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## POLICY CONCLUSIONS AND RECOMMENDATIONS.

1. **Nutrition Resilience** is the concept that good nutrition results in a more resilient person, or household and **Resilience for Nutrition** is the concept that a resilient person or household results in good nutrition. Interventions to positively influence both concepts consist of using a tri-track approach.

2. Nutrition resilience is developed through a **tri-track approach** to tackle chronic and acute nutrition deprivation.

- **Track One Foundational** - Programme interventions to address chronic nutrition deprivation develop a coherent cross-sectoral nutrition specific and sensitive approach to create a foundation for nutrition resilience.

- **Track Two Reliability** - Programme interventions to address acute nutrition deprivation develop a risk sensitive approach to absorb, adapt and transform in response to covariate shocks.

- **Track Three Emergency** - Interventions are used to address extra - ordinary shocks.

3. It is recommended that Nutrition Sensitive Resilience Programmes focus on two theme areas;

- Dietary Diversity for infants 6-23 months infants and women

- Nutrition Sensitive Women's Empowerment in particular women's workload.

4. Measurement of Nutrition Resilience is possible at two levels;

- **Impact Measurement.** Recommended to use stunting as a start and end point impact resilience indicator and variability of wasting trends as a regular resilience impact indicator.

- **Outcome Measurement.** Recommended to incorporate more nutrition sensitive outcome objectives and indicators into interventions of sectors allied to nutrition.

5. Acute Nutrition Deprivation Measurement. Recommended to develop indicators that monitor the trends of nutrition outcomes and their variability in response to covariate shocks.

The Centre for Humanitarian Change aims to redefine the model for aid in fragile areas using evidence of local models of What Works and by breaking down system wide barriers to using longer term thinking and context specific approaches.

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## Background and Objectives

Across all sectors there is a concerted effort to develop the resilience of communities in the arid and semi-arid lands of Kenya, East Africa and the Sahel. Although the concept of resilience is much debated, consensus has not yet been reached on the precise meaning of resilience and what it means for interventions in these areas. Much of the focus of these debates and resilience interventions have focused on the livelihoods and food security sector. Therefore the role of nutrition in the resilience concept and related interventions is far from clear. At the same time the Kenya Nutrition Sector has been focusing on developing a more holistic and coherent approach to nutrition programming through an increased emphasis on nutrition sensitive programming and developing the links with nutrition specific programming more effectively. Nutrition sensitive programming involves the incorporation of nutrition objectives and indicators into allied sectors policies, strategies and interventions.

This policy brief aims to provide some recommendations on what, who and how nutrition and other sectors could contribute to nutrition resilience. It is suggested below that many aspects of developing nutrition sensitive approaches, effective links to nutrition specific programming and nutrition resilience programming are the same. Therefore, conclusions drawn address the three objectives of becoming more nutrition sensitive across sectors, linking to nutrition specific approaches and at the same time making nutrition related programming more resilience friendly. In the past cross sectoral coherence and integration have proven to be elusive goals for the humanitarian and development aid stakeholders. Therefore, this paper has taken a pragmatic approach to identifying a limited number of areas and “low hanging fruit” where both nutrition sensitivity, specificity and nutrition resilience might be initially focused.

# 1. What is Malnutrition?

The term malnutrition refers to a condition caused by insufficiencies, excesses and imbalances in intakes of energy and/or other essential nutrients necessary for a healthy and active life. The condition includes overnutrition, undernutrition and micronutrient deficiencies. Undernutrition is found as acute undernutrition or wasting (low weight for height), chronic undernutrition or stunting (low height for age) and underweight (low weight for age). Often children can suffer from all three types simultaneously and the types can act synergistically. People who are well nourished and who have been well nourished since before birth are less sick less often, achieve more at school and go on to earn more as adults. The positive contribution to the productive labour force can result in a 2-3 percent increase in annual GDP for a country<sup>1</sup>.

## A. Who is vulnerable to and affected by malnutrition?

Physiologically the most vulnerable to and those affected by undernutrition, including micronutrient deficiencies, include children less than 5 years, pregnant and lactating women, the elderly, the disabled and people living with HIV and AIDS. Research has shown that undernutrition in the first 1,000 days between conception and a child's second birthday has the greatest negative long term impact on the person's educational and earnings potential. The first 1,000 days therefore represents the critical window of time during which a lifelong and intergenerational foundation for good health and nutrition can be built. Within these vulnerable groups those individuals, households and communities most affected tend to be those with lowest incomes, high levels of social and economic marginalization and whose livelihoods are fragile. Understanding both types of vulnerability, physiological and socioeconomic, and the interactions between them are critical. It should be noted that all of these household and community level vulnerabilities apply when discussing resilience development.

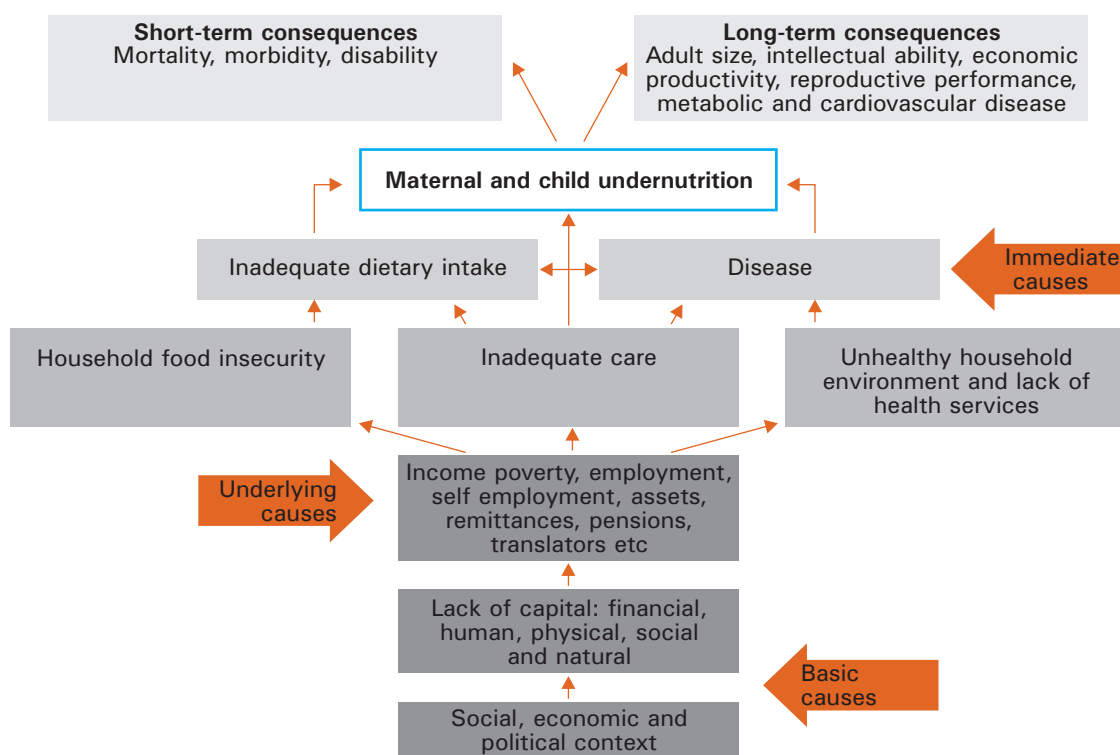


Figure 1: UNICEF Nutrition Conceptual Framework.

<sup>1</sup> World Bank. 2006. Repositioning nutrition as central to development, a strategy for large scale action. Washington, DC, USA

<sup>2</sup>Scaling Up Nutrition Movement 2010. Scaling up Nutrition: a framework for action. ([http://scalingupnutrition.org/wp-content/uploads/pdf/SUN\\_Framework.pdf](http://scalingupnutrition.org/wp-content/uploads/pdf/SUN_Framework.pdf)).

## Box 1: Nutrition Specific & Sensitive.

**Nutrition Specific Interventions** – address the immediate causes of undernutrition, like adequate dietary intake, management of acute malnutrition and some of the underlying causes like feeding practices and access to food.

**Nutrition Sensitive Interventions** – can address some of the underlying and basic causes of malnutrition like food security, income, household health, and care practices by incorporating nutrition goals and actions from a wide range of sectors. They can also serve as delivery platforms for nutrition specific interventions.

## B. Causes of Undernutrition.

The UNICEF Nutrition Causal Framework describes the complex system that causes undernutrition. The conceptual framework also demonstrates that all types of undernutrition are caused by the same causes and only represent different manifestations of this complex causal framework. It is important to note that the causes of undernutrition are multisectoral and the interactions of the causes vary geographically, over time, and according to a household's livelihood status. The framework demonstrates that nutritional status is the result of immediate, underlying and basic causes. Again, the framework has many similarities to causal frameworks used in resilience and livelihoods discussions, with an emphasis on a systems approach (multisectoral, multilevel and multi-stakeholder).

To maintain progress along the Nutrition development pathway the UNICEF Conceptual Framework can be used as guidance for ensuring that approaches to improve nutrition security are holistic, cross-sectoral and address a complex causality. Recently the Scaling Up Nutrition Movement (SUN)<sup>2</sup> and the Lancet have provided a practical framework to structure thinking about what strategies could be used to address the causes described in the conceptual framework. Strategies are divided into actions that are specific for nutrition and strategies that are nutrition sensitive (Box 1).

How Nutrition and Nutrition Allied Sectors (NAS) contribute to improved population nutritional status depends on how interventions are designed and how sectors' interventions interact. As nutrition and NAS respond to the challenge of how to implement more nutrition sensitive programmes it has become clear that the theoretical opportunities to be more nutrition sensitive are enormous. Yet evidence on What Works is still lacking and consequently field interventions tend to lack guidance on how to design the intervention and there is a tendency to overemphasise integration of interventions as the main approach to boosting nutrition sensitivity.

In all cases of nutrition sensitive programming the first and most important step involves ensuring that interventions include nutrition objectives and monitoring indicators. For example what are the nutrition objectives and indicators to be used to measure the nutrition sensitivity of a household vegetable garden programme?<sup>3</sup> Objectives can also address nutrition positive and negative issues e.g. an intervention aimed at increasing women's income from markets will empower women to use the income for child care but also risks diverting child caring time to income generation time.

A second step that can be used to become more nutrition sensitive is the modification of a NAS intervention. Such a modification could involve:

- I. The adaptation of the target group e.g. from a whole community geographic or poverty based targeting to one focusing on the population groups included in the first 1,000 days approach e.g. children under 2 years or pregnant and lactating women.

<sup>3</sup> See discussion on nutrition resilience measurement below.

- ii. The adjustment of the target geographic area to implement a nutrition sensitive programme in a “hot spot” area for undernutrition.
- iii. A shift of objectives to a common theme, agreed between Nutrition and NAS e.g. micronutrient deficiency or complementary feeding.
- iv. The reworking of the inputs of the programme to increase nutritional impact e.g. changing the focus of rural water supply interventions from simple infrastructure improvement to women friendly, multiple use (animals/farming and humans) water supplies.

These modification approaches would involve setting nutrition objectives and using nutrition indicators. It is to be noted that these modifications need only planning level input from the nutrition sector. It should also be noted that the cost implications of many of these modifications would be limited as they often would not involve a need for more inputs.

In a few cases, integration of NAS interventions is possible. A significant focus of these integrated interventions is in the area of Behaviour Change Communication (BCC) at community and service level. Increasingly NAS interventions include BCC interventions focused on their own sectors and Nutrition sector objectives. Considerable opportunities exist to ensure that BCC interventions become more nutrition sensitive and cross sectoral. Across sectors community based BCC interventions face the common challenges of motivation, capacity and pressure to prioritise and limit the numbers of behaviours being addressed.

A second area of integration would involve capacity development activities. Many NAS are unaware of or are unclear about the opportunities for more nutrition sensitivity and whilst a large majority are positively disposed to adding a nutrition objective to their programmes they are not aware of how this could be done. The integration of basic nutrition issues into NAS capacity development strategies and interventions offers significant opportunities for removing many simple bottlenecks for the development of nutrition sensitive interventions in the NAS.

## 2. What is Resilience?

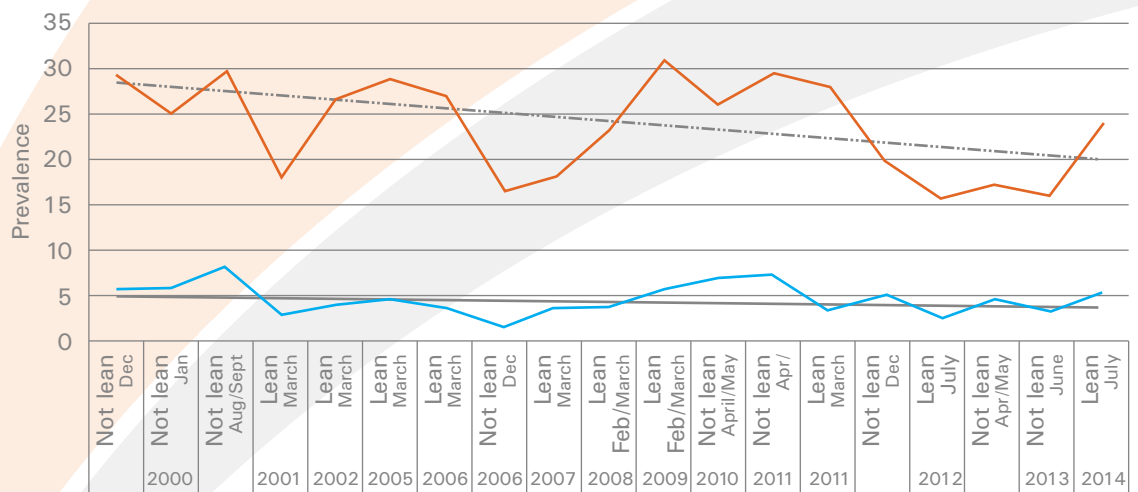
There are a large number of definitions of resilience many, including the UNICEF Nutrition programme<sup>4</sup>, have an overarching aim of sustainable reduction in deprivation, vulnerability and the promotion of inclusive social and economic growth. The objectives of developing resilience described in these definitions commonly include the following three systemic objectives:

- i. Improved capacity of a system's ability to plan, prepare for and **absorb** shocks,
- ii. Improved capacity to **adapt and transform** a system's ability to manage shocks and stresses,
- iii. Prevent negative impacts of shocks and stresses and promote positive impacts of resilience on development pathways.

All of the definitions discuss how stresses and shocks to the system impact on development pathways and how resilience can help to absorb, adapt and transform livelihood strategies to maintain a positive development pathway.

A wide range of ASAL development indicators show very poor baseline levels when compared to many other parts of Kenya. Many of these indicators often also show negative, near stable or very slow improvement in trends over two to three decades. This picture indicates constant stress on the livelihoods of the ASAL inhabitants and results in **chronic nutrition deprivation** and measured by high stunting or persistently high wasting unrelated to season or shocks. Furthermore for indicators that are responsive to change in the short term, such as acute malnutrition prevalence in young children, the data shows that these vulnerable populations frequently experience shocks that result in rapid and sometimes large fluctuations in their nutritional status.

<sup>4</sup>The EU-GOK-UNICEF 19 million Euro Maternal and Child Nutrition Programme is over a 4 year period and targets 9 of the arid and semi-arid counties of Kenya, commenced in November 2014



Graph 1: Mandera Nutritional surveys: 2000-2014  
 Median (by season) Annual results

For example graph 1 shows nearly 15 years of nutrition surveys conducted in Mandera. The maximum change in nutritional status in one year was nearly 15%<sup>56</sup>. The picture is very similar in other ASAL counties with slightly less volatility. Using nutritional status as the impact indicator for the intersectoral aspects of the nutrition conceptual framework it can be concluded that rapid, relatively large and frequent changes in nutritional status indicate low resilience to shocks resulting in an acutely nutrition deprived population.

Thus the population in ASAL areas can be characterised as being chronically AND acutely nutrition deprived. Moreover, as is the case for nutrition status, it is very likely that chronic nutrition deprivation interacts with acute nutrition deprivation<sup>7</sup> reinforcing each other in a synergistic fashion resulting in a vicious circle or deprivation trap. A resilience programme needs to address both types of deprivation and the interactions.

### 3. Nutrition Resilience and Resilience for Nutrition.

Using the Nutrition Causal Framework as a reference it can be seen that each of the basic, underlying and immediate causes of undernutrition can be affected by the shocks and stresses that characterize the ASAL areas and that these shocks and stresses can act independently or together to create chronic and acute nutrition deprivation. The ultimate impact of these effects on the individual, household and population can be determined through a measurement of nutrition status so that a better nourished person or population indicates a capacity to mitigate, adapt and transform their livelihoods in response to shocks and stresses i.e. a more resilient person or population. Or in other words well-nourished people are more resilient and a more resilient person is likely to be better nourished<sup>8</sup>.

Thus interventions that improve nutrition through an explicitly cross sectoral nutrition sensitive approach to developing nutrition programmes will contribute to the development of resilience in those households and communities. This concept also has implications for the measurement of resilience in that a nutrition indicator such as stunting, micronutrient status or wasting prevalence can be used as a key outcome indicator of the resilience of a person, household or population and as an impact indicator for interventions aiming to develop resilience (discussed later).

<sup>5</sup>WHO classifies an emergency level of acute malnutrition as being over 10% prevalence.

<sup>6</sup>2011 was the Horn of Africa crisis year followed by a very good series of three rainy seasons. The worsening of the situation in 2009 corresponds to failed seasons in 2008 and 2009.

<sup>7</sup>Chronic – Long term, Acute – Short term.

<sup>8</sup>Thus there are two concepts, one of nutrition resilience and the other of resilience for nutrition. Whilst the concepts are separate they are very similar and are used interchangeably throughout the text.



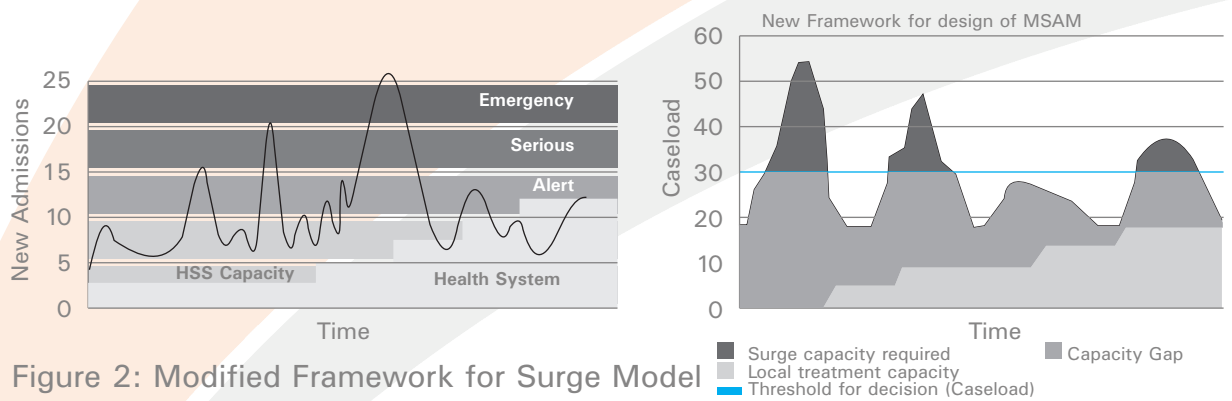


Figure 2: Modified Framework for Surge Model

An intervention aiming to develop nutrition resilience and resilience for nutrition should take a tri-track approach, tackling acute and chronic nutrition deprivation at the same time. Both chronic and acute deprivation are highly context specific. A successful nutrition or nutrition resilience intervention in one area may not be applicable in different circumstances.

A person, household or population is subject to stresses and shocks. Shocks can be characterized as being idiosyncratic or covariate. Stresses and idiosyncratic shocks act at a smaller scale and should be taken into account in the development of a context specific approach to addressing chronic nutrition deprivation. Whilst covariate shocks act at a larger scale and are the basis for the development of a context specific approach to addressing the acute nutrition deprivation. In the ASAL areas these covariate shocks are frequent with many small and medium shocks a few large and rare extraordinary shocks (Figure 2)<sup>9</sup>.

### Example 1: Milk Availability.

Given the seasonal nature of milk availability for young child's nutrition and the impact of poor rain seasons on milk availability a foundational nutrition sensitive intervention would involve improving the availability, access and utilization of animal milk for young child's complementary feeding. In parallel an approach to addressing the negative impact of a poor season on milk availability and access might focus on ensuring milk production is continued close to the households with very young children throughout a very dry period.

Thus a tri-track approach would entail building on the foundation of interventions addressing chronic nutrition deprivation focusing on a coherent, context specific, cross-sectoral nutrition specific and sensitive programme. These foundational interventions would then be adapted to ensure they take into account the context-specificities of the shocks causing acute nutrition deprivation. A classic emergency response would then only be required for the rare extra-ordinary shocks.(Figure 3).

Thus, **Nutrition Resilience** is the concept that good nutrition results in a more a resilient person, or household and **Resilience for Nutrition** is the concept that a resilient person or household results in good nutrition. Interventions to positively influence both concepts consist of tri-track approach; a foundational **Track One** of nutrition specific and sensitive programmes, a reliability focused **Track Two** where risks and vulnerabilities to covariate shocks ensure reliable livelihoods through seasons and shocks and **Track Three** emergency response only for extra-ordinary shocks.

<sup>9</sup>Using this approach the habitual association of acute undernutrition to shocks and chronic undernutrition to stresses breaks down. Most acute undernutrition caseloads contain a group of children whose acute undernutrition is mostly related to chronic poverty and stresses. Shocks speed up and worsen these individuals acute undernutrition but also add a new group of children who are "tipped over the edge" by the shock. Equally chronic undernutrition is clearly related to long term poverty and stresses, but shocks such as seasons and poor seasons have been shown to cause worsened chronic undernutrition and all the long term negative impacts associated with the condition. Finally it is likely that acute undernutrition caused by a shock will contribute to chronic undernutrition and chronic undernutrition results in higher risks of becoming acutely undernourished during a shock.

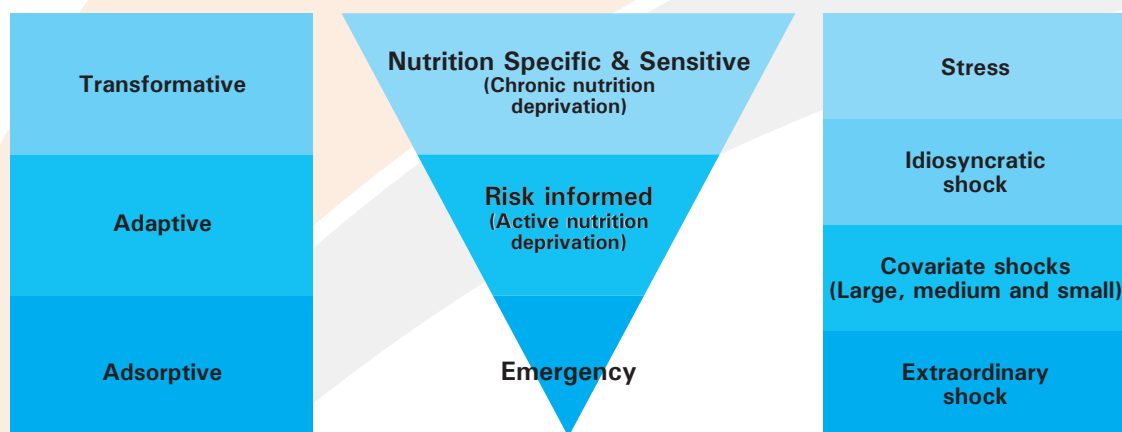


Figure 3: Nutrition Resilience Model.

## 4. Resilience and Nutrition Programming

### A. UNICEF Nutrition Programme

The UNICEF Nutrition programme takes a holistic systematic view of how resilience is developed with nutrition. The key result areas focus on developing resilience at policy, service and community level. They include a specific result area for knowledge management and are summarized as follows:

**Result 1** - Community and individual capacities, practices and demand for services in targeted (most affected) populations increased,

**Result 2** - Access and utilization of basic social services in targeted (most affected) populations is improved,

**Result 3** - Evidence base and knowledge management to best inform programme policy and strategies is improved,

**Result 4** - Resources for progressive investment in nutrition security and related interventions that will strengthen community and system resilience are leveraged.

Each of these result areas can be further broken down using the concept of a nutrition specific and sensitive programming foundation addressing chronic nutrition deprivation. Context specific adaptations to support communities to absorb, adapt and transform their livelihoods to maintain long term nutritional status despite the frequent shocks experienced in the ASAL areas would then be added. (Figure 4)

### B. Resilience and Nutrition Sensitive Programming with Nutrition Allied Sectors.

From a nutrition sector perspective the ASAL areas represent a significant challenge in that many of the core indicators of nutrition security are extremely poor. Acute undernutrition prevalence are the highest in Kenya e.g. Turkana 32.9% wasting<sup>10</sup>. Chronic undernutrition prevalence is also extremely high<sup>11</sup> e.g. West Pokot 45.9% stunting<sup>12</sup>. Key behaviours essential for good nutrition security such as breast feeding rates and complementary feeding are also extremely poor<sup>13</sup> e.g. Minimum acceptable diet for children aged 6-23 months in North East Province was only found for 10% of children aged 6-23 months<sup>14</sup>.

<sup>10</sup>KDHS 2014

<sup>11</sup>Micronutrient status data is limited for ASAL areas but are expected to be very poor.

<sup>12</sup>KDHS 2014

<sup>13</sup>Recent results from the KDHS 2014 suggest that stunting, exclusive breastfeeding and other breastfeeding indicators have seen a significant improvement in recent years albeit not to an acceptable level and certainly not at an equitable rate across the county with the ASAL counties generally have the highest burden of under nutrition.

<sup>14</sup>KDHS 08/09



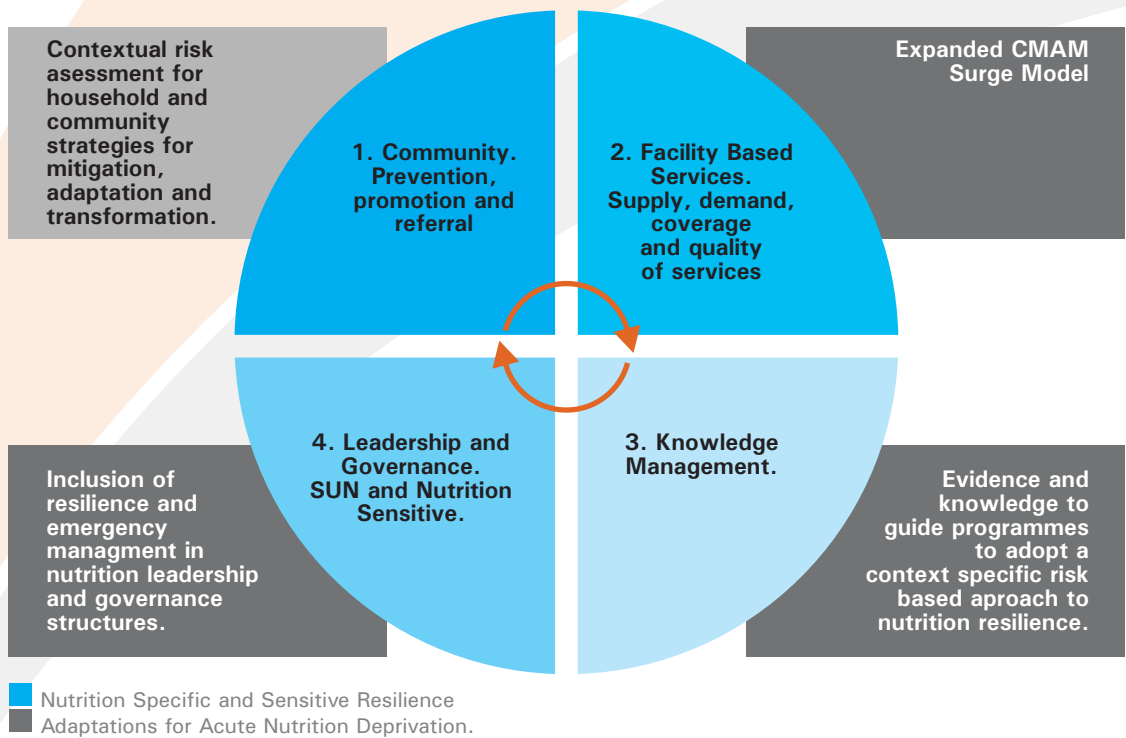
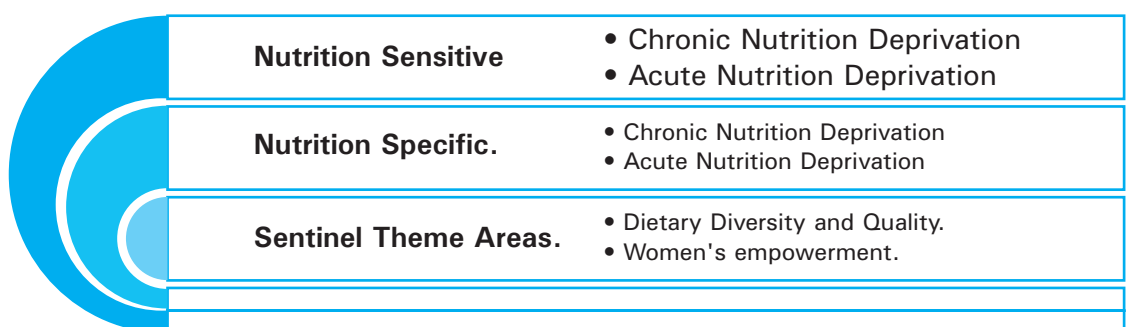


Figure 4: UNICEF Nutrition Specific and Sensitive Resilience and Adaptations for Acute Nutrition Deprivation

As discussed above the potential for nutrition sensitive interventions of NAS to address immediate, underlying and basic causes of poor nutritional status is huge. Yet the evidence of what works is still limited and the necessary cross sectoral coherence often remains an elusive ideal. Therefore this paper takes the position of recommending a limited number of priority nutrition theme areas for collaboration between the Nutrition Sector and NAS. These themes have been selected based on their potential impact on priority nutritional issues summarized within the “First 1,000 day's” concept. Priority themes selected also have important elements of programming already in place and a move to developing nutritional sensitivity and nutrition resilience would

only require modification rather than initiation of new approaches. Indeed some elements of nutrition sensitive programmes along these lines are already in place. The suggested theme areas also involve short and simple causal pathways focused on the underlying causes in the causal framework. This approach does not negate the full range of expected positive impacts of NAS intervention on nutrition resilience. Positive impact in these sentinel theme areas can act as sentinel indicators both for the overall programmes impact on nutrition and resilience whilst at the same time measure the impact of the desired increase in cross sectoral coherence.



<sup>15</sup>This section gives a limited number of practical examples of nutrition sensitive interventions, objectives and indicators. A separate accompanying framework paper gives more detail and a suggested framework for first steps in nutrition resilience and resilience for nutrition programming.

## C. Sentinel Theme Areas.

After extensive review of nutritional data and trends, key informant interviews within the nutrition sector and with NAS and donor's this policy paper would like to recommend three initial areas of focus<sup>15</sup>:

### a. Dietary Diversity and Quality.

During the first 1,000 days between conception and two years of life the transition from exclusive breast milk to solid foods is a crucial period when many causal factors for poor nutritional status become critical e.g. hygiene of complementary foods and the hygiene environment contribute to a peak of chronic undernutrition in the 6-23 months age group. Acute malnutrition peaks from 4-10 months.

A key approach to improving complementary feeding involves increasing the diversity, quality and nutrient density of the foods used for feeding 6-23 months children. This objective is already a part of many NAS interventions e.g. USAID Fed the Future Programmes (Good Practice 1.). Many programmes in the past have attempted to influence dietary diversity and quality solely through the use of BCC programmes, usually through the nutrition and health sectors only. Yet dietary diversity is also directly related to production and income and it would appear that opportunities to explicitly relate the two in field interventions are very often being missed. Clearly, if taken, opportunities like the USAID FTF example and potential in other donors support to Government in the fields of Agriculture, Livestock, Livelihoods, WASH and Health and Nutrition are likely to have a greater impact on nutrition resilience and resilience for nutrition.

For the vast majority of the ASAL areas, most of the time, the quality of the diet is an equally or more important issue than the quantity of the diet. Women's micronutrient status and dietary diversity in the ASAL areas is likely to be the worst in Kenya and this situation has changed little in the last two decades. At present many of the existing programmes for improved micronutrient status in these two vulnerable groups are focused on the Health and Nutrition sector and use supplementation and BCC as main strategies. In Agriculture, fortification is the predominant strategy, with rare attention to the subtleties of the link between increased production and its impact on nutrition. As for complementary feeding, opportunities to develop a more coherent approach to women's dietary diversity already exist in Kenya (Good Practice 2)<sup>16</sup>.

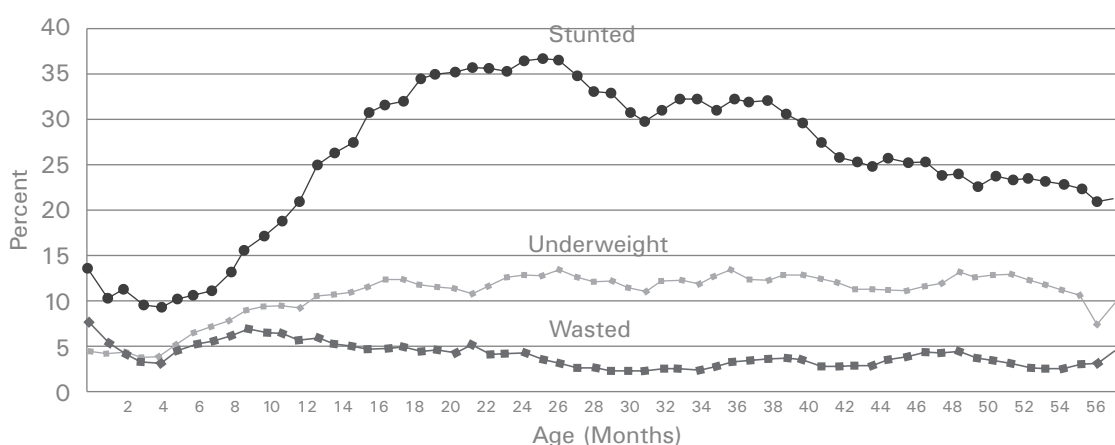


Figure 5: KDHS 2014- Nutritional status of children by age.

<sup>16</sup>Women's empowerment and nutrition: an evidence review, M Van den Bold, AR Quisumbing, S Gillespie - 2013 - papers.ssrn.com. 'With regard to agricultural interventions, evidence is limited and mixed on the impact of dairy and home gardening projects on women's empowerment measures in terms of women's income and control over income and resources as well as women's time and workload.'... Studies have found that implementation modalities matter in terms of impacts on empowerment measures and nutrition outcomes. Again, evidence is lacking on the impact pathways of agriculture on nutrition outcomes.'

## Good Practice 1: USAID Feed the Future (FTF) – Complementary Feeding Indicators.

One of the two First Level Objectives for FTF is 'Improved nutritional status, especially of women and children'. Globally six Nutrition related Intermediate Result Areas (IR) further describe the nutrition objectives of FTF. Two of these IRs specifically aim to improve infant complementary feeding; 'Improved access to diverse and quality foods' and 'Improved Nutrition related behaviours'. Other IR relate to improved agricultural enabling environments, expanded markets and trade and improved productivity of selected value chains.

The global FTF list of standard and 'required if applicable' outcome indicators includes indicators such as:

- Percent of children 6-23 months in the sample receiving minimum acceptable diet.
- Percent of women of reproductive age (15-49 years) in the sample who consume at least one targeted nutrition-rich value chain commodity.
- Percent of children 6-23 months in the sample who consume each targeted nutrient rich value chain commodity.

The FTF Kenya programme is complemented by the Nutrition and Health Program Plus (NHP+). NHP+ complementary feeding related result areas include; Improved nutrition related behaviours, Increased knowledge and skills of Health Care Workers (HCW) in nutrition and Increased market access and consumption of diverse and quality foods. Thus NHP+ will aim to link the objective to promote inclusive agricultural growth with the objective to improve nutrition status of women and children.

Despite this good practice example there still appears to be work to do in strengthening the degree of influence the potential impact on dietary diversity and quality has on the selection of the value chains prioritised for support.

### b. Women's Empowerment.

Women play a major role in caregiving, household economic management and food production. Women are principally responsible for earning cash to provide their children with purchased food (a large component of the basic complementary foods are purchased). Women are responsible to ensure that water and firewood are available as well as home production of some of the higher quality complementary foods. As principal caregivers to young infants opportunity costs of managing the household have immediate impacts on the quality of care of an infant; one of the key determinants of nutritional security. This short list only scratches the surface of the importance of women's empowerment for nutrition and resilience. Many of the existing NAS programmes in the ASAL areas have a significant focus on women's empowerment based on very strong evidence on the impact of empowerment on development pathways<sup>17</sup>. However, very few have used theory of change pathways that relate women's empowerment to crucial nutritional issues such as child care, complementary feeding quality (see Box 2) and the women's own health and nutrition status tending to focus on other important issues such as access to and decision making for income and credit.

<sup>17</sup>Women's empowerment and nutrition: an evidence review, M Van den Bold, AR Quisumbing, S Gillespie - 2013 - papers.ssrn.com. 'while many development interventions seem to target women specifically or have women's empowerment as one of their objectives, no sufficient body of evidence overwhelmingly points to success in terms of improving women's empowerment, or improving nutrition through women's empowerment. It is clear that even though women's empowerment seems to have strong associations with improved nutrition outcomes, more research is needed to analyse the pathways that lead to improved nutrition'

## Good Practice 2: Optimum Diets.

GAIN have been using an ethnographic survey combined with an approach to design optimum diets for complementary feeding (OPTIFOODS). The Ministry of Health, Concern Worldwide, Feed the Hungry and UNICEF have used a similar approach with a tool called PROPAN. These approaches have concentrated on developing a context specific understanding of the factors affecting the utilization of higher quality foods, including micronutrients, for complementary feeding of infants (6-23 months). The optimum diets and accompanying studies provide a clear direction on what are the optimum value chains and priority fortification strategies for complementary feeding and could be adapted for women's micronutrient requirements. Yet translation of this knowledge into adaptations of production and income promoting interventions appears to be limited to BCC only. If this information and data results in adaptations of interventions aiming at increasing production and income represent a clear opportunity for significant impact on nutrition resilience and resilience for nutrition.

### c. Risk Informed Nutrition Sensitive Programming.

As argued above in order for each of the three sentinel theme areas above to influence nutrition resilience and resilience for nutrition they need to not only establish the foundation of a coherent programme nutrition sensitive programme but also should be context specific and risk informed. This would mean ensuring that a cross sectoral programme linking production and income objectives with nutrition objectives would also ensure that strategies used were season and shock sensitive.

### Example 2: Reliable Water Supply

A multi-track approach for nutrition resilience

The burden of fetching water is a major contributor to women's workload and hence to poor care practices leading to chronic nutrition deprivation. **A First Track Foundational** nutrition sensitive intervention that provides a reliable, multi-purpose water supply close to the homestead has the potential for a double impact on nutritional resilience through reducing women's workload as well as improving livestock or agricultural production. A complementary nutrition specific approach to addressing hygiene behaviour with the additional quantities of water available will contribute to reducing chronic nutrition deprivation. **A Second Track Reliability** could be a context specific approach to address the reliability of water supply through seasons and shocks using measures to ensure sustainable water services with integrated surge capacity, triggered by local capacity assessment and planning, to respond to shocks or periods of stress. The resulting reliable water supply services will contribute to reducing acute nutrition deprivation.

## 5 Measurement of Nutrition Resilience.

Using the suggested Nutrition Resilience Model above (Figure 3) it can be seen that two types of indicators will be required. The first set are 'regular' indicators that measure impact, outcome etc of the nutrition specific and sensitive programmes. Trends in stunting prevalence is a common high level impact indicator. Other examples could be the trends in acute undernutrition prevalence or micronutrient status over the period of the programme. Outcome indicators discussed above for nutrition sensitive programming would include trends in minimum acceptable diets for 6-23 month old children and for nutrition specific programming a trend of exclusive breastfeeding rates is a very common indicator.

### **Example 3: Risk Informed Complementary Feeding Interventions**

#### **Risk Informed Complementary Feeding Interventions.**

Using existing good practices an intervention could be designed for increased production of home garden vegetables that increases income for women and optimum dietary diversity and quality for complementary feeding and micronutrient intake of children aged 6-23 months. The intervention would use context specific data and information from approaches such as OPTIFOOD or PROPAN and would measure the impact on the minimum acceptable diet of the target age group and include an appreciation of the crucial role of reliable water for production and minimising women's workload. The intervention would have developed an approach that enhances its positive impacts on women's empowerment and reduces the negative impacts, such as women's income generation activities negatively affecting time for child care.

Yet the intervention will be implemented with households that experience multiple shocks throughout the year. Examples of common shocks might be the dry season, a particularly dry season or a flood. Vegetable gardening and income generation activities are affected by these shocks and the aim of resilience programming is to absorb, adapt and transform livelihoods to deal with these shocks. During these shocks elements such as water availability for irrigation, women's workload, market conditions and access are all affected. Many of these changes are predictable and local strategies for absorption, adaptation and transformation exist. Thus a resilience intervention will need to ensure that a complementary feeding friendly home garden intervention reliably achieves its impact throughout the seasons and at times of shocks.

The second set of indicators need to measure the effect of shocks on nutrition sensitive and specific impacts, outcomes etc and the objective of a nutrition resilience programme is to reduce the impact the shock has on a persons, households or systems nutritional status. (Example 2).

### **Example 2: Nutrition Resilience Indicators for Acute Nutrition Deprivation.**

**Impact Indicator** - In Graph 2 below acute undernutrition trends have improved over the last 10 years. Indicating a reduction in chronic nutrition deprivation. At the same time the variability over those 10 years remains high, with up to 15 percentage points change in one year. Using the Nutrition Resilience Model above a success for the Nutrition Resilience intervention in Mandera would be to reduce the variation in acute undernutrition prevalence from 15 percentage points to 5 percentage points over the next 5 years.

**Outcome Indicator** – As discussed above an improvement in the Minimum Acceptable Diet (MAD) of a 6-23 month old child would be a positive outcome for reducing chronic nutrition deprivation and improving nutritional status and resilience. Yet MAD will continue to fluctuate between seasons and during shocks such as floods and very dry seasons. A Nutrition Resilience monitoring system would establish a baseline range for MAD and aim to reduce the variability during the period of the intervention in order to reduce acute nutrition deprivation. Given the likelihood that interventions will probably not be able to smooth out all variability or to always ensure a full recovery back to baseline after a large shock, more sophisticated approaches to measure changes in acute nutrition deprivation and nutrition resilience could also look at the average speed and size of recovery.

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As discussed above the example of acute undernutrition in Mandera could provide an indicator for Track Two of a Nutrition Resilience approach. The GAM trend line has improved over 14 years but the variation around this trend line has worsened since 2006. Whilst it is clear that several of the seasons and years between 2006 and 2011 were exceptionally bad for nutrition status a Nutrition Resilience programme would be expected to have supported the development of households, communities and systems resilience so that whilst the mean prevalence can change over time the impact of the shocks within that time cause less variation. Using acute malnutrition trends and variability in this way is an example of an impact indicator for resilience. If minimum acceptable diet data were collected with the same frequency the same type of analysis by season and over time could be used to measure the outcome of a nutrition resilience programme.

A nutrition system and nutrition resilience is a complex system and possible positive causal pathways have multiple dimensions that usually do not respond to inputs in a linear or proportional fashion. A certain combination of inputs, activities and context may work this time or in this place but may not work or work in the same way at another time, place or context. In this situation no overarching model for programming can be described and used prior to implementation and no one evaluation can explain What Works and what doesn't and why. An internal experimental approach to learning What Works in a small step by small step approach is well adapted to such a complex social problematic. The monitoring described above will be essential but will not allow the interventions to take an experimental approach to developing Nutrition Resilience unless the knowledge management part of the Nutrition Resilience programme incorporates monitoring for iterative learning about What Works with the already established function of monitoring for compliance.

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