Strengthening nutrition within the food security agenda

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1. Introduction

With the world's population expected to reach 9 billion people by the year 2050, many are asking the question whether there will be enough food. Food security is high on the agenda for many countries and organizations that support them. The concept of food security has evolved substantially over the past decades. It encompasses dimensions related to the physical availability of food, the economic and physical access to it, the utilization of food, and the stability of these dimensions over time[1]. Aspects of food safety, nutrition, and food preferences are also incorporated into the current definition of food security: "*Food security exists when all people, at all times, have physical, social and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life*"[1]. If one reflects on the many concepts included in this definition, it is clear that food security goes far beyond the concept of hunger, or inadequate calorie intake. Yet discussions related to food security and measures of it often focus on such indicators, for example, yields of staple crops such as maize, rice or wheat and the total calories available at a population level from such crops. This is clearly essential, but insufficient to assure food security.

In this paper we will lay out the implications of including nutrition in the concept of food security and what this means for policy, programs, and how we measure progress. We will begin by a very brief summary of the nutrition situation in the Asia and Pacific Region, highlighting recent trends and remaining challenges (Section 2). This will be followed by a review of the concept of food and nutrition security, focusing on relation to the nutritional status of individuals and populations (Section 3). Finally, we will highlight the implications of including nutrition in the food security agenda and what this means for policy, programs (Section 4) and end with some conclusions and the implications of this for monitoring progress (Section 5).

Throughout the paper we will highlight three key messages vital to ensure that efforts to improve food and nutrition security and be effective to improve and sustain the nutritional status of populations. First, the focus of food and nutrition security must go beyond ensuring adequate calorie availability and intake in populations to a focus on a "nutritious diet". In addition to calories and protein, we must address sufficiency of micronutrients. Second, efforts to ensure food security must go beyond national level data to assess household and individual vulnerability. Finally, to be successful in doing this, we must work across sectors, recognizing the vital role that each sector plays in ensuring food and nutrition security for the population but at the same working together across sectors to resolve the issues that lead to populations living with food and nutrition insecurity. We present two examples of on-going efforts, Scaling-up Nutrition (SUN) and REACH Partnership, where inter-sector collaboration is making progress towards these goals.

2. Nutrition in the Asia and Pacific region: recent trends and challenges

Nutrition is important throughout the life cycle. Deficient or excessive dietary intake has implications for health and wellbeing at all stages of life, particularly during the initial years. The current intervention approaches to improve nutritional status of a population focus on the first '1000 days', targeting children from conception until two years after their birth because of the critical time they pass through for growth and development[2]. Damages that occur to children during this critical period are irreversible and result in increased susceptibility to infection, slower growth and development, reduced school performance, and development of chronic diseases because of the rapid weight gain that follows during later childhood and adolescent[3]. These lead to decreased productivity in adult life, lower earning power, and potential negative health consequences, and prevent households from escaping the vicious cycle of poverty[4]. The schematic diagram in Figure 1 shows the causes and consequences of malnutrition at different stages of life and highlights the importance of prevention across the life cycle.

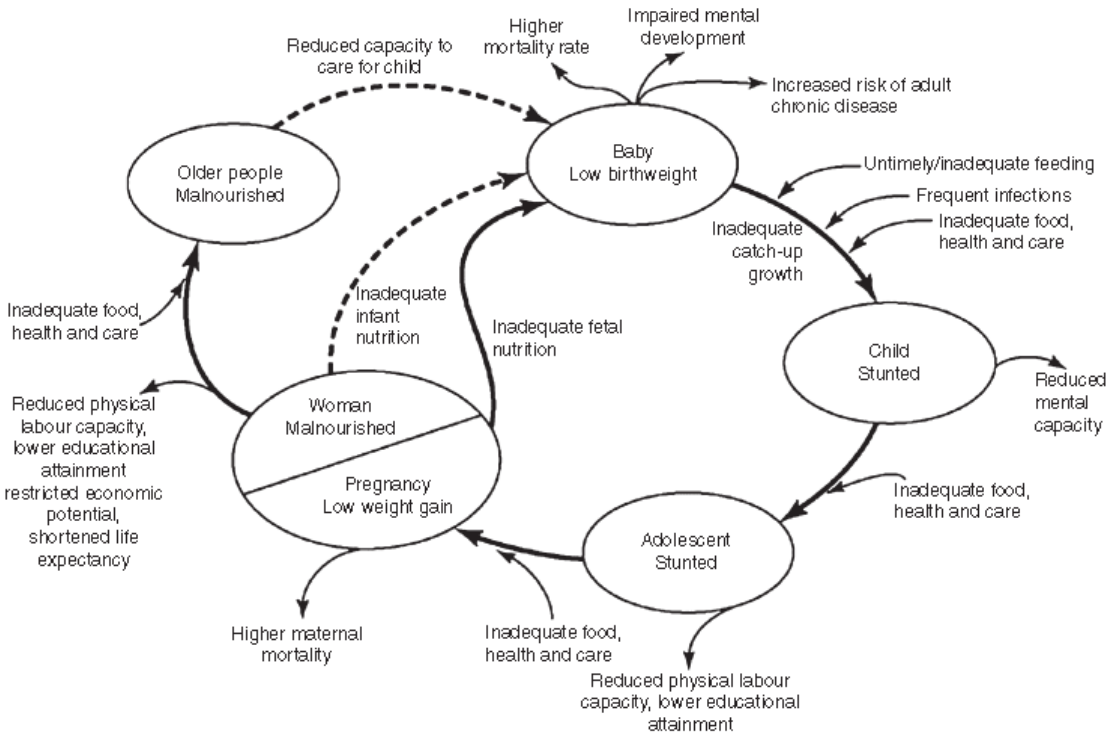

Figure 1: Causes and consequences of malnutrition throughout the life cycle[5]

Within the Asia-Pacific region problems of stunting (low height-for-age) and acute malnutrition or wasting (low weight-for-height) persist in children, usually accompanied by micronutrient (vitamin and mineral) deficiency. These undesirable nutritional conditions coexist with the growing problem of overweight and obesity among older children, adolescents, and adults, doubling the burden of malnutrition[4]. Although the prevalence of stunting in preschool children decreased across the globe over the past two decades, particularly in the developing countries from 47.1% in 1980 to 32.0% in 2005, there is still considerable disparity between regions and countries both in trends and in current nutritional status within the Asia-Pacific region[6]. While children in East Asia and the Pacific are fulfilling their growth potentials children of South Asia remain alarmingly undernourished despite an acceleration of pace in improvement in the region[7,8]. Children in Asia account for approximately 61% of the total number of stunted children in the world. The prevalence of stunting, however, varies substantially by country and within countries by socio-economic status, being highest among the poor[9]. No matter what the health and nutritional status later, children

who are growth faltered during the first two years of life do not recover and will suffer the consequences of not having achieved their growth potential throughout life (Figure 2).

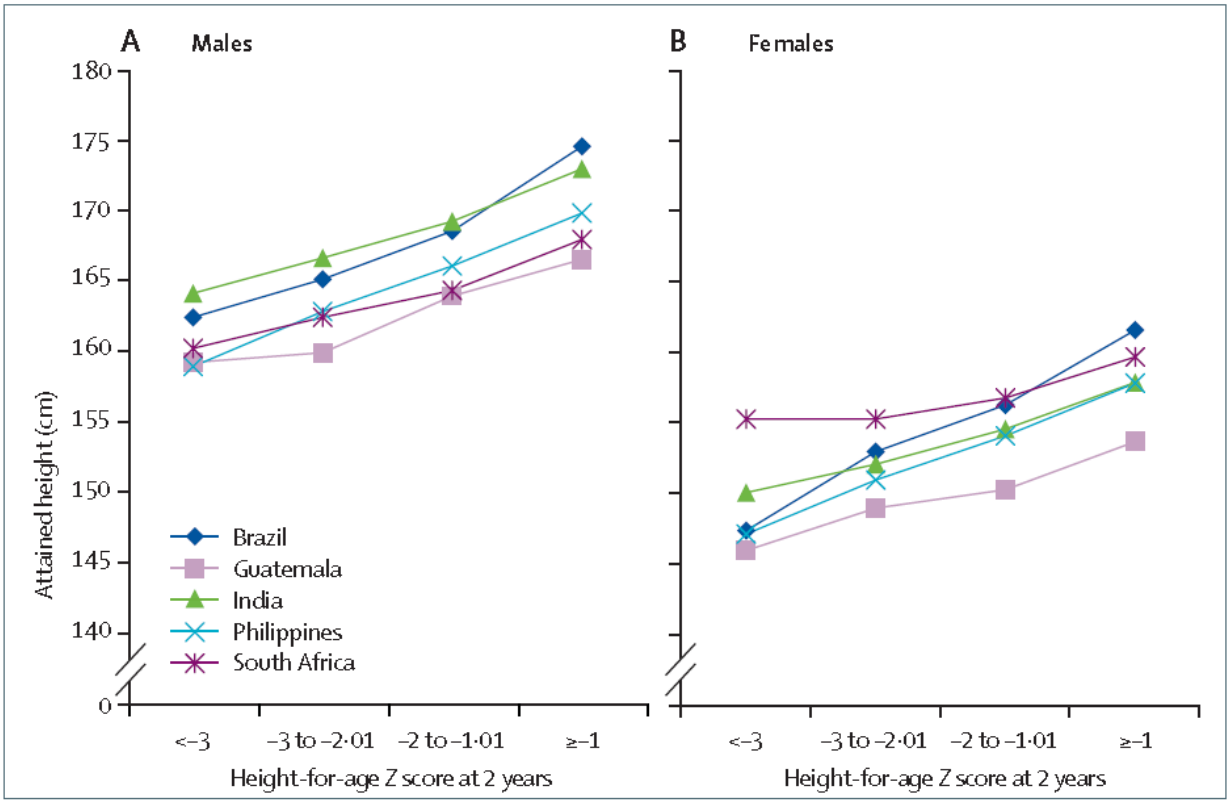

Figure 2: Relationship between standardized score of height-for-age at 2 years and attained adult height[4]

There is strong evidence showing the coexistence of stunting and overweight globally; as national income rises the prevalence of stunting falls but the prevalence of obesity rises rapidly[10,11]. The accelerated growth in the regions' economy contributes to the overweight and obesity at a disproportionate rate by altering dietary habits and activity patterns[12]. The prevalence of overweight and obesity in children less than 5 years of age in developing countries increased from 3.7% in 1990 to 6.1% in 2010, which corresponds to 6.2 million and 8.1 million children, respectively. The prevalence in Asia increased from 3.2% in 1990 to 4.9% in 2010, or 12.4 million

and 17.7 million children, respectively. Unlike the other Asian countries, the prevalence doubled in South-East Asia from 2.1% to 4.6% during the same period[13].

The double burden of malnutrition, contrary to the common understanding, often exists within the same household[12]. Children in the resource-poor setting who are likely to subsequently increase consumption of high-calorie diet in the later life, remain as the most vulnerable due the changes that has been set off by insufficient nutrition while in utero (Figure 3)[10,14]. What should alarm health professionals and governments alike is that the majority of diseases predisposed by overweight and obesity are also irreversibly triggered during the first two years of life by adversely altering the metabolic effects on blood pressure, cholesterol, and triglycerides. Every year about 2.8 million people die worldwide as a result of being overweight or obese, the majority of them from coronary heart diseases, stroke, Type-II diabetes, and perhaps cancer[15].

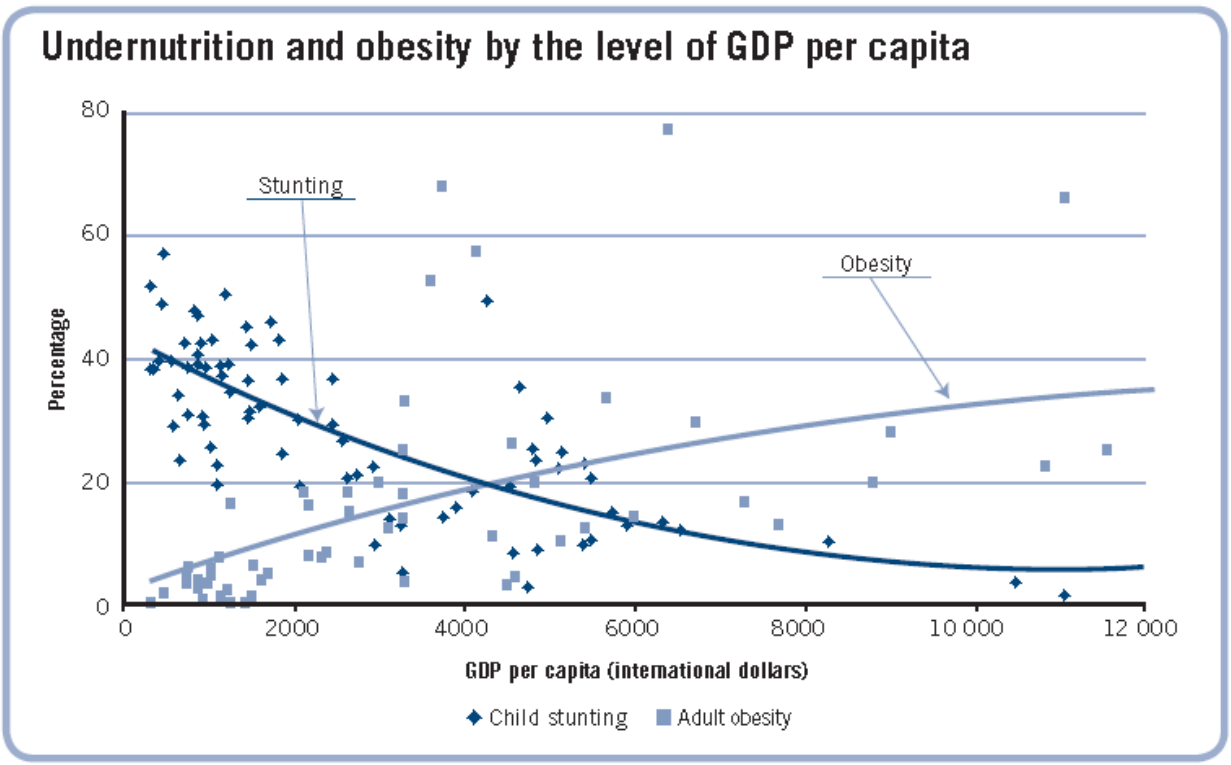

Figure 3: The global shift from childhood stunting to adult obesity as national income rises[10]

Micronutrient malnutrition is another important condition to consider within the food and nutrition security concept. The Expert Panel of Copenhagen Consensus 2012 recommended fighting malnutrition through integrated packages of micronutrient and other interventions as the number one cost-efficient way to use development funds[16]. We focus only on iron and vitamin A as a proxy to show the extent of deficiency of micronutrient in children of the Asia region; recent data for status of other micronutrients is scarce.

Iron deficiency in infant and young children has neural development consequences and delays in acquisition of motor and mental milestones which continues to middle childhood and adolescence having impact on productivity in later life[17]. Globally, an estimated 27.0% of the preschool children are affected by anemia[18]. The prevalence among the same age group is much higher in the developing world (47.4%) particularly in South Asia, reaching as high as 65.5%. India and Nepal are among the most affected with more than three-quarters of preschool children being anemic[19]. In most countries in South-East Asia, anemia is regarded as a severe public health problem by the World Health Organization[20].

Vitamin A is an essential nutrient required to maintain immune function, eye health, vision, growth and survival in human beings. Its deficiency, as indicated by low serum retinol concentration (<0.70 µmol/l) is estimated to affect 33.3% (i.e., 190 million) of the children under age 5 years globally and 15.3% (i.e., 19.1 million) of pregnant women. The prevalence is much higher in India (62.0%), the Philippines (40.1%), and Laos (44.7%). Evidence suggests that approximately 800,000 deaths are attributable to vitamin A deficiency among women and children. About a quarter (20-24%) of child mortality from measles, diarrhea, and malaria can be averted by improving vitamin A status[21].

3. Food and nutrition security: moving beyond calories

The primary focus of achieving food security is the production of sufficient food by ensuring an efficient agricultural food system, geared by a good economy and an appropriate policy that essentially takes consideration of the market dynamics[22]. Adequacy of food production, however, is insufficient to ensure that nutrition security is achieved. The focus on agricultural productivity has 2 important limitations. First, it currently only provides for adequate energy and sometimes protein

but does not assess whether agricultural systems are sufficient to ensure adequate availability and access to the diverse diet needed to ensure a healthy diet, particularly related to adequate micronutrient intake. Second, the focus on national-level data ignores the fact that even within a food secure nation, households and even individuals within households may be food insecure.

To assure food and nutrition security for all we need to have a clear understanding of the dietary gaps and nutrition problems that need to be addressed at the national, household and individual level. Energy and protein may or may not be the true dietary gaps as is commonly perceived. In fact, foods that provide energy and often protein may actually be available or consumed in excess; if this were not the case, we would not be experiencing the nutrition transition so evident in countries across the globe. Staple foods and oils can provide for the energy needs of a population (and possible protein, depending on the combination of staples), but contribute little to the intake of vitamins and minerals.

Neufeld *et al.*, in their research show that approximately 70% of adult women in Mexico are overweight or obese, even among households that are classified as moderately or severely food insecure[23]. Clearly it is not more energy that is required in these households to address their issues of food insecurity. A constellation of factors contribute to this situation including lack of consumer nutrition education, increase in household purchasing power, and the infiltration of the market with low-priced high energy-yielding food. This situation can only be worsened by a focus on the energy content of national foods supplies, assuming that "more is better"; as now, insufficient attention is being paid to the nutritional value of the food supply, beyond energy[24,25].

4. Implications for policy, programs and measuring progress

The nutritional status of a population is the overall consequence of nutrition security at the individual, household, community and national levels[26]. Current food security policies, programs and indicators focus primarily on national level availability and access without adequate consideration of whether all households within the population and whether all individuals within a household will have access to foods according to their needs. Undoubtedly, national level food security is a necessary condition for household food security and household food security is a

condition for individual food security. Existence of food security at one level however, does not necessarily translate into the others. Inequity and isolation may limit the availability and access of households to adequate food despite national level abundance. Within a household traditions and feeding practices may similarly limit the access of individuals to sufficient food according to their need, even in the absence of household food insecurity. In many settings such practices and traditions disproportionately affect women and young children. This difference in individual food and nutrition security occurs due lack of knowledge, or optimal practice, or both related to child feeding and also inadequate access to health care, gender inequality, and other intra-household power dynamics driven by social and cultural norms. The concept of nutrition security, hence, involves a broader range of factors that need to be addressed beyond food availability and access.

The policies and interventions required to ensure food and nutrition security at all three levels, national, household and individual, differ. Figure 4 illustrates how food security can exist at diverse levels and highlights the types of interventions that are required to address each. Food security at the national level can be assured by appropriate domestic agricultural policies and programs, favorable trade regulations, food aid, and domestic stocks to buffer shocks. Food however, may not be distributed equally across the regions of a country and policies and programs that ensure equitable distribution, provide for social protection, and are effective for the timely identification, targeting, and reach to those who are affected by food insecurity are vital. Differences in geographic, political, and socio-economic status contribute to this variation. Issues related to accessibility and access may also be seasonal, transitory or chronic and effective programs must have knowledge and clear understanding of this and the factors that contribute to it. At the household level, interventions that address the traditions and feeding practices that might lead to individuals within the household not receiving food according to their need are vital. It is essential to know the context in which we work and who within the household is most at risk and also how to reach them with effective solutions. For this in the black shaded area of the figure, only policies and programs that address issues across all three levels will be effective to mitigate food and nutrition insecurity.

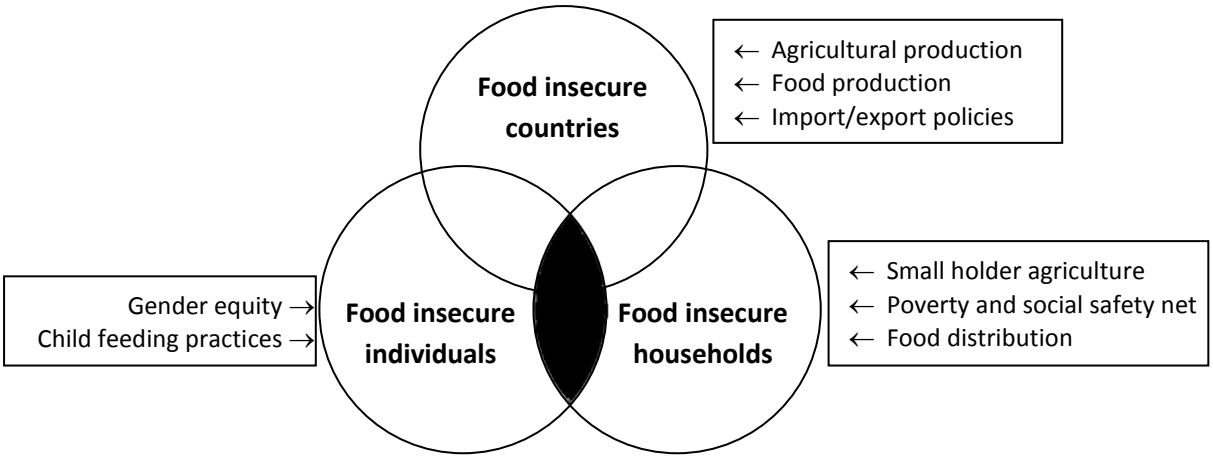

Figure 4: Factors influencing food insecurity at national, household, and individual levels

If one reflects on the multiple factors that influence food security at the national, household and individual level, it is clear that food and nutrition security is affected by health/disease, environment, and agro-food systems but more importantly, by the interconnections among them as portrayed by Hammond and Dubé (Figure 5)[22]. The authors challenge us to think beyond the individual sectors within which we work recognizing that making progress in policies and programs to adequately address food and nutrition security at all levels (national, household, individual) requires thinking and working outside of the comfort zone of our individual disciplines and understanding how factors from these many systems interact.

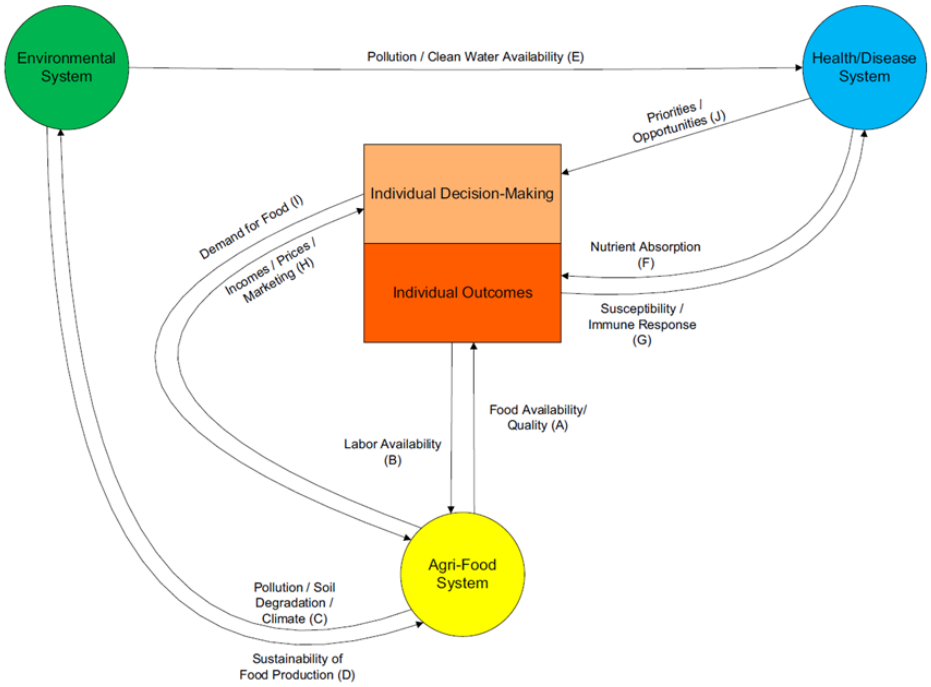

Figure 5: A system framework for food and nutrition security (from Hammond and Dubé 2012)[22]

Although there is much yet to be achieved, two examples of inter-sectoral approaches to addressing the overarching issues that lead to food and nutrition insecurity at multiple levels are currently being undertaken. The Scaling Up Nutrition (SUN) movement is a collaborative process that began in 2009 to stimulate and reinforce political commitment to nutrition among leaders of national governments and development partners alike. SUN works by promoting collaboration and coordination across sectors, improving information dissemination, stimulating research, harmonizing policy, improving monitoring and evaluation, building capacity of individuals and institutions, and garnering long-term governmental commitment[27].

The SUN movement has developed a framework for action that puts into perspective the many types of interventions required to address food and nutrition security at multiple levels. *Nutrition specific* interventions (Figure 6) address the direct determinants of nutritional status and includes those that would lead to individuals within a household receiving the food in accordance with their needs. This would include those that address issues of intra-household food distribution and ensure the access and utilization of food and micronutrient supplements and/or fortified foods where access to a diverse diet to meet all needs might be difficult. Social safety nets, small holder

agricultural and other programs that aim to increase purchasing power and create demand for food that are adequate in nutritious value would be included among those referring to as *nutrition sensitive* interventions. These address the underlying causes of poor nutrition. Long-term investments are also needed to ensure agricultural crop diversity, poverty and other basic causes of poor nutrition. Effective programs to address food and nutrition security at the household and individual level simultaneously can include nutrition specific interventions, such as education for child feeding with those that favor the availability of nutritious foods within the home, for example, small holder agriculture.

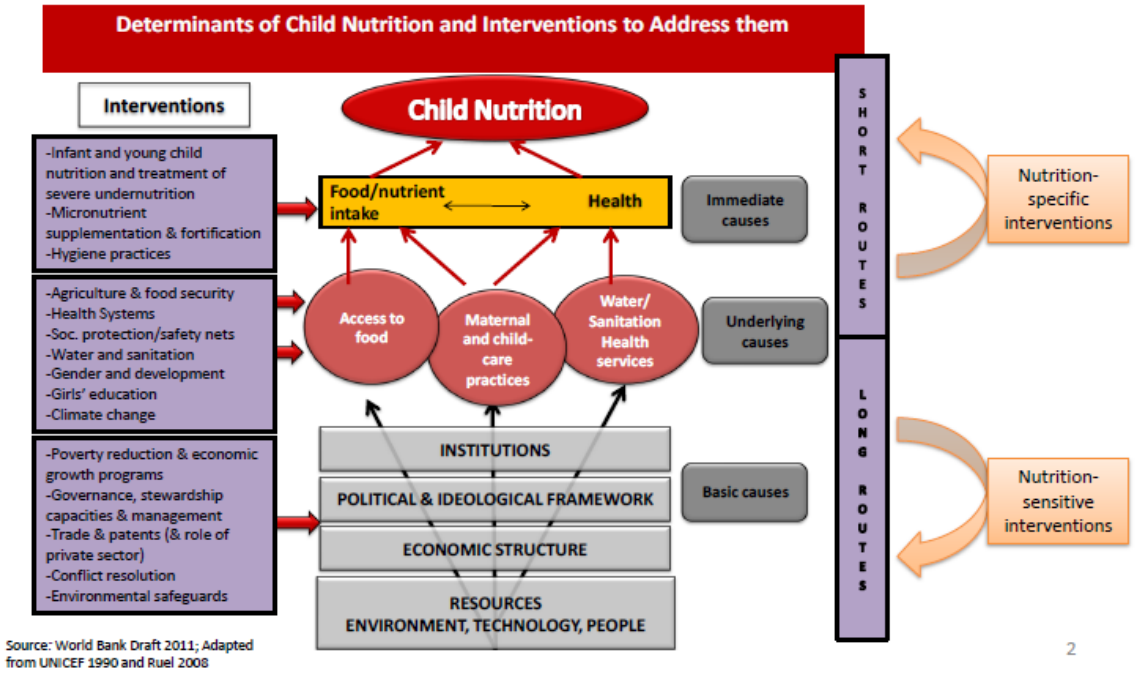

Figure 6. The determinants of poor nutrition and potential interventions to address them[28]

The foundation of the REACH activities is a government-led partnership of actors in each country who are working to improve the nutritional status of the population. The overarching goal is to establish a forum for national governments, the UN, civil societies and private sectors to work together to build capacity, share experiences, and help each other to improve programming and achieve desired outcomes to accelerate countries' progress on MDG-1[29]. REACH supports national

governments to mobilize partners at the country level to analyze country readiness, willingness and ability to scale up proven interventions. It supports the government-led development of detailed country-level action plans, including selection and prioritization of the appropriate mix of interventions, defining delivery strategies, mapping, costing, and organizing demand for implementation at scale, matching resource supply and demand at country level, and mobilization of resources to fill gaps. It further supports at the level of implementation by creating synergies among operations and delivery channels and changes that are required to act at scale while also assisting government-led processes for tracking progress and evaluating results.

5. Conclusions and implications for monitoring progress

Appropriate and timely information is vital to measure progress towards food and nutrition security and inform actions required to accelerate it. Estimates of energy and protein availability at national level is certainly essential but could never be sufficient to ensure food and nutrition security for countries, households or individuals. To do this, we must assess and track dietary adequacy beyond energy and protein not only at the national but also at the household and individual level. This could be done by including within essential food and nutrition security indicators, simple measures of dietary diversity. Finally, we cannot adequately address food and nutrition security without a strong focus on equity within and across populations and households. To do this, again, we need information to know the challenges that programs must overcome and the types of actions required to do this. Again, this implies ensure that we have information available disaggregated by regions, economic groups and other characteristics that may put populations at increased risk for food and nutrition security.

6. References

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