMAM Surge can be described as a social innovation. In a social innovation, new ideas are developed, reworked, and spread within society or to new places to address societal problems or improve human wellbeing (Mulgan, 2006). Social innovation in health can include new concepts, strategies, initiatives, products, processes, or organisations that change the components, processes, and routines of health systems. The CMAM Surge approach can be viewed as social innovation that aims to address the problem of health systems in low- to middle-income countries being insufficiently responsive to variability in the acute malnutrition caseload.

Murray *et al.* (2010) identify five phases that make up an innovation process (Figure 2). First, prompts, inspirations, and diagnoses are needed for an idea or solution to become apparent. This stage can include a crisis that highlights the need for change, creative imagination and new evidence that inspire new ideas, and the diagnosis and framing of a problem so that a solution can be found. Second, proposals and ideas are suggested and consolidated to address the diagnosed problems. Then, third, ideas get tested in practice as a pilot or prototype. Fourth, the idea becomes routine practice and is sustained with sustainable financing and resourcing, and is integrated into institutions. Fifth, scaling involves the growing and spreading of the innovation within the same place and context, and in new places and contexts. Finally, the social innovation may generate system change, such as

new frameworks, ways of thinking, distributions of power, or social networks. These phases overlap in time; for readability purposes, Section 3 of this working paper orders the scaling phase before the sustaining phase. By analysing the history of CMAM Surge through the prism of these phases, we can better understand what enables and blocks shock-responsive innovations, opportunities and pitfalls to scaling the approach up, and its potential to bring about health system change towards shock-responsiveness.

**Figure 2:     Social innovation phases**
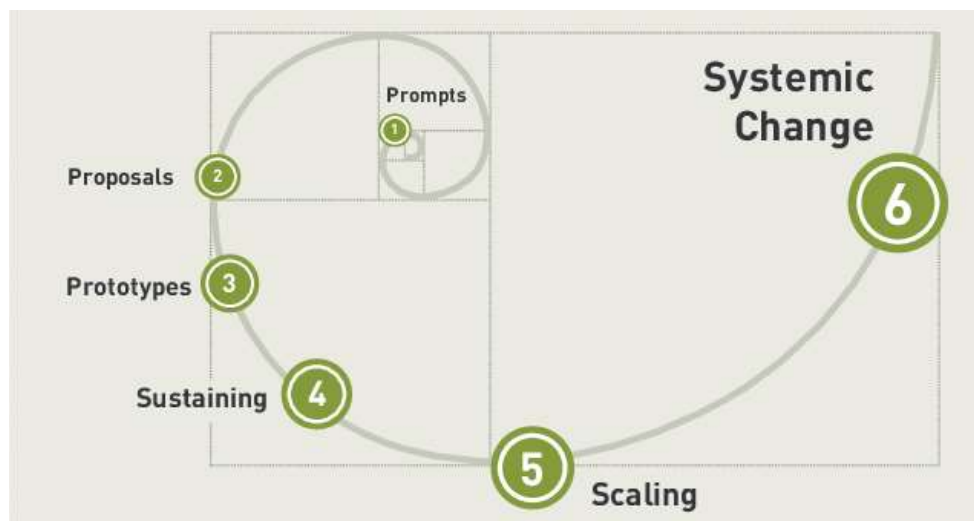


Source: Murray *et al.* (2010)

## 2.3    The ASAL of northern Kenya

The sub-national research on CMAM Surge that is drawn upon in this working paper was undertaken in the ASAL of Kenya (in the counties of Marsabit, Turkana, and Wajir; see Figure 3). The ASAL account for approximately 89% of Kenya's land mass and 23 of Kenya's 47 counties (Republic of Kenya, 2012a). The defining characteristic of the Kenyan ASAL is their aridity, with significant seasonal and interannual climate variability and extremes, which result in regular drought and floods (Government of Kenya (GoK), 2015).

**Figure 3:   Maintains programme case study counties**
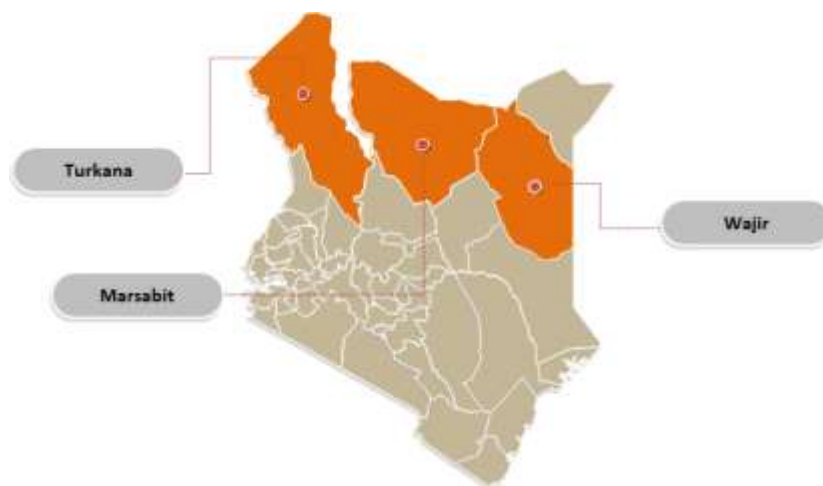
Pastoralism is the dominant livelihood in the arid lands, while agro-pastoralism is most common in the semi-arid lands (Munene, 2019; Turkana County Government, 2019). Roles and responsibilities in households and communities are highly gendered in what are strongly patriarchal societies (Dometita, 2017). The three case study counties are ethnically diverse: the largest ethnic groups in Marsabit, for example, are the Borana, Gabbra, and Rendille, but there are (at least) an additional eight ethnic groups (Czuba, 2017). Religion plays an important role in the daily lives of populations in these counties: Wajir is a predominantly Muslim county, while indigenous religions or Christianity are commonly practised in Turkana and Marsabit. All three counties have low educational attainment levels, are prone to inter-tribal conflict, and have some of the highest poverty rates nationwide: estimates for the percentage of households in poverty (and hardcore poverty) are 56% (20%), 71% (44%), and 54% (9%) for Marsabit, Turkana, and Wajir respectively, compared to a national average of 27% (6%) (KNBS, 2018).

Since 2013, devolution of decision-making power to county governments in Kenya has made county officials responsible for health and nutrition service delivery, while the national government has retained responsibility for health policy and regulations. Healthcare is organised into four tiers: community (Tier 1); primary care, including dispensaries, health facilities, and clinics (Tier 2); secondary referral county hospitals (Tier 3); and tertiary referral national hospitals (Tier 4). The health system in the ASAL is beset by challenges, including a shortage of skilled health workers (especially women), infrastructure, supplies, and equipment (Ojakaa *et al.*, 2014; Wayua, 2017). The vastness of these counties and the remoteness of many communities means that some populations receive little to no formal health services.

The ASAL are prone to numerous shocks, including political and ethnic conflicts, and slow-onset natural hazards (e.g. droughts) and rapid-onset natural hazards (e.g. floods, landslides/mudslides, and disease outbreaks). The northern and eastern ASAL are particularly vulnerable to drought – there were 12 droughts in Kenya between 1990 and 2019, each affecting about 4.8 million people on average (GoK, 2018a). The occurrence of severe to extreme drought is likely to intensify there in the near future due to climate change (Tan *et al.*, 2020). Pastoralists have traditionally coped with climate variability through livestock mobility to track forage and water resources, and reciprocal systems of distributing food and (most importantly) milk, and they have sought to adapt to climate change by diversifying livelihoods and sending children to school (Opiyo *et al.*, 2015; Orindi *et al.*, 2007). However, the severity and frequency of droughts can overwhelm coping strategies, which themselves are also being eroded by political instability and a trend towards farming and sedentarisation in poorly planned settlements (McCabe, 1990; Njoka *et al.*, 2016).

Malnutrition (chronic and acute) remains stubbornly high in the northern ASAL, and Marsabit, Turkana, and Wajir have some of the highest malnutrition rates in Kenya, recording global acute malnutrition prevalence rates of 18%, 25.6%, and 16.4%, respectively; Turkana has the highest global acute malnutrition prevalence of any county in Kenya (Munene, 2019; Turkana County Government, 2019; Wajir County Government, 2019). Seasonal and drought-related temperature and vegetation cover variability has the strongest association with child malnutrition compared to other risk factors (e.g. poverty and illiteracy) in the ASAL of Kenya (Bauer and Mburu, 2017; Harison *et al.*, 2017). Drought can increase malnutrition incidence as a result of poor access to clean water and food insecurity due to higher food prices, livestock mortality, and worsened terms of trade, and lower

household incomes and household production, which results in a higher number of households being unable to meet their minimum dietary needs. Women often sacrifice their dietary intake for children to eat, and skip meals or reduce the size of their meals (Dometita, 2017). Indeed, malnutrition tends to affect child, women, and maternal health most (Manners *et al.*, 2015). Droughts, seasonality, low dietary diversity, high costs of domestic food production, global food price volatility, low purchasing power, displacement, poor hygiene, and lack of safe drinking water all contribute to high burdens of, and spikes in, acute malnutrition and common diseases, especially malaria, respiratory tract infections, and diarrhoea (Munene, 2019; Wayua, 2017).

The 2011 Horn of Africa drought was the worst in 60 years, and highlighted the extreme vulnerability of pastoralist communities in northern Kenya to surges in acute malnutrition incidence. The response in Kenya was considered to be late and weakly coordinated, exposing weaknesses in early warning systems, and resulted in high levels of acute malnutrition and child mortality (e.g. Australian Government, 2014; Paul *et al.*, 2012). The most recent severe drought emergency in 2016–17 came soon after devolution in 2013, which meant that county governments took more of a lead in the response than in 2011. Devolution increased the number of stakeholders participating in drought management, but created challenges as a result of immature leadership and coordination mechanisms. Nevertheless, the government response to the drought of 2016–17 was assessed to be a significant improvement on the response in 2010–11, with high levels of global acute malnutrition but lower mortality rates (Hailey *et al.*, 2018). This improvement was partly attributed to the scale-up of CMAM and its integration into the health system, stronger government leadership (including from NDMA), the establishment of scalable social protection, and the introduction of CMAM Surge (Dolan and Shoham, 2017).

## 2.4    Methods

The innovation histories method (Douthwaite and Ashby, 2005) involves the recording of a detailed written and visual account of an innovation process based on the memories and available documents of people who participated in its establishment, implementation, and roll-out. As a participatory method, the preparation of the history stimulates discussion, reflection, and learning among key implementing actors in order to produce findings and conclusions.

The innovation history of CMAM Surge identified factors and enablers of success, as well as institutional and social-political obstacles, barriers, and sources of resistance. Organisations can learn from the history of CMAM Surge in Kenya to be inspired, understand how to avoid pitfalls, and maximise the chances of success in other contexts, and when developing new surge innovations, such as Health Surge.

As a participatory method, the research involved insiders (those involved in the development and scale-up of CMAM Surge), end-users (health and disaster management staff), and outsider researchers (with no association with CMAM Surge). During the innovation history interviews (Section 2.4.1), *insiders* were provided with a space to reflect on, question, and rethink their situation and strategies, while at the same time providing new perspectives for the research, and guiding research outputs so that they would have real-world applicability (Bergold and Thoma, 2012; Aldridge, 2016). Insiders were asked reflective questions during

interviews, to review and comment on draft copies of this report, and/or to attend learning workshops where findings were discussed. Members of the Maintains research team also included insiders (i.e. Hailey, co-author, who previously wrote an article that originally inspired CMAM Surge, Section 3.1). End-users were interviewed (Section 2.4.2) to understand their perspectives and experiences of using the CMAM Surge approach. Finally, outsider researchers (co-authors Fortnam, Sheen, and Lea) implemented the research methods and analysis, and wrote up the outcomes of the research, without the biases of having participated in CMAM Surge previously.

In the original research protocol (Fortnam *et al.*, 2020a), interactive innovation history workshops were planned at national, county, and sub-county levels, which were to be followed up with face-to-face interviews. Because of travel and physical risks and restrictions related to the COVID-19 pandemic, the method was instead implemented remotely by interview only with higher-level county, national, and international respondents. Instead of county and sub-county innovation history workshops and interviews, additional county and sub-county perspectives on CMAM Surge were analysed from previously recorded interviews from Work Package 1 of Maintains Kenya (conducted in January to February 2020, prior to COVID-19 becoming a global pandemic). While these interviews did not take a historical perspective, they captured current experiences of, and perceptions of, CMAM Surge's contribution to shock-responsiveness.

### 2.4.1   Innovation history interviews

Innovation history interviews were held (November 2020 – February 2021) with 19 key informant insiders (Table 2) who had been purposefully selected based on their knowledge and experience of designing, implementing, and scaling up CMAM Surge in Kenya and internationally. The interviews were conducted by one interviewer (the lead author) using the teleconference software Zoom.

**Table 2:    Profile of interviewees**

| Interviewee position | Total | Female | Male |
|---|---|---|---|
| **Country NGO staff** | 5 | 1 | 4 |
| **International NGO staff** | 4 | 4 | 0 |
| **UN** | 1 | 0 | 1 |
| **Consultants** | 2 | 1 | 1 |
| **Government staff** | 5 | 3 | 2 |
| **Donors** | 2 | 2 | 0 |
| **Total** | 19 | 11 | 8 |

Source: Authors

Using an interview guide (Annex A), interviewees were asked to describe and explain the history of CMAM Surge, and they were then questioned on important events and asked to reflect on important themes and lessons learnt, including key actors, enablers of and barriers to success, and the perceived benefits and limitations of the approach in regard to building health system shock-responsiveness.

The innovation history was studied at international, national, and county levels in Marsabit, Turkana, and Wajir. These are the case study counties of the wider Maintains Kenya programme of research, and were selected in consultation with partners based on their exposure to shocks, their strategic interest to FCDO, and the fact that they have at least four years' experience of CMAM Surge implementation (Fortnam *et al.*, 2020a). Initial interviewees were sampled from the CMAM Surge Global Technical Working Group (TWG) and a list provided by Centre for Humanitarian Change (CHC) staff and Concern. Interviewees were then asked to recommend individuals to interview (snowballing sampling). The sample concentrated on those involved in the implementation of CMAM Surge in Kenya but additional interviews with key individuals leading its scale-up internationally were undertaken to understand how the approach has been adapted and applied in other contexts. Interviews in Kenya were conducted until a saturation point was reached.

### 2.4.2 County and sub-county interviews

Work Package 1 of Maintains involved 56 interviews with individuals and five interviews with more than one person, conducted by a gender-balanced team (one female and one male) in Marsabit, Turkana, and Wajir (Table 3). These interviewees were purposefully selected because they are health staff end-users of CMAM Surge, or because of their roles and responsibilities, or because they interact with or have knowledge of CMAM Surge activities through their involvement in nutrition and emergency planning and response at county and sub-county levels. The interview guide was semi-structured to enable a conversational, exploratory discussion of health system shock-responsiveness. Part of this guide included questions about perceptions and experiences of CMAM Surge (Annex B, Fortnam *et al.* 2020). Categories of county and sub-county interviewee were selected based on a review of the institutional structure of the health system and disaster management in Kenya. Individual interviewees were invited based on their relevant positions in county and sub-county governments, and at NGOs and United Nations agencies. Sub-counties and health facilities were selected according to their exposure to climate shocks, diversity of contexts and livelihood zones, and where CMAM Surge is being implemented (Fortnam *et al.*, 2020a). Table 3 shows that more men were sampled than women, especially at senior county level, which reflects the fact that the northern counties of Kenya have a lower proportion of women health workers, except for nurses (MONDKAL and IntraHealth, 2012; Ojakaa *et al.*, 2014). To account for the potential incompleteness of the stakeholder list, snowballing sampling was employed.

**Table 3: Interviewees by position, gender, and level**

| Interviewee position | Total | Female | Male |
|---|---|---|---|
| **County level** | | | |
| County drought coordinator, drought information officer or response officer | 3 | 0 | 3 |
| County director disaster management and humanitarian coordination/county planning director[1] | 2 | 0 | 2 |
| County director MoH | 1 | 0 | 1 |
| County director of public health | 2 | 0 | 2 |

| | | | |
|---|---|---|---|
| County nutrition coordinator | 2 | 2 | 0 |
| Human resource officer | 1 | 1 | 0 |
| United Nations/NGO programme director, manager, or officer | 11 | 2 | 9 |
| United Nations/NGO nutrition officer | 7 | 2 | 5 |
| United Nations/NGO group of programme managers and/or nutrition officers[2] | 3 | N/A | N/A |
| **Total** | **32** | **7** | **35** |
| **Sub-county level** | | | |
| Sub-county deputy public health nurse | 1 | 1 | 0 |
| Sub-county nutrition coordinator | 4 | 2 | 2 |
| Sub-county public health nurse | 1 | 0 | 1 |
| Sub-county medical officer for health | 3 | 2 | 1 |
| Sub-county medical team (group)[1] | 2 | N/A | N/A |
| **Total** | **11** | **5** | **4** |
| **Health facility level** | | | |
| Facility in charge | 8 | 3 | 5 |
| Nurse or patient attendant | 2 | 1 | 1 |
| Community Health Assistant (CHA[2]) | 8 | 6 | 2 |
| **Total** | **18** | **10** | **4** |
| **Total individuals** | 56 | 22 | 34 |
| **Total groups** | 5 | N/A | N/A |

Source: Authors

Notes: [1] The county planning director assumed the role of county director disaster management and humanitarian coordination in Marsabit; [2] Some participants were interviewed as a group.

### 2.4.3 Qualitative data analysis

Innovation history interview audio recordings were transcribed verbatim using the transcription software Otter.ai (and then checked by the interviewer), while county and sub-county interviews were transcribed by research assistants. The transcripts were analysed in the qualitative analysis software, NVivo. County and sub-county interviews were coded using a 'flexible coding' approach that combines inductive and deductive coding (Deterding and Waters, 2018). This involved index coding all transcripts for reference to CMAM Surge, and then analytically coding data within this index code to inductively develop a framework of themes presented in this report.

For the innovation history interviews, transcripts were coded by events, organised chronologically, and coded by the six innovation phases. Within each of these phases, data

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[2] CHAs are also known as Community Health Extension Workers.

were coded inductively for themes related to the enabling factors, strategies, barriers, and benefits and limitations as regards strengthening the shock-responsiveness of health systems. The history was summarised as a written account and as a timeline (simplified in Figure 4 below).

### 2.4.4    Secondary data analysis

CMAM Surge dashboard threshold data (Section 2.1) were aggregated to analyse the proportion of health facilities at each threshold phase (normal, alert, alarm, and emergency) and were descriptively analysed to understand if the passing of thresholds was associated with drought early warning phases shown in Early Warning Bulletins of NDMA. The analysis involved filtering consolidated CMAM Surge dashboard threshold data for Marsabit to calculate the percentage of health facilities at each threshold each month (2017–20). The analysis was undertaken in Marsabit since it is the only county to have had a high proportion (90%) of health facilities implementing the approach for three years, avoiding analysis being skewed by a limited number of health facility data points. Monthly NDMA early warning phases data for Marsabit were categorised as 1 (alert), 2 (alarm), and 3 (emergency) (2017–20). A stacked area graph was created that plotted the proportion of health facilities passing thresholds and early warning phases as a time series for visual analysis.

A descriptive analysis was also performed of seasonal community prevalence of acute malnutrition compared to admissions at health facilities in the three counties, to understand whether admissions data (and therefore surge data) are representative of the nutrition situation in the community. This was undertaken to understand the ability of CMAM Surge data to inform shock responses beyond the formal health system. We used monthly mid-upper arm circumference (MUAC) data recorded in NDMA Early Warning Bulletins to indicate the proportion of children under five with MAM and SAM in the community. Monthly admissions data were sourced from the District Health Information System (DHIS) via UNICEF. In-patient clinic (very severe cases) and outpatient therapeutic feeding programme admissions were summed together, and disaggregated by gender. Refugee cases were not included.[3] Finally, monthly and county[4] mean rainfall data (from the Famine Early Warning Systems Network (FEWSNet))[5] were computed to undertake a descriptive analysis of associations between seasonal admissions and rainfall. Seasonal cycles of MUAC, MAM and SAM, outpatient therapeutic feeding programme/in-patient clinic admissions, and rainfall data (2011 to 2019 inclusive) were plotted on graphs (Annex B) to undertake a descriptive analysis of seasonal relationships between community incidence of, and health admissions for, MAM and SAM, and rainfall. Trends in malnutrition admissions between 2010 and 2020 were also analysed for each of the three counties, disaggregated by gender, to visually analyse whether peaks in admissions aligned with known climate events (Annex B).

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[3] Refugees receive a system of healthcare that is separate from the regular Kenya health system and therefore were removed from the computation.
[4] County border data was extracted from the Humanitarian Date Exchange.
[5] Global Climate Hazards Group InfraRed Precipitation with Stations (CHIRPS) 2.0 rainfall estimates were sourced from the FEWSNet dataset as annual files (https://earlywarning.usgs.gov/fews).

### 2.4.5    Insider review of draft reports

This working paper has been shared with key individuals in organisations implementing CMAM Surge for review and will be presented to the CMAM Surge Global TWG and other selected stakeholders (e.g. MoH and NDMA staff) to review and validate. A facilitated discussion identified the most critical factors and strategies for scaling up the approach, and themes for further research investigation.

### 2.4.6    Limitations of the study

- The innovation history interviewees were insiders, which presents a risk that perspectives are biased and overly positive towards the approach. County-level interviews provided alternative perspectives, but not from an innovation history perspective.

- Being a predominantly qualitative study, there are limitations in respect of recall biases and findings being based mainly on perceptions. Further research maybe required to substantiate claims made by research participants in some instances.

- This working paper was part of a larger programme of research on the shock-responsiveness of Kenya's health system. The early termination of the Maintains programme means additional insights on the CMAM Surge approach are absent from the analysis (including on social relations and surge information flows; analysis of surge actions at health facility and sub-county levels; and community- and household-level analysis that would have provided an opportunity to survey users of nutrition services at health facilities implementing and not implementing CMAM Surge, and to understand access barriers).

- COVID-19 restrictions prevented planned innovation history workshops at national, county, and sub-county levels. This inhibited dialogue, contestation, and learning among research participants, and a comprehensive analysis of the innovation history at county and sub-county levels in Kenya, except for a limited number of remote county-level innovation history interviews (and Work Package 1 interviews).

- The research focused on the development and scale-up of the approach in Kenya; data on experiences in other countries are sourced from a limited number of international NGO and donor interviewees and grey literature (e.g. evaluations). Further research is needed on the experiences of those involved in adapting the approach in new contexts and piloting innovations to the approach (e.g. Health Surge in West Africa).

- The admissions data analysed may have inaccuracies because of gaps and errors in heath facility data collection, and is not necessarily representative of community incidence of malnutrition (discussed in Section 4.2.4).

### 2.4.7    Ethical procedures

Ethical procedures for the research are described in the Maintains Kenya research protocol (Fortnam *et al.* 2020). The research received ethics approval from Pwani University ethics board (ERC/EXT/001/2020) and was granted a research licence by the National Committee for Science, Technology and Innovation (reference 752880). Each participant was provided with a Participation Information Sheet and read and signed a research consent form. All data

have been kept confidential, are stored on password-encrypted computers, and are pseudonymised so that they are not attributable to a participant without the use of additional information about the participants, which is kept separately, safely, and securely on encrypted computers. Quotes have been attributed to gender, position, and organisational categories to maintain the anonymity of interviewees. Interviews with sub-county and county staff were undertaken at a venue of their choosing and were timed to minimise disruption to their work, and participants were asked if they had special requirements.

Because the research is participatory, insiders with a critical interest in CMAM Surge from their past work in evaluating and supporting the approach's development participated in the research and commented on early drafts. However, to mitigate any conflict of interest, their role was limited to being interviewed and commenting and providing broader reflections on the implications of the findings, to limit biases, with external researchers leading the analysis and writing.

# 3    CMAM Surge innovation process

This section analyses the CMAM Surge innovation history. Figure 4 summarises key events in the history (as identified by the interviewees), which are referred to in the following analysis of five of the six stages of social innovation: (i) prompts, inspirations, and diagnoses; (ii) proposals; (iii) piloting; (iv) scaling; and (v) sustaining. While the first three stages mainly follow a chronological order, stages (iv) and (v) overlap in time. The final innovation phase, systemic change, is analysed in Section 4 in respect of change towards a shock-responsive health system.

## 3.1    Prompts, inspirations, and diagnoses

In the 2000s, health facility capacities to manage CMAM services and surges in demand for services were increasingly recognised as highly variable by nutrition practitioners. In 2010, an article was published by Hailey and Tewoldeberha (2010) in *Field Exchange*, a print and digital journal, on a 'Suggested new design framework for CMAM Programming' that captured many of the concerns nutrition practitioners had with the status quo:

- Governments lacked the capacity to manage CMAM services outside of emergencies when support from NGOs and UNICEF receded.

- A stop-start model of emergency response was dominant, yet drought-prone ASAL experience chronic and regular seasonal and periodic extreme spikes in acute malnutrition, with emergency cycles overlapping in space and time.

- There was no consideration of the variable capacity of health facilities to cope with acute malnutrition caseloads, resulting in inefficient NGO/United Nations targeting of support.

Hailey and Tewoldeberha proposed a more holistic approach to managing seasonal and emergency surges in acute malnutrition by analysing the capacity of the health system to cope with caseloads and strengthening government health system capacities, rather than substituting them with external support (Figure 5).

Then in 2011 a major drought in the ASAL of Kenya resulted in over 300,000 children developing acute malnutrition (CHC, 2015). Evaluations of the drought response highlighted the need to strengthen government leadership of nutrition service delivery and responses to emergencies (Hailey *et al.*, 2021). Concern was the lead NGO partner for the health and nutrition response to the drought in the districts (now sub-counties) of Moyale, Chalbi, and Sololo in Marsabit county. After the drought, Concern identified issues with the lack of preparatory planning, despite early warning, and a lack of understanding of the context or the use of available data to inform response planning. A key conclusion was recognition of the need for indicators and thresholds to prompt timely planning and earlier response activities in response to predictable nutrition emergencies (Kopplow *et al.*, 2014). Lessons learnt from the 2011 drought coalesced with discussions within Concern about the Hailey and Tewoldeberha (2010) article, leading to the development of the CMAM Surge approach.

**Figure 4:    Key events in CMAM Surge innovation history**
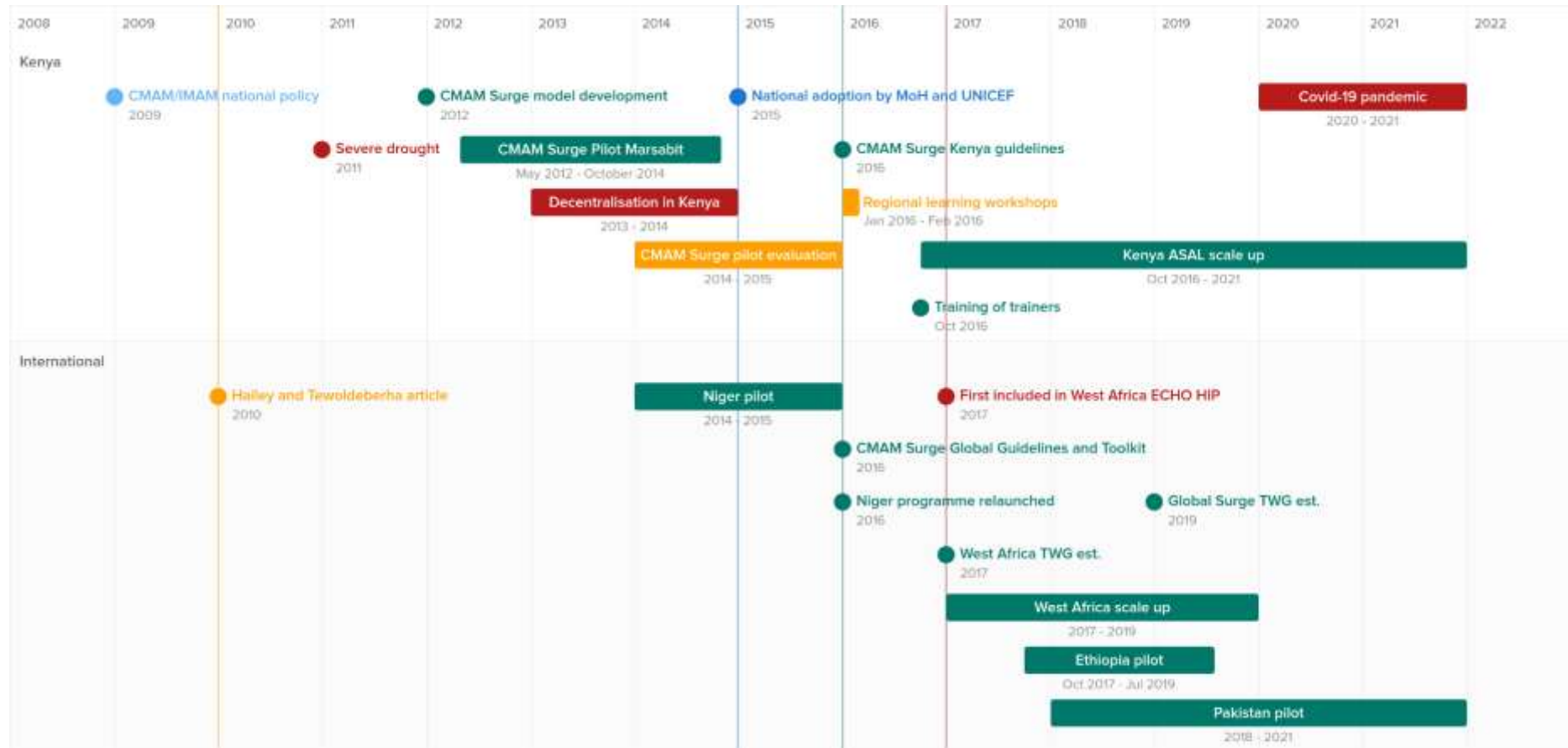


Data: Key events in the CMAM Surge history identified by respondents and validated with documentation. Timeline created using the software Precedon.com

Notes: Colour coding of events reflects different types of event: learning (yellow); something happened – e.g. shocks or political events (red); actions and activities (green); decisions made (blue). The vertical lines highlight events most commonly selected by research participants as the most critical in the history.

**Figure 5:  The theory of the surge approach**
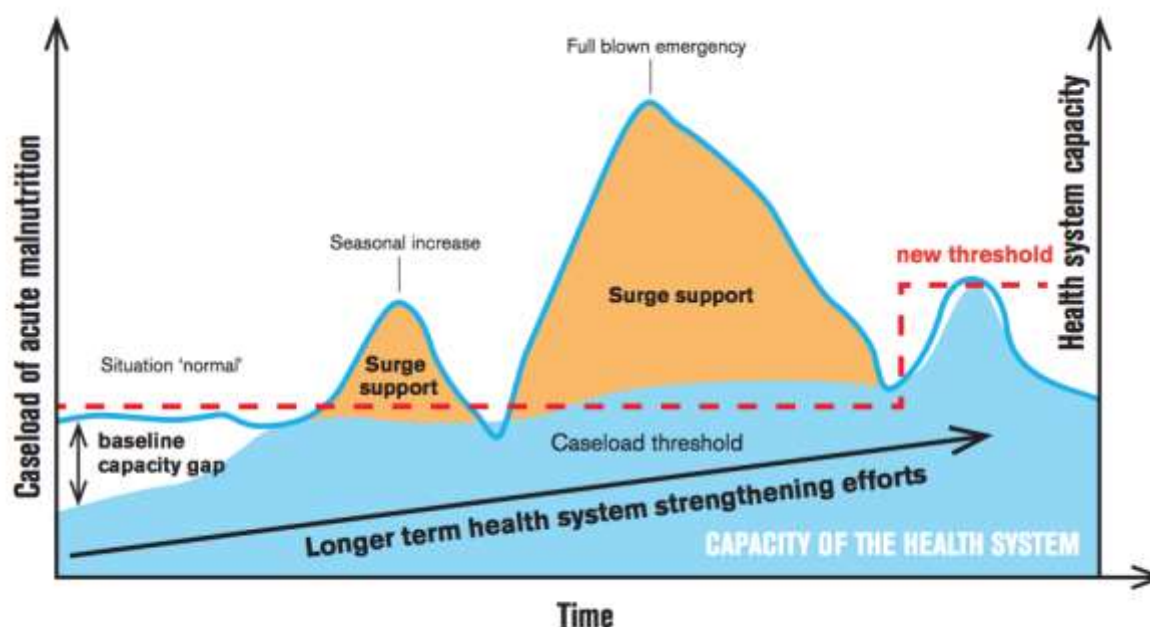


Source: Concern (2016)

Notes: The figure shows Concern's interpretation of the Hailey and Tewoldeberha article. The figure shows thresholds for surge support that can be passed during seasonal and emergency acute malnutrition caseload surges. As the capacity of the health system increases over time (blue area), the threshold (red dotted line) at which surge support is required to cope with caseloads of acute malnutrition can be set at a higher level.

### 3.1.1    Enablers, strategies, and barriers

While recognised by practitioners for many years, the problems with the system of nutrition emergency response had not been consolidated and articulated in writing because of the perceived limited time available to humanitarian actors for learning and conceptualising. The writing of the Hailey and Tewoldeberha (2010) article, required the authors, UNICEF technical advisers at the time, to provide **thought leadership** and to **dedicate time among competing priorities**. Publishing the **article in a publication with practitioner audiences** communicated the concept to technical advisers who were in a position to operationalise the proposed solutions: '*the article framed the problem in such a way that a workable solution could be sought*' (female technical adviser). The 2011 drought **shock opened a window of opportunity** for government and non-government actors to question the status quo and to search for solutions.

## 3.2    Proposal to pilot

The right question and broad suggestions for a way forward had been posed by the Hailey and Tewoldeberha (2010) article, but an answer needed to be found in terms of operationalising those ideas in a proposal. In 2012, a Concern technical adviser, Regine Kopplow, together with colleagues, drafted a proposal that also drew from a caseload monitoring and management approach piloted by Concern in Karamoja, Uganda, but that was not sustained (Hailey, 2016). Kopplow then further developed and contextualised the

proposal with the Concern Kenya team and District Health Management Teams (DHMTs) in Marsabit.

The resultant CMAM Surge approach was piloted in Moyale and North Horr sub-counties in Marsabit between May 2012 and October 2014, as part of routine CMAM programming funded by UNICEF, and the 'Marsabit County Emergency Recovery Project (March 2012 to February 2013)', funded by the Directorate-General European Civil Protection and Humanitarian Office (ECHO) (Kopplow *et al.*, 2014).

In consultation with the DHMTs, 14 health facilities were selected: seven with strong capacity and seven with weaker capacity, to test the approach in different contexts. A formal agreement between Concern and the DHMTs defined roles, responsibilities, and the package of support for health facilities. Concern staff were trained first, and they then trained and facilitated health workers in each health facility with the CMAM Surge set-up (Kopplow *et al.*, 2014). While the pilot involved the government at every stage, it was led by Concern.

### 3.2.1    Enablers of, strategies for, and barriers to piloting

**Programme and funding flexibility** from UNICEF and ECHO gave Concern Kenya the freedom to innovate by repurposing funds to what was a low-cost activity. DHMTs (and the national government, which approved the pilot) demonstrated an openness to experiment with a new untested approach, while Concern combined international **technical leadership** to conceptualise the approach with **in-country technical and managerial leadership** to contextualise the pilot model through iterative cycles of design, implementation, and review. Rather than imposing an externally designed tool, CMAM Surge was therefore developed from the ground up in Kenya. The long-term and extensive relations of the Concern Kenya team with the MoH and communities in Marsabit gave them the **contextual understanding and trusting relations** required to find solutions in partnership with the MoH:

> '[MoH staff] *were not just sitting in the room…they were really shaping it. And a lot of what the CMAM Surge approach looks like today is because of the ideas and the contributions of the of the Kenyan government.'* (Female NGO technical adviser)

While some interviewees felt that without established tools during the pilot the approach lacked clarity, others saw that the **learning-by-doing approach** engaged and gave ownership to the government from the outset, and ensured the approach met local needs and fit the local context, and thus was feasible and accepted.

Concern's relatively small size was perceived to make it innovatively nimble, but some interviewees expressed that there was a **lack of resource dedicated to fostering innovation**, an *'aversion to wasting money on temporary salaries'* for untested approaches, and a **lack of donor support for process orientated innovation**, compared to more tangible outputs (e.g. technologies). The development of CMAM Surge relied on the motivation and commitment of individuals, who faced **internal organisational scepticism** about the idea, and the low set-up costs of the innovation that made it viable within the existing programme budget.

## 3.3 Scaling up

### 3.3.1 Kenya scale-up

From 2013 onwards, operational feedback from the Marsabit pilot that the approach was technically feasible and effective led to interest in formalising the approach and a retrospective evaluation (CHC, 2015) of the pilot, which concluded:

> '[CMAM Surge is] *strengthening the health system to increased caseloads of acute malnutrition during predictable AND un-predictable emergencies without undermining ongoing health system strengthening efforts'* (p. 9).

Concern and MoH personnel from Marsabit presented the approach and the pilot evaluation results at various fora, which led to the national MoH and UNICEF adopting the approach in 2015 to roll out across 10 priority ASAL counties (Figure 6). By June 2020, CMAM Surge was implemented in 63% of targeted ASAL county health facilities (469 facilities), and 29 of the total 45 sub-counties (in seven out of the 10 counties) had developed sub-county CMAM Surge dashboards, which Sub-County Health Management Teams (SCHMTs) use to monitor the admissions and threshold phases of their participating health facilities.

**Figure 6:   Percent of health facilities implementing the CMAM Surge approach in implementing ASAL counties in Kenya (2017–20)**
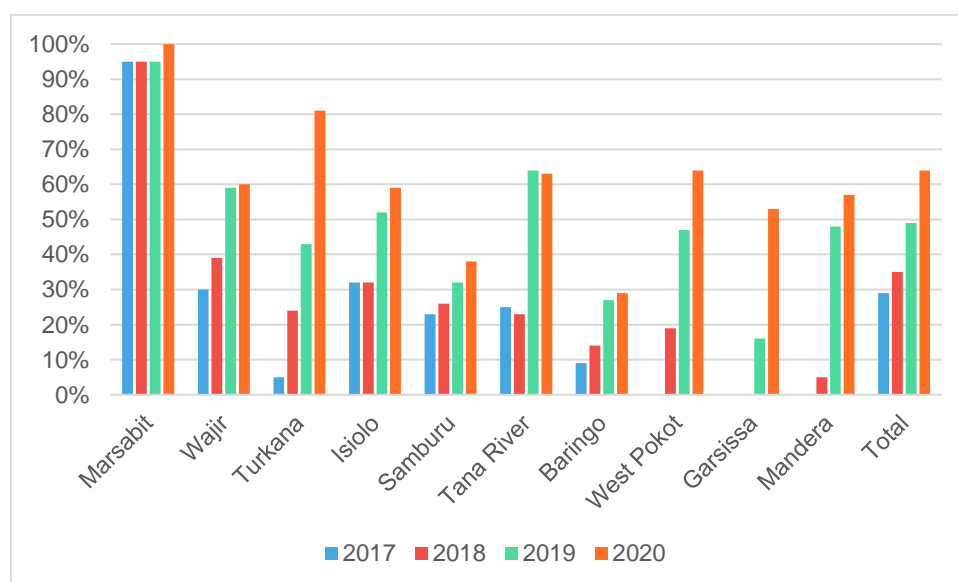


Data: Annual review workshop reports (GoK, 2019, 2018, 2017)

In 2015–16, CMAM Surge global and Kenya specific guidelines and toolkits (Concern, 2016) formalised the steps involved in the approach (Section 2.1), following regional workshops that validated draft guidelines and invited contributions from key actors involved in pilots in East and West Africa (see below). Following publication of the Kenya guidelines in July 2016, national training of trainers targeted County Health Management Teams (CHMTs), who then trained 53 county and sub-county trainers from the MoH and NGO partners. Road maps for the first year of implementation were formulated during the training; these are revised annually based on learning and contextual changes (Ngetich *et al.*, 2021).

### 3.3.2    International scale-up

From 2016, Concern and several other NGOs and UNICEF began to provide technical assistance to governments in 11 countries to adapt and implement the approach outlined in the global guidelines (Figure 7).

West Africa has experienced the most significant regional scale-up (Figure 8). Concern first piloted the approach in Niger in 2014 (McCloskey, 2019), and then it was introduced to NGOs and other stakeholders at West African regional learning workshops in May 2016 (Figure 4) as part of consultations for the global guidelines. Then in 2017, ECHO included CMAM Surge in its Humanitarian Implementation Plan (HIP) for West Africa, which led to several NGOs including it in their proposals for HIP funding. As a consequence of the funding of these proposals, CMAM Surge scaled up to approximately 900 health facilities across 70 districts in six countries (Figure 8) (Moyer and Hoorelbeke, 2021).

**Figure 7:    Countries implementing CMAM Surge**
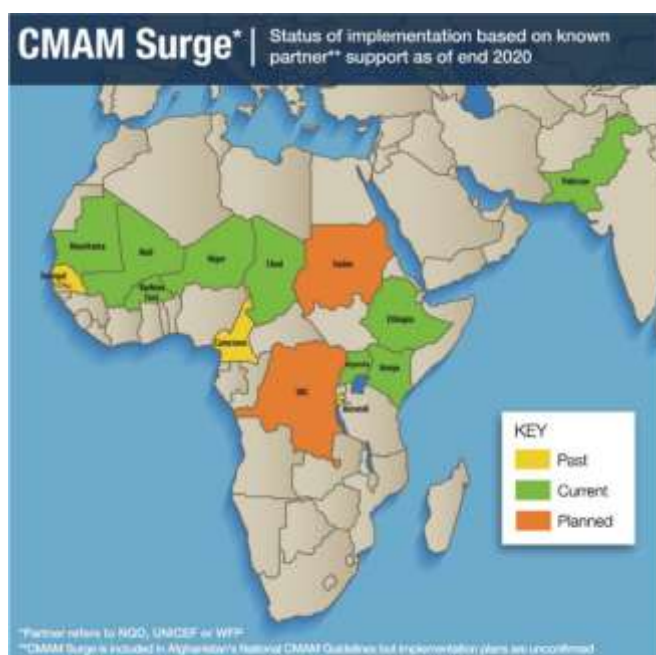


Source: Yourchuck and Golden (2021), reproduced with permission from Emergency Nutrition Network

**Figure 8:   Number of health facilities implementing CMAM Surge globally (2014–20)**
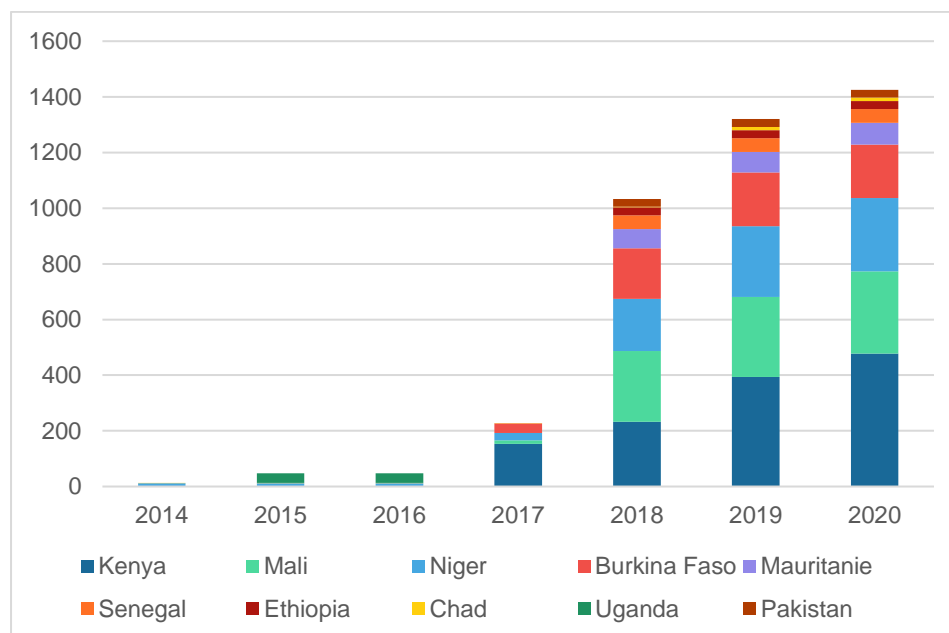


Data: GoK (2019, 2019, 2017); West Africa TWG; personal communication with NGO staff.

Notes: Data from implementation in Kenya before 2017 were not available. Chart does not capture health facilities that may have discontinued operation of the CMAM Surge approach, except for Uganda (e.g. Senegal is believed to have terminated its use).

### 3.3.3   Enablers to scale-up

The scale-up of CMAM Surge was enabled by government and United Nations endorsement and the buy-in by a key donor of what was seen to be a widely appealing, low-cost, and relatively simple approach that addressed a problem that is common across the ASAL.

Adoption and **leadership by the national government** put CMAM Surge on national meeting agendas, and the national government also provided technical and supervisory support to implementing counties, while the commitment of county and sub-county health teams was recognised as critical for uptake of the approach by health facilities. With national government adoption, the approach became part of the mandate of county MoH staff and their implementing partners:

> 'Before MoH national adopted it was hard to get sub-county and county teams to provide sufficient support to health facilities as it was not part of their remit. But once MoH adopted, this changed… suddenly county team very interested in approach…' (Male NGO manager)

The **championing of the approach by UNICEF**, on the other hand, was critical because of its influence on the government. UNICEF in Kenya has built trusting relations through long-term engagement with the MoH and the secondment of its staff as nutrition advisers within government at county and national levels. It is also perceived to be influential within government because of the substantial resources it invests in the nutrition sector in Kenya: *'[UNICEF] is such a huge nutrition player'* (male consultant), and *'could push the approach at the power level [within MoH]'*, and *'pull other agencies in'* (female consultant).

The approach was said to be widely appealing to government, the United Nations, and NGOs because it aims to **address the widely recognised problem** of malnutrition spikes. Thus, when presented with the concept, it resonated with the experiences and needs of the MoH and its partners in both Kenya and other arid and semi-arid countries. In Kenya, there was also increasing interest in experimenting with new approaches because the government recognised that shocks were threatening flagship national government policy goals, such as universal health coverage.

Willingness to take up CMAM Surge was supported by the approach being **low-cost**. The primary financial costs to set up CMAM Surge at a health facility level are related to the training and mentoring of staff by NGO teams, with in-kind human resources support from government. A rough estimate, based on CMAM Surge direct programme costs in five different countries, shows that it costs on average 1,022 euro per health facility to integrate CMAM Surge into routine CMAM programming. However, this unit cost can vary significantly (from 251 euro to 2,195 euro) depending on country processes of supervision and training, and the number of expected surges and the type of external support provided. The approach has also been evaluated as cost-effective: evaluations in Ethiopia and Niger found that CMAM Surge cost US$ 21.58 per disability adjusted life year (DALY) averted, which is within the WHO cost-effectiveness benchmark (Fotso and Myatt, 2019a, 2019b). While there are methodological limitations to these analyses (see below), interviewees agreed that the set-up of CMAM Surge requires limited investment.

The approach was also appealing to the Kenya government because it **builds on – rather than changes – the existing health system.** CMAM Surge utilises existing information collected by health facilities (but previously not used), and staff and supervisory structures (such as SCHMTs and CHMTs). The approach was also appealing because it builds on widely accepted and implemented CMAM programming. The macro trend of nutrition being integrated into government health services through CMAM programming and decentralisation in 2013 created structures for CMAM Surge to plug into, and increased the number of nutrition-related staff who could implement the approach at multiple levels.

The **simple design** of the approach ensured it was easily understood, useable, and accepted by health workers. Some interviewees were wary of adding additional complexity: '*emphasis [should be] on keeping [it] simple, just flipchart paper and markers so people find it easy and can understand*' (female NGO technical adviser).

Finally, the **willingness of donors to finance** the scaling up of an innovation beyond Kenya was crucial. ECHO, the United States Agency for International Development's Office of US Foreign Disaster Assistance, and UNICEF were early supporters of the approach in Kenya. This was then followed in 2018 by several additional institutional donors (Irish Aid, French Development Agency, Spanish Agency for International Development Cooperation) and foundations (ELMA Foundation, Gates Foundation, and Innocent Foundation) coming on board to support the scale-up of the approach beyond Kenya. In addition to UNICEF's sustained support in Kenya, ECHO's inclusion of CMAM Surge in its West Africa HIP in 2017 (followed by three consecutive annual HIPs) resulted in the rapid scale-up of the approach to 668 health facilities in West Africa in 2018 (Figure 9). While most donor support has been passive, ECHO has numerous technical advisers with field experience who actively seek innovations to scale up; the engagement of ECHO technical staff in the development of the global guidelines '*created an ally*' that led to its inclusion in the West

Africa HIP and ongoing championing of the approach in other regions and countries (including Pakistan). CMAM Surge was appealing to ECHO and other donors because it offered to provide them with an exit strategy in regard to financial assistance, by strengthening government management of admission surges, thereby promising to reduce the frequency of emergency funding. It was also appealing because, by assessing health facility capacities, humanitarian assistance could be targeted more efficiently.

**Figure 9:   Health facilities setting up CMAM Surge in West Africa (2014–20)**
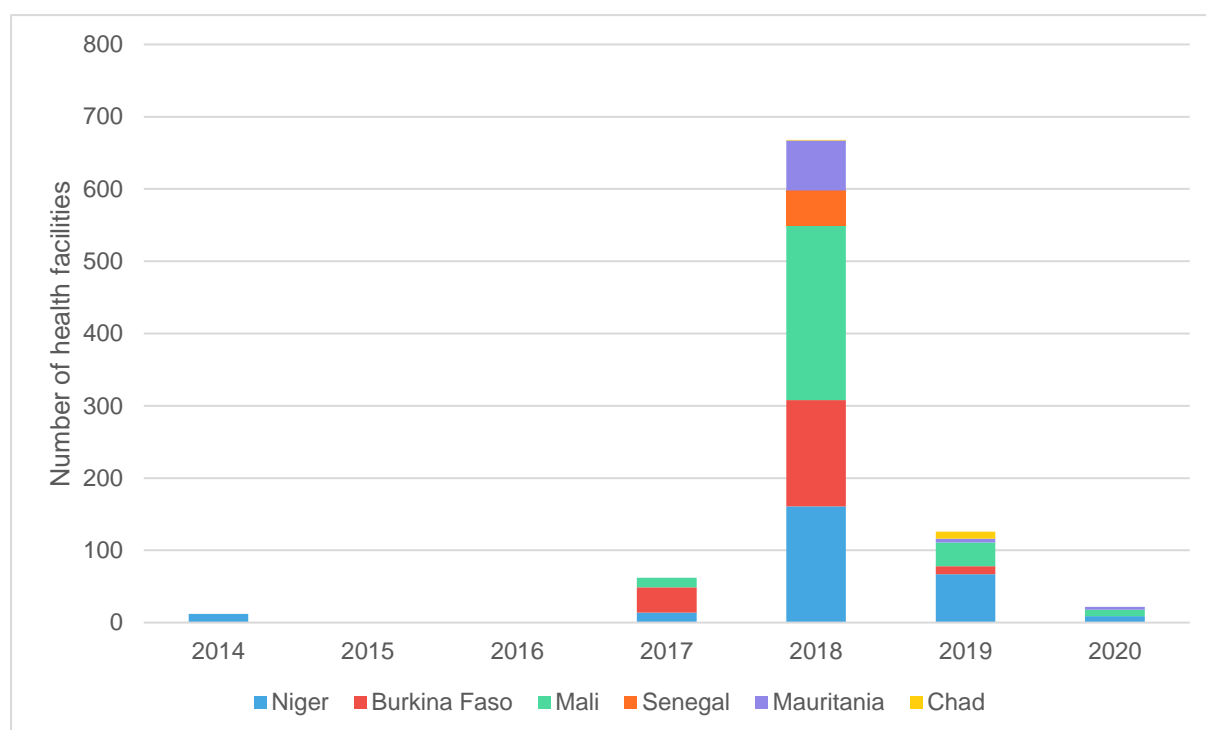


Data source: West Africa TWG.

Notes: CMAM Surge approach was rolled out to 638 health facilities in West Africa with the support of 11 NGO partners in a project funded by ECHO.

## 3.3.4   Strategies for scale-up

The scale-up was aided by advocacy from MoH staff, learning visits, the sharing of best practices, maintaining momentum through coordination mechanisms, and making the guidelines and tools open source so that CMAM Surge could be adapted to fit new contexts and implemented by an increasing number of NGOs.

In addition to the evaluation of the CMAM Surge pilot in Marsabit (CHC, 2015), a key factor in regard to the national MoH endorsing the approach in Kenya was that the approach was perceived to be from the government system itself, and its benefits were evidenced by an evaluation and advocated by **MoH staff themselves:**

> *'If [an intervention is] evidence-based it is easier for government to take up.'* (Male United Nations officer)

*'Because it came from people within [the government] system, government take more note'*. (Male NGO manager)

**Learning visits** to Marsabit by MoH teams from other counties, and **cascading of training** from the national to county to health facility level, engaged, sensitised, and built the capacity of MoH staff to accelerate the scale-up.

The process of drafting **the Kenya and global guidelines and tools** was a '*huge step*', in terms of building momentum and drawing in stakeholders to support validation of CMAM Surge, and raised the awareness and engagement of a wider pool of partners. Concern's decision to make the tools open source and in an editable format in French and English facilitated the diffusion of the approach to other NGOs in Kenya, and to new governments and NGOs in other countries.

The **open source global guidelines spurred multiple innovations** (Table 4). However, some participants identified that there would be a trade-off going forward between maintaining this adaptability and consolidating tools and the identity of the approach for quality assurance and replicability. Moyer and Hoorelbeke (2021) warned that '*omission of key steps or their incorrect application could lead to inappropriate interventions that may affect sustainability or be damaging to the health system*' (p. 30). Criticisms included that the guidelines are too general and threshold setting is too subjective, and therefore incomparable across health facilities. Others warn that standardisation could result in less localised responses:

'[*In a county in Kenya*] *health officers set thresholds and surge actions for health facility staff. It'd become prescriptive rather than giving ownership and flexibility to health facilities to decide their capacities*'. (Female donor technical adviser)

Since the international scale-up began in 2016, adaptations of the approach have proliferated more in West Africa than in Kenya and East Africa. This is attributed to West Africa having a greater **diversity of implementing partners** (Table 5) associated with the funding from ECHO, the need to contextualise the approach to several countries, and the sharing of best practices regionally. In Kenya, the absence of a regional learning mechanism and consistent implementation under a nationally agreed framework may have limited the exchange of ideas and adaptations from the 2016 guidelines. Those countries where CMAM Surge has been discontinued (Table 5) tended to have one supporting NGO, but it is not known whether this was a factor in discontinuation of the approach, or whether there were not more NGOs participating because pilots were not successful.

**Table 4:    Adaptations to CMAM Surge approach**

| Adaptation | Country/partner example | Description |
|---|---|---|
| **Governance model** | Somalia/ Concern | In a fragile health system context; action plan for data to inform surge support from NGOs, rather than the MoH (planned and funded by ECHO). |
| | Pakistan/ World Food Programme | Coordination and implementation through public–private partnership implementation of health services. |

| Health surge | Turkana in Kenya, Sierra Leone, Burkina Faso, Chad, Niger, Ethiopia, and Mauritania | Set thresholds, monitor, and agree surge actions for caseloads of sick children, including diarrhoea, malaria, and acute respiratory infection. |
|---|---|---|
| Threshold monitoring | Niger/Concern | Large facilities chart admissions against thresholds on a weekly rather than monthly basis because of the high volume of admissions; consider a threshold passed when it is exceeded for two consecutive weeks; and record reasons for thresholds being passed. |
| Seasonal thresholds | Niger/Concern | A paediatric ward at a regional hospital has a dual threshold whereby lower-capacity thresholds are set for the malaria season when malaria caseloads are high, reducing capacity for SAM treatment. |
| Digitisation | Pakistan/ World Food Programme | An existing health facility digital nutrition monitoring system that tracks enrolment and progression in programmes now shows Surge threshold phases and is linked to a district digital dashboard for live monitoring. |
| | Burkina Faso/ Homme de Terre | Health Surge (malaria, diarrhoea, and malnutrition) integrated into *Registre Electronique de Consultation* (REC) or Digital Patient Record System, whereby medical screening records at health facilities are recorded onto a tablet to support staff diagnosis of patients. |
| Livestock surge | Kenya/Concern | Model developed because of the link between nutrition and milk production from livestock in pastoralist communities (unimplemented). |
| Community surge | Kenya/Concern | CMAM Surge data from health facilities planned be used to initiate community-level actions to better manage wasting (in planning stage). |

Source: Authors/innovation history interviews

**Table 5: NGOs supporting CMAM Surge scale-up globally**

| NGO | East Africa | | | | | | West Africa | | | | | | | | North Africa | Central Africa | Asia | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Burundi | Ethiopia | Kenya | Somalia | South Sudan | Uganda | Burkina Faso | Chad | Mali | Mauritania | Niger | Nigeria | Senegal | Sierra Leone | Sudan | DRC | Cameroon | Pakistan | |
| ACF | | | ■ | | | | ■ | | ■ | ■ | ■ | | ■ | | | | | | 5 |
| ACTED | | | | | | | | | ■ | | | | | | | | | | 1 |
| ALIMA | | | | | | | | | ■ | | ■ | | | | | | | | 2 |
| Concern | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | | | ■ | | | ■ | ■ | ■ | | ■ | 1 |
| COOPI | | | | | | | | | ■ | | ■ | | | | | | | | 2 |
| CRF | | | | | | | ■ | | | ■ | ■ | | | | | | ■ | | 4 |
| CRS | | ■ | | | | | | | | | | | | | | | | | 1 |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Goal | | | O | | | | | | | | | | | | | | | | 2 |
| Help | | | | | | | | | | | O | | | | | | | | 1 |
| IRC | | | O | B | | | | | O | | B | | | | | | | | 4 |
| IMC | | | | | | | | | | | | | | | | | | | 0 |
| KRCS | | | O | | | | | | | | | | | | | | | | 1 |
| SCI | | | | | | | | | O | | O | | | | | | | | 3 |
| TDH | | | | | | | O | | O | | | | | | | | | | 2 |
| World Vision | | | O | | | | | | | | | | | | | | | | 1 |
| UNICEF | | | O | | | O | | | | | | | | | | | | | 2 |
| WFP | | | | | | | | | | | | | | | | | | O | 1 |
| **TOTAL** | 1 | 2 | 5 | 2 | 1 | 2 | 2 | 2 | 7 | 2 | 9 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | |

Data: Provided by Concern from CMAM Surge global mapping exercise and West Africa TWG

Notes: Active (orange), planned (blue), and discontinued (grey) CMAM Surge NGO projects. Organisation acronyms: Action Against Hunger (ACF); Agency for Technical Cooperation and Development (ACTED); the Alliance for International Medical Action (ALIMA); Concern Worldwide (Concern); *Cooperazione Internazionale* (COOPI); *Croix-Rouge Française* (CRF); Catholic Relief Services (CRS); International Rescue Committee (IRC); International Medical Corps (IMC); Kenya Red Cross Society (KRCS); Save the Children International (SCI); *Terre des Hommes* (TDH); World Food Programme (WFP).

Finally, **coordination and learning mechanisms**, such as TWGs and taskforces, have maintained momentum for scale-up and the sharing of best practices. In Kenya, the national Emergency Nutrition Advisory Committee and county technical nutrition fora involve regular meetings of MoHs and partners to monitor the roll-out, provide technical support, and mobilise resources to address any issues that arise, and annual CMAM Surge review workshops review progress and establish county implementation roadmaps for the year to maintain momentum and integrate learning. In West Africa, the rapid regional scale-up was coordinated and supported by a regional CMAM Surge Taskforce established in 2017, led by Save the Children International. The taskforce was said to have played a critical role in supporting implementing partners for whom the approach was new, relieving demands for capacity development from a small Concern team. The regional taskforce, in addition to the ECHO funding, was said to have underpinned the more widespread and rapid scale-up in West Africa compared to East Africa.

### 3.3.5    Barriers to scale-up

NGO capacity, inter-organisation competition, and the diversion of leaders' attention and resources to emergency response during shocks may have deaccelerated the scale-up, while some interviewees questioned the feasibility and relevance of scaling the approach to all contexts.

As the approach began to be scaled up in Kenya and globally, the Concern Kenya team was inundated with requests to train other Concern country and other NGO teams. Such demands put **pressure on a small NGO team,** and limited additional resources were provided to facilitate the scale-up. Furthermore, while surge tools are publicly available, internal tensions within Concern over how much **ownership of the concept** to retain were fuelled by pressures on NGOs to differentiate themselves and demonstrate success. In the main, however, rather than seeking to own the approach, Concern is seeking to own the agenda by driving learning and future innovation, such as Health Surge.

While UNICEF and large NGOs, such as Save the Children International, have adopted the approach in-country, the fact that CMAM has received a '***lack of global endorsement** by big players that everyone has to follow means [it has] not reached global audience*' (Female NGO advisor. Some attributed this to Concern's small size, while others said that there has been a lack of global advocacy of the approach to raise awareness of it and its benefits. There were also suspicions that **some donors and large NGOs are sceptical of the approach**. Those with health backgrounds were said to have a mindset of '*innovations being products and technologies [that treat specific diseases], whereas Surge is about building capacities…and tools to help health facilities work better*' (male consultant). Others added that it negatively judged CMAM Surge prematurely, before pilots had realised benefits (e.g. spikes in admissions had not been experienced during the pilot), and that its effectiveness was questioned because of a lack of robust impact evaluations.

Indeed, donors and governments often prefer external validations of benefits to be quantified*.* However, **quantifying the impact of CMAM Surge has proved challenging** because of limited data, the time needed for benefits to accrue, and difficulties in controlling for external factors (such as human resource availability for surge actions) and identifying a comparable scenario or control sample. Moreover, many of the purported benefits of the approach are problematic to quantify yet are likely to be important for building shock-responsiveness, such as empowerment of staff and improved workload management, work planning, and communication. The lack of scientific evidence demonstrating the approach's benefit may have limited the number of donors and United Nations agencies/NGOs supporting its scale-up.

In-country scale-up was **stalled by recurrent shocks**. In Kenya, droughts in 2014 and 2017 diverted resources to emergency response; frequent tribal conflict in the ASAL has restricted activities because of security concerns; and some senior MoH staff were said to have been preoccupied with COVID-19 in 2020, resulting in delayed decision-making.

A broader concern is whether the approach is **feasible or relevant in all contexts**. There is debate over whether predictable and seasonal malnutrition surges are needed for the approach to be relevant to health workers. The lack of admission spikes during the pilot in Ethiopia and Burundi meant that thresholds were never passed, leading staff to question the utility of the approach. While some interviewees argued that surges therefore need to be predictable, others felt the approach can also build capacities that can support responses when unexpected surges occur. Questions were also raised by some interviewees over whether some health systems are too fragile to implement the approach because it needs to plug into government systems. However, others argued that surge still adds value by empowering staff to use their own data and make decisions, and they pointed out that the approach needs to be adapted to weaker health system contexts, rather than abandoned.

## 3.4    Sustaining CMAM Surge

Many innovations fail to be sustained beyond the pilot phase. In Kenya, the CMAM Surge approach is being successfully sustained, with caseloads consistently monitored against thresholds by health workers, and the approach has become a standing agenda item on nutrition technical forums at county and national levels. Notwithstanding this, sustainable financing (as this section shows) remains a critical challenge.

### 3.4.1    Enablers of, strategies for, and barriers to sustaining CMAM Surge

In Kenya, the CMAM Surge approach is institutionally sustainable, as it plugs into existing government structures and builds on CMAM programming. Kenya government leadership, with partner support, has **institutionalised the approach in policies, and in the roles and responsibilities of health actors** at multiple levels of government (Figure 10). CMAM Surge features in the NDMA National Response Operational Manual, and, in Marsabit, in the County Nutrition Action Plan (2019–23) and the County Integrated Development Plan (2018–22), which has enabled it to be allocated (limited) resources in annual county budgeting. Furthermore, **training is integrated into the curricula** of medical and nutrition training colleges and university curricula, to ensure new staff understand the purpose of the approach. The **sense of government ownership** of the approach, nurtured in Kenya from the outset, was critical in order for government to take a lead on these processes of institutionalisation, which has made the approach less dependent on the cycles of donor funding found in other countries where it has been implemented.

While the ultimate aim is for the MoH to assume full responsibility for CMAM Surge, **sustained implementing partner support** and finance was recognised to still be needed to maintain momentum in Kenya, with the aim then to gradually phase out support according to the competence of MoH staff and the establishment of sustainable financing.

**However, establishing sustainable financing has proved problematic.** The government in Kenya has not yet '*taken full responsibility'* for financing CMAM Surge. While some county governments have included CMAM Surge in their annual budgets, health facilities often lack basic resources, such as marker pens and chart paper, needed to undertake caseload monitoring. **Most funding for set-up and surge actions is still sourced from NGOs** and their donors. The limited inclusion of CMAM Surge in county budgets was attributed to its notional inclusion in Country Integrated Development Plans (CIDPs), which inform county budget-setting, and the politics of allocations, which tends to favour investments that are visible to the electorate, such as new health facilities. Furthermore, there was a broader perception that **nutrition programming is expected by government to be partner-funded**: '*Anytime you ask for resources [for CMAM Surge], you are told see UNICEF or NGOs; adopt those resources first'* (male county official). This dependence leads to surge actions not being undertaken if partners are inactive (Section 4), and a perception that CMAM Surge is partner-led. Thus, county governments do not sufficiently resource CMAM Surge, and donor and NGO funding can be problematic because it is time-bound.

**Figure 10: Organisational structure for CMAM Surge implementation in Kenya**
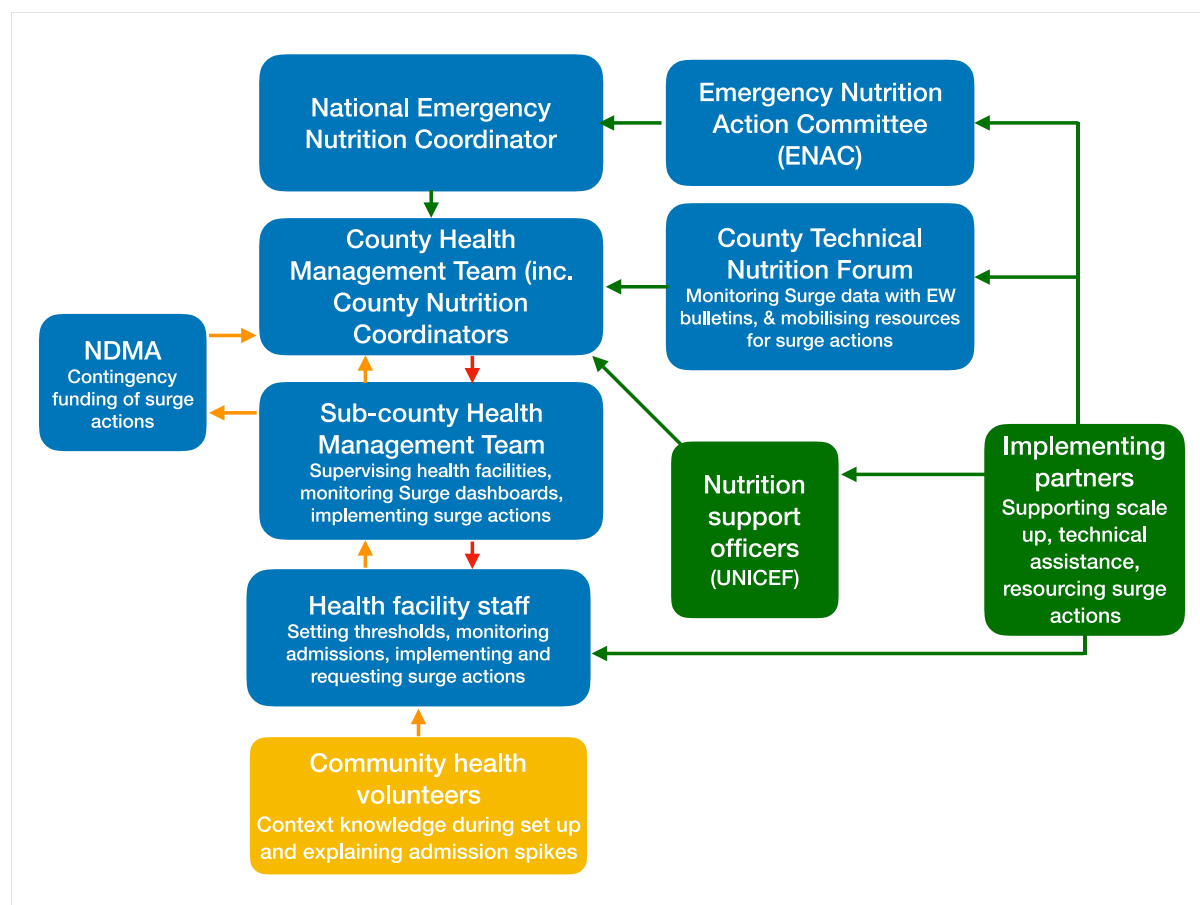


Source: Authors

Notes: Government (blue), implementing partners (green), and community actors (yellow) involved in CMAM Surge implementation; connected through information exchange (yellow), technical advice (green), and lines of supervision (red).

**High rates of staff turnover** at health facilities in remote areas of the ASAL of Kenya (GoK, 2014) has challenged CMAM Surge sustainability in places. New staff are often not trained in CMAM Surge, and end up training themselves, which was said to lead to human errors in recording admissions on dashboards. A male county official admitted that they had not trained 56 newly recruited nutritionists in the approach until external support was secured to train them. How far activities are sustained can also be negatively affected by **industrial action**. Kenya has experienced several major strikes by health workers during the scale-up of CMAM Surge, because of late payments of salaries. If staff are absent, admissions data are not monitored at health facilities, meaning sub-county dashboards can become inaccurate.

Health facilities tend to be understaffed, and cultural norms about the appropriateness of women working in remote and extreme environments mean that women are underrepresented in the work force (GoK, 2014; MONDKAL and IntraHealth, 2012). Staff tend to assume multiple roles: '*I am the nurse, am the nutritionist, am the clinician, so you can see all the workload*' (female facility in charge nurse). While several staff interviewed felt that the reporting requirements of CMAM Surge are manageable, some interviewees

(especially those at health facilities with one member of staff) said that they add an **additional workload** on top of existing overstretched responsibilities. If staff do not see a benefit of CMAM Surge for managing spikes in their workload, there is a risk that they will not continue to meaningfully implement CMAM Surge.

A common cause of CMAM Surge not being sustained was **loss of supervision of, or support to, health facilities**, either from government or implementing partners. The approach has not always been adequately integrated into supervision structures. Lack of focal persons in SCHMTs to supervise health facilities led to gaps in monitoring admissions in Kenya.

In other countries, the approach has a more limited history in regard to understanding whether it will be sustained beyond project lifecycles. However, various strategies have also been deployed to sustain the approach. In Ethiopia, surge packages are integrated into the annual workplans of the health facilities. In Mali, the government has integrated the CMAM Surge approach within the national CMAM protocol. In Niger, a 'Master Trainer Pool' at national and regional levels has been created by Concern. Emerging lessons from these countries also suggest that government ownership is critical for sustaining the approach. While most health facilities piloting the approach in Niger in 2014 discontinued its use, deeper engagement of the MoH during its relaunch in 2016 was attributed to it since being sustained (McCloskey, 2019). In Mali, MoH focal points were also identified at each health system level (national, regional, and local), but a key lesson that was shared was that **insufficient time was taken to build local ownership**, challenging the sustainability of CMAM Surge programmes.

Lack of government ownership in West Africa was in part attributed to **short-term NGO projects and donor funding,** compared to Kenya, where there has been long-term investment from Concern, UNICEF, other NGO partners, and the government. The short timelines of ECHO-funded projects in West Africa (with funds needing to be renewed each year) was said to have left insufficient time and resources for MoH engagement and capacity development at the outset, and sustainability activities at termination (e.g. celebratory ceremonies at health facilities): '*It was rush, because we had results to achieve. This hampers ownership of approach*' (female NGO staff)*.* In West Africa, short-term funding was attributed to **CMAM Surge being funded as a nutrition emergency response, rather than as health system strengthening**. The humanitarian/development divide was said to inhibit funding of nexus innovations like CMAM Surge: '*In terms of other donors, I don't even know where that would fit in ... [but] It can't continue to be 12–18 months funding*' (female donor adviser)*.*

## 3.5    Summary

| | Prompts | Proposal to pilot | Scaling up | Sustaining CMAM Surge |
|---|---|---|---|---|
| **Enabling factors** | Thought leadership and accumulated experience<br><br>Crises (drought) as window of opportunity<br><br>Past and ongoing innovation (CMAM programming) | Programme and funding flexibility<br><br>Simplicity and low set-up costs<br><br>Technical and local leadership<br><br>Government openness to experimentation | Addresses shared problems and goals<br><br>Builds on existing government structures<br><br>Simplicity and low set-up costs<br><br>Donor support and leadership<br><br>Government leadership<br><br>NGO and United Nations leadership<br><br>Health worker support and leadership | Macro-level trend towards government-led nutrition services<br><br>Feasible to sustain<br><br>Government leadership and ownership |
| **Strategies** | Practitioners publishing their insights | Bottom-up development | Getting national government adoption<br><br>Learning visits<br><br>Guidelines and tools<br><br>Cascading of training<br><br>Coordination and learning mechanisms<br><br>Freedom to use and adapt tools | Government participation from outset<br><br>Government adoption from bottom to top<br><br>Integration into government structures<br><br>Institutionalisation of training<br><br>Consistent partner support and gradual phase-out<br><br>Learning and adaptation |
| **Barriers** | Insufficient time and resources for practitioners to innovate and promote their ideas | Support for innovation not institutionalised<br><br>High staff turnover and closure of health facilities<br><br>Health worker resistance | Governance capacity and contextual feasibility<br><br>NGO capacity<br><br>NGO competition and concept ownership<br><br>Declining quality of training<br><br>Progress stalled by shocks<br><br>Lack of learning and collaboration<br><br>Weak promotion and advocacy<br><br>Misunderstandings | Impact quantification<br><br>Building government ownership when diffusing to new countries<br><br>Unsustainable financing<br><br>Lack of costing information<br><br>Lack of sustained supervision and coordination<br><br>Staff turnover, inadequate existing capacity, and industrial action |

# 4 System change towards a shock-responsive Kenyan health system

In the context of this work, the final phase of an innovation process – system change – means substantial changes to the components of the health system to enhance shock-responsiveness, in line with the stated aims of CMAM Surge to '*strengthen the health system's capacity to be more resilient, risk informed, and shock responsive*' (CHC, 2019, p. 1). In this section, we analyse how CMAM Surge has contributed to, and the challenges and limitations it faces in, building the shock-responsiveness of the Kenya health system in terms of building absorptive, adaptive, and transformative capacities. The subsequent Section 5 (discussion) draws on the findings from the innovation history set out in Section 3 and insights from this section to discuss how the approach could go further to support health system shock-responsiveness.

## 4.1 Building shock-responsive capacities

CMAM Surge's primary focus has been on building capacities to absorb surges in caseloads of acute malnutrition through improved monitoring of admissions and defined actions to address those surges. It currently only aims to build absorptive capacities for the nutrition services of the health system, but we also found that the adaptability of the health system has been enhanced by improving the flexibility of human resource and product distribution systems, adjusting seasonal preparations based on trends, and the alteration of capacity thresholds to account for changing circumstances and health facility capacities. There is also evidence of the approach's transformative potential for the entire health system, through its empowerment and influence on the mindsets of health workers and those providing technical assistance, and by contributing to the transition to government-led emergency response.

### 4.1.1 Absorption

The ability to absorb malnutrition caseload surges was developed by building information capacities to monitor admissions in near real-time, and to inform health facility and sub-county preparations for seasonal and shock-related surges in demand for nutrition services. This information is actionable through defined roles and responsibilities in surge plans that support human resource and nutrition product management, among other management functions, to produce perceived timelier responses to spikes in admissions.

**Information system capacities**

The approach was perceived to **improve seasonal preparations** for surges in acute malnutrition admissions. The trend and situational analysis (Step 1 of set-up) was said to provide contextual awareness (e.g. about the drivers of acute malnutrition) and information (e.g. seasonal calendars) that is needed to plan ahead for seasonal spikes in admissions, including leave management, and nutrition product ordering and prepositioning by health facility staff and SCHMTs.

The monitoring of admissions against thresholds on dashboards (Step 6) in near real-time was perceived to have several benefits for absorbing surges in admissions. First, it was considered **more precise, accurate, and timely than other health information sources**, such as the Kenya DHIS and Standardised Monitoring and Assessment of Relief and Transitions (SMART) surveys. DHIS data are collected monthly and take time to process before they become available for decision-making, and are not used at the health facility level. Household SMART surveys provide information on the nutrition situation in communities (not the status of the formal health system), require time-intensive data collection and analysis, and are only conducted periodically. In contrast, CMAM Surge data provide continuous surveillance data that are analysed regularly and that are used to inform surge actions to reduce the risk of health facilities' capacity to absorb cases being overwhelmed.

Second, health facility and sub-county dashboards were perceived to provide greater **geographic precision at a scale (i.e. the health facility level) that is more useful for health decision-making** than NDMA nutrition early warning indicators, which are aggregated at the county level. According to a male county official: '*We have malnutrition info at our finger tips … I know now what place is in emergency and I know the reasons why*'. Some county health actors said surge data can then be used to trigger the undertaking of community screening, to provide further information about the health and nutrition situation locally.

Third, there was a perception among some interviewees that surge monitoring could **detect the emergence of nutrition emergencies**. A SCHMT member said that monitoring the status of dashboards helped them detect the 2019 drought, while some health facility staff observed on their dashboard the number of discharged patients later rising, indicating a recovery from the drought. Other health staff said that they can even observe the effects of dry spells on caseloads, or the effects of large traditional weddings, which leads to temporary migration to or away from a health facility catchment area. However, many NGO staff who were interviewed questioned the sensitivity of CMAM Surge data in regard to detecting an emerging nutrition emergency (Section 4.2.5).

Fourth, the sub-county dashboards can be used to monitor caseloads against the **absorptive capacity of the health system at higher levels**, by summarising the proportion of health facilities at each capacity threshold phase. With increasing health facility coverage the representativeness of this analysis increases. According to a county government official, because over 95% of health facilities in Marsabit have adopted CMAM Surge, reviewing sub-county dashboards provides a fairly accurate analysis of the stress the health system is experiencing from acute malnutrition countywide.

**Governance capacities**

The absorptive capacity of the health system was also perceived to have been strengthened by governance changes brought about by CMAM Surge. Whereas previously '*there was no one to report to when capacities were overwhelmed*', there was a perception that health facilities now know what actions they can undertake (e.g. cancelling planned leave, and adjusting orders for nutrition products) and what package of support they should expect from higher levels of government or partners when thresholds are passed (e.g. redistribution of nutrition products). Predetermined actions were said by some health facility interviewees to

make responses timelier, including leave management, the prepositioning and redistribution of nutrition products, and the implementation of outreach activities, including health education and mass screening.

**Human resource management capacities**

Interviewees said that CMAM Surge data were used for leave management and in some cases to increase the number of staff at health facilities experiencing caseload surges. Leave management may include recalling staff on leave or reducing or stopping leave being taken. This was said to be activated in response to current dashboard data or when planning for surges using seasonal calendars and/or the previous year's dashboard. In rare emergency cases, aid organisations recruit additional staff or second NGO staff to health facilities. For example, Concern seconded a staff nurse and nutritionist to facilities that had passed CMAM Surge emergency thresholds during the 2019 drought. However, even when CMAM Surge data indicate that more staff are required, it may take time before they are deployed: '*it took three months for the response to come and staff to be seconded to their facility*' (SCHMT). Issues remain over whether spare capacity in neighbouring sub-counties, and the mechanisms needed (e.g. out-of-office pay), are available to provide this support (see Section 4.2.1).

**Product ordering and distribution capacities**

One of the key uses of CMAM Surge data has been to inform the prepositioning and restocking of nutrition products, distributed from warehouses managed by aid organisations (Section 4.2.1) or redistributed among health facilities by SCHMTs. When thresholds are reached, SCHMTs are notified, and they can then order additional supplies from NGO-supported contingency stocks, or they can redistribute health, nutrition, and water treatment (e.g. aqua tabs) supplies from other health facilities within a sub-county: '*it tells the sub-county team that the facility…is overstretched so they need enough supplies [for…] their caseloads*' (female CHA nutritionist). The seasonal analysis undertaken when setting up CMAM Surge was also said to have helped plan the prepositioning of products. For example, for floods in late 2019, the risk analysis conducted as part of setting up CMAM Surge increased awareness of the risk of health facilities being cut off by floods, and therefore the need to preposition supplies (according to one male county government official).

### 4.1.2   Adaptability

CMAM Surge enables strategies for adapting seasonal preparations and how resources are allocated during emergencies, for health facilities to adapt their set thresholds in response to their changing capacity to cope with escalations in caseloads, and to communicate during shocks to adjust response strategies.

Before each season, health facilities can **adapt annual and seasonal plans** according to current recorded admissions trends and compare them to the previous year's chart (which is often kept pinned on the wall), and by drawing on their contextual knowledge and information provided by CHVs (e.g. pastoral migratory patterns and cultural events). This informs the ordering of products, health education, mass screening, staff leave schedules, and the distribution of water treatment products to communities.

Using sub-county surge dashboards, it was perceived that resources, including staff and products, are deployed more flexibly, efficiently, and objectively (rather than based on kinship or political allegiances) to meet capacity needs. The **type and intensity of activities can be adjusted** accordingly: '*CMAM Surge, where you are monitoring change as it comes, the system is elastic so are able to adjust as it is happening*' (county official, Turkana).

CMAM Surge has also **improved** lines of communication between levels of the health system, providing opportunities to discuss issues and adjust responses:

> '*We used our [CMAM Surge] data to alert the county government that we are entering a new phase…and that is what actually informed many responses that the county government utilised during the 2018–19 drought*'. (SCHMT, Marsabit)

In particular, communication among health facilities, CHVs, and sub-county teams has improved. WhatsApp messaging groups are used by health facilities to report their surge phase status and the reasons for phase changes (e.g. in-migration to the health facility catchment) to SCHMTs, and health facilities request additional nutrition products if caseloads increase: '*they are able to give and receive feedback every week "How are you doing? What do you lack?" so we plan and get resources early*' (female nutritionist). Health facility staff also contact CHVs to understand the reasons for changing caseloads. A county official said that such regular information exchange across levels did not take place before CMAM Surge. This exchange of information means that: health workers better understand the nutrition situation in the health facility catchment; sub-county teams better understand the capacity needs of health facilities; and sub-county and county health teams have a better overview of the capacity status of health facilities in their jurisdiction. This information supports the health system to prepare for, respond to, and adapt strategies as caseloads ebb and flow.

The approach also proscribes a regular threshold review by health facility staff (supported by SCHMTs) at least twice a year to **alter thresholds according to changing circumstances** (Concern, 2016, p. 33): for example, changes in staff numbers or improvements in health facility procedures that improve capacities to absorb caseloads. However, adaptation of thresholds was said to not be implemented regularly in practice.

### 4.1.3   Transformability

Interviewees highlighted that CMAM Surge has contributed to deeper system change towards shock-responsiveness within and beyond nutrition serves.

Participation in CMAM Surge was reported to have **changed the mindsets and system understanding of health workers**. Seasonal and historical trend analysis provides a deeper understanding of caseloads, seasonality, and the contextual drivers of malnutrition. Health facility staff explained that they could anticipate seasonal spikes in caseloads using these data and their knowledge of rainy and dry seasons, and associated pastoral migratory patterns, cultural events (such as festivals), and periods of heightened conflict. An NGO officer in Kenya said that there has been a '*step change*' in thinking among health workers, from being reactive to recognising that there are seasonal trends that can be prepared for, monitored, and acted upon to minimise mortality. By reflecting on the potential for demand surges, CMAM Surge was perceived to be nurturing a **culture of planning for**

**emergencies**. However, mindset change benefits may be inhibited by the workloads of staff limiting their engagement in some cases: '*They just do the report for the sake of it, so they miss out on some of those trends because they don't internalise and consume that information*' (county official).

Widely cited by interviewees, CMAM Surge was also said to be **empowering health workers**. The approach was perceived to **increase analytical capacities** at health facility and sub-county levels, **empowering health workers to use their own data and plan for and manage spikes in caseloads** themselves, without waiting for NGO support: '*it's really about the power of data used by those who generated it*' (female consultant). A CHA nutritionist said that before CMAM Surge, staff did not quantify caseloads and reflect on what that meant in terms of their capacity. Empowerment was said to be manifested in the **confidence of staff to take actions themselves** to deal with spikes in caseloads, such as cancelling leave during peak seasons, and in the fact that many of the adaptations to the approach were suggested by health workers themselves (including to monitor admissions of common morbidities that surge seasonally in Turkana). Moreover, MoH staff have been **empowered to advocate for additional resources** from county governments using surge data, which are '*more trusted*' than NGO data because '*they are generated by the government system itself*' (male United Nations officer). Surge data were reported to '*provide a narrative of capacity shortfalls*' and a '*powerful advocacy tool to push for [health system] changes*' (female county official).

The **improvement of communication and social networks** across levels as a result of CMAM Surge has resulted in health system changes that have improved shock-responsiveness. Communication within health facilities was said to have improved because nutritionists, clinical officers, and CHVs work within the same CMAM Surge integrated model: '*everyone knows what is happening with CMAM Surge*' (female facility in charge nurse). The passing of thresholds leads to discussions between staff about planning to respond, rather than just coping day-to-day. The relationship between SCHMTs and health facility staff was also proposed to have shifted from top-down supervision to two-way exchange focused on the surge analysis, thus altering power relations. Moreover, CMAM Surge has increased the prominence of nutrition in county emergency arrangements (e.g. contingency plans) and surge data are sometimes (but not routinely) considered alongside NDMA early warning data in county decision-making processes (e.g. county steering group and nutrition TWGs), promoting the allocation of resources to nutrition during emergencies. As a result, some surge actions have been funded by national contingency funds (e.g. outreach activities in 2019). CMAM Surge may therefore be supporting the transition to government-led emergency response:

> '*10 years ago nutrition was partner-led in Kenya but now the government has the tools… surge has helped convince policymakers that this is their concern, creating commitment and accountability*'. (Female county official)

## 4.2    Challenges and limitations

Our data show several gaps in, and limitations of, CMAM Surge in regard to being able to transform health systems so that they adopt a shock-responsiveness paradigm. These are related to weaknesses in health system capacities, and the fact that the focus on nutrition

ignores the fact that morbidity and undernutrition drive each other, and the fact that multi-morbidity surges have the potential to overwhelm health facility capacities to absorb surges in total workload.

### 4.2.1    Inadequate and unresponsive financing of surge actions

A major barrier to CMAM Surge improving the shock-responsiveness of the health system in Kenya is the lack of government mechanisms to finance surge actions. While some well-managed health facilities occasionally have small funds for minor surge actions (e.g. employing an extra cleaner), county governments do not set aside a budget to finance surge actions, and county contingency funds (up to 2% of total budgets) tend to be underfinanced and are not ring-fenced in county budgets, and so are not available when needed, and tend to not prioritise health needs, including surge actions (Fortnam *et al.*, 2020). Health and nutrition have benefited from the national contingency funds since 2016 and these funds were allocated *ad hoc* to surge actions by the NDMA during the 2019 droughts. However, resources from the contingency fund, and county governments and partners, are allocated after consideration of emergency needs across sectors at the county level, through a negotiated rather than automated process, after considering early warning and nutrition survey data. The MoH itself does not appear to have flexible financing or contingency funds available for the implementation of surge actions.

The upshot is that surge actions are limited to those that require little or no finance and so can be undertaken by the health facility, or those that are resourced by implementing partners, who do not always have budget lines available and often need to wait for fundraising. Thus, there is little funding available for surge actions (except for externally funded outreach services) to be realised, despite the costs for most surge actions being relatively low (e.g. the cost of fuel to move supplies, and out-of-office allowances for redeployed staff). The lack of financing mechanisms results in delays or surge actions not being undertaken, especially outside of emergencies when NGO/United Nations funding subsides. In January 2020, for example, a health facility CMAM Surge dashboard moved to 'alert' phase but the county government was unable to provide assistance, and no support was available from partner/aid organisations working in the area due to reduced donor funding. Unmet requests for surge support demotivate health workers: '*Over time it just feels routine: make plan and then no response. Lethargy sets in*' (male county official). A male United Nations officer summarised the situation as follows (paraphrasing him): '*In some counties not even simple actions are resourced… the system is working as an early warning system, but is not responding*'.

### 4.2.2    Product stockouts

Many of the surge actions involve the prepositioning and redistribution of nutrition products to address stockouts if and when surges in admissions occur. While nutrient stockouts have decreased significantly according to UNICEF (reported in Hailey *et al.* (2021)), there is still an erratic supply because of financial and logistical issues. Importantly, the movement and buffer stocking of products remains NGO/United Nations-dependent; the MoH lacks buffer stocks or mechanisms for repositioning products that CMAM Surge could tap into.

### 4.2.3    Unresponsive human resource management systems

While CMAM Surge can contribute to workload management and the redeployment of staff to health facilities experiencing admissions surges, persistent staff shortages leave limited spare staff for redeployment to surge hotspots and insufficient budget to rapidly recruit temporary staff. In some cases, partners supported surge actions by providing additional staff, but this depended on whether partner programmes were active at that time in the area. Moreover, MoH human resource management is insufficiently flexible and lacks protocols to redeploy staff to add additional capacity to health facilities experiencing surges in malnutrition hotspots.

### 4.2.4    Weak community health system linkages

The CMAM Surge guidelines suggest including communities in the process. CHVs should participate in the trend and contextual analysis steps (although this does not routinely happen in Kenya), and communities should provide information on events affecting admissions and prevalence. However, weaknesses in the community health system and connections with health facilities were the most oft-cited challenge to CMAM Surge contributing to the shock-responsiveness of the health system.

Active community health units have CHVs who actively screen and refer children with acute malnutrition to health facilities, resulting in a steady increase in admissions in response to drought or other shocks, giving health facilities time to implement surge actions. However, because many community health units are inactive or dysfunctional, children are typically not referred until mass screening is undertaken in communities. Mass screening therefore results in a spike in admissions, rather there being a gradual progression through the surge phases and triggering of surge actions:

> '*One health facility may detect surges because has strong CHV, while a neighbouring health facility may not because it lacks good community referral system. In the latter case, can move from normal to emergency rapidly while with good community system can see gradual increase in malnutrition and take actions. Kenya does not have strong community-level system, so information does not explain reality.*' (Male NGO manager)

The role of the CHVs (who are mostly women) is especially critical in the ASAL because of the mobility of communities and the distances to health facilities – mothers and other caregivers in the home can miss the signs of acute malnutrition in their children without support from CHVs. Yet CHVs are normally not paid a stipend for their work, or if they are, payments are inconsistent, which affects their motivation to screen and refer. Initiatives that have sought to strengthen the community health system were said to have low coverage, and to often be terminated when NGO funding ends.

Thus, there was a strong perception that current weaknesses in the community health system undermine CMAM Surge's contribution to building shock-responsiveness:

> '*CMAM Surge is not sensitive to emergencies…even if capacity at health facility, we will not be shock-responsive when referral mechanisms and community linkages are [not strengthened]*'. (Male NGO officer)

### 4.2.5 Not fully integrated into early warning systems and decision-making

**CMAM Surge data are considered by some actors to be a source of early warning of a deteriorating nutrition situation** in communities. According to Ngetich *et al.* (2021, p. 25), there was evidence from the 2019 drought that CMAM Surge dashboards identified a deteriorating nutrition situation before early warning indicators:

> '*By March 2019, county stakeholders were detecting a deterioration of the nutrition situation via IMAM Surge dashboards. This raised an early alarm at different levels – even as other early warning indicators such as the Vegetation Condition Index (VCI) and prices of livestock and crops remained relatively normal or inconclusive.*'

Others, however, said CMAM Surge did not detect the drought, despite an extreme spike in malnutrition cases in the community: '*You'd expect more and more children to be admitted as malnutrition increased and thresholds to be passed, but they did not*' (female NGO technical adviser).

Visual analysis of secondary data (Annex 2) shows that **seasonal cycles of SAM and MAM admissions and community rates of malnutrition (according to MUAC measurements) are not clearly associated,** and that **seasonal patterns in admissions vary across counties and do not relate directly to when peaks would be expected** in July, when: (i) the number of diarrhoea cases increases; (ii) the workload, particularly for women, increases due to agricultural activities; and (iii) most households exhaust their food stocks (Kopplow *et al.*, 2014). This is because a range of factors complicate and mediate the relationship between community incidence and heath facility admissions, including barriers to populations accessing services (which can be exacerbated during shocks), health-seeking behaviours (e.g. preference for traditional medicines), weak community screening and referral, and the closure and malfunctioning of health facilities (detailed in Annex 2). Rather than being caused by a shock, surges in caseloads are more often caused by mass screening events.

Analysis of the passing of CMAM Surge thresholds and drought early warning phases in NDMA Early Warning Bulletins does not show a clear association between seasons and drought periods (Figure 11). If health facility admissions are not representative of community prevalence then, by extension, the passing of surge thresholds does not necessarily indicate a deteriorating nutrition situation, and likewise the non-passing of thresholds does not mean the nutrition situation is normal. There is also likely to be a long time lag between climate shocks (highlighted by the early warning phases) and the passing of thresholds, with nutrition programmes scaling up to increase coverage in the meantime.

**Figure 11: Percentage of health facilities at each surge phase in Marsabit (2017–20)**
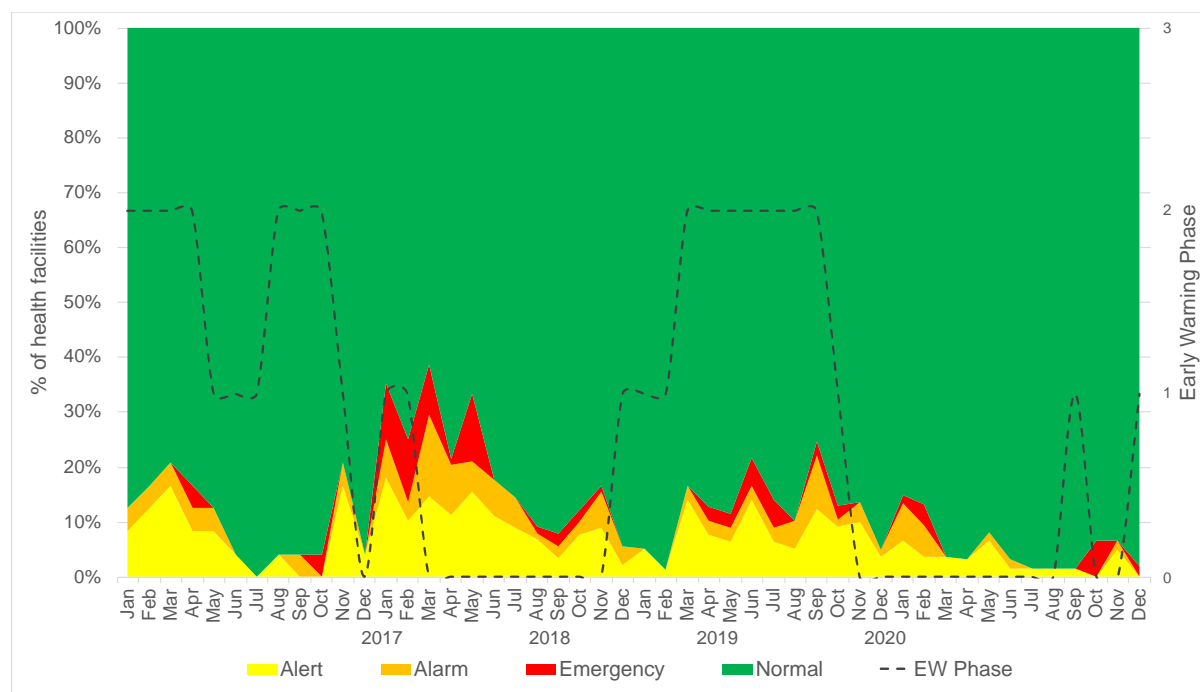


Data: Surge phase data provided by implementing partners; NDMA early warning phases data.

Surge data are therefore not representative of community incidence, or a reliable early warning indicator of a deteriorating nutrition situation. The point being made here is not that CMAM Surge is not working, since the approach aims to monitor the utilisation of nutrition services, rather than the need for services. The point is that without strengthened community health systems and reduced access barriers, the approach does not fully address the stop-start emergency model because there remains a reliance on mass screening and SMART surveys for an emergency to be declared and funding to become available for mass screening and outreaches. SMART surveys are only conducted periodically, can be delayed by adverse weather, and data that are collected take time to analyse and only provide a snapshot of the nutrition situation, which is not able to differentiate spikes from residual unmet demand. With weak community connections, CMAM Surge does not therefore have – or intend to have – predictive capabilities and early community-level nutrition action remains elusive:

> '[Surge] is actually a bit slow because by the time it predicts something, it has already happened. How I wish it could actually give earlier warning than what it is giving. Because by the time you see cases rising it means already it's taken time even for you to respond. It's welcomed but it may not be timely'. (Male county official)

However, surge data can still provide early warning of the absorptive capacities of the formal health system becoming overwhelmed by the utilisation of nutrition services. Yet surge threshold data (e.g. the percentage of facilities at each threshold phase) are not shown in NDMA Early Warning Bulletins. These bulletins are reviewed routinely at county emergency coordinative meetings (e.g. of county steering groups), whereas surge data are only used *ad hoc* (and not in all counties) by county decision makers.

## 4.3    Summary

- Capacities to absorb surges in caseloads of malnutrition were perceived to have been strengthened through improved monitoring of admissions against predetermined thresholds to cope with caseloads, the setting of surge actions to absorb additional caseloads when thresholds are passed, and improved communication and understanding of the situation across levels of governance.

- The adaptability of the health system was perceived to enhanced by improving the flexibility of the human resource and product distribution system, improved communication across levels of governance, adjusting seasonal preparations based on admission trend analysis and current capacities to absorb seasonal and unusual demand for nutrition services, and the alteration of health facility capacity thresholds to account for changing circumstances.

- CMAM Surge may also showing transformative potential by empowering and changing mindsets and the system understanding of health workers, and by driving the transition to government-led emergency response.

- Weaknesses in health system capacities, including the lack of prearranged government financing mechanisms and human resource and product supply system deficiencies, undermine the implementation of surge actions.

- The approach has not addressed weak connectivity between community health systems and health facilities, with inconsistent engagement of CHVs, access barriers, and weak screening and referrals systems meaning health facility surges are often caused by mass screening events, rather than community caseload surges associated with shocks.

- CMAM Surge dashboard changes do not necessarily reflect the nutrition situation in communities, and therefore are likely to play a limited role in triggering early responses in communities, but findings indicate they can provide early warning of the absorptive capacities of the formal health system being overwhelmed.

# 5 Discussion and recommendations

To date, the literature on CMAM Surge has been limited to country evaluations and perspective articles. This research advances this small but growing body of evidence in two ways. First, by documenting CMAM Surge as an innovation process, drawing on multiple NGO, donor, and MoH perspectives in Kenya and internationally, this working paper presents the first systematic analysis of the enablers, strategies, and barriers in regard to developing, scaling up, and sustaining CMAM Surge. Recommendations are made for how key success factors identified from this analysis can be applied as the approach is scaled up to new contexts (discussed in Section 5.1 below) and to new surge (and other health system) innovations (Section 5.2), including the proposed broadening of the approach to the wider health system ('Health Surge'). Second, the research has revealed critical findings on how CMAM Surge in Kenya (in its current form) contributes to strengthening health system capacities (e.g. information systems and governance), while identifying limitations to the approach that curtail system change towards a government-led shock-responsive health system. As discussed in Section 5.2, this advances knowledge by broadening the focus from the innovation itself to understanding and recommending how surge approaches can be integrated into, and influence, entire health systems to become more shock-responsive – in Kenya and other low- to middle-income contexts.

## 5.1 Enabling the scale-up of surge approaches to new contexts

Several factors that are critical for success can be identified from the analysis of enablers of, strategies for, and barriers to, the CMAM Surge innovation phases. These factors should be considered in ongoing and future efforts to scale up CMAM Surge, while also offering insights into enabling health system shock-responsive innovation (which will be presented in a forthcoming scientific publication).

### 5.1.1 Contextualisation and innovation

The decentralised and established governance structures of the Kenyan health system, good coverage of CMAM programming, and a government that was open to experimenting with and scaling up a new approach were key factors that enabled the innovation process in Kenya. Yet the findings of this research show that the potential of CMAM to build shock-responsiveness was limited by weaknesses in the wider health system, including in relation to financing, human resources, and product supply chains (discussed in Section 5.2). In other low-income countries, these enabling factors may not be present, and the health system weaknesses may be more pronounced.

These observations led to divergent opinions among interviewees about the relevance and feasibility of the approach in contexts without predictable seasonal spikes in malnutrition or fragile health system contexts. Some argued that in countries such as South Sudan and Somalia there is insufficient capacity to implement surge actions, but others argued that there is almost always some degree of health system capacity that can be targeted with support, even if that support is NGO-led. More research and piloting is needed to assess the feasibility of the approach in different contexts, but the findings illustrate that the approach cannot be implemented uniformly across contexts – it is necessary to adapt and design the

approach for each context of implementation. The adoption of a public–private partnership governance model in Pakistan, and proposals for an NGO-led surge approach in Somalia, provide examples of innovations aimed at contextualising the approach (Section 3.3.2).

Such innovation has been enabled, to date, by an open source approach to CMAM Surge innovation that permits guidelines and tools to be adopted by diverse NGOs and adapted to meet local needs, and to build upon existing capacities (e.g. digital health information systems in Burkina Faso). In Kenya, guidelines have been implemented more rigidly, which may have the effect of stifling innovation but has provided consistency and a structure for MoH staff and implementing partners to roll out the approach. These findings point to the need to balance formalising and institutionalising the tools, processes, and identity of CMAM Surge with making the approach agile in new contexts and able to capitalise on new ideas and opportunities. In this respect, learning and collaborative mechanisms (such as the Global TWG) will become increasingly important for documenting new surge innovations and sharing and scaling up best practices.

## 5.1.2   Leadership

In agreement with social innovation theory (Moore and Westley, 2011), leadership was critical for CMAM Surge's establishment and scale-up. Across the phases, different types of leadership were required at different phases of the CMAM Surge innovation. These included thought leadership of individuals to diagnose the problem and design the concept, nimble and experienced practitioners to operationalise the ideas, and the adoption and strategic leadership of government and large organisations and donors to scale up and sustain CMAM Surge. Often the innovation phases were progressed and driven by enthusiastic individuals within government, NGOs, the United Nations, and donors, who bridged and broadened the coalition of organisations driving the innovation, enrolled other key leaders (e.g. UNICEF and the Kenyan government), and engaged end-users like MoH staff. As the approach is scaled up, leadership is likely to become increasingly diffuse as those that scaled and sustained it so far transfer to new roles and organisations. The lesson from Kenya is to institutionalise leadership and best practices in government structures and positions, to reduce dependence on champions, while keeping space for innovative leadership to address challenges and thus avoid the risk of innovation stagnating.

The finding that the attention of government and organisations was diverted from CMAM Surge scale-up in Kenya by shocks, such as drought and COVID-19, is in line with case studies of innovations in other humanitarian contexts (Obrecht and Warner, 2016). While crises may delay implementation, the findings also highlight that after crises, windows of opportunity may open, during which governments may become more willing to consider new and adapt existing innovations, like CMAM Surge, that offer to build health system shock-responsiveness. COVID-19, in particular, has put centre stage the issue of health systems needing to cope with surges in demand for services and adapt to emergent shocks.

If/as coverage of the approach increases globally, the CMAM Surge Global TWG and Global Adviser offers the promise to institutionalise collaborative leadership, set strategic goals, maintain key relationships, and document and share learning and best practice across project life cycles, regions and countries. However, large NGOs and UNICEF have not adopted CMAM Surge as a routine programming globally, and some country, regional, and

headquarter offices were reported to be sceptical of the approach. This may be explained by the finding that global advocacy of the approach has been limited, and that there is a lack of quantitative evidence of its benefits. Given the dominance of UNICEF in nutrition programming, deeper engagement with UNICEF at the headquarter level is needed, as well as with global health professionals, as the approach expands to the wider health system. The lesson for surge approaches from the roll-out of CMAM programming was that many countries only scaled up once the United Nations (UNICEF first and then WHO) validated the innovation. This may be the case for surge as well.

### 5.1.3    Collaboration, ownership, and end-user engagement in-country

A key message from the innovation history is that collaboration with, and ownership of, CMAM Surge by the government, and the engagement of health workers, is critical throughout the innovation phases. The MoH county staff contributed to the design and piloting of the approach, and advocated for its national adoption, which led to its roll-out across the ASAL of Kenya.

In some West African countries, diffusing the approach to new contexts through short-term CMAM projects allowed less time for engaging government actors across levels from the outset, leading to perceptions that the approach was partner-led. This points to the need for new resourcing models (Section 5.1.5), and the importance of '*taking time to make time*' to secure government ownership and engage health workers in the proposal and piloting phase, rather than '*rushing to scale up*' (female technical adviser). Unlike in Kenya, where the MoH co-designed the approach itself, when diffusing the approach to other countries ownership needs to be nurtured to avoid it being regarded as an external intervention.

Findings from Kenya also highlight the need for continuous engagement with the end-users of the CMAM Surge approach: the health workers. For example, a minority of staff expressed concerns that the approach added to an already burdensome workload. If these staff do not recognise the value of the approach for managing their workload, they may, over time, become less willing to actively engage in the approach, and thus work for its benefits to be realised.

In this respect, the findings emphasise the importance of research, monitoring, evaluation, and learning at multiple levels (from global to health facility levels), including annual reviews and nutrition TWGs in Kenya, and regional institutions, like the West Africa TWG. Such collaborative mechanisms can share best practices and document what worked and what did not work to facilitate improvements and adaptations to the approach that will ensure it continues to meet end-user needs and is sustained.

### 5.1.4    Evidencing impact

The reluctance on the part of some donors and large NGOs to endorse, adopt, and scale up CMAM Surge was in part linked to methodological challenges faced in robustly demonstrating and quantifying health and health system outcomes of the approach. As the approach scales up, there remains a question as to what evidence is sufficient for government and implementing partners to buy into the benefits of the approach. Importantly, there is a need to explore qualitative or alternative evaluative methods to capture intangible

benefits that elude quantification (e.g. empowerment and social network strengthening) and that are crucial for building health system shock-responsiveness (and resilience more broadly). Furthermore, futher research is needed to challenge and improve the approach in different contexts to strengthen confidence in its scaleability.

### 5.1.5 Resourcing

Innovations are best supported with continuous funding and then transitioned to sustainable financing to be integrated into health systems (Obrecht and Warner, 2016). The CMAM Surge scale-up in Kenya has been sustained by UNICEF financial and technical resources and government human resources. The implementation of the approach in other countries has often been funded from emergency funding sources, most notably the West Africa ECHO HIP, which funds projects on an annual basis. In addition to the risk of weak government engagement, lessons from other innovations (including CMAM) have shown that staggered and uncertain funding can result in champions of innovations moving to new posts, and insufficient time for lessons to be learnt and incorporated into new project proposals (*ibid.*).

To secure long-term funding, several participants, including a donor representative, recommended that CMAM Surge should transition from being humanitarian-funded to development-funded, given that it is a long-term health system strengthening approach. Although the silos persist, CMAM Surge also represents a humanitarian-development nexus innovation that may garner as yet unexplored funding opportunities related to health system resilience, health security, humanitarian resilience, climate resilience, and disaster risk reduction programming.

In the long run, sustainable financing models are needed for CMAM Surge, especially for financing surge actions (Section 5.2), led by governments. The findings show that in Kenya, despite its cost-effectiveness and relatively low cost, there remains an expectation that the approach be funded by implementing partners. In countries with less government investment in health systems, the challenge of financing is likely to be greater still, pointing to the need for sustainable resourcing models.

## 5.2 Improving the shock-responsiveness of CMAM Surge in Kenya and elsewhere

CMAM Surge was found to strengthen several health system capacities in Kenya that confer shock-responsiveness, yet the approach is perceived to be coming up against barriers to system change related to wider health system weaknesses, its lack of integration into the health system, and its narrow focus on nutrition services and the formal health system. This section discusses these issues, and proposes pathways forward for integrating CMAM Surge into the health system, strengthening the shock-responsiveness of the wider health system, and progressing to Health Surge and community surge approaches.

### 5.2.1 Shock-responsive capacities strengthened by CMAM Surge

The research participants discussed several health system capacities that CMAM Surge strengthens, which are proposed in the literature to build health system resilience, including:

increased awareness of health system risks and capacities; more timely data at a scale appropriate for decision-making; formal collaborative arrangements to clarify roles and actions during periods of crises; empowered staff to make rapid and more informed decisions; and strengthened social networks (e.g. Barasa *et al.*, 2017; Blanchet *et al.*, 2017; Kruk *et al.*, 2017). The strengthening of these capacities supports absorptive, adaptive, and transformative responses to shocks.

While many of these benefits are specific to nutrition services, the capacities developed are also likely to be building health system shock-responsiveness more widely. First, social networks have been strengthened among health facilities: SCHMTs and CHVs are likely to provide sources of shock-responsiveness beyond nutrition by building trust among health actors, facilitating cooperation and reciprocity during difficult periods, and efficiently sharing information (Gilson *et al.*, 2017). Second, increased system understanding (e.g. of seasonality and trends in admissions), and the reported change in the mindset of health workers that they can take decisions themselves, are capacities that can be applied to respond to diverse shocks to the health system. Third, the findings suggest that CMAM Surge is boosting the agency of health workers not only to plan, make decisions, and respond in the face of caseload variability, but also to influence both the internal and external context of the health facilities to shape shock-responsiveness (e.g. by using data to lobby for more resources). Agency, or the ability to enact change, is known to be a critical factor for resilience to shocks (Adger *et al.*, 2009).

By building these capacities, the adoption of CMAM Surge may represent the beginning of a shift from governing the health system for stability to recognising the dynamics in both the caseloads and capacities of the health system. However, there is still much work to do in Kenya to make capacities, such as finance and human resource management systems, sufficiently responsive to these health system dynamics. CMAM Surge is also supporting a wider shift from humanitarian response to inclusive collaboration with government, whereby implementing partners support government surge actions, rather than implement them in parallel to the government system.

However, CMAM Surge may be contributing more to 'everyday resilience', through capacity development, than it is to shock-responsiveness directly. The findings showed that surge data are insensitive to shocks because of mediating factors (e.g. time lags and access barriers) that make malnutrition admissions data unrepresentative of community surges in malnutrition caused by a shock. Instead, CMAM Surge enables staff to manage predictable and expected spikes in caseloads caused by a multitude of factors that are not always linked to shocks (e.g. mass screening activities), and variability in capacities caused by chronic stresses, such as staff shortages. However, by building everyday resilience to variability and stresses, it is likely that wider shock-responsiveness is strengthened (Barasa *et al.*, 2017) – by empowering health workers to take actions with their own capacities before full-blown emergencies emerge. A key lesson from Ebola in West Africa was that health worker (and community) capacity is vital for shock-responsiveness since they are often the first responders (Bhandari and Alonge, 2020).

## 5.2.2 Barriers to system change

Despite perceptions of improved shock-responsive capacities, CMAM Surge is coming up against barriers to system change that are likely to be faced in most contexts where the approach is being implemented. These include contingency budgets not being allocated for surge actions (despite their low cost), unreliable product supply chain management, and a lack of spare human resources to redeploy to health facilities experiencing surges. The findings therefore show that, while the approach is enabling health facility surge actions, the triggering of surge actions at higher levels of government is problematic, which curtails the potential of CMAM Surge to manage surges in acute malnutrition. These weaknesses extend to the wider health system (Fortnam *et al.*, 2020b) and therefore will be faced if CMAM Surge evolves into Health Surge.

Thus, to date, health facilities are successfully implementing surge actions to deal with minor spikes in admissions, but there is now a need to move to wider system change to ensure support is available from the sub-county, county, and national level when absorptive capacities at each level are exceeded. The lack of higher-level surge actions impacts frontline health workers, since they continue to use coping strategies, such as working longer hours and not taking leave, which creates stress and exacerbates staff turnover in a context in which staff vacancy rates are about 80% and there are low rates of women health staff (MONDKAL and IntraHealth, 2012; Ojakaa *et al.*, 2014).

Beyond formal health system capacities, weaknesses in the community health system and barriers to populations accessing formal health services mean that health facility dashboards, and by extension sub-county dashboards, are not a reliable or early indicator of a declining nutrition situation, and therefore a trigger for anticipatory community actions. CMAM Surge can thus currently help manage surges in the utilisation of services, rather than surges in the need for services, pointing to the need for community health system strengthening and community-level innovation for system change towards a shock-responsive health system being realised.

## 5.2.3 Kenya health system strengthening for shock-responsiveness

The findings suggest that there is a need to better integrate CMAM Surge into the health system in Kenya (and elsewhere) and to strengthen health system shock-responsiveness capacities in finance, product supply chain, and human resource management systems.

**Integrate CMAM Surge into shock-response mechanisms and nutrition programming**

While CMAM Surge features in some policy documents, there is a need to institutionalise it in key county government policies and strategies across the 10 ASAL counties and at national level. Ensuring CMAM Surge is included in the CIDPs of all the ASAL counties would permit county budgets to be allocated to CMAM Surge, and the inclusion of surge actions in county contingency planning by NDMA and county steering groups could ensure that they receive greater prominence in decision-making on resource allocations. CMAM Surge could also become a routine component of CMAM programming, which is included in health system policies, strategies, and planning documents, and budgeted annual MoH workplans, providing an opportunity for surge actions to be budgeted and MoH shock-responsive financing mechanisms to be developed.

**Establish shock-responsive financing**

In Kenya, more needs to be done to establish government financing of surge actions. The linking of agreed surge actions at each level with tiered financing mechanisms could support the release of finance to address the capacity gaps at each level of the health system, depending on the magnitude and scale of caseload surges. As illustrated in Figure 12, contingency budgets held at each level could be released to finance packages of surge actions (pre-agreed for each level) when thresholds for the proportion of health facilities at the alarm or emergency phase are surpassed. In Kenya, this would require MoH contingency funding to be established within health facilities and SCHMTs; allocations for surge actions in county emergency funds; and NDMA contingency funds allocated when demands exceed county contingency funds (rather than NDMA contingency funds being the first source of finance requested). Donor funds should be directed through government contingency funds and/or reserved for widespread emergency surges that exceed government capacities. Such a tiered approach would require accurate costing of surge actions and fulfilled commitments to allocate and release contingency funds when needed. Given that the costs of most surge actions are limited (e.g. out-of-office allowances for transferred staff) compared to overall health spending, actions would be expected to be feasible within government budgets, except under exceptional emergency circumstances.

**Figure 12: Illustration of tiered surge financing**
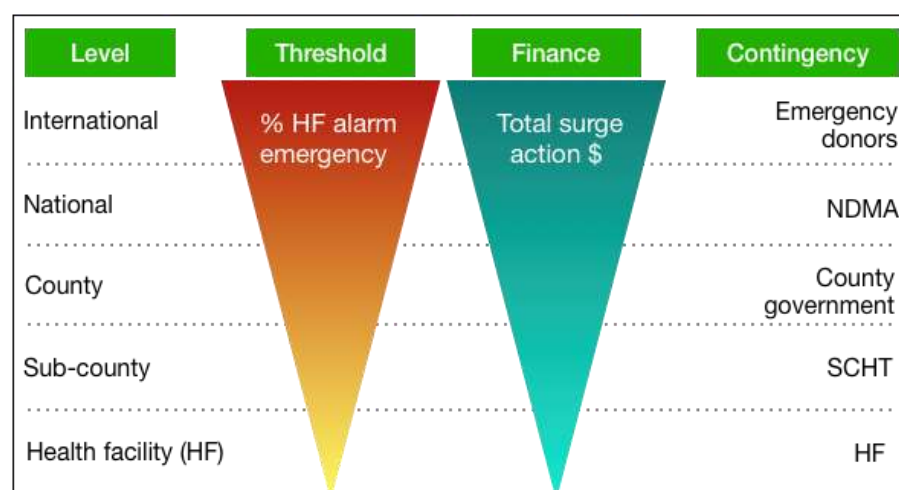


Source: Authors

Note: Dotted lines represent thresholds.

**Develop a human resource strategy for surge actions**

To address issues with the supply of staff to health facilities experiencing surges, there is a need for shock-responsive sub-county, county, and national MoH human resource strategies, agreed in MoUs when the approach is set up at each health facility and collated in sub-county surge plans. Integrated with the tiered financing (Figure 12), these strategies could include threshold triggers based on the proportion of health facilities at each surge phase and procedures for the rapid temporary (re)deployment of health staff from government, faith-based, and aid organisations, as well as from the Kenya Red Cross Society, within counties and sub-counties to health facilities experiencing surges. This strategy could assist sub-county and county health teams to allocate human resources more

efficiently and, when linked with tiered financing, could facilitate temporary recruitment of staff to create additional capacity.

**Integrate surge data into early warning and health information systems**

CMAM Surge data, such as the proportion of health facilities at threshold levels, could be included in monthly NDMA county and national Early Warning Bulletins now that a majority (<50%) of health facilities are implementing the approach in eight ASAL counties. This has the potential to increase decision makers' awareness of the degree to which health system absorptive capacity is being stressed by acute malnutrition admissions, and to inform health system responses that aim to maintain the coverage and quality of health services. While there were examples of CMAM Surge being integrated into county drought management decision-making, the inclusion of CMAM Surge data in bulletins would enable triangulation with other indicators, and would be a first step towards making it a routine consideration in county decision-making processes.

In line with McCloskey *et al.* (2021), digitisation is likely to become increasingly necessary under a Health Surge approach as the amount of data and number of thresholds set by each health facility increases, making higher-level (e.g. county- or national-level) analysis of multiple thresholds to detect health system emergencies increasingly complex. The challenge will be embracing information technologies while not undermining the simplicity and health worker empowerment that this study found were key to the scale-up of CMAM Surge to date, and ensuring the technology is appropriate to the context, and meets the goals, of the health system.

### 5.2.4   Broadening the surge approach to the entire health system

To build health system shock-responsiveness in its entirety, there is a need to expand the surge approach to surges in common morbidities, through Health Surge, and to expand to the community health system, which is identified in our conceptual framework (Section 2.2) as a key sub-system of a shock-responsive health system. Moving to health and community surge approaches implies moving from a single-issue vertical programme to a health system approach, whereby shock-responsiveness is built across capacity domains.

**Community surge**

Participants in this research recommended several options for strengthening linkages between the community health system and health facilities to improve the CMAM Surge approach. The first option is strengthening the community health system to increase case detection and referrals to health facilities by CHVs or families (i.e. family MUAC), or to better manage acute malnutrition in the community, reducing the need for formal facility-based services. A second option is that which is occurring as part of the Nawiri project, in which Concern, in partnership with the MoH in Marsabit County, is exploring the feasibility and added value of engaging community members and CHVs and CHAs more actively in the identification of community actions, such as screening and referrals of children, that are triggered when the health facility surpasses thresholds or when the health facility is at 'normal' phase but discussions with the community reveal a current or potential surge in cases in the community. In this approach, regular communication between CHVs and the

health facility would be crucial given the findings of this study that health facility data are a late indicator of the nutrition situation in communities.

A third option that was suggested for strengthening linkages between the community health system and health facilities involves extending surge principles and processes to the community health system. CHVs, for example, could analyse the drivers and seasonality of, and could monitor, acute malnutrition (and morbidities) cases in the community, in order to prioritise their activities (e.g. to focus on diarrhoea prevention) and thus manage their workload. Alternatively, CHVs could set capacity thresholds that, when passed, would trigger changes to their prevention, promotion, detection, and referral strategies, or trigger the provision of support from government at higher levels or from partners.

In a fourth option (one that is broader still), just as health workers were empowered to develop health facility surge actions, there is an opportunity for communities to develop surge strategies that are actioned when malnutrition and morbidity incidence (and other health and nutrition indicators) deteriorates. The passing of lower thresholds could trigger community-level surge actions (e.g. water treatment, food distribution for livestock), while the passing of higher thresholds could trigger increased capacity support from multiple sectors (health, food security, social protection, and water, sanitation and hygiene (WASH)). Interviewees pointed out that communities have well-developed traditional practices for coping with climate extremes (e.g. '*drying meat to use in hard times*') and knowledge of seasonality, which can be built upon to facilitate systematic planning and preparedness for seasonal trends and shocks. Such a *community surge approach* has the potential to enable anticipatory actions before CMAM Surge at health facilities detects rising caseloads and, if data are shared, to provide earlier warning for health facilities to expect a possible influx of patients.

Any expansion of surge approaches to the community level needs to be gender-sensitive and socially-inclusive, especially in the patriarchal societies of northern Kenya. CHVs are predominantly women: the design of such an approach would need to alleviate (instead of add to) the workloads of CHVs during shocks, when domestic workloads can escalate for women.

The national government has published a Community Health Policy (2020–30), and the county governments are at various stages of adopting legislation to implement it, which provides an opportunity for community health system capacity strengthening and piloting of community surge approaches. Moreover, integrated community case management (iCCM) is beginning to be implemented in Kenya (and West Africa), whereby CHVs are trained to diagnose and treat childhood diseases (sometimes including acute malnutrition), which could be strengthened with the introduction of a surge component that triggers community actions (e.g. distribution of nutrient products).

**Health surge**

There is growing interest in evolving CMAM Surge into Health Surge, building on health surge innovations in Sierra Leone, Burkina Faso, Niger, Ethiopia, and Mauritania. ECHO is supporting this process by funding Health Surge in Niger and the Enhanced Responses to Nutrition Emergencies (ERNE) programme, led by Concern, which includes Health Surge-related activities. Concern is also leading the transition to Health Surge through its

coordination of the Global CMAM Surge TWG and the planned update of the CMAM Surge Global Guidelines in 2022.

The premise for Health Surge is that demand for the treatment of certain childhood diseases, such as malaria, diarrhoea, and acute respiratory infection, surge seasonally and because of shocks. McCloskey *et al.* (2021, p. 35) define Health Surge as '*a quality improvement approach that empowers health workers to better anticipate, prepare for and manage fluctuations in demand for essential nutrition and child health services at facility-level in real-time*'. Expanding the approach to morbidities also offers the opportunity to assess and monitor health system capacity more comprehensively, and to monitor epidemic shocks against capacities.

Health surge can be considered to be in the proposal to piloting phase of the innovation process, for which the CMAM Surge innovation history offers some key lessons (in addition to applying those for scaling up outlined in Section 5.1):

- In developing proposals, involve and facilitate co-leadership from the MoH at all levels and other relevant government actors, and engage a wide range of stakeholders to combine technical expertise, practical experience, and the local knowledge of government, NGOs, and communities. Such bottom-up development of concepts, processes, and tools will increase the likelihood that Health Surge approaches are contextually appropriate, owned by local stakeholders, and conceptually robust, and that they address shared problems and goals, and are thus widely accepted and supported. However, proposals should be developed based on gender equity and social inclusion analysis, to ensure the engagement of marginalised groups and both women and men.

- Integrating health and nutrition into a Health Surge approach may increase opportunities for collaboration between nutrition and health actors on building shock-responsiveness. In Kenya, this may begin to address issues of nutrition being primarily associated with climate shocks, rather than being part of the health system (Fortnam *et al.*, 2019). However, the more complex array of departments and specialisms in health may make engagement more challenging than for nutrition, which has a simpler organisational structure. Furthermore, the MoH lacks a focal point for shock-response activities; climate shocks are associated with nutrition, and the wider MoH tends to focus on heath emergencies (i.e. epidemics) rather than health in emergencies (such as droughts and floods). Health surge may thus require organisational changes that were not required when implementing CMAM Surge.

- Bridging health and nutrition will require persuasive advocacy and leadership that breaks down silo thinking. There is a risk that higher-level health actors will: be sceptical of the benefits of an innovation emerging from the nutrition sector; not relate to the language and terminology of nutrition or perceive the need for a climate shock-responsive health system; and perceive overlaps with disease surveillance systems.

- Take advantage of the window of opportunity provided by COVID-19 for health actors to be engaged in the concept of Health Surge as more attention is turned to building shock-responsive health systems. There is a need, however, to evidence morbidity surges and their impact on health systems and different social groups (including marginalised groups), and thereby to convince health actors of the need for shock-responsive innovations in the health system.

- Take a systems approach to designing and implementing Health Surge by strengthening the shock-responsiveness of multiple health system capacities, including financing, human resource management, and medical and nutrition product supply chains. This can only be achieved by surge approaches being integrated with disaster governance, early warning, anticipatory action, health information systems, and routine health and nutrition programming. Such integration requires systems understanding through systems research.

## 5.3     Specific recommendations

**For those setting up CMAM Surge in new contexts:**

1. Plan how to engage with shock-responsive human resources, financing, and product supply chains from the early stages of initiatives.

2. Identify champions at every level of the health system, nurturing their engagement with and ownership of the approach, with a view to institutionalising the approach from the beginning, even at the outset of piloting.

3. Deliberately use the opportunities between emergencies to learn, adapt, and further integrate CMAM Surge into the shock-responsive mechanisms of the health system.

4. Centre piloting and roll-out on working with health workers (not on objectives in the proposal or logframe) to maximise opportunities for empowerment and ownership.

5. Ensure that a learning and systems approach is taken towards monitoring, action research, and evaluation. This should include monitoring and evaluating the type, timeliness, and effectiveness of surge actions undertaken at different levels.

6. Seek development funding from the outset or plan for development funding to support scale-up once the pilot has demonstrated benefits.

**For global and regional CMAM Surge TWGs to coordinate:**

1. Focus on facilitating a collaborative, learning, and adaptive approach at global, regional, and national levels, rather than being prescriptive in guidelines and technical assistance.

2. Facilitate action research and piloting that:

   - experiments with adaptations of the approach in new contexts, and that tests and evaluates its feasibility in highly fragile to stable health system contexts;
   - further investigates how everyday resilience capacities developed by the approach build responsiveness to non-seasonal and unexpected spikes;
   - evaluates the potential for public–private partnerships (as have occurred in Pakistan) to support scale-up processes; and
   - conceptualises and studies the use of surge principles in health system human resource, financing, and product supply chain systems, and in community health systems.

3. Engage UNICEF, large NGOs, and the WHO at the global level to discuss the next steps for CMAM Surge, and what further evidence is needed to understand its advantages and disadvantages of its integration into routine nutrition and health programming.

4. Engage donors at the global level to seek out multi-year funding and embed surge innovation in health development funding to improve programme sustainability and opportunities for learning.

5. Review the theory of change of the surge approach to adopt a health systems approach so that system changes towards shock-responsiveness are captured in evaluations using quantitative and qualitative methods.

**For the Kenyan government and implementing partners:**

1. With implementing partner technical assistance, begin a dialogue among the national nutrition TWG, NDMA, MoH Department of Health Financing, Kenya Medical Supplies Authority, and other relevant stakeholders about how to introduce shock-responsive components in human resource, financing, and supply chain systems to enable the timely and adequate financing and implementation of surge actions.

2. Review the national theory of change and evaluation protocols to ensure the system change impacts of the approach are captured.

3. Initiate pilots and research on the feasibility and efficacy of various options for developing a community health system surge approach.

4. Pilot and evaluate the integration of the sub-county surge dashboard data (i.e. the proportion of health facilities at each surge phase) into county NDMA Early Warning Bulletins and county steering group coordination and decision-making processes.

5. Explore whether surge threshold monitoring and surge actions undertaken could be integrated into the DHIS to monitor performance at county and national level.

6. Learning from pilots in West Africa, pilot the use of digital and mobile technologies at the health facility and sub-county level to automate the triggering and monitoring of surge actions when thresholds are passed.

7. Establish an MoH-led process, engaging multiple divisions (i.e. not only nutrition), to develop, pilot, and evaluate a Health Surge approach, building on the experience in West Africa.

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# Annex A  CMAM Surge innovation history: virtual interview guide



1



2



3



4



5



6

### Guarantees of confidentiality and anonymity

- Everything you say during this interview is potentially usable in our research.

- You have a right to anonymity throughout the research.

- I need to gain your permission to digitally record the interview on Zoom.

- To summarise, nothing from this interview will be repeated with your name attached, and nothing will be shown to anyone besides those on our research team before you have a chance to approve it.

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### Step 1: Tell the history of CMAM Surge

- I'd first like to hear you tell the story of CMAM Surge so far

- I'll be speaking to other people involved in CMAM Surge, so don't worry if you don't remember everything or were only involved for a limited period

- I'm interested in the story from how the idea emerged, right up to its implementation in other countries

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### Step 2: Lessons learnt

- What have been the key factors that enabled IMAM Surge approach to be established and scaled up in Kenya and globally?
- What were the key barriers faced in establishing, implementing and scaling up CMAM Surge?
- Who were the most important people/organisations in the history of IMAM Surge? Why?
- Who resisted or disapproved of IMAM Surge? How? Why?
- What have been the key benefits of implementing IMAM Surge?
- What are the limitations of the approach?
- How did IMAM Surge perform during the 2019 droughts?
- What are the main lessons you have learnt from the history?
- How could IMAM Surge be improved in the future?
- What would you like Maintains to investigate further in relation to IMAM Surge?

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### Interview close

We're at the end of the interview now. However, there is always a chance that my list of questions may not have reflected everything you wanted to, or could have, said. So:

- Is there anything you would add to what has been discussed so far? Anything that needs to be said?

- Are there questions I should have asked?

- Is there anything else you'd like to say?

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### Next steps

- We will be interviewing others involved in IMAM Surge over the coming weeks

  Is there anybody you'd recommend we speak to?

- Once we have analysed the interviews, we plan to hold a virtual workshop to validate our findings and to facilitate discussion about how to take forward recommendations

  Would it be OK to contact you about this closer to the time?

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# Annex B Admissions and surge data analysis

Visual analysis of secondary data shows that **seasonal cycles of SAM and MAM admissions and community rates of malnutrition (according to MUAC measurements) are not clearly aligned** (e.g. Figure 13 shows the cycles for Wajir). Moreover, the seasonal patterns in admissions vary across counties and do not display the expected peak in July, when: (i) the number of diarrhoea cases increases; (ii) the workload, particularly for women, increases due to agricultural activities; and (iii) most households exhaust food stocks (Kopplow *et al.*, 2014). Planned statistical analysis will test the relationship between MUAC and admissions data as an indicator of the strength of the association between community incidence of acute malnutrition and caseloads at health facilities. However, interviewees discussed a range of factors that complicate and mediate the relationship between community incidence and heath facility admissions (Table 6).

**Figure 13: Seasonal cycles of admissions and community SAM and MAM in Wajir**
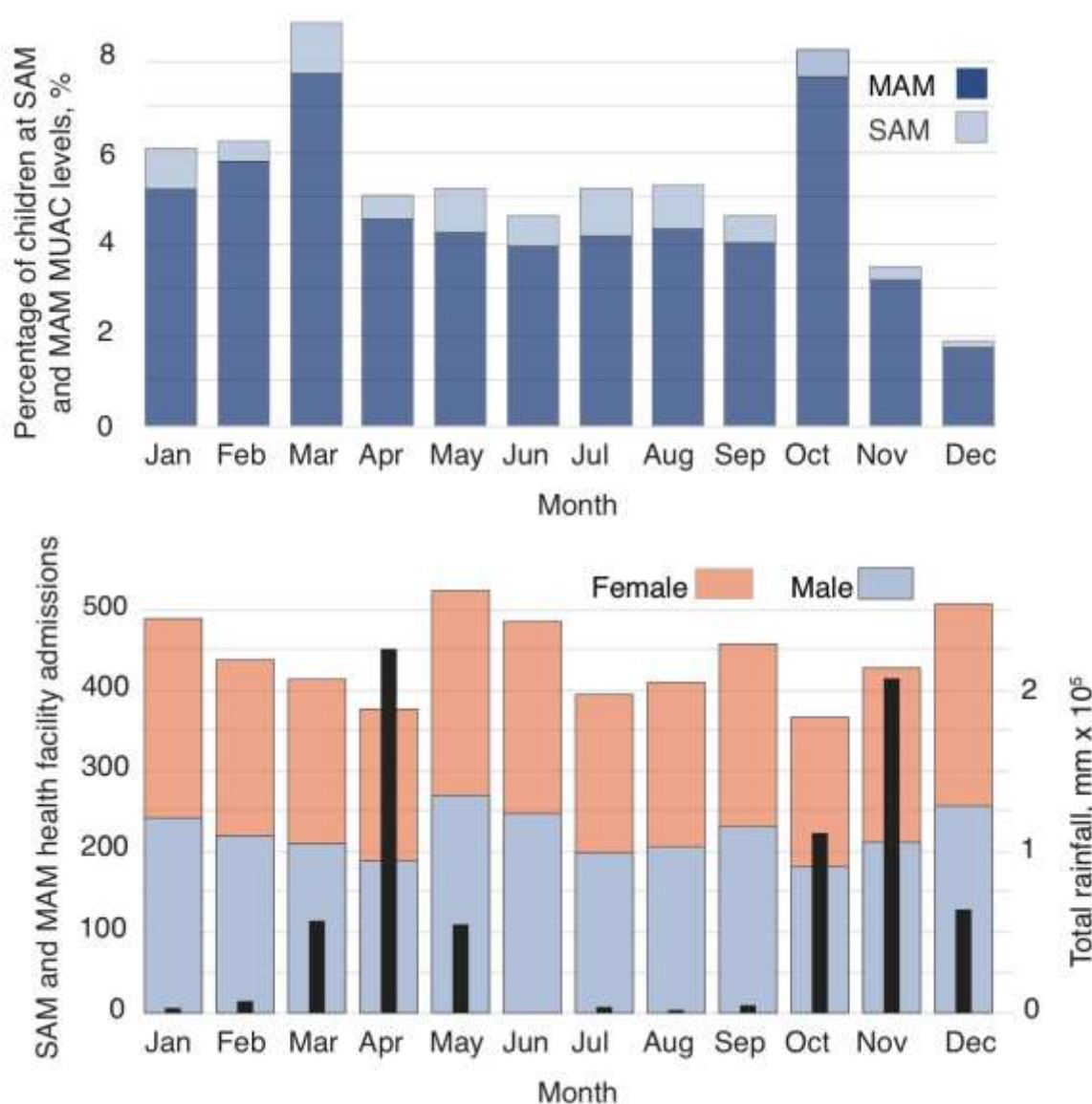


Data: Health facility admissions data provided by UNICEF, and MUAC data provided by NDMA.

**Table 6: Factors mediating the relationship between health facility admissions and community prevalence of acute malnutrition**

| Factor | Description |
|---|---|
| **Barriers to populations accessing services** | Distance and opportunity costs (time for food and water collection) of travel to health facilities in sparsely populated ASAL |
| **Shocks** | Access barriers are exacerbated during shocks that increase opportunity costs (increased pressures to collect food), damage health and transport infrastructure, disrupt health facility functioning, inhibit community screening (e.g. social distance restrictions during COVID-19 have reduced |

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| | close proximity screening), or dissuade people from travelling (e.g. security risks during conflict or fear of contracting COVID-19) |
| **Health-seeking behaviours** | Traditional treatments within the community can be preferred to travelling to health facilities, and households can be dissuaded from accessing services if information circulates in their community about poor service quality or high death rates at nearby health facilities |
| **Weak community health system** | Lack of community screening and referrals (Section 4.2.1) |
| **Closure of, or dysfunctional, health facility** | Health facilities sometimes close or work at lower capacity because of staff absenteeism, health worker strikes, or stockouts of nutrition products. Recorded admissions at such facilities can be low even if rates are high in the community, while patients may be displaced, causing spikes at neighbouring facilities |
| **Mass screening** | Admissions spike during drought events when mass screening is activated and can be low if mass screening activities are inactive |

Figure 14 shows how the de-seasonalised total SAM and MAM admissions show an increasing trend since 2016. This is likely to reflect the increasing capacity of government nutrition services to the population, including during drought years (e.g. 2019 in Figure 14). With increasing admissions to health facilities during drought, surge data may be becoming more reflective of the nutrition situation on the ground, but further research is required to substantiate this claim.

**Figure 14: De-seasonalised total SAM and MAM health facility admissions Marsabit (2010–20)**
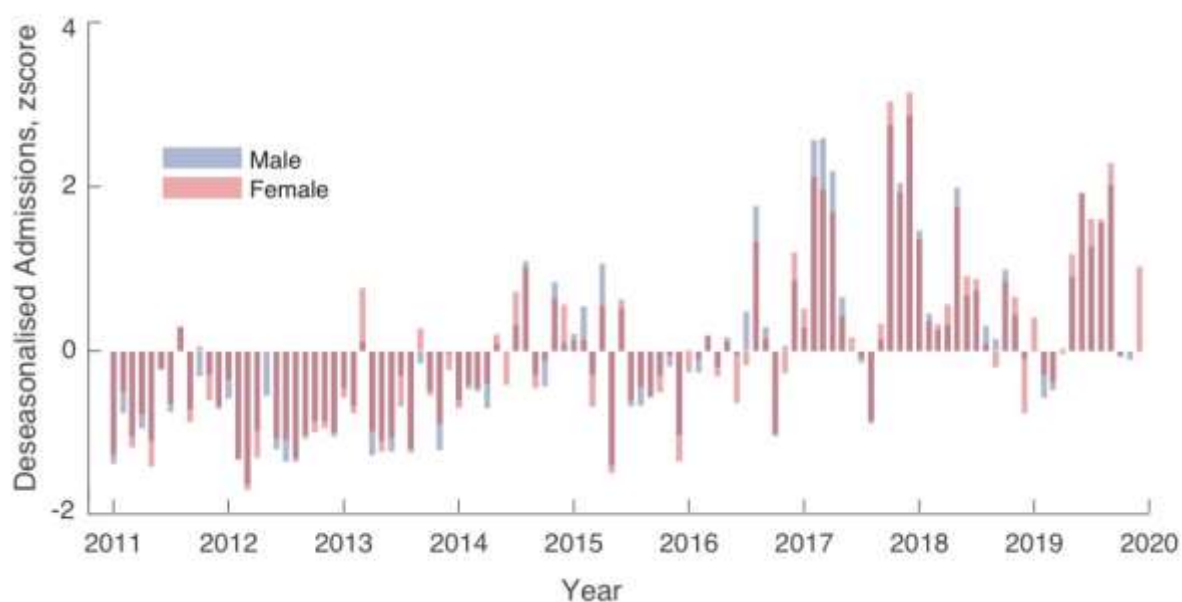


Data: Admissions data provided by UNICEF.

Note: Monthly admissions are normalised and de-seasonalised by the average admissions for that month (z-score).