

# Strategic Review of **FOOD SECURITY AND NUTRITION IN BANGLADESH**

S. R. Osmani

*Team Leader*

Akhter Ahmed

Tahmeed Ahmed

Naomi Hossain

Saleemul Huq

Asif Shahan



September 2016, Dhaka

**An Independent Review commissioned by the World Food Programme (WFP)**

(The authors gratefully acknowledge the generosity with which many agencies and individuals shared their knowledge and wisdom through both discussions in meetings and written comments on earlier drafts. The authors are solely responsible for the contents of the review and the views expressed in it; no part of it can be attributed to either WFP or the institutions with which the authors are affiliated.)

© World Food Programme, 2016

**ISBN:** 978-984-34-1041-2

Designed by Mohammad Inamul Shahriar

# Strategic Review of **FOOD SECURITY AND NUTRITION IN BANGLADESH**

S. R. Osmani (Team Leader),  
Akhter Ahmed, Tahmeed Ahmed,  
Naomi Hossain, Saleemul Huq, Asif Shahan



# CONTENTS

<b>ACRONYMS AND ABBREVIATIONS</b>	iv
<b>EXECUTIVE SUMMARY</b>	6
Introduction	6
Progress to Date	6
Remaining Concerns	7
Emerging Concerns	8
Strategies for Dealing with Food Security and Nutrition Challenges	9
Governance Issues for Food Security and Nutrition	16
Concluding Observations	16
Recommendations	17
<b>STRATEGIC REVIEW OF FOOD SECURITY AND NUTRITION IN BANGLADESH</b>	19
Introduction	19
Progress to Date: Food Security	20
Progress to Date: Nutritional Outcomes	23
Remaining Concerns: Food Security	27
Remaining Concerns: The State of Nutrition	30
Emerging Concerns	33
Strategies for Dealing with Food Security and Nutrition	39
Governance Issues for Food Security and Nutrition	59
Concluding Observations	64
Recommendations	66
<b>REFERENCES</b>	71

# ACRONYMS AND ABBREVIATIONS

ANC	antenatal care	DGHS	Directorate General of Health Services
ANGeL	Agriculture, Nutrition, and Gender Linkages	DHS	Demographic and Health Survey
BBS	Bangladesh Bureau of Statistics	E-HFP	enhanced homestead food production
BCC	behavioural change communication	FANTA	Food and Nutrition Technical Assistance
BCCSAP	Bangladesh Climate Change Strategy and Action Plan	FAO	Food and Agricultural Organization of the United Nations
BCRF	Bangladesh Climate Resilience Fund	FCS	Food Consumption Score
BCTF	Bangladesh Climate Trust Fund	FDS	Food Deficit Scale
BIHS	Bangladesh Integrated Household Survey	FPMU	Food Policy Monitoring Unit
BINP	Bangladesh Integrated Nutrition Project	FSNSP	Food Security and Nutrition Surveillance Project
BKB	Bangladesh Krishi Bank	GDP	gross domestic product
BMI	body mass index	GMP	growth monitoring and promotion
BNNC	Bangladesh National Nutrition Council	HFIAS	Household Food Insecurity Access Scale
BRAC	Bangladesh Rural Advancement Committee	HIES	Household Income and Expenditure Survey
BRRI	Bangladesh Rice Research Institute	HKI	Helen Keller International
CBN	cost of basic needs	HPNSDP	Health, Population and Nutrition Sector Development Programme
CC	community clinic	ICDDR	International Centre for Diarrhoeal Disease Research, Bangladesh
CCCP	Community Climate Change Project	ICESCR	International Covenant on Economic, Social and Cultural Rights
CED	chronic energy deficiency	IDA	International Development Association
CIP	Country Investment Plan		
CLTS	community-led total sanitation		
CNCD	child nutrition and cognitive development		
CUS	Centre for Urban Studies		
DES	dietary energy supply		

IFAD	International Fund for Agricultural Development	OFSP	orange-fleshed sweet potato
IFPRI	International Food Policy Research Institute	PFDS	Public Food Distribution System
InM	Institute of Microfinance	PHI	Poverty and Human Development Initiative
ISPP	Income Support Program for the Poorest	PKSF	Palli Karma Sahayak Foundation
IUGR	intrauterine growth retardation	RAKUB	Rajshahi Krishi Unnayan Bank
IYCF	infant and young child feeding	RUSF	ready-to-use supplementary foods
JPGSPH	James P. Grant School of Public Health	SAM	severe acute malnutrition
LDC	least developed countries	SDG	Sustainable Development Goals
LGRD	local government and rural development	SF	School Feeding
MAD	minimum acceptable diet	SGSP	Strengthening Government Social Protection Systems for the Poor
MAM	moderate acute malnutrition	SHOUHARDO	Strengthening Household Ability to Respond to Development Opportunities
MFI	microfinance institutions	SUN	Scaling Up Nutrition
MHC	Mahbub ul Haq Centre	TMRI	Transfer Modality Research Initiative
MICS	Multiple Indicators Cluster Survey	UNDP	United Nations Development Programme
MOF	Ministry of Food	UNEP	United Nations Environment Programme
MoLGRD&C	Ministry of Local Government, Rural Development, and Cooperatives	UNICEF	United Nations Children's Fund
MoWCA	Ministry of Women and Children Affairs	USAID	United States Agency for International Development
MRA	Microfinance Regulatory Authority	VGD	Vulnerable Group Development
NGO	nongovernmental organization	VGf	Vulnerable Group Feeding
NIPORT	National Institute of Population Research and Training	WASH	water, sanitation and hygiene
NNP	National Nutrition Programme	WEAI	Women's Empowerment in Agriculture Index
NNS	National Nutrition Services	WFP	World Food Programme
NPA	National Plan of Action	WHA	World Health Assembly
NPAN	National Plan of Action for Nutrition	WHO	World Health Organization
NSSS	National Social Security Strategy		

# EXECUTIVE SUMMARY

## INTRODUCTION

Food security and adequate nutrition are among the basic needs of every human being. Their fundamental importance has been underscored by the world community through the *International Covenant on Economic, Social and Cultural Rights (ICESCR)*, which enshrines the right to food and the right to adequate nutrition, as among the inalienable rights that every human person can claim.

It also makes economic sense to pay attention to food security and nutrition. No country can expect to build a thriving economy on the backs of hungry and undernourished people. According to a joint study of the Government of Bangladesh and the United States Agency for International Development (USAID), undernutrition already costs Bangladesh more than US\$1 billion in lost productivity every year and even more in health costs. Thus, if Bangladesh aspires to be a developed country by 2041 (as the government has proclaimed), it must commit to investing heavily and effectively in food security and nutrition. This strategic review is intended to strengthen the efforts of the government in this regard. In so doing, the review takes a medium-term perspective consistent with the timeframe of the Sustainable Development Goals (SDGs), which are meant to be achieved by the year 2030.

## PROGRESS TO DATE

Bangladesh has come a long way from being a chronically food deficit country in the 1970s. In the last three decades, even as its population has more than doubled, food production has more than kept pace with population growth. There are still important shortfalls in the production of certain non-cereal crops as well as some non-crop foods relative to demand, but overall it is fair to say that Bangladesh has attained food self-sufficiency at the aggregate level—at least in terms of calorie availability. Thus, per capita calorie intake in 2010 was 2,318 kilocalories (kcal) per day, which was comfortably higher than the estimated minimum requirement of 2,122 kcal per day.

Alongside availability, people's access to food has also improved, including people in the poorer segments of the population. This is evident from rapid decline in poverty, which has fallen from 56.6 percent in 1991–92 to 31.5 percent in 2010. Data on other economic indicators, such as real wages, suggest that the purchasing power of the poorer segments of the population has continued to improve in more recent years.

The other dimension of food security—namely, food utilization—is closely related to nutritional outcomes, and there has been significant progress on that front as well. Until the mid-1990s, Bangladesh's stunting rates, along with those of the rest of South Asia, were significantly higher than those of Sub-Saharan Africa, where people were both poorer and less educated than in South Asia. UNICEF christened this anomaly as the "Asian Enigma." Since then, Bangladesh has achieved a great deal by way of improving the state of nutrition. A recent cross-country study has concluded that from 1997 to 2007 Bangladesh had achieved one of the fastest prolonged reductions in child undernutrition in recorded history. The rate of stunting (low height-for-age) among children under five, which reflects the state of chronic undernutrition, has decreased from 55 percent in 1996–97 to 36 percent in 2014. Maternal undernutrition, as measured by "low" body mass index (BMI) has also declined sharply from 52 percent to 17 percent during the same period.

A large number of factors have contributed to the observed improvement in nutritional status. Careful quantitative analyses have identified the following major factors: growth of income and wealth, education (especially maternal education), expansion of healthcare coverage, and improved sanitation. However, taken together these factors explain only about half of the observed improvement, which implies that there are other factors that remain to be clearly identified. Various sources of evidence suggest that women's empowerment is one of them.

## REMAINING CONCERNS

Despite the impressive gains achieved over the last few decades, a number of concerns still remain. First of all, an alarmingly large number of people still remain food insecure and hungry. Using a composite index of several dimensions of food insecurity, a recent study found that one-quarter of the population was food insecure in 2014, which amounts to 40 million people in absolute number. Among them, some 11 million people were found to suffer from acute hunger. Even larger numbers remain vulnerable to food insecurity in the face of periodic shocks. Furthermore, progress has been uneven across population groups—poorer groups have gained more slowly than richer groups, and women still bear the brunt when there is not enough food for the family. A further concern arises from recent slowdown in agricultural growth: in the past five years, agriculture has only grown at half the rate of the preceding five years.

A final remaining concern with food security is that, among the general population, very little improvement has occurred in the quality and diversity of diet. Cereals still occupy a preeminent place in the diet; their contribution to total energy supply has fallen very slowly—from 79.6 percent in 1995–96 to 77 percent in 2009–11.

There are several concerns on the nutritional front as well. Stunting still afflicts more than one-third of children; acute malnutrition (or “wasting”) has remained worryingly stubborn over a long period; and serious inequalities exist in nutritional outcomes between the rich and the poor, with the degree of inequality seeming to increase over time. According to the *Global Hunger Index*, an internationally comparable composite indicator of nutritional status, Bangladesh’s situation was found to be in the “serious” category in 2014.

At the current rate of progress, Bangladesh will fail to meet several targets it has committed itself to. For example, stunting will need to decline by 5.3 percent per year if the government’s target for the year 2021 is to be achieved, but the rate at which it has actually declined in the recent past is only about 2.5 percent. According to the *2014 Global Nutrition Report*, Bangladesh is not on course for meeting any of the 2025 targets agreed upon at the World Health Assembly in 2012.

## **EMERGING CONCERNS**

On top of the challenges that already remain, new concerns with food security and nutrition are emerging as a result of the socioeconomic and climatic evolution that the country is undergoing. In particular, increasing pace of urbanization and the ongoing process of climate change have some worrying implications for the future trend of food security and nutrition.

The preponderance of slums, where the poorest urban people live, makes for extreme polarization in urban life, with some of the poorest and some of the richest people in the country living side by side. According to the Bangladesh Urban Health Survey of 2013, as many as 50 percent of the children in urban slums were stunted, in comparison with 33 percent among the residents of non-slum urban areas.

Some new problems are emerging in the wake of urbanization, which although not unique to urban life, are especially relevant to it. These are (a) lack of food safety, (b) increasing obesity, especially among women, and (c) increasing difficulty of combining the pursuit of work outside the home with caregiving, which is essential for the nutritional well-being of children.

The ongoing pattern of climate change also has ominous consequences for food security and nutrition. It has been estimated that, as a result of climate change, crop production might be reduced by 30 percent by the end of the century. In addition, rising carbon dioxide emission is going to make Bangladesh’s staple food crops less nutritious. About half of the population already suffer from iron and zinc deficiencies, which cause serious

damage to health and nutrition, especially for small children and pregnant women. There is a genuine concern that rising carbon dioxide in the atmosphere will exacerbate the problem of micronutrient deficiencies further.

Increased salinity in the coastal zones might also alter the micronutrient content of foods, including rice, which may become deficient in zinc and other micronutrients. Furthermore, one can expect to witness increased prevalence of preeclampsia in pregnant women due to hypertension caused by intake of saline water, which, in turn, would aggravate the problem of low birthweight and malnutrition of babies in the coastal zones.

## **STRATEGIES FOR DEALING WITH FOOD SECURITY AND NUTRITION CHALLENGES**

The battle against the challenges with food security and nutrition will have to be fought on many fronts at the same time. In general, anything that promotes broad-based or inclusive growth, thereby raising the real incomes of the poor, will help because it will improve access to more and better food for those who need it the most. In this sense, there is considerable overlap between policies needed for inclusive growth and policies needed for ensuring food security and better nutrition. However, this strategic review abstains from launching into a full-fledged discussion of policies needed for inclusive growth, on the presumption that the broad contours of such a policy framework are by now relatively well understood. Instead, the review chooses to focus on some aspects of public policy that are especially relevant for food security and nutrition, in all their dimensions. These are discussed below under three broad groupings: agriculture, social protection, and nutrition-specific interventions.

### **Creating a More Diversified, Resilient, and Nutrition-Sensitive Agriculture**

A flourishing agriculture can play an essential role in improving food security and nutrition through several pathways: (a) *the production pathway*: farming practices can improve the quantity, diversity and quality of foods; (b) *the income pathway*: since agriculture and related activities still provide a substantial part of rural income, a flourishing agriculture will improve the rural poor's access to food; (c) *the market pathway*: rapid growth in food production can help improve non-producers' access too by keeping the price of food affordable, and (d) *the public food distribution system (PFDS) pathway*: a strong public distribution system is needed for stabilizing foodgrain prices and bolstering the social safety net—both of which are essential for improving food security, and a flourishing agriculture sector is needed to feed the public distribution system without upsetting the normal functioning of the market.

Several features of the necessary agricultural strategy may be highlighted. First, agriculture must be encouraged to grow with a diversified production structure. By enabling the production of more high-value products, diversification will raise the incomes of smallholder farmers and thus improve the access dimension of their food security. At

the same time, diversification will also improve the nutrition dimension for the population in general by increasing the availability of products rich in micronutrients. The problem, however, is that farmers face a number of constraints in their efforts to diversify, which is where the policy interventions need to focus. These constraints include lack of access to credit, technology, and the market on one hand and price instability of high-value products (because of a thin market) on the other.

The government has already established policies and programmes for providing agricultural credit and extension services for the adoption of better technology and farming practices. It is well-known, however, that these programmes, as they are currently being implemented, primarily serve the “better off” farmers and leave the large majority of smallholder farmers inadequately covered. The same problem exists with respect to agricultural credit access. Serious attention will have to be paid towards remedying the existing bias against smallholders.

Vertically integrated value chains will also help, by reducing the risk of diversification. An example is contract farming, in which the farmer supplies agreed upon quantities to an agribusiness firm, usually at a price negotiated in advance. Agribusiness firms can also support farmers through a variety of services, such as input supply, extension advice, and transportation of produce. Some private sector initiatives in this regard are already evident; the public sector should complement them by ensuring an enabling policy environment.

The government should also encourage technological research on the development of a range of products rich in micronutrients. Bangladesh is in fact the first country in the world to develop a rice variety biologically fortified with zinc—a micronutrient that can help reduce child mortality and stunting rates by reducing the prevalence of diarrhoea and pneumonia. Similar efforts should be intensified.

Another aspect of the agricultural strategy that needs special emphasis is women’s empowerment. Recent research has produced robust evidence that there are at least two ways in which women’s empowerment can help develop a nutrition-sensitive agriculture. First, when women are empowered, farming households are more likely to opt for greater diversity of production. Second, women’s empowerment, when combined with behavioural change communication (BCC) on nutrition also increases the likelihood that farmers who produce diversified products will also consume a diversified diet instead of selling the micronutrient-rich products for the sake of higher income.

Based on these research findings, the Ministry of Agriculture is currently implementing a pilot project called “Orienting Agriculture towards Improved Nutrition and Women’s Empowerment.” The project seeks to draw on the large agricultural extension network that already exists in the country, and attempts to “top-up” its current portfolio with nutrition activities and messages. There are, however, reasons to be sceptical of the strategy of relying exclusively on extension workers as the change agents. In rural Bangladesh,

the nongovernmental organization (NGO) community has a proven track record of acting successfully as behavioural change agent, especially with regard to women's empowerment. It seems wasteful not to make use of this readily available asset, especially for a task that it is eminently well-suited for.

A final element of agricultural strategy that needs emphasis is its ability to acquire resilience against the impacts of climate change. Resilience must be achieved through both choice of crops and use of appropriate farming practices. No less important, however, is the recognition that efforts must go beyond agriculture to embrace all aspects of rural life, by fostering community-based adaptation to climate change. The NGO community should once again be viewed as an ally of the government in this enterprise.

### **Social Protection**

Social protection and safety net programmes are potentially an important vehicle for promoting food security and nutrition. Bangladesh possesses significant experience in providing assistance to the poor through social protection programmes. Currently, public spending on social protection amounts to around 2.2 percent of GDP, accounting for 12 percent of annual government budget. The proportion of households covered by the safety net programmes has increased from 13 percent in 2005 to 24 percent in 2010.

Despite increased coverage, however, social protection in Bangladesh still faces the following serious shortcomings: (a) its impact is diluted owing partly to very thin spreading of resources and partly to diversion of resources to non-poor households, (b) it fails in one of its most crucial functions, namely, to enable poor households to cope with shocks better, and (c) it bypasses the urban poor.

In recognition of these shortcomings, the Government of Bangladesh has set out the guiding principles for its future interventions for social protection in a new *National Social Security Strategy (NSSS)*. In implementing this strategy, priority will have to be given to those interventions most capable of reaching those in greatest need and have the greatest scope for being nutrition-sensitive. Some illustrations are provided below by discussing four major types of interventions: the Public Food Distribution System (PFDS), programmes for poor and vulnerable women, a safety net for small children, and the School Feeding Programme.

The Public Food Distribution System (PFDS) should continue to remain a core component of the social protection system. In the early 2000s, a presumption was growing in favour of watering down the PFDS, partly on the grounds of cost and partly on the assumption that a liberalized food market should be able to deal effectively with price instability. However, in the aftermath of the food price shocks of 2008 and 2011, it has been recognised that in an increasingly globalized and unstable food market, which is going to become even more unstable due to climatic shocks, the market mechanism may fail to smooth out severe fluctuations in price. PFDS can play a crucial role in complementing the market.

A new concern for PFDS has recently arisen from the proposal put forward by the new NSSS to shift away from food transfers to cash transfers on efficiency grounds. Such a move will jeopardise the economic viability of PFDS as it might be saddled with huge stocks that cannot be unloaded without serious repercussions on the market. Since Bangladesh will have to maintain the PFDS in the foreseeable future to deal with unstable food markets, the safety net system ought to maintain a sensible mix of food and cash transfers.

Furthermore, PFDS should be made more nutrition-sensitive, by strengthening the current efforts to offer micronutrient-fortified foods through both open-market operations and safety-net outlets. International evidence suggests that this is a relatively cheap and effective way to fight micronutrient deficiency and related morbidities.

Support for poor and vulnerable women should constitute another core component of the social protection system. The flagship programme in this sphere is the well-known Vulnerable Group Development (VGD) programme, which originated in the mid-1970s mainly as a relief programme for poor and vulnerable women but has since transformed itself into an instrument for empowering such women by improving their income-earning capacity. In the past, VGD was widely criticised for targeting failures and other inefficiencies. However, under the donor-funded *Strengthening Government Social Protection Systems for the Poor* (SGSP) programme, VGD is being revitalized and enhanced. As part of this process, a significant effort to bolster the government's implementation capacity was started. At the same time, targeting, efficiency, effectiveness and accountability of the programme are being improved. Currently, almost 750,000 women are being served by VGD.

The aim of the current version of the programme is to enable the VGD women, with the help of a cash grant for investment and training, to earn enough for themselves and their families so that they can move out of extreme poverty and food insecurity by the end of the two-year programme cycle. The programme is also being rendered more nutrition-sensitive by adding nutrition-focused approaches, such as BCC on nutrition and providing post-harvest fortified rice. As such, the new version of VGD has great potential to elicit sustained improvement in the food security of poor vulnerable women and their families while simultaneously making a contribution to their nutritional outcomes.

As regards the safety net for children, the programmes with the greatest coverage at present are Primary and Secondary Student Stipends. As of 2015, around 13 million children received stipends, covering around 24 percent of primary school children and 17 percent of secondary school children. However, the transfer level of the stipends is low and has been falling in real terms in recent years. The NSSS, therefore, proposes to make two significant changes to the stipend schemes: (1) extend the coverage to the poorer half of the student body in primary and secondary schools, with no distinction by gender; and (2) increase the amount of transfer while protecting its real value by indexing it to inflation.

In order to make the income transfers more nutrition-sensitive, however, it is necessary to target very young children—especially, those in the first two years of life, when the impact on lifelong nutritional outcomes is likely to be the strongest. Recognising this, the government has decided to prioritise support to young children up to the age of four years, through a large extension of current support by establishing a ground-breaking scheme known as the Child Benefit Programme.

For reasons not entirely clear, the programme has not yet been developed, let alone implemented. Meanwhile, the World Bank has offered to provide support for a programme called the Income Support Programme for the Poorest (ISPP), which contains some of the basic elements of the proposed Child Benefit Programme. There is a danger, however, that the priority of focusing on the first 1,000 days of an infant's life might be lost, or at least diluted, if the age cut-off line is set at four years (as in the original proposal for the Child Benefit Programme) or five years (as in the ISPP). This issue of priority should be given due consideration while planning the phasing of the programme.

For older children, the major intervention is the School Feeding (SF) programme, targeted to poor and vulnerable areas. In this programme, a packet of fortified biscuits (75 grams) is supplied to all students (up to the primary level) six days a week or 240 school days a year. The packet of biscuits meets 67 percent of a child's daily micronutrient requirements, and it is complemented by a range of other services designed to improve the health and nutrition awareness of both the children and their families.

It is sometimes contended that whatever good such a programme might do for children's education, it cannot be counted as a nutrition-sensitive intervention because when the children go to school they are already well past the 1,000-day window beyond which stunting can no longer be reversed. But this argument ignores the fact that stunting is not the only nutritional problem afflicting the children of Bangladesh. Some 2.2 million children under five suffer from acute malnutrition (wasting), and evidence from Bangladesh shows that school feeding can be highly effective in reducing the problem. Even with regard to stunting, international evidence shows that school feeding programmes can reverse it to some extent. One must also recognise the existence of an intergenerational mechanism through which SF might reduce stunting—namely that better educated parents are more likely to ensure better nutritional outcomes for their children. These are all very good reasons for substantially scaling up SF programmes.

Attention also needs to be paid to the modality of the SF programme. The government is considering the option of moving partially or wholly to the provision of cooked meals in the schools, based on locally sourced ingredients. In addition to being more wholesome than biscuits, cooked meal have the added advantage of opening up local value chains for diversified production of food (mainly vegetables, which are often produced by women), as demonstrated in two WFP pilot projects in Bangladesh.

## Nutrition-Specific Interventions

Strategies for overcoming the burden of undernutrition must begin from the premise that the aetiology of undernutrition is complex and multidimensional. Households' access to resources is an important determinant of nutritional status, but there are many other forces at work as well. This is evident from the facts that (a) some of the lowest rates of stunting in Bangladesh prevail in regions with some of the highest rates of poverty while some of the highest rates of stunting are found in regions with the lowest rates of poverty, and (b) the problem of undernutrition is not confined to the poorest segments of the population. In fact, about one-fifth of the children under five in the richest wealth quintile were found to suffer from stunting in 2014. Therefore, if the burden of undernutrition is to be reduced faster than in the past, it is essential to look beyond economic and educational progress to first identify other drivers of nutritional status and then to act on them.

One aspect that deserves special attention in this context is the persistently high prevalence of low birthweight since it is well-established that low birthweight babies tend to be more susceptible to stunting in later life. For the past decade, the prevalence of low birthweight in Bangladesh has hovered around 36–37 percent, which is high by international standards. It is notable that neither education nor economic status makes a great deal of difference in this regard. Even among mothers with higher level of education (secondary completed), 32.8 percent of babies are born with low birthweight; among the wealthiest quintile, the proportion is 34.1 percent. The problem of low birthweight is thus both persistent and pervasive. Any strategy for achieving rapid improvement in nutritional status must, therefore, start by addressing this problem.

The main reason for low birthweight in Bangladesh is undernourishment of the foetus, which, in turn, is caused by undernourishment of the mother. It is important to realize, however, that what matters here is not just the nutrition and healthcare the mother receives during pregnancy. The entire biological history of the mother matters—starting from her own birthweight at the beginning of her life, how she was fed and taken care of as a child, her physical stature as an adult, at what stage in life she started childbearing, and the quality of antenatal care and nutrition she received during pregnancy. Actions are required on all these fronts if the prevalence of low birthweight is to be reduced.

A matter of particular concern is the persistently high rate of teenage pregnancy, which is an important cause of low birthweight. It is alarming to note that the proportion of 15–19-year-old young women already bearing children has fallen only marginally in the past two decades—from 33 percent in 1993–94 to 30.8 percent in 2014. A massive social campaign, along with more focussed family planning advice, is clearly needed to bring about a change in behaviour in this respect.

The problem of low birthweight is aggravated by a lack of access to diets of adequate nutritional quantity and quality. More than half the adolescent girls and women of

reproductive age eat diets that are inadequate in both macro- and micronutrients. Even among the richest quintile, nearly one-third of women have inadequate diets. This does not portend well for the nutritional outcomes of either mothers or their children.

Even the children who are born with normal weight often suffer from undernutrition owing to poor feeding practices when they are most vulnerable. According to the recommended infant and young child feeding (IYCF) practices, newborn infants should be exclusively breastfed for the first six months of life but soon thereafter they must be introduced gradually to complementary foods of adequate quantity and quality. These norms of feeding fail to be practised in Bangladesh on a massive scale. Close to half the children are still not exclusively breastfed in the first six months of their lives, 18 percent of children receive complementary foods too early, and nearly 40 percent too late. Even when complementary foods are introduced, they are not given in appropriate amounts or in the right manner, resulting in large-scale micronutrient deficiencies.

The problem is both economic and cultural. The economic problem can be mitigated by promoting agricultural diversification so that a variety of non-cereal foods can become readily available and by ensuring widespread availability of micronutrient-fortified complementary foods at affordable prices. The cultural problem needs to be addressed by adopting nutritional interventions that include a BCC component on nutrition and early childhood development.

The nutritional status of children and adults alike is also influenced massively by the quality of water, sanitation, and hygiene—a group of factors that has collectively come to be known as WASH. Among the three components of WASH, Bangladesh has made the most progress in sanitation, followed by access to safe drinking water (albeit spoiled, to some extent, by arsenic contamination), but remains far below the desired level in terms of personal hygiene. A recent study has found that only 27 percent of caregivers (of children) use appropriate handwashing behaviour; shockingly, even among the top wealth quintile, only 35 percent of caregivers were found to display appropriate handwashing behaviour. Clearly, a key intervention at household and community level is a massive campaign for the promotion of handwashing with soap.

Finally, serious attention must be paid to the problem of acute malnutrition (wasting) among children under five, which has shown very little improvement over the years. The Government of Bangladesh has an explicit policy of treating both moderate and severe acute malnutrition at the health centres and in the community, but evidently the efforts have not been effective enough to date. For those who are already in the category of severe acute malnutrition (SAM), and are thus at a very high risk of dying, appropriate therapeutic treatment would be needed, but currently access to such treatment is severely limited.

## **GOVERNANCE ISSUES FOR FOOD SECURITY AND NUTRITION**

As food security has been a persistent concern in Bangladesh ever since its emergence as an independent nation, the governance structure for managing food security is relatively well advanced. By contrast, since nutrition began to emerge as a matter of public concern only in the 1990s, the related governance structure is much less advanced and is still evolving. Furthermore, since food security and nutrition are interlinked phenomena, their respective governance should also ideally occur through an integrated framework. But, the actual practice falls short of the ideal. A major problem relates to interministerial and interdepartmental coordination of a plethora of nutrition-related interventions. At the national level, at least eight line ministries of the Government of Bangladesh have mandates about nutrition, and it has remained a challenge to ensure collaboration between these ministries.

The reform of nutrition governance would have to focus on two ends of the governance spectrum. At the top, strong and effective coordination will be needed both in order to avoid unnecessary overlaps and to extract possible synergies between various types of interventions. The new National Nutrition Policy marks an important step in this direction by making the Ministry of Health and Family Welfare (MoHFW) the lead coordinating agency among the ministries and by reviving the Bangladesh National Nutrition Council (BNNC) as the overarching supra-ministerial coordinating body.

At the bottom—that is, at the field level, where services are actually delivered—a couple of issues deserve emphasis. First, community clinics must remain the lynchpin of any future system of nutrition-service delivery, but their operation must be made more effective by enhancing the skill level of staff, who had previously dealt with health and family planning much more than nutrition. Second, as part of the process of strengthening the community clinics, serious attempt must be made to harness the expertise and specific skills of the many NGOs that are serving the rural people throughout the length and breadth of the country.

## **CONCLUDING OBSERVATIONS**

The Government of Bangladesh is committed to freeing its people from the burden of food insecurity and malnutrition. There is no shortage of targets and commitments in this regard, nor any shortage of programmes and policies. However, if the goal is to be achieved in a not-too-distant future, the intentions must be made to count—principally, in terms of money and accountability.

According to the Country Investment Plan (CIP), total resources available for promoting food security and nutrition in the year 2014–15 was US\$8.8 billion, out of which 63 percent was funded by the Government of Bangladesh from its own resources; the remaining 37

percent was funded by development partners. Scaling up the kinds of interventions that have been advocated in this review—with respect to agriculture and social protection as well as nutrition-specific interventions—would require considerable additional investment of resources. Concrete estimates must await the findings of a costing exercise that is currently underway in connection with the implementation of the National Plan of Action for Nutrition (NPAN) for the new National Nutrition Policy. In general, preliminary estimates suggest that the necessary investments are not going to be cheap.

Increased budgetary allocations will have to be accompanied by the establishment of a transparent and effective accountability system. Bangladesh has taken a step in the right direction by joining the Scaling Up Nutrition (SUN) movement, which requires the participating countries to first maintain clear and transparent accounts of how they are striving to achieve the targets and then discuss them in multiple stakeholder fora to receive feedback and advice.

This process can be further strengthened by adopting a human-rights based approach. By explicitly recognising people's right to food and adequate nutrition, the government accepts that citizens can hold their government accountable and culpable in the event of avoidable failures. By so doing, the rights-based approach adds a much-needed punch to the accountability system, which it otherwise lacks. There is no better way for the Government of Bangladesh to confirm that it is serious in its commitment towards food security and nutrition than to explicitly adopt the principles of the rights-based approach while formulating its strategies for food security and nutrition with a view to achieving zero hunger by 2030.

## RECOMMENDATIONS

The problem of food insecurity and malnutrition is inherently multidimensional. Actions, therefore, must also be taken on many fronts at the same time; as such, any plausible list of detailed recommendations will have to be inordinately long. Instead of going in that direction, this review makes its recommendations in the form of five central messages. Within each message, some detailed recommendations are made, but this is done mainly for illustrative purposes; no attempt is made to be comprehensive. It is expected that if the central messages are found compelling, the government will then be able to proceed to prepare a detailed plan of action. The five core messages are:

1. Promote a diversified, resilient, and nutrition-sensitive agriculture sector.
2. Recognise women as the key to achieving sustainable food security and nutrition.
3. Ensure through the social protection system that no one is left behind.
4. Create and disseminate relevant knowledge.
5. Adopt the human rights-based approach.



# Strategic Review of **FOOD SECURITY AND NUTRITION IN BANGLADESH**

## **INTRODUCTION**

Food security and adequate nutrition are among the basic needs of every human being. Their fundamental importance has been underscored by the world community through its agreement to the International Covenant on Economic, Social and Cultural Rights (ICESCR), which enshrines the right to food and the right to adequate nutrition as among the inalienable rights that every human person can claim. By ratifying this Covenant, the Government of Bangladesh has acknowledged its duty to fulfil this right to the best of its ability. Although, Bangladesh does not follow an explicitly rights-based approach, one of the fundamental principles of its Constitution (Article 11) stipulates that “The Republic shall be a democracy in which fundamental human rights and freedoms and respect for the dignity and worth of the human person shall be guaranteed.” Clearly, “the dignity and worth” of a human person cannot be guaranteed so long as such fundamental needs as food security and adequate nutrition remain unfulfilled. In recognition of this fact, Article 15 of the Constitution proclaims that it will be a “fundamental responsibility of the State” to secure for its citizens “the provision of the basic necessities of life, including food, clothing, shelter, education and medical care.” Article 18 (1) of the Constitution further explains: “The State shall regard the raising of the level of nutrition and the improvement of public health as among its primary duties.”

Ensuring food security and adequate nutrition is, however, not only a matter of fulfilling the needs and rights of the people but it also makes eminent economic sense. No country can expect to build a thriving economy on the backs of hungry and undernourished people. A thriving economy needs people who are productive and motivated, and neither productivity nor motivation can be strong when people lack access to food and

nutrition. Precise estimates of the economic benefits of food security and nutrition are difficult to make, but by using state-of-the-art knowledge, a joint study by the Government of Bangladesh and USAID has made the conservative estimate that undernutrition already costs Bangladesh more than 70 billion Taka (almost US\$1 billion) in lost productivity every year, and even more in health costs (Howlader et al. 2012). Another way of appreciating the economic benefit is to consider the benefit-cost ratio of policy interventions. It has been estimated that every Taka invested in a set of well-designed and well-implemented nutrition interventions will yield a return of 18 Taka in Bangladesh (Hoddinott et al., 2013). This is a far higher rate of return than can be expected from many a narrowly defined “development” project, which are typically undertaken by developing countries (IFPRI 2014, 2015). Thus, from an economic point of view alone, if Bangladesh aspires to be a developed country by 2041, as the government has proclaimed, it cannot but prepare itself to invest heavily and effectively in improving the state of food security and nutrition of its people.

Through its various plans, programmes, and policies, the Government of Bangladesh has consistently evinced its commitment to the goal of achieving food security and adequate nutrition of its people, even if sometimes its achievements and efforts may have fallen short of its commitments. Ever since the famine of 1974, food security has been one of the primary concerns of the government in all its policies and programmes. Since the 1990s, nutrition-specific interventions have also begun to assume growing importance in the policy agenda. Apart from its own internal targets and commitments, which are articulated in its planning documents, the government has also made international commitments by agreeing to work towards targets agreed upon by various international fora. For instance, Bangladesh was a participant in the World Health Assembly of 2012, which set six global nutrition targets to be achieved by 2025. More recently, Bangladesh has signed up to the internationally agreed Sustainable Development Goals (SDGs), of which the second goal (SDG2) calls upon the nations “to end hunger, achieve food security and improved nutrition, and promote sustainable agriculture” by 2030.

This strategic review is intended to strengthen the efforts of the Government of Bangladesh to meet its goals in respect to food security and nutrition. With this aim in view, the review provides an analysis of the current state of food security and nutrition in Bangladesh, identifies the challenges that remain and some new challenges that are emerging, and makes recommendations for dealing with these challenges. In undertaking this exercise, the review takes a medium-term perspective consistent with the timeframe of the SDGs.

## **PROGRESS TO DATE: FOOD SECURITY**

Bangladesh has made significant progress in improving food security and nutrition in the last twenty-five years. The improvement in food security has come about through progress in both availability of and access to food.

In the early 1970s, Bangladesh was a food-deficit country with a population of about 75 million. Today, the population has more than doubled to over 160 million, but food production has more than kept pace with population growth—so much so that at the aggregate level the deficit no longer exists. Crop production has accelerated, especially since the late 1980s, when the Green Revolution—based on new seed, fertilizer, and irrigation technologies—finally took off. In the 1980s, the government liberalized the input markets, gradually eliminated subsidies on agricultural inputs, and removed bans on private-sector imports of agricultural machinery. These policy changes induced private investment into small-scale irrigation, such as shallow tube wells and power pumps, all of which has contributed to the faster growth of dry-season irrigated rice (boro). Driven mainly by the expansion in boro rice, total rice production has more than tripled in the last three decades while the population increased by only about 60 percent. Non-crop agriculture has grown at an even faster rate than crop production, with the result that its share in total agricultural gross domestic product (GDP) has gone up from 35 percent to 45 percent in the past three decades. There are still important shortfalls in the production of certain non-cereal crops as well as some non-crop foods relative to demand, but overall it is fair to say that Bangladesh has attained food self-sufficiency at the aggregate level as far as calorie availability is concerned. This is evidenced by a dramatic decline in import dependency for rice, which is still by far the most important source of calories in Bangladesh (around 70 percent): from 4.7 percent in 2007–08, the import ratio has declined to less than one percent in 2013–14.

All this has allowed growth in aggregate food availability to stay ahead of population growth, resulting in higher per capita availability of food over time. According to the official Household Income and Expenditure Survey (HIES), per capita food consumption has increased from 914g per day in 1995–96 to 1,000g in 2010 (BBS 2012). Both rural and urban populations have shared in this improvement. In fact, rural people have fared slightly better than their urban counterparts in this regard: while rural per capita food consumption has gone up from 910g to 1,000g per day during the period from 1995–96 to 2010, urban per capita consumption has increased from 931g to 986g during the same period. At the national level, per capita calorie intake in 2010 was 2,318 kcal per day, which was comfortably higher than the estimated minimum requirement of 2,122 kcal per day. Thus, in the availability aspect of food security, Bangladesh has clearly performed well in recent decades.

Alongside availability, access to food has also improved, including for those who belong to the poorer segments of the population. Improved access has been made possible to a large extent by a sharp increase in purchasing power brought about by acceleration in economic growth since the 1990s. Growth of real GDP accelerated from an annual average rate of 3.7 percent in the 1980s, 4.8 percent in the 1990s, 5.8 percent in the 2000s, and finally reaching 6.3 percent in the first half of the 2010s. At the same time, Bangladesh has witnessed a marked deceleration in population growth, which has fallen from 2

percent in the 1980s to 1.3 percent in the last decade. In consequence, per capita income has grown even faster than GDP; from a sluggish rate of 1.7 percent per year in the 1980s, the growth in per capita income went up to an impressive 4.8 percent in the last decade. The upshot of all this is that in 2014–15, an average Bangladeshi was almost three times as well off as his or her counterpart was in 1980–81.

An increase in average income of this magnitude would inevitably lead to substantial improvement in the purchasing power of the general population unless it is offset by a worsening of distribution of staggering proportions. There are indeed some signs that the distribution of income has tended to worsen precisely during the period in which growth has accelerated. This has resulted in rising inequality, but the rise has by no means been of staggering proportions. The trend of rising inequality is evident from the so-called Palma ratio, which measures the ratio of incomes of the richest 10 percent and the poorest 40 percent of the population. The Palma ratio has risen steadily from 1.7 in the 1980s to 2.1 in the 1990s and further to 2.5 in the 2000s (Osmani 2015). However, the growth of average income has been so sharp that rising inequality of this magnitude could not prevent the bottom 40 percent of the population from enjoying rising per capita income in real terms.

Furthermore, and more relevant in the context of food security, the distribution of consumption expenditure has remained remarkably stable since 2000, with a Gini coefficient of around 0.31. As a result, the consumption expenditure of the poorer segments of the population has grown almost in line with average growth. This has been reflected in substantial reduction in poverty in recent decades (since poverty is typically measured with reference to consumption expenditure rather than income). At the national level, the headcount measure of poverty has declined from 56.6 percent in 1991–92 to 31.5 percent in 2010 (World Bank 2013). Significantly, the process of poverty reduction has been such that it has benefitted not only the better off among the poor but also those lying at the bottom rungs of the distribution. This is evident from the fact that extreme poverty, based on an official estimate of a “lower poverty line,” has also declined in an impressive manner. At the national level, extreme poverty was almost halved in the decade of the 2000s—from 34.2 percent in 2000 to 17.6 percent in 2010. While growth has been a major driver of poverty reduction, other forces have been at work as well. As a recent analysis by the World Bank (2012: 22) observes: “At the aggregate level, growth in real GDP per capita, increase in foreign remittance per capita and increased access to services, particularly education, micro-credit and safety net, appear to have contributed to the observed decline in poverty.”

More recent evidence on the trend in poverty is not available, but other economic indicators suggest that the purchasing power of the poorer segments of the population has continued to improve. Most significantly, real wages in Bangladesh have accelerated in recent years. As more workers have shifted to the formal sector and other non-farm jobs, labour in rural areas has become scarcer, bidding up rural real wages and thereby

enhancing total labour earnings (Zhang et al. 2014). Since physical labour is the most important asset for the poor, escalation of real wages has boosted their earnings and improved their food security. Agricultural wage labourers are among the poorest in rural Bangladesh; as such, the level of the agricultural wage has a large bearing on the incidence of poverty and food insecurity. It is, therefore, significant to observe that agricultural wages have increased quite sharply in the recent past. On average, the daily wage of a male agricultural labourer could buy 7 kg of rice in 2009. By 2015, it could buy 10.6 kg of rice—an increase of almost 50 percent over a period of just six years.

The evidence presented above—on impressive advances made on the fronts of both food availability and access to food—suggests that a significant improvement in food security has occurred over the past three decades. A complete assessment of food security would involve assessment of a couple of other dimensions—namely, quality of food and food utilization. Since these two dimensions have a direct bearing on the nutritional status of the population, they are discussed more fully below in the context of assessing the nutritional situation in Bangladesh.

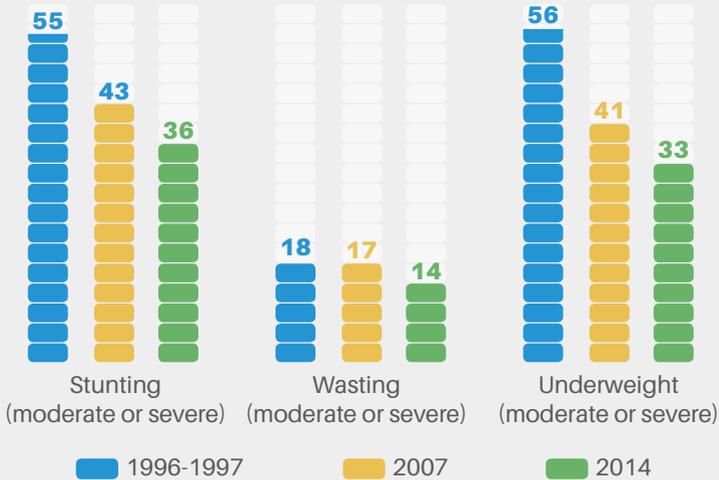
## **PROGRESS TO DATE: NUTRITIONAL OUTCOMES**

Until the mid-1990s, Bangladesh, along with other countries in South Asia, had a persistently high level of undernutrition. The rate of stunting (low height-for-age) among children under five, which is a good indicator of the state of chronic undernutrition in the population as a whole, remained stubbornly above 50 percent. More intriguingly, Bangladesh's stunting rates, along with those of the rest of South Asia, were significantly higher than those of Sub-Saharan Africa, where people were both poorer and less educated than in South Asia. UNICEF christened this anomaly as the "Asian Enigma" (Ramalingaswamy et al. 1997).

Since then, Bangladesh has achieved a great deal by way of improving the state of nutrition. So much so that a recent cross-country study by Headey (2013) concluded that from 1997 to 2007 Bangladesh had recorded one of the fastest prolonged reductions in child underweight and stunting prevalence in recorded history, narrowly behind the more celebrated case of Thailand in the 1980s and just ahead of several success stories identified in the nutrition literature, such as Brazil, Mexico, and Honduras. The trend of improvement observed up to 2007 has continued to this day. The overall trend in three indicators of child nutrition over the last two decades is depicted in Figure 1, using data from different rounds of the Demographic and Health Survey (DHS).

The rate of stunting, which reflects a state of chronic undernutrition, has come down from 55 percent in 1996–97 to 36 percent in 2014. The rate of wasting (low weight-for-height), which reveals the state of acute malnutrition, has not, however, improved much. Indeed, it showed hardly any improvement from 1996–97 to 2007, the period for which Bangladesh

**Figure 1: Trend in Child Nutrition in Bangladesh: 1996/97 - 2014**



Source: Gwatkin et al. (2007) and NIPORT et al. (2009, 2015)

was being acclaimed as a star performer; it is only recently that a modest improvement has been evident. Finally, the rate of underweight (low weight-for-age), which reflects the combined effect of chronic and acute malnutrition, has improved in roughly the same manner as stunting. Given the stubborn nature of wasting, it is not surprising that this has been the slowest to change.

There are also other indicators of significant improvement in nutritional status over the last two decades. A good example is maternal undernutrition, as measured by “low” body mass index (BMI)—meaning a BMI of less than 18.5—which is taken as a symptom of chronic energy deficiency (CED). According to this measure, undernutrition among women of reproductive age has declined sharply from 52 percent in 1996–97 to 33 percent in 2007 (NIPORT et al., 1997, 2009), and further to 17 percent by 2014 (HKI/JPGSPH, 2015). Yet another indicator is child mortality. Although many different factors can influence the level of child mortality, undernutrition is known to be one of the major factors: international evidence suggests that almost half (45 percent) of all under-five deaths in the developing world can be attributed to undernutrition (Black et al. 2013). According to DHS data, under-five mortality has declined in Bangladesh from 133 per thousand in the mid-90s to 46 in recent years (NIPORT et al. 1997, 2015). The credit for a large part of this decline must go the improvement that has occurred on the nutritional front, although health interventions may have played an even bigger role.

A large number of factors has contributed to the observed improvement in nutritional status. According to the conceptual framework developed by UNICEF, and further articulated by Black et al. (2008), the causal factors can be classified into three groups: (a) basic factors, which refer to the social, economic and political context; (b) underlying factors, which follow from the basic factors, and include household income, capital, education and people's access to resources in general; and (c) immediate factors, which follow from the basic and underlying factors, and include such determinants of nutritional status as quantity and quality of diet, access to healthcare, quality of sanitation and drinking water, personal hygiene, care practices, and the disease environment. Using this framework, a recent study by Headey et al. (2014) tried to explain the improvement in stunting in Bangladesh between 1996–97 and 2007 in terms of a mix of underlying and immediate factors. Some of the main lessons of interest emerging from this study may be summarised as follows.

First, among the variables used as explanatory factors, wealth accumulation by households turns out to be the most important, accounting for almost a quarter of the predicted change in stunting. The wealth accumulation variable captures the effects of economic growth, poverty reduction and improvement in food security—in other words, household access to resources. The significant improvements in all these areas documented earlier clearly had a positive impact on the nutritional status of the population. As will be argued below, income or wealth is not enough to solve the problem of undernutrition, but there is solid evidence in support of the view that it is a very important contributory factor (Behrman and Deolalikar 1987; Haddad et al. 2003; Heady 2013; Heltberg 2009; Smith and Haddad 2000).

Second, education, and especially maternal education, also played a very important role. In fact, the combined effect of maternal and paternal education turns out to be even bigger than that of wealth. Bangladesh's record in expanding the reach of school education in the past two decades—in particular, girls' education—has been widely celebrated, and it is evident from this review that, among the many positive outcomes that follow from education, improvement in nutritional status is a very important one. This finding is in conformity with growing international evidence that education, especially maternal education, leads to better nutritional outcomes (Behrman and Wolfe 1984; Burchi 2012; Headey 2013; Ruel and Alderman 2013).

Third, healthcare emerges as the next most important factor. Bangladesh is well known for impressive improvements in a range of health indicators, particularly child mortality, which has already been noted. Remarkably, these achievements have taken place despite relatively low levels of public spending on health. What has made a real difference is the manner in which health services have been delivered through substantial innovations in community-based service delivery (Chowdhury et al. 2013; El Arifeen et al. 2013).

Fourth, improvement in the state of sanitation was also a contributory factor. Between 1990 and 2015, access to improved sanitation has increased remarkably from 50 percent to 89 percent of the population. Open defecation, which has been found to be one of the most important causes of undernutrition in many developing countries, including India (Spears 2013; Spears et al. 2013) has become a negligible problem in Bangladesh; its prevalence has fallen from 40 percent to just 2 percent in the last twenty-five years (UNICEF/WHO 2015). This transformation has been brought about by a combination of specific strategies and policies undertaken by the government (through, for example, the National Sanitation Strategy 2005) and civil society initiatives. The latter has consisted of support for latrine construction and safer water supply/treatment by NGOs, campaigning for a “Right to Water and Sanitation” and a participatory approach of community-led total sanitation (CLTS), which was developed by Kamal Kar and WaterAid from the late 1990s onwards and subsequently scaled up in government programmes.

It is notable that the study by Headey et al. (2014) found that almost half of the improvement in nutritional status could not be explained by the variables they had considered. This is not entirely surprising because nutritional status is a complex phenomenon, which is influenced by a myriad of factors, many of which may be difficult to capture in a statistical exercise. The authors speculated about a couple of missing factors, including (1) rapid growth in agriculture, which can have an independent effect on nutrition in addition to the effect it has by increasing the national income; and (2) a whole range of decentralised nutrition-specific interventions undertaken by the NGO sector throughout the length and breadth of the country.

Yet another missing factor could be the increasing trend of women’s empowerment. The study itself could not find any explanatory power of this factor, but this does not necessarily indicate that there was no impact. It is well-known that a reliable index of empowerment is difficult to construct, and the authors themselves acknowledge that their own index was inadequate to capture many different dimensions of women’s empowerment. In contrast, a carefully constructed index of women’s empowerment has been found to be positively associated with household and child food security (Sraboni et al. 2014). More direct evidence on nutrition comes from an impact evaluation of the Strengthening Household Ability to Respond to Development Opportunities II (SHOUHARDO II) project, implemented by CARE (Bangladesh) from June 2010 through September 2015 in 1,573 villages located in the poorest and most marginalized districts in the country. The project employed an integrated approach to reducing food insecurity and child undernutrition, combining nutrition-specific interventions with those that address underlying causes, such as poverty, economic and gender inequality, and poor sanitation. The impact evaluation study found that, along with other interventions, improvement in women’s empowerment contributed strongly towards reducing both food insecurity and child undernutrition: stunting was reduced by 21 percent among children under five over a period of five years (Smith 2015). There is, therefore, evidence of a link between women’s empowerment and an improved state of nutrition in Bangladesh over time.

## REMAINING CONCERNS: FOOD SECURITY

Despite the impressive gains made in improving the state of food security in Bangladesh over the past few decades, an alarmingly large number of people still remain food insecure and hungry. This is suggested by a number of alternative indicators.

One such indicator is the extent of “undernourishment,” which, as defined by FAO, stands for the percentage of population who are unable to access a diet that can provide the minimal calorie requirements. This measure is constructed by combining aggregate data on food availability with survey data on income or consumption distribution and by using an estimated relationship between income or consumption distribution on one hand and the distribution of calorie intake on the other. According to this indicator, which FAO uses as its principal measure of global hunger, the extent of hunger has declined in Bangladesh from 32 percent in 1990 to 16 percent in 2015 (FAO/IFAD/WFP 2015). This is no doubt an impressive decline, but it’s a sobering thought that 16 percent of the population translates into some 26 million hungry people.

An alternative indicator is the extent of “extreme poverty” as measured with reference to the “lower poverty line” used by the Government of Bangladesh and the World Bank. The way the concept is defined, a household categorised as extremely poor would necessarily fail to meet the minimum calorie requirement even if it spent only a minimally acceptable part of its budget on non-food items. In that sense, this too can be taken as a measure of the prevalence of hunger. By this criterion, and using data from the Household Income and Expenditure Survey (HIES), some 17.6 percent of the population were hungry in 2010, which translates into 28 million people in absolute number. Latest estimates of extreme poverty based on recent surveys are not available, but on the basis of simple linear projection of past trend the Government of Bangladesh puts the figure at about 16 million in 2014 (MOF 2015: 24).

A common limitation of the concepts of both undernourishment and extreme poverty as a measure of hunger is that not everybody who consumes less than the respective cut-off point is necessarily hungry. This is because there are inter-personal variations in calorie requirements—some individuals need less and some need more, even if they are otherwise identical in all relevant aspects such as gender, age, body mass, and physical activity. By the same token, some of those who consume more than the required norm may actually be hungry. As such, these measures are subject to both errors of inclusion and errors of exclusion, and the estimate can only be a rough guide of the average picture if the two types of error cancel each other out.

A more reliable procedure would be to directly identify food insecure and hungry households by observing their experience with regard to food intake. This is precisely what is being done by a series of nationally representative surveys carried out since 2010 under the Food Security and Nutrition Surveillance Project (FSNSP) funded by the European Union. In these studies, the state of food insecurity is measured with the help of two indices.

The first index, called the Household Food Insecurity Access Scale (HFIAS), aggregates information on several dimensions of food insecurity experienced by a household—for example, whether a household worried about being able to feed itself around the year, and whether some members of the household skipped meals, went to bed hungry, ate smaller meals, or used unusual food. The second index, called the Food Deficit Scale (FDS) is constructed from the most severe subset of the dimensions of HFIAS (for example, food running out, sleeping hungry, and day and night without food), and is meant to offer a measure of acute hunger experienced by households.

By using the HFIAS criterion, one-quarter of the population was found to be food insecure in 2014, which amounts to 40 million people in absolute number—far higher than the numbers suggested by either FAO's criteria of undernourishment or the Government of Bangladesh's concept of extreme poverty. Acute hunger, as measured by the FDS index, was found to afflict 7 percent of the population, or some 11 million people (HKI/JPGSPH 2015).

These are staggering numbers, but the picture actually gets worse when one considers the concept of vulnerability to food insecurity. A household that is food secure at a particular point in time by some criterion, but only barely so, may easily experience actual hunger the next period as a result of some shocks to their livelihoods. A one-shot survey may classify such a household as food secure even though it may be vulnerable to food insecurity in a slightly longer time perspective. This means that, over a period of time, the number of people who would be experiencing food insecurity would be larger than the number estimated to be food insecure at a particular point in time. The measures of food insecurity discussed above are all of the latter type, meaning they refer to a point in time, and therefore cannot capture vulnerability over a period of time.

Ideally, one would have to rely on large-scale longitudinal surveys to derive reliable estimates of vulnerability. A rough alternative is to try to assess how many households reside just above the cut-off point used for the purpose of identifying food insecurity because many of them are likely to fall below the cut-off point at some point in time. When this is done, not only does the number of people vulnerable to food insecurity turn out to be much larger than the simple estimates of poverty or food insecurity, but also the rate of progress achieved in the recent past also appears to be much less impressive. The situation is neatly summarised in a recent World Bank (2012: 22) report as follows: "Notwithstanding its achievements in poverty reduction, the size of Bangladesh's vulnerable non-poor remains very large. Simply moving from the national poverty line of US\$1.09 a day to the international US\$1.25 a day increases the headcount ratio to 43.25 percent. The pace of poverty reduction in the last two decades slows considerably with the raising of the poverty line. Thus, while the cost of basic needs (CBN)-based poverty headcount rate has declined rapidly in the last three decades, vulnerability has not. Large numbers of people are at the margin, indicating potential vulnerability to a myriad of idiosyncratic or covariate shocks to income and/or expenditures" (emphasis added).

The second concern relates to uneven progress between different segments of society. One aspect of this unevenness is evident from the FSNSP reports mentioned earlier, which divide the entire population into five wealth groups (quintiles) while estimating the extent of food insecurity. The successive surveys show that while food insecurity has declined for all the quintiles, it has declined relatively slowly for the poorer ones. In 2010, the proportions of food insecure households were found to be 68 percent for the bottom two quintiles and 20 percent for the top two quintiles. By 2014, these proportions had come down to 43 percent among the bottom two quintiles and just 6 percent among the top two (HKI/JPGSPH 2015). These figures suggest that in percentage terms the rate of progress was much slower for the poorer groups. As will be shown later in this review, the same observation applies to progress on the nutritional front as well. Uneven progress in reducing food insecurity is partly a consequence of the trend of rising income inequality referred to earlier, but partly it also reflects a failure to target social safety net measures and other interventions to those who need them most.

Yet another aspect of uneven progress relates to the gender dimension of food insecurity. It is a part of the folklore of Bangladesh's cultural history that women traditionally suffer more at times of food scarcity. Evidently, not much has changed in this regard despite rapid progress made in many aspects of social and economic life. As recently as 2014, a nationally representative survey found that when a household faced food crisis and at least some members of the household had to make a sacrifice in food consumption, across all age groups except the youngest, a greater proportion of females sacrificed consumption compared to males. "If only one member of a household reduced consumption, it was almost always an adult woman.... Even among children younger than 10 years of age, a greater proportion of girls than boys changed their eating habits due to food insecurity" (HKI/JPGSPH 2015: 52).

A further concern arises from the recent slowdown in agricultural growth. In the second half of the 2000s, agricultural GDP grew at a remarkably high rate of 5 percent per year, but in the next five years (2010–11 to 2014–15), the growth has slowed down to 2.7 percent—almost half the growth rate of the preceding five-year period. Even though the overall GDP growth has remained 6.3 percent during both the periods, the slowdown in agricultural growth is likely to have a negative effect on food security—especially from the perspective of access to food. In spite of growing importance of non-farm activities in rural Bangladesh, the rural people still earn a substantial proportion of their income from agriculture and related activities. According to a recent estimate, agriculture directly contributed 47.8 percent of rural income in 2010, even without taking into account off-farm income generated by agriculture-related activities (Rahman 2014). Slowdown in the growth of agricultural incomes would, therefore, act as a constraint on the ability of the rural poor to improve their access to food. In a situation, where, as we have seen, a large number of people still suffer from food insecurity and hunger, this should be a matter of serious concern.

A final concern with food security is that, among the general population, very little improvement has occurred in the quality and diversity of diet, which is an important dimension of food security. From the supply side, this can be seen from the fact that the contribution of cereals to Dietary Energy Supply (DES) has declined very slowly since the mid-1990s: falling from 79.6 percent in 1995–96 to 77.0 percent in 2009–11. The Food Policy Monitoring Unit (FPMU) of the Government of Bangladesh has thus concluded that “while overall food and energy supply has improved considerably in the last two decades, and there is improved adequacy of dietary energy, the food supply diversification shows stagnancy” (FPMU 2015: 24)

On the intake side, the evidence is somewhat mixed. A rather depressing picture is given by the FSNSP reports, which since 2010 has annually constructed the Food Consumption Score (FCS), an indicator developed by the World Food Programme (WFP) to capture the diversity of food consumed in the household. Using this score, it is observed that between 2011 and 2014, despite substantial reductions in the prevalence of food insecurity, there has been little reduction in the proportion of households consuming poor or borderline diets (HKI/JPGSPH 2015). By contrast, a more promising scenario is depicted by an ongoing research project by the International Food Policy Research Institute (IFPRI). Using data from the Bangladesh Integrated Household Survey (BIHS), a nationally representative household survey of rural Bangladesh conducted by IFPRI that uses the same FCS used by FSNSP, researchers found that dietary diversity has actually improved in the past five years in rural Bangladesh; the average score has gone up from 56.4 in 2011 to 62.6 in 2015 (out of a maximum possible score of 112). The exact reasons for such divergent results cannot be ascertained at this stage; it could be due to differences in survey design or to a slight difference in the timeframes used. Regardless of how things have changed in the past few years, it is clear that the level of dietary diversity is still very low. Even going by the optimistic figures of the IFPRI study, the average score in 2015 was only just over half of the maximum possible score, which shows that there is still a long way to go before achieving a satisfactory level of dietary diversity in Bangladesh.

## **REMAINING CONCERNS: THE STATE OF NUTRITION**

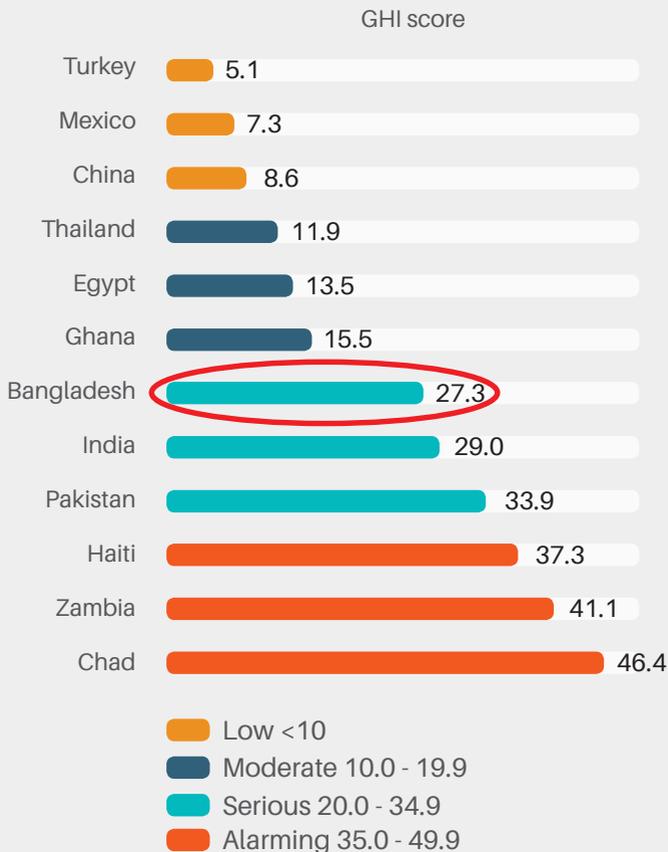
Despite notable achievements made in the recent past, more than one-third (36 percent) of all children under five still suffer from stunting, which means some 5.5 million children are suffering from chronic undernutrition. Furthermore, the prevalence of acute malnutrition, as reflected in wasting, remains alarmingly stubborn, afflicting more than 2 million children. Clearly, an enormous task lies ahead if the country is to rid itself of the scourge of undernutrition.<sup>1</sup>

---

<sup>1</sup> For comprehensive overviews of the challenges Bangladesh currently faces on the nutritional front, see Ahmed et al. (2012) and Hussain et al. (2015).

One measure of the magnitude of the task is given by the Global Hunger Index (GHI) devised by IFPRI. Despite what the name might suggest, this index is not just about hunger; it gives a summary view of relative nutritional status of different countries based on four criteria: stunting, wasting, child mortality, and undernourishment (as defined by FAO as the proportion of the population with insufficient calorie intake). Higher values of the index indicate greater intensity of the problem, and there are certain cut-off points to categorise countries according to different levels of intensity. According to the 2015 GHI report, Bangladesh's GHI score was 27.3, which puts the country's hunger status in the "serious" category (Figure 2).

**Figure 2: 2015 Global Hunger Index by severity (selected countries):**



Source: von Grebmer et al. 2015.

It is also important to recognise that the task ahead is not going to get any easier, in part because as the rate of undernutrition falls from very high to moderate levels, it indicates that the more extreme aspects of the problem (that is, the ones amenable to simpler solutions) have already been resolved and the part that remains is much harder to tackle. This means that if the interventions remain as they are, it would be difficult to maintain the past rate of progress.

The task is made even more daunting by the fact that even maintaining the past rate of progress would not suffice if the various goals that have been set nationally and internationally are to be met. For example, the Health, Population and Nutrition Sector Development Programme (HPNSDP) of the Government of Bangladesh has set the stunting target at 25 percent, to be achieved by 2021. Internationally, the World Health Assembly (WHA) convened in 2012 by the member states of WHO set a number of targets for 2025, including a 40 percent reduction in stunting, which, for Bangladesh, implies that the level of stunting should be brought down to 21.6 percent by 2025. Given that 36 percent of children were stunted in 2014, the level of stunting must fall at an annual rate of 5.3 percent in the period from 2014 to 2021 if the HPNSDP target is to be achieved, and at the rate of 4.8 percent in the period from 2014 to 2025 if the WHA target is to be met. By contrast, the rate at which stunting has actually fallen in the period from 1996–97 to 2014 is just 2.5 percent.

Thus, the rate of improvement actually achieved so far is only about half of what is needed if national and international targets are to be met. A sharp acceleration in the rate of progress will obviously be needed, but there are no signs of such an acceleration happening. In fact, the annual rate of decline in stunting was almost identical in the period from 2007–2014 to what it was from 1996–97 to 2007.

The rates of progress in other dimensions are no better. Indeed, the *Global Nutrition Report 2014* offers the rather sombre picture that Bangladesh is not on course for meeting any of the four (out of six) WHA targets for which internationally comparable data are currently available (IFPRI 2014).

Yet another concern on the nutritional front is that serious inequalities exist in nutritional outcomes as between the poor and rich and the degree of inequality seems to be increasing over time (Osmani 2015). In 2014, when the average rate of stunting in the country was 36 percent according to DHS data, the bottom wealth quintile had a rate of 50.2 percent whereas the top quintile had 20.5 percent; thus, the bottom-to-top quintile ratio was 2.5. In 2007, this ratio was 2.1, indicating a widening of inequality in recent years. A cross-country study shows that Bangladesh is one of only 11 countries, out of 80 countries studied, in which inequality in child nutrition is increasing (Bredenkamp et al. 2014).

The fact that half of the children in the bottom quintile still suffer from chronic undernutrition and that the gap between the rich and poor is widening over time pose serious challenges

for nutrition policy in Bangladesh. In part, the problem arises from the general trend in rising income inequality referred to earlier, and, to that extent, the solution lies in broader socioeconomic policies that will have to be pursued in a more pro-poor manner than has been the case so far. But, in part, the solution must also involve more precise targeting of nutrition-specific interventions so that more of the scarce resources are allocated for the benefit of the poorer segments of the population.

A major remaining concern is the persistence of acute malnutrition (wasting). Both moderate and severe acute malnutrition (denoted as MAM and SAM, respectively) have remained worryingly stubborn over a long period, declining only at a snail's pace, if at all. Acute malnutrition not only prevents children from developing their full physical and cognitive potential, it also threatens their very survival. Currently, some 2.2 million children are at risk of premature mortality. The risk is especially high for SAM; a child with SAM is 10 times more likely to die compared to a well-nourished child. About 3.1 percent of children under five belonged to this category in 2014, which translates to some 480,000 children at great risk of premature death due to malnutrition.

## **EMERGING CONCERNS**

On top of the challenges that already remain, new concerns with food security and nutrition are emerging as a result of the process of socioeconomic as well as climatic evolution that the country is going through. In some cases, the emerging forces aggravate the old problems, but they also give rise to completely new types of challenges, including those resulting from urbanization and climate change. Since both urbanization and climate change are growing in importance, a strategy for achieving food and nutrition security that takes a medium-to-long term perspective must address them.

### **Issues Arising from Urbanization**

At independence, Bangladesh had the lowest level of urbanization in South Asia, but it has since been urbanizing at a very rapid pace; between 1980 and 2011, the country's annual rate of growth of urban population (4.2 percent per year) was higher than that of India, Pakistan, Sri Lanka, and Afghanistan. In 1974, only 9 percent (6.3 million) of the total population was living in urban areas; in 2011, this figure stood at 23 percent (35.1 million). If this trend continues Bangladesh's urban population will exceed its rural population by 2040.

Apart from the rapid pace of growth, yet another feature of urbanization in Bangladesh is that it occurred in an unplanned way, which has forced a large number of growing urban population to live in the slums. According to one estimate, the total number of urban slums increased from 2,991 in 1997 to 9,048 in 2005 (CUS 2005). As of 2009, Bangladesh had the highest proportion of urban population living in slums (61.6 percent) among the South Asian countries (MHC 2014: 46).

The preponderance of slums, where the poorest of the urban people live, makes for extreme polarization in urban life, with some of the poorest and some of the richest people in the country living side by side. Because of this polarization, the urban food security problem exhibits a startling duality—extreme undernutrition and burgeoning overnutrition being manifest at the same time. The average picture masks this duality. Thus, if one looks simply at the average, urban people appear to fare better than their rural counterparts in terms of food security and nutrition, but this comparison hides the true picture of urban deprivation, which resides mostly in urban slums.

For example, using the Household Food Insecurity Access Scale (HFIAS) discussed earlier, the FSNSP report of 2014 shows that on average 19 percent of the urban population were food insecure versus 25 percent of the rural population. Using the Food Consumption Score (FCS) devised by WFP to measure the diversity of diet, only 7 percent of urban households had poor or borderline food consumption pattern, as against 12 percent of rural households. According to the same survey, the extent of stunting among children under five was 32 percent in urban areas and 36 percent in rural areas. Similar pattern prevailed with regard to wasting: 9 percent in urban areas as compared to 11 percent in rural areas (HKI/JPGSPH 2015).

Thus, evidently the urban population does better than the rural population, on average, by all major criteria of food security and nutritional status. But when the focus shifts to urban slums, rather than the average urban situation, certain apparently puzzling phenomena begin to emerge. If one considers food security alone, the slum population actually appear to do rather well. A survey on urban slums carried out in 2013 by WFP shows that among the slum dwellers of Dhaka the prevalence of food insecurity as measured by the HFIAS index was 20 percent (WFP 2015), which is just about the same as the rate prevailing among the overall urban population and lower than that among the rural population, found by the FSNSP report of 2014 discussed above. In terms of dietary diversity as measured by FCS, only about 5 percent of the slum dwellers of Dhaka had poor or borderline consumption pattern, which is actually lower than what the FSNSP report found for both overall urban population and rural population.

Thus, in terms of the standard criteria of food security, the slum dwellers of Dhaka fare no worse than the average urban dweller and clearly better than the average rural resident. Yet, the picture changes dramatically when one looks at the actual nutritional status of the slum dwellers. According to the Bangladesh *Urban Health Survey* of 2013, as many as 50 percent of the children of urban slums were found to be stunted, in comparison with 33 percent among the residents of non-slum urban areas. The extent of stunting in urban slums is also considerably higher than the extent of stunting in rural areas found by other studies—which range from 33 percent to 38 percent depending on the source (HKI/JPGSPH 2015; NIPORT et al. 2015; UNICEF/BBS 2015). The extent of wasting is similarly found to be higher in urban slums than in urban areas overall or in rural areas.

There is thus the apparent paradox that while the slum dwellers appear to perform relatively well in terms of food security, they do very badly in terms of nutritional outcomes, even in comparison with the rural population. There are a couple of plausible explanations for this.

First, the WFP survey of the urban slums has found that even though the urban slum households eat from a wide variety of food groups (and thus have a good dietary diversity score), they actually consume in small quantities from each of the food groups. Since many diverse types of foods are available in the urban market—as opposed to in the rural market—urban slum households buy a wide variety of foods. But their low income, combined with the fact that they have to cover a range of unavoidable non-food costs associated with urban life, forces them to buy small quantities of each type of food. As a result, dietary diversity does not get translated into better nutritional outcomes.

Further, the quality of sanitation, hygiene, childcare and child feeding practices also happen to be much poorer in urban slums compared to non-slum urban areas (NIPORT 2015).

In view of the above considerations, urban slums deserve special attention with regard to all kinds of interventions—related to social protection, WASH, and other nutrition-specific interventions. In reality, however, urban areas are generally bypassed by the mainstream social protection system in Bangladesh. A few schemes are operated by the Ministry of Local Government, Rural Development and Cooperatives (MoLGRD&C) in cooperation with city corporations and municipalities, but these are not adequate in comparison with the magnitude of the task involved.

In addition to the urban slum phenomenon and the associated problems of food security and nutrition that are emerging as a result of urbanization, some new problems are also appearing, which although not unique to urban life, are especially relevant to it.

*Food safety:* This problem is related to urbanization but goes beyond it. As the economy grows and diversifies, food items are entering more and more into the marketing chain. With increasing marketization comes the issue of food safety, which has indeed become a major public concern in recent years, especially in the context of fish and fruits but not confined to them. In recognition of these concerns, the government has recently introduced a Food Safety Act. This is an important first step, but enforcement is the key; without strict enforcement of food safety standards, food security and nutrition is going to be seriously compromised.

*Obesity:* While the battle against undernutrition has yet to be won, the opposite problem of overnutrition and obesity is already making its appearance in Bangladesh. General economic prosperity, urbanization, changing food habits and changing lifestyle are all contributing to it. Increasing integration with global markets also plays a role by increasing the availability of attractive foods with dubious nutritional value. Among children, the

problem is still small, although rising, especially in urban areas. But it is beginning to grow more alarming for adult women among whom the proportion of overweight (BMI  $\geq 25$ ) has increased from 9 percent to 24 percent over the past decade.

*Caregiving:* As more and more women enter the labour force, their traditional role as caregivers will come under increasing stress. Two conflicting effects on nutritional security of children are likely to ensue. On one hand, enhancement in women's empowerment that may result from labour force participation should exert a positive impact on nutritional outcomes, but at the same time a negative effect might follow from the stress on caregiving. How to manage these conflicting impacts would emerge as an important challenge in the coming decades.

### **Issues Arising from Climate Change Effects**

Being located almost entirely on the low lying part of the Ganges-Brahmaputra-Meghna rivers, with the levels of poverty and population density that it has, Bangladesh is prone to almost every kind of adverse climate change impact, including floods, cyclones, drought, and sea level rise.

Over a long time scale, the magnitude of floods, which are measured in return periods, has stayed roughly constant in Bangladesh. Thus a one-in-twenty-year flood has indeed occurred once in approximately twenty years. However, in the past twenty years, Bangladesh has suffered four one-in-twenty year floods. While this cannot (yet) be accurately attributed to human induced climate change, this is exactly what the global climate models have predicted will happen. Hence it is quite safe to say that we are already living under changed climatic conditions and can henceforth expect that one-in-twenty-year floods may now become one-in-five-years floods.

The frequency of cyclones is not thought to be associated with climate change, but the severity of cyclones is. So, even if the overall frequency of cyclones does not increase due to climate change, the number of high intensity cyclones (due to higher sea surface temperatures) is likely to increase. Thus severe cyclones like Sidr and Aila may become more frequent in future due to climate change.

Bangladesh is not normally thought of as drought-prone country; nevertheless, in a country where most of the agriculture system is able to grow three or at least two crops a year in the same patch of land, there are parts of the country, mainly in the northwest (Barind Tract), where the dry season is becoming longer and the growing of an additional non-monsoon crop is becoming more and more difficult over time.

While these climatic shocks—floods, droughts, and cyclones—all pre-date human-induced climate change (but will become worse due to climate change), the issue of sea level rise is, in fact, new and almost entirely due to climate change (although the phenomenon of low river flows in the Ganges predates climate change). In Bangladesh, a

sea level rise of only 45cm would displace as many as 35 million people from 20 coastal areas by 2050 (Rabbani et al. 2010). Due to its high population and poverty level, coupled with inadequate infrastructure and services, Bangladesh is a low-lying area that struggles to cope with the impacts of flooding, storm surges, erosion and salinization; sea-level rise will only make this situation worse (Huq and Rabbani 2015). The main immediate impact, which is quite prevalent already, is salinisation of both surface and groundwater in the coastal belt, particularly in the Ganges estuary region.

All these changes will heavily affect food security by adversely affecting food production and threatening the livelihoods of the directly affected people. It has been estimated that, owing to climate change, crop production might be reduced by 30 percent by the end of the century; in particular, rice and wheat production might be reduced by between 8 percent and 32 percent by 2050. Winter crop production would be seriously hampered due to a warmer and drier environment while moisture stress might force farmers to reduce the area under boro cultivation (FAO/WHO 2014).

High soil salinity in the coastal belt will reduce crop yields and thus increase food insecurity among those who rely on agriculture for their livelihoods. There are only a few agricultural technologies that can be adopted in the high-salinity coastal areas in Bangladesh. This lack of agricultural technology, coupled with the climatic hazards, leads to food insecurity in many parts of the country (Rabbani et al. 2015).

In addition, the global problem of rising carbon dioxide emissions is going to make Bangladesh's staple food crops less nutritious. There is also growing evidence that higher atmospheric carbon dioxide concentrations could reduce the zinc, iron, and protein content of certain crops, including staples such as rice, wheat, peas, and soybean (Myers et al. 2014). This has serious implications for nutrition since nearly three-quarters of the people in Bangladesh currently get their zinc and iron from staple crops. About half of the population already suffer iron and zinc deficiencies, which cause serious damage to health and nutrition, especially for small children and pregnant women. There is a genuine concern that rising carbon dioxide in the atmosphere will exacerbate the problem of micronutrient deficiencies further.

Sea level rise would exacerbate the impacts of cyclones and storm surges on the quality of water in Bangladesh, since such events have the potential to spread pollution from contaminated sources. For example, Cyclone *Sidr* in 2007 spread saline water to more than 6,000 ponds in Bangladesh (Rabbani et al. 2010). Such pollution will increase the prevalence of waterborne diseases such as cholera and diarrhoea (Brouwer et al. 2007).

Increased salinity in the coastal zones might also alter the micronutrient content of foods, including rice, which may become deficient in zinc and other micronutrients. Further, in the coastal zones, one can expect to witness increased prevalence of pre-eclampsia in

pregnant women due to hypertension caused by intake of saline water (Khan et al. 2014). This particular adverse impact is likely to aggravate the problem of low birthweight and malnutrition of babies in the coastal zones.

That these effects are not just plausible but many of them are already happening is attested to by an exploratory study recently commissioned by WFP. The study looked at the impact of different types of climate-related shocks and stresses in selected rural communities in Bangladesh, and found statistically robust evidence of adverse impact on food security and nutrition in most (though not all) cases (Béné et al. 2015).

The Government of Bangladesh appears to be alert to this emerging threat and has already been taking a range of actions. Two separate funds have been created for this purpose: the Bangladesh Climate Trust Fund (BCTF), which has invested the government's own funds in hundreds of projects over the past six years, and the Bangladesh Climate Resilience Fund (BCRF), which has also invested several hundred million dollars with funds contributed by developed countries, including Australia, Denmark, the European Commission, and the United Kingdom through their bilateral aid agencies. In addition, Bangladesh has also received funds from the Asian Development Bank, the Least-Developed Country (LDC) Fund, the UN Development Programme (UNDP), the UN Environmental Programme (UNEP), and the World Bank, amongst others.

Most of these funds, which reached well over half a billion US dollars over the past six years, have gone towards supporting hundreds of projects under the *Bangladesh Climate Change Strategy and Action Plan* (BCCSAP). Most of these projects are geared towards enhancing resilience through adaptation, although there has also been a significant investment in solar energy systems for mitigation as well over the past few years. A significant amount of additional resources has recently been obtained from the Green Climate Fund, through partnerships with the UNDP and the German development bank KfW.

The NGO sector is playing an important role too. Many NGOs have engaged with the climate change issue at the level of community-based adaptation (CBA) from an early stage with the formation of a consortium of twelve major international NGOs called Action Research on Community Action in Bangladesh (ARCAB). The Palli Karma Sahayak Foundation (PKSF) has been funding a large-scale community climate change project (CCCCP) aimed at innovating adaptation with the help of its partner NGOs. It is imperative to encourage such experiments further and to synthesise lessons on best practices, which can then be used to scale up appropriate adaptation processes with the help of government funds across the country.

## STRATEGIES FOR DEALING WITH FOOD SECURITY AND NUTRITION

The battle against the remaining challenges with food security and nutrition will have to be fought on many fronts at the same time. Some of the more important elements of such a multi-pronged strategy are discussed below under three broad groupings: agriculture, social protection, and nutrition-specific interventions.<sup>2</sup>

### Creating a More Diversified, Resilient, and Nutrition-Sensitive Agriculture

A vibrant and flourishing agriculture can play an essential role in improving food security and nutrition in a country like Bangladesh. There are several possible pathways: (a) *the production pathway*: farm households' production practices can improve the quantity, diversity, and nutrient quality of foods available to the household year-round; (b) *the income pathway*: in view of the fact that agriculture and related activities still provide a substantial part of rural income, a flourishing agriculture will improve the rural poor's access to food; (c) *the market pathway*: rapid growth in food production can help improve the access of non-producers too by keeping the price of food within the range of affordability, and (d) *the public distribution system pathway*: a strong public distribution system is needed for stabilizing prices and bolstering the social safety net, both of which are essential for improving food security, and a flourishing agriculture is needed to feed the public distribution system without upsetting the normal functioning of the market.

The logic behind the proposition that through these various pathways a flourishing agriculture can improve the availability and access dimensions of food security is easy to see. However, the issue of nutritional impact is not so straightforward. If the nutritional impact has to go beyond simple provision of calories, which it should, agriculture must not just be growing fast, it must be growing in a diversified manner producing a variety of foods containing essential micronutrients. In other words, what matters for nutritional impact, is not just the rate of growth but also the pattern of growth. To put it differently, what is needed is a flourishing, diversified, nutrition-sensitive agriculture.

The relevant policy questions are: (a) How can we promote a diversified agriculture?, and (b) How can we ensure that a more diversified production structure is reflected in the diet of the farmers themselves?

---

<sup>2</sup> It should be recognised that there is an overlap between strategies for food security, nutrition, and general inclusive growth, because, to the extent that inclusive growth expands the real incomes of the poor, it will also improve their access to food and nutrients, other things remaining the same. For this reason, a fully comprehensive discussion of strategies for food security and nutrition should, in principle, also encompass a thorough discussion of strategies for inclusive growth—for example, strategies for promoting non-farm growth in rural areas and labour-intensive growth through industrial and macroeconomic policies, removing discrimination along gender and other dimensions, and so on. But since the general strategies for inclusive growth are already well discussed in the existing literature (for example, in the Seventh Five-Year Plan of the Government of Bangladesh), and also with a view to keeping our discussion within manageable limits, the review leaves out the discussion of these general strategies and concentrates on strategies that are more specifically focused on food security and nutrition.

As far as the promotion of a diversified agriculture is concerned, the first point to note is that as the demand for a diverse diet grows with rising per capita income of the general population, farmers should have the incentive to meet this demand in any case, without any added inducement. After all, rice gives relatively low-value output per unit of land, so it offers less scope for sustained income growth compared to high-value agricultural commodities. Because smallholder farmers have relatively less access to land, high-value crops such as horticulture already loom large in their livelihood structure. It clearly pays smallholder farmers to use family labour to grow more labour-intensive, higher-value crops.

The problem, however, is that rather than receiving incentives to meet demand, farmers face a number of constraints, which is where policy interventions need to focus.<sup>3</sup> A common constraint is the disincentive that comes from price instability. High-value crops, especially fruits and vegetables, have thin domestic markets owing to relatively low levels of demand for them. As a result, they are subject to much higher year-to-year price fluctuations compared to rice, indicating relatively high levels of market-induced risks for production of non-rice crops. Horticultural crops also face special problems related to perishability, which increases the risks of marketing. The interplay of these factors contributes to the risks farmers take on to produce horticultural crops. However, these factors also imply that addressing the market efficiency issues is likely to be an effective means of reducing the risks associated with adoption of high-value agricultural production.

Well-developed agricultural value chains can reduce much of the risk through institutional innovations, such as contract farming, in which the farmer supplies agreed upon quantities of an agricultural product to an agribusiness firm (for example, a supermarket chain or food processing industry), based on the quality standards, delivery requirements, and negotiated price established in advance. Agribusiness firms often also agree to support farmers through a variety of services, such as input supply, extension advice, and transportation of produce to their premises. Modern food retail is currently very small in Bangladesh, but it is growing rapidly. Financial institutions in general constitute a missing link but are key to the consolidation of investments within value chains. Considering the fragmented nature of value chains in Bangladesh, which is a major constraint for smallholder farms, the approach would need to be comprehensive to address key parts of the value chains by expanding investments in production, processing, and marketing and improving service delivery in parallel. While private-sector activities are increasingly creating agribusiness opportunities, the public sector should complement them. The government's role in providing an enabling policy environment for the private sector is crucial in this regard.

Second, marginal and small farmers constitute the largest share of farmers in Bangladesh. However, the outreach of agricultural extension services to these two groups of farmers

---

<sup>3</sup> For a thorough discussion of the importance of and the strategies for agricultural diversification in Bangladesh, see Gautam and Faruqee (2016).

is very low in absolute terms and considerably less than the service provided to medium and large farmers. This has been a traditional problem with the extension services of Bangladesh, and recent research shows that the problem persists. For example, the 2015 BIHS survey, carried out by IFPRI, shows that only 16 percent of farmers received government extension services that year; for the marginal farmers, the proportion was only about 10 percent (Ahmed 2015). This is a complex problem, characterised by multiple constraints related to: (i) institutional capacity of public extension services to operate effectively and at a significant scale; (ii) relevance of the available extension services to meet farmers' demands; and (iii) technical, financial, and organizational capacities of household farms to access and implement extension services.

Third, since high-value foods also often tend to involve high levels of input, access to credit is essential if farmers are to take full advantage of the market opportunities for selling these products. It is well-known, however, that the farmers' access to formal agricultural credit institutions, such as the Bangladesh Krishi Bank (BKB) and the Rajshahi Krishi Unnayan Bank (RAKUB), is low, and the outreach of these two credit institutions focuses more on medium and large farmers than marginal and small farmers. Smaller farmers have much greater access to the microcredit institutions (MFIs), but traditionally microcredit has tended to focus mainly on non-farm activities. Encouragingly, MFIs are now increasingly moving towards agricultural loans. Since the production technology of agriculture does not suit the standard weekly repayment system practised by the MFIs, they are currently experimenting with alternative loan products, which break away from many of the traditional practices. It is imperative that the Microfinance Regulatory Authority (MRA) and the Palli Karma-Sahayak Foundation (PKSF), the largest wholesaler of microcredit in Bangladesh, create the necessary enabling environment in which these experiments can result in sustainable products and practices.

Fourth, farmers need access to a range of products rich in micronutrients. One useful way of expanding this range is to fortify the products with which Bangladeshi farmers are already familiar. In this context, it is encouraging to note that Bangladesh is the first country in the world to develop a rice variety biologically fortified with zinc—a micronutrient that can help reduce child mortality and stunting rates by reducing the prevalence of diarrhoea and pneumonia. The government has already approved two zinc-rich rice varieties which the researchers of the Bangladesh Rice Research Institute (BRRI) have developed, and these are being cultivated by farmers. Yet another example is an orange-fleshed sweet potato (OFSP), locally called *komola sundari*, which has been developed by the International Potato Centre. It is easy to produce and suitable for growing in small areas like pond dykes. Only 125g of OFSP per day provides enough  $\beta$ (beta)-carotene to meet the needs of a preschool child. It has been estimated that even at a low yield (6 tons per hectare), just 12 decimal of land can generate adequate annual supply of vitamin A for a family of five (FAO 2014).

Yet another constraint is the widespread prevalence of gender inequality. Women are key actors within the food system in Bangladesh, but they are historically less empowered. In spite of playing an important role in agriculture growth in Bangladesh, women face persistent obstacles and societal and economic constraints that limit their further inclusion in agriculture. This has serious implications – not just from the point of view of social equity and justice, but also from the perspective of economic efficiency. In particular, the lack of women’s empowerment weakens the links between agriculture and nutrition. Analysis of data from the BIHS survey, carried out by IFPRI, reveals that women’s empowerment plays a key role in promoting a diversified production structure among the rural households of Bangladesh. Using a specially designed Women’s Empowerment in Agriculture Index (WEAI), developed jointly by USAID, IFPRI and Oxford Poverty and Human Development Initiative (PHI), researchers have found robust statistical evidence that greater empowerment of women leads to greater diversity of production, other things remaining the same (Sraboni et al. 2014; Ahmed 2015).

If the farmers can be given the necessary incentive to produce a diversified portfolio of foods, and if the constraints they face can be eased with appropriate policy interventions, it will certainly help the general population to access a diversified diet at affordable prices. But a basic question still remains: is there any assurance that the farmers themselves will actually consume a diversified diet? It is certainly conceivable that while the farmers may be induced to produce diversified foods in pursuit of a higher income, they may be inclined to use that income mainly to consume more of the traditional diet. This is especially likely for the poorer farmers, for whom the quantity of the basic diet rather than the quality of diet may be the main concern simply because a better-quality diet is also more expensive. “Why not sell the milk and eat more rice,” they might think.

Fortunately, recent evidence suggests that, as consumers, Bangladeshi farmers are not exclusively concerned with quantity to the neglect of quality. The IFPRI research project mentioned above reveals that agricultural production diversity does lead to dietary diversity of children, women, and other household members. Following FAO guidelines, this project classified all foods into 12 categories—(1) cereals, (2) white tubers and roots, (3) vegetables, (4) fruits, (5) meat, (6) eggs, (7) fish and other seafood, (8) legumes and nuts, (9) milk and milk products, (10) oils and fats, (11) sweets, and (12) spices, condiments, and beverages—and household dietary diversity was defined as the number of food groups consumed by a household in the week preceding the survey. Using data from a baseline survey carried out in 2011, a carefully conducted econometric study observed that the more diversified a household’s production structure was, the greater was the index of household dietary diversity as defined above, after controlling for other influences (Sraboni et al. 2014). Subsequently, this finding was confirmed by a more robust study, using panel data for 2011 and 2015 (Ahmed 2015).

There are, therefore, reasons to be optimistic that promoting a more diversified agriculture will improve the dietary diversity not only of the general population but of the farmers as well. The relevant policy question here is how to strengthen the effect on the farmers' diet. One answer is provided by the aforementioned IFPRI studies that examined the nexus between women's empowerment and agriculture. These studies found that women's empowerment enhances not only a diversified production structure but also increases the likelihood that diversified production will be translated into a diversified diet for the producers themselves (Sraboni et al. 2014; Ahmed 2015). There is also a good deal of evidence that women tend to spend more on the health and nutrition of children than do men (Kennedy and Peters 1992; Quisumbing et al. 1995), but it takes empowered women to translate this preference into practice.

International evidence suggests that the effect of women's empowerment can be further strengthened if the interventions include a behavioural change communication (BCC) strategy to sensitize decision-makers within the household about the benefits of dietary diversity. A particularly good example is the Enhanced Homestead Food Production (E-HFP) programme introduced in Burkina Faso by Helen Keller International (HKI) in 2010. The programme targeted women with children 3- 12 months of age as the principal vehicle for bringing about diversity in production and diet of poor agricultural households. It also aimed at empowering women by providing education on best practices in agriculture and nutrition, transferring small agricultural assets to beneficiary women, and having village model farms led by women. Furthermore, instead of just teaching them about the best practices, it attempted to strengthen their propensity to adopt those practices through a BCC strategy. A rigorous evaluation of the programme provides convincing evidence that the programme was immensely successful—both in fostering diversification in production and ensuring greater dietary diversity (Olney et al. 2014). The study shows that a well-designed, well-targeted, and well-implemented integrated agriculture and nutrition programme, including a strong BCC strategy and women's empowerment strategy, can have a significant impact on the nutrition of all household members. The programme clearly demonstrates that it is possible to achieve nutrition-sensitive agriculture if correct interventions are employed and effectively implemented.

These examples from Bangladesh and elsewhere provide convincing evidence that women's empowerment, combined with appropriate BCC, can play a significant role in promoting a nutrition-sensitive agriculture. Happily, the Government of Bangladesh appears to be taking this evidence seriously. The Ministry of Agriculture is currently implementing a pilot project called "Orienting Agriculture toward Improved Nutrition and Women's Empowerment", also referred to as "Agriculture, Nutrition, and Gender Linkages," or ANGeL, for short. Designed by IFPRI and funded jointly by the Government of Bangladesh and USAID, the pilot project was launched in October 2015, and is currently underway in 16 districts across the country. The project seeks to draw on the large existing national agricultural extension network, and attempts to "top-up" its current portfolio with

nutrition activities and messages. Agriculture extension workers are thus expected to act as the primary deliverers of nutrition knowledge and practices.

How far this strategy would succeed in achieving its goals remains to be seen. The pilot project is being implemented through randomized controlled trials (RCTs), and the outcome is supposed to be evaluated rigorously by IFPRI after an interval of two years. *A priori*, there does exist a good justification for using the nationwide network of extension workers under the Ministry of Agriculture as the change agents. Since these extension workers presumably maintain regular contact and have established relationships with the people and the communities where they are based, they are expected to have the necessary awareness of local social norms, cultures, and belief systems that help nutrition messaging. However, if the presumption is that it is much easier to propagate nutrition messages into communities through pre-existing relationships built on trust, it would appear odd to rely exclusively on government officials (who are, also, mostly males) for this purpose. In rural Bangladesh, the NGO community has a proven track record of acting successfully as a behavioural change agent, especially with regard to women's empowerment. The accumulated experience and expertise of the NGO community is a great asset in Bangladesh—much more so than other developing countries. It would be wasteful not to make use of this readily available asset to execute tasks for which it is eminently suited.

### **Devising a More Inclusive, Efficient and Nutrition-Sensitive Social Protection System**

Social protection and safety net programmes are potentially an important vehicle for promoting food security and nutrition. Bangladesh possesses a lot of experience in providing assistance to the poor through social protection programmes.<sup>4</sup> During the period from 2000 to 2008, the government allocated an average of 12 percent of total annual public expenditure (about 1.5 percent of GDP) to social protection. Since 2008, in response to global food and energy price crises, the allocation was increased to about 14 percent, on average, of the total budget from 2009--2012, reaching as high as 2.64 percent of GDP in 2010-11. Over the next couple of years, the amount of spending came down to around 2.2 percent of GDP, accounting for 12 percent of annual public expenditure.

The increased allocation in the wake of price shocks is reflected in greater coverage. According to data from the *Household Income and Expenditure Survey* (HIES), the proportion of households covered by the safety net programmes rose from 13 percent in 2005 to 24 percent in 2010, bringing the total number of households reached by social assistance measures to roughly eight million.

---

<sup>4</sup> For critical evaluation of this experience, see, among others, Ahmed et al. (2009), Khuda (2011), Morshed (2009), Rahman and Chaudhury (2012), Rahman et al. (2012, 2014), and the World Bank (2006).

With increased spending and coverage, the regional allocation of safety net spending has also become more progressive. In 2005, regional allocation had no correlation with the intensity of regional poverty, but in 2010 regions with higher levels of poverty tended to receive higher allocation per capita (World Bank 2012: 118).

Despite increased coverage and an element of progressivity at the regional level, the impact of safety nets at the household level has been minimal so far. The analyses carried out by the World Bank (2012) using data from HIES and by Osmani et al. (2015) using a different nationally representative survey for rural Bangladesh carried out by the Institute of Microfinance (InM) in 2010 both demonstrate similar, depressing conclusions in this regard. The main findings are summarised below.

First, there is little evidence of progressivity at the household level. The World Bank study finds that although the coverage of the poor increased during the 2005–2010 period—from 21 percent to 33 percent—the coverage of the non-poor increased almost at the same rate—from 44 percent to 60 percent. At the same time, the share of total programme spending accruing to the poor dropped from 52.6 percent to 35.3 percent within the five-year period. Poor households' receipt of safety net transfers as a share of their total consumption has also fallen from 22 percent to 11 percent.

Second, owing partly to very thin spreading of resources and partly to substantial diversion of resources to non-poor households, the impact of safety net programmes on poverty—and by implication on food security—has been negligible. Simulations show that in the absence of safety net transfers, poverty rates in Bangladesh would be 33 percent instead of 31.5 percent in 2010 (World Bank 2012) and rural poverty would be 34.4 percent instead of 33.1 percent in the same year (Osmani et al. 2015)—a difference of just 1.3 to 1.5 percentage points.

Third, the safety net fails in one of its most crucial functions—namely, in enabling poor households to cope with shocks better. Using yet another nationally representative household survey carried out in late 2009, Santos et al. (2011) found that more than 50 percent of Bangladeshi households experienced one or more shocks over a one-year recall period, but less than two percent of households reported the use of safety nets as one of the top four coping mechanisms against a shock. By contrast, use of savings was reported by 26 percent to 44 percent of households as the principal means of coping with shocks, and the use of loans was reported by 31 percent to 46 percent of households. A similar conclusion was reached by Osmani et al. (2015) using the InM survey of 2010. Through econometric analysis, they identified a set of factors that helped rural households to cope better with shocks, which included savings and access to microcredit but not social safety nets.

Clearly, important issues and challenges remain in the safety net system. The targeting errors of exclusion and inclusion are large in most programmes. Additionally, many

programmes have limited coverage, are uncoordinated, and are not adequately funded. Programme resources and, hence benefits to programme participants, are spread too thin.

Most safety net programmes in Bangladesh address economic vulnerability but pay little attention to demographic vulnerability. The demographically vulnerable—including children, the elderly, and those who are severely disabled or chronically ill—are often not able to perform the intense physical labour involved in cash- or food-based public works programmes. More than a short-term safety net, they really need a broader social protection system. Programmes that involve providing allowances to elderly and disabled people are a start, but coverage and transfer amounts are currently inadequate. Programmes for pregnant women and young children are also extremely limited (less than 1 percent of the social protection budget), which is a matter of particular concern since a mother's nutrition levels at the time of pregnancy have a longstanding impact on the health and nutrition of the child.

There is also a lack of safety nets available to the urban poor. The rapid urbanization of Bangladesh calls for a range of measures to tackle urban food insecurity; a strong safety net or social protection system for the urban poor is an important one. This issue is taken up more fully later in this review while discussing emerging concerns.

The Government of Bangladesh has set out the guiding principles for its future interventions for social protection in a new strategy document called the *National Social Security Strategy* (GOB 2015a). In implementing these principles, priority will be given to those interventions that have the greatest scope for being nutrition-sensitive and amenable to reaching those in greatest need. Some illustrations are provided below by discussing four major types of interventions: the Public Food Distribution System (PFDS), programmes for poor and vulnerable women, a safety net for small children, and the School Feeding (SF) programme.

**Public Food Distribution System (PFDS):** The Government of Bangladesh procures foodgrains (rice and wheat) from the domestic market and imports from abroad, and distributes these through different monetized and non-monetized channels of the Public Food Distribution System (PFDS). The PFDS has four key functions: (1) to supply foodgrains to various food-based safety nets; (2) to provide price incentives to farmers for increased production through domestic procurement of rice and wheat; (3) to maintain a security stock of foodgrains to meet emergencies; and (4) to stabilize market prices through open market operations.

Public foodgrain reserves are costly to maintain and divert public expenditure from other investments aimed at increased agricultural production (for example, rural infrastructure and/or improved technology). Determining the minimum level of PFDS grain reserve is, therefore, very important. Moreover, it is important to note that the same amount of grain cannot simultaneously serve all of its multi-pronged objectives as there are inevitable

trade-offs amongst them. For example, a sudden emergency may require stocks to be drawn so low that normal distribution of grain is no longer feasible and must be postponed, cancelled, or targeted to those in greatest need. Thus, acceptable stock levels need to be analysed for each purpose, together with a review of alternative instruments available outside the PFDS (Shahabuddin et al. 2009).

In the early 2000s, a presumption was gaining ground in favour of watering down the PFDS, partly on the grounds of cost and partly on the assumption that a liberalized food market should be able to deal effectively with any concern regarding prices being too low for producers or too high for consumers. Donors, primarily the World Bank, were pushing in this direction. However, the mood changed radically after the food price shock in 2008 and again in 2011, emanating from global crises. The suffering of poor people following the price shocks was well-documented, and it has since become abundantly clear that in an increasingly globalized and unstable food market, national policies cannot rely solely on the market mechanism to smooth out severe fluctuations in price. It is being increasingly recognised in Bangladesh that PFDS has an especially important role to play to ensure food security in a globalized world, which is susceptible to unforeseen price shocks owing to both economic and climatic reasons.

The government has made efforts to increase the PFDS foodgrain storage and handling capacities in response to food price crises. Effective foodgrain storage capacity of the PFDS increased by 20 percent over the period 2007/08–2013/14, reaching 1.79 million metric tons in 2013/14. Not even the World Bank now advises the government to rely solely on international trade to manage the food stocks. Indeed, the World Bank has been the major force behind the drive to expand storage capacity for PFDS by financing the *Modern Food Storage Facilities Project*, which will add capacity for 540,000 tons by 2020. The project is intended, however, not only to increase storage capacity by quantity alone but also in quality retention—that is, maintaining the nutritional value of stock over a longer period of time due to modern storage facilities—as well.

A new concern for PFDS has recently arisen from the proposal put forward by the new *National Social Security Strategy* (NSSS) to shift away from food transfers to cash transfers. One of the ways in which the PFDS manages its stocks is by feeding the food transfer programmes in the social safety net. If these programmes are to be phased out or converted into cash-transfer programmes, the economic viability of PFDS might be jeopardised as it might be saddled with huge stocks that cannot be unloaded without serious repercussions on the market. This is a genuine concern, and the answer to this concern lies in striking a pragmatic balance between cash and food transfers in the social safety net system. Normally, cash transfers are superior on efficiency grounds. However, since Bangladesh will have to maintain the PFDS in the foreseeable future in light of the possible transmission of instability from the global markets, the social safety net system ought to contain a sensible mix of food and cash transfers.

Furthermore, in order to make the PFDS more nutrition-sensitive, efforts must be made to offer micronutrient-fortified foodgrains that are supplied both in its open market operations and through safety-net outlets. In collaboration with the private sector and the government, WFP is introducing a post-harvest fortified rice (called *pushti chal*) for mitigating micronutrient deficiencies. Rice is powdered and mixed with vitamin A, vitamin B1, vitamin B12, folic acid, iron, and zinc, according to WHO guidelines and the micronutrient requirement of the population of Bangladesh, as specified by the Bangladesh Standards and Testing Institution (GOB 2015b). This mix is then reconstituted into rice kernels, which are mixed with normal rice kernels at a ratio of 1:100. Efforts along these lines need to be strengthened. International evidence suggests that this is a relatively cheap and effective way to fight micronutrient deficiency and related morbidities (Menon et al. 2007).

**Programmes for Poor and Vulnerable Women:** Of the several safety net programmes that the Government of Bangladesh has put in place for poor and vulnerable women, by far the biggest and most important is the Vulnerable Group Development (VGD) programme. It emerged out of the 1974 famine under the name of Vulnerable Group Feeding (VGF) (which now applies to a different food transfer scheme triggered by food shocks) and was established with WFP and donor support in 1975. While the broad aim of the programme—to protect poor women and their families against hunger—has remained the same over its more than 40 years of operation, the more specific objectives and design of the scheme have shifted over time, from a purely relief-oriented programme towards a more development-oriented one in which training on income-generating activities and life skills is provided in addition to monthly rice transfers over a two-year period. The programme, initially launched by the Ministry of Disaster Management and Relief, is now implemented by the Ministry of Women and Children Affairs (MoWCA).

Although VGD has remained one of the most important components of the country's safety net scheme, there have always been concerns about its failure to target the “most deserving” women. There were also wider concerns about political use of the scheme as a means of building client bases for local political patronage (Hossain 2007). These concerns were brought into sharp focus by a major study of leakage (Ahmed et al. 2004). As a result of these concerns, combined with the fact that the donors no longer had large food (wheat) surpluses, interest in the programme began to wane.

However, under the donor-funded Strengthening Government Social Protection Systems for the Poor (SGSP) programme, an attempt is now being made to revitalize and enhance VGD. As part of this process, a significant effort to bolster the government's implementation capacity was started. At the same time, efforts are being made to improve the targeting, efficiency, effectiveness, and accountability of the programme. Currently, almost 750,000 women are being served by VGD.

An important aspect of the revitalization and enhancement process is to render the programme more development-oriented—that is, to ensure that the VGD women are enabled, with the help of a cash grant for investment and training, to earn enough for themselves and their families so that they can move out of extreme poverty and food insecurity by the end of the two-year programme cycle. In order to figure out the best modalities for this reorientation, pilot schemes have been launched, with support from WFP, by including an investment component in the VGD programme. These pilots are currently being implemented with 2,000 women (in two upazilas in Sirajganj) with donor-funded cash grant for investment assistance. MoWCA has now extended the model by an additional 6,000 women; it funds the cash grant and training assistance from its own resources. The programme uses an improved implementation procedure, including a one-time Tk. 15,000 cash grant for investment, monthly distribution of fortified rice (instead of regular rice or wheat), improved training on income-generating activities, stronger communication strategies, and more nutrition-focused approaches, such as behavioural change communication (BCC) on nutrition. Thus, from what was once a predominantly survival scheme, VGD is now being transformed into an instrument of economic empowerment for poor women, with an element of nutrition-sensitivity added to it. As such, in its new incarnation, VGD has a great potential for bringing about sustained improvement in the food security of poor vulnerable women and their families, while at the same time making perhaps a modest contribution to their nutritional outcomes as well.

One of the challenges for the future is that under the NSSS the emphasis on food-based transfers, of the kind practised in VGD, is less pronounced than before. For example, the government plans to consolidate the VGD and other poor-women-focused programmes into one cash-based Vulnerable Women's Benefit (VWB) programme (GOB 2015a). Consolidation of diverse programmes is certainly desirable, but it might be a mistake to do away with food transfers altogether. In addition to providing a convenient mechanism for rotating government food stocks, such food transfers also have the merit that they can act as a vehicle for introducing post-harvest fortified rice to the vulnerable population. The government and WFP are hence pursuing this goal through the VGD programme, among others. According to a recent study by BRAC, the beneficiaries of VGD and other safety net programmes have found the fortified rice acceptable to them; as such, it has great potential for delivering to the women and their families a range of micronutrients that are severely lacking in the diets of the very poor (Chakraborty and Akter 2014). This effort is consistent with the government's new national strategy for the prevention and control of micronutrient deficiencies (GOB 2015c).

**A Safety Net for Children:** At present, the highest coverage of social security schemes for children is during school age, mainly via the programmes for primary and secondary student stipends. As of 2015, around 13 million children received stipends, covering around 24 percent of primary school age children and 17 percent of secondary school age children. However, the transfer level of the stipends is low and has been falling in real terms in recent years. The real value of stipends also falls if more than one child receives them

in a family. As a result, the government recognises that the stipend scheme, as currently practised, is unlikely to advance the cause of social security for children very much (GOB 2015a). Accordingly, in the new *National Social Security Strategy* (NSSS), the government proposes to make two significant changes to the stipend schemes. First, coverage is to be extended to the poorest 50 percent of children in primary and secondary schools, with no distinction by gender. Second, the transfer value is to be increased and indexed to inflation so as to protect its real value. However, a maximum of two children per family will be able to receive the stipends at any one time.

Income support of this kind has a role to play in improving the food security of poor families with young children, quite apart from the positive effect it is likely to have on school enrolment. In order to make the income transfers more nutrition-sensitive, however, it is necessary to target very young children—especially, those in the first two years of life—when the impact on lifelong nutritional outcomes is likely to be the strongest.

Recognising this, the government has decided to prioritise support to young children up to the age of four by establishing a groundbreaking scheme known as the Child Benefit Programme. The brief outline of the new programme given in the NSSS document (GOB 2015a) suggests that it will build on the current Maternity Allowance Programme for the Lactating Mother, but the scale would be expanded greatly to reach half of all children ages 0–4 years, targeting poor and vulnerable families. The transfer will be paid to the mother or female caregiver (although a male caregiver will be eligible if no female is available). Each mother will receive the transfer for up to two children so as to avoid incentives for higher fertility. MoWCA was supposed to prepare a detailed implementation plan for this new programme, which was to begin in July 2016 in areas with the highest levels of child undernutrition.

For reasons not entirely clear, the programme has not yet been developed, let alone implemented. Meanwhile, the World Bank has offered to provide support for a programme, called the Income Support Programme for the Poorest (ISPP), which contains some of the basic elements of the proposed Child Benefit Programme. ISPP builds on the *Shombhob* pilot project, which was implemented by the Local Government Division (LGD) under the Ministry of Local Government, Rural Development and Cooperatives (MoLGRD&C) with support from the World Bank. *Shombhob* was a conditional cash transfer programme, which provided monthly cash transfers to poor mothers as long as they fulfilled the co-responsibility of: (i) attending monthly awareness sessions on nutrition; and (ii) having the growth of their children below three years of age regularly monitored at community clinics. Transfers were accompanied by robust targeting, communication, payments, monitoring, and evaluation activities.

Evaluation of *Shombhob* shows that it has been highly successful in achieving its goals (Ferré and Sharif 2014). Compared to a control group, beneficiaries of the project

experienced a significant 11 percent increase in monthly household food consumption. Expenditure on protein-rich foods—such as meat, eggs, dairy, fish, and pulses—also increased significantly for beneficiary households who attended the nutrition awareness sessions. The intervention had a significant impact on the state of malnutrition among children who were 10–22 months old when the project started, reducing the prevalence of wasting by 40 percent. Moreover, the intervention resulted in an 8 percent increase in nutrition-related knowledge of mothers regarding the importance of exclusive breastfeeding.

Encouraged by these results and to further strengthen safety-net delivery at the local level, the Government of Bangladesh requested for IDA support to scale up the *Shombhob* pilot in other parts of the country. The proposed ISPP is the outcome of this process (World Bank 2014). The project beneficiaries would include pregnant women and mothers with young children under the age of five from the poorest households. In the first instance, the proposed project will directly benefit approximately 600,000 beneficiary mothers in 42 of the poorest upazilas over a five-year period. Beneficiary mothers will receive cash benefits if they fulfil the following co-responsibilities linked to the growth and development of their young children: (i) use of regular growth monitoring and promotion (GMP) services, and (ii) attendance at child nutrition and cognitive development (CNCD) awareness sessions.

As part of the implementation process, the project will strengthen the capacity of (i) Union Parishads to develop the beneficiary list based on the Bangladesh Poverty Database currently being developed, and to supervise their enrolment into ISPP; (ii) community clinics (CC) to deliver the antenatal care (ANC) and GMP services as well as CNCD awareness sessions; and (iii) Union Post Offices to make electronic payments to beneficiaries using the Postal Cash Cards (upon compliance with co-responsibilities). To facilitate the Union Parishad activities, a “safety net cell” will be established at the existing offices, staffed by one safety net program assistant. To ensure regularity in service provision by the CCs and avoid overburdening the CC staff, one or more NGOs will be hired to support the CCs with delivering ANC and GMP services. The chosen NGOs will be exclusively responsible for offering the CNCD awareness sessions.

The project is yet to take off, but it appears to be based on sound principles. The experience of *Shombhob*, as well as the findings from a WFP-supported study called *Transfer Modality Research Initiative* (TMRI) (Ahmed et al. 2016b), clearly demonstrate the value of complementing transfers with BCC on nutrition. The idea of implementing the project through a co-ordinated mechanism involving local government bodies, community clinics, and local NGOs, so as to utilize their respective comparative advantages, is also inherently sound. However, to what extent the co-ordination works in practice, especially when the project is operated on a large scale, remains to be seen. There is also an issue of prioritization. There is a danger that the priority of focusing on the first 1,000 days of an infant’s life might be lost, or at least diluted, if the age cut-off line is set at four years, as was

the original proposal for the Child Benefit Programme, or at five years, as was proposed in the ISPP. This issue of priority should be given due consideration while planning the phasing of the programme.

**School Feeding (SF) Programme:** The SF programme originated from WFP's relief operations in response to the severe flood that affected the southwestern region of Bangladesh in 2000. The programme was initiated because the WFP officials, while delivering general food relief to the flood-affected households, realized that the children living in the assisted households were not attending schools, and they were also suffering from malnourishment. To resolve this problem and encourage the children to go back to the school, SF was developed as a "simple intervention" aimed at providing a mid-morning snack of fortified biscuits.

In 2002, SF became a core component of WFP's activities in Bangladesh and was gradually expanded to other parts of the country focusing on poverty-prone and food-insecure areas. The implementation process involved four-way co-operation between WFP, GOB, the private sector (who produced fortified biscuits according to WFP specifications), and local NGOs (who were in charge of distributing biscuits). Initially, the lead role was played by WFP, but gradually the government began to assume that role.

Under the programme, a 75g packet of fortified biscuits is supplied to each student (through the primary level) six days a week, or 240 school days a year. The packet of biscuits provides 338 kcal/day and meets 67 percent of a child's daily micronutrient requirements. The supply of fortified biscuits is complemented by a range of other services designed to improve the health and nutrition awareness of both the children and their families.

A careful econometric evaluation of the programme highlighted a range of positive outcomes (Ahmed 2004). After controlling for the effects of other influences, the study found that as a result of the programme (a) school enrolment increased by 14.2 percent, the probability of drop-out fell by 7.5 percent, and school attendance increased by about 1.3 days per month; (b) academic performance improved, as revealed by standard test scores and competency in mathematics; (c) children's diets improved, in particular, the calories consumed from the biscuits were found to be almost entirely (97 percent) additional to the child's normal diet, which implies that the biscuit was not simply a substitute of foods provided at home, even for poor households; and (d) child nutritional status, as measured by the body mass index (BMI) of participating children, also improved. More recent evidence, albeit based on qualitative data and less rigorous analysis, confirms these findings (Hossain 2014; WFP 2011).

These seem to be all very good reasons for scaling up the SF programme as one of the core components of the country's social protection system. It is sometimes contended that whatever good such a programme might do for children's education, it cannot be counted

as a nutrition-sensitive intervention because when the children have gone to the school they are already well past the 1,000-day window of opportunity beyond which stunting can no longer be reversed. This is a misconception, on three counts.

First, while there is no doubt that interventions are the most effective in the first 1,000 days of life, it would be a mistake to think that the growth deficits that are incurred in this period are completely irreversible and that nothing can be done to reduce stunting beyond this threshold. The existing medical and nutritional literature recognises that there is potential for catch-up in height-for-age, if circumstances improve for the better when a child is still young (Tanner 1981; Golden 1994; Coly et al. 2006). Further support to this proposition has recently been provided by a carefully conducted econometric evaluation of one of the most well-known school feeding programmes in the world: the Midday Meal Programme in India. Studying a cohort of children in the Indian state of Andhra Pradesh over a period of six years, the study has found that infants who became stunted (as well as wasted) by one of the worst droughts in two decades recovered almost fully and achieved normal height-for-age (on average) as a result of the SF programme (Singh et al. 2014).<sup>5</sup>

Second, the intervention can also have a far-reaching effect on stunting on an inter-generational scale. The crucial mediating variable here is education. It is generally agreed that school feeding can enhance educational performance, and, as noted earlier, educational improvement – of both sexes – has played a very strong role in reducing stunting in Bangladesh over the years (Headey et al., 2014). It follows, therefore, that an extensive school feeding programme in the present generation should have a profound effect on stunting in the next.

Third, stunting is not the only nutritional problem afflicting the children of Bangladesh. Some 2.2 million children below 5 years suffer from acute malnutrition (wasting), and as noted earlier, the problem shows no sign of receding fast. School feeding can be a highly effective means of reducing the problem as demonstrated by the evidence on improvement in nutritional status (Ahmed, 2004).

Thus, the case for scaling up the programme appears to be very strong. If the benefit is counted narrowly as prevention of acute malnutrition in the present generation, the magnitude of required scaling would be relatively small because in that case the intervention will have to be targeted closely to food insecure and vulnerable areas, as is the current practice. However, if the current as well as inter-generational impact on stunting is considered, the required scaling will have to be much more extensive. The present Review prefers the latter option.

---

<sup>5</sup> There is more evidence from Peru and elsewhere that carefully chosen interventions, including feeding programmes, can reverse stunting incurred in early life. See, for example, the evidence cited in Georgiadis (2014) and Crookston et al. (2013).

Extensive scaling will of course bring its own challenges, involving management issues as well as resources. Until now, WFP has been playing a vital role by selecting NGOs and factories on merit, ensuring transparency of procurement and other aspects of accountability. It is an open question whether WFP (or any other development partner) will be able to, or even allowed to, continue to play this role if the programme is to be scaled up to the national level. Ensuring accountability will be a matter of serious concern if the programme is taken over by government in its entirety, but this is a general concern for all kinds of intervention and is not limited to School Feeding. Accountability procedures will have to be improved all around in any case if the government is serious about achieving its developmental goals, including goals on food security and nutrition. During the transition period, however, it would be desirable for WFP to continue to play its current role of ensuring accountability as well as offering technical support.

Apart from management and accountability issues, attention also needs to be paid to the modality of the SF programme, in particular, whether the current modality of offering fortified biscuits should continue or not. The government is considering the option of moving partially or wholly to the provision of cooked meals in the schools, based on locally sourced ingredients. In terms of logistics, this may be more cumbersome than provision of biscuits, but there are instances of successful implementation of cooked meal programmes in developing countries, most notably in India. Apart from being more wholesome, cooked meals have the added advantage of opening up local value chains for diversified production of food (mainly vegetables, which are often produced by women), as demonstrated in two WFP pilot projects in Bangladesh (GOB 2015d).

## **Nutrition-Specific Interventions**

Strategies for overcoming the burden of undernutrition must begin from the premise that the aetiology of undernutrition is complex and multidimensional. As noted previously, households' access to resources—as reflected in income and poverty—is an important determinant of nutritional status, but there are many other forces at work as well. In the context of Bangladesh, a couple of facts bring this point into sharp focus.

First, detailed geographical maps of poverty and undernutrition, prepared by the Bangladesh Bureau of Statistics, with technical support from the World Bank and WFP, demonstrate a clear dissonance between the intensity of poverty and the intensity of undernutrition. In fact, one observes the apparent paradox that some of the lowest rates of stunting prevail in regions with some of the highest rates of poverty while some of the highest rates of stunting are found in regions with the lowest rates of poverty (WFP/BBS/IFAD 2012).

Second, successive DHS reports show that the problem of undernutrition is not confined to the poorest segments of the population. While the problem is certainly more severe for the poorer households, the rich are far from being exempt from it. Thus, as recently as in 2014,

about one-fifth of children under five in the richest wealth quintile were found to suffer from chronic undernutrition, as reflected in stunting. The case of acute malnutrition (wasting) is even more intriguing. In the case of stunting, at least one observes a decline over time; among the top quintile the rate of stunting has come down from 30 percent in 2004 to 20 percent in 2014. However, no such improvement is found in wasting; between 2004 and 2014, the level of wasting in the top quintile has fluctuated in the narrow range of 11–13 percent. Furthermore, in 2014, the rate of wasting in the top quintile (12.8 percent) was very close to the national average of 14 percent, which suggests that access to resources at the household level has made very little difference to the problem of acute malnutrition in Bangladesh.

The lesson that emerges from all this is that if the burden of undernutrition is to be reduced faster than it has been in the past, it is essential to look beyond economic and educational progress to first identify other drivers of nutritional status and then act upon them.

One aspect that deserves special attention in this context is the persistently high prevalence of low birthweight since it is well-established that low birthweight babies tend to be more susceptible to stunting in later life. The prevalence of low birthweight is high in Bangladesh by international standards. This is, in fact, a general problem for South Asia as a whole, and lies at the root of the “Asian Enigma” that South Asia had historically higher rates of undernutrition than countries in Sub-Saharan Africa despite being ahead in most aspects of socioeconomic development (Osmani and Bhargava 1998). For Bangladesh at least, the underlying problem has not changed much. In 2003–04, a nationwide survey carried out by BBS (2004) found the prevalence of low birthweight to be 35.6 percent. About a decade later, in 2012–13, another survey called the *Multiple Indicators Cluster Survey* (MICS) found the proportion to be 37.7 percent (UNICEF/BBS 2015). With more than one-third of babies being born with low birthweight, it is no surprise that more than one-third of children are also currently stunted.

It is notable that neither education nor economic status makes a great deal of difference in this regard. According to MICS of 2012–13, even among mothers with higher levels of education (secondary completed), 32.8 percent of babies were born with low birthweight; among the wealthiest quintile, the proportion was 34.1 percent. The problem of low birthweight is thus both persistent and pervasive. Any strategy for achieving rapid improvement in nutritional status must, therefore, start by addressing this problem.

The main reason for low birthweight in Bangladesh is undernourishment of the foetus—or intra-uterine growth retardation (IUGR), in technical jargon. IUGR, in turn, is caused by undernourishment of the mother. It is important to realize, however, that what matters here is not just the nutrition and healthcare the mother receives during pregnancy. The entire biological history of the mother matters, starting from her own birthweight at the beginning of her life, how she was fed and taken care of as a child, her physical stature as

an adult, at what stage in life she started child-bearing, and the quality of antenatal care and nutrition she received during pregnancy. Actions are required on all these aspects if the prevalence of low birthweight is to be reduced. As reported above, the nutritional status of women of reproductive age has improved considerably in the last decade; that is a positive development, but challenges remain in other spheres.

A matter of particular concern is the persistently high rate of teenage pregnancy. When the body of the mother is still growing, pregnancy leads to competition between the mother and the foetus for access to nutrients, a battle which the foetus invariably loses. It is, therefore, alarming to note that the proportion of 15–19 year-old-women who had already started child-bearing has fallen only marginally in the last two decades—from 33 percent in 1993–94 to 30.8 percent in 2014 (according to DHS data).

The spectacular progress in female education that Bangladesh has achieved during the same period, along with general economic progress, has evidently failed to make any dent into the culture of early marriage and teenage pregnancy. A massive social campaign, along with more focussed family planning advice, is clearly needed to bring about a change in behaviour in this respect. While the objective of the social campaign would be to increase the age of marriage as well as to postpone pregnancy of those girls who do marry early, family planning support should be provided to achieve the latter (postponing pregnancy). Family planning services have an excellent track record in Bangladesh. One of Bangladesh's most unambiguous success stories is the reduction of fertility rates (Kohler 2012), and several evaluations have clearly established that the family planning programme played a major role in making this possible (Cleland et al. 1994; World Bank 2005). The need of the hour is to harness the proven powers of Bangladesh's family planning services towards helping adolescent girls, who do marry early due to social and other pressures, so that they can at least control their reproductive behaviour.

The problem is aggravated by the fact that adolescent girls and women in general face special disadvantages in accessing diets of adequate nutritional quantity and quality. The Food and Nutrition Technical Assistance 2 (FANTA-2) Programme has set up criteria by which non-pregnant and non-lactating women in Bangladesh can be identified as having diets that were likely to be inadequate in micro- and macronutrients. According to this criterion, the proportion of women and adolescent girls eating inadequate diets was 54 percent in 2014 (HKI/JPGSPH 2015). The situation seems to be improving, as the ratio was 61 percent in 2011, but the fact that more than half the adolescent girls and women of reproductive age still eat diets that are inadequate in both micro- and macronutrients does not portend well for the nutritional outcomes of future generations.

There is large variation among women belonging to different socioeconomic groups, with women from poorer households understandably eating poorer diets: over three-quarters (77 percent) of women in the poorest wealth quintile had an inadequate diet. But it is

remarkable that even among the richest quintile, nearly one-third of women (32 percent) had inadequate diets (HKI/JPGSPH 2015).

The children of Bangladesh suffer not just because so many of them are born with the disadvantage of low weight, but because many more—even those who are born a normal weight—do not receive proper feeding when they are most vulnerable. This is especially true in the first two years of life, which nutritionists have identified as the critical period for laying the foundations for future nutritional well-being.<sup>6</sup> It has now been established beyond doubt that new-born infants should be exclusively breastfed for the first six months of life but soon thereafter they must be introduced gradually to complementary foods of adequate quantity and quality. These norms of feeding have been christened as the recommended infant and young child feeding (IYCF) practices. One of the major nutritional problems of Bangladesh is that these norms fail to be practised on a massive scale.

For much of the last two decades, exclusive breastfeeding of children under age 6 months has hovered around 40 percent. According to DHS, there has been some improvement in recent years as the proportion rose to 55 percent in 2014 (NIPORT et al., 2015). However, the FSNP report of 2014 finds the prevalence of exclusive breastfeeding to be only 42 percent; and more worryingly it finds a slightly downtrend trend since 2010 (HKI/JPGSPH, 2015). Whichever figure is accepted, it is a worrying fact that close to half the children are still not exclusively breastfed in the first six months of their lives, which is essential for laying a solid nutritional foundation for later life. It is also notable that the extent of exclusive breastfeeding does not depend much on mother's education, except at very high level of education (HKI/JPGSPH, 2015). Formal education among girls, which has expanded rapidly in the last couple of decades, has clearly failed to make any significant dent into the cultural practice of breastfeeding.

Equally alarming is the situation of feeding practices after six months of life. Proper nutrition requires that complementary foods must be introduced soon after the first six months of life, but currently in Bangladesh there is a strong dissonance between the norm and the practice of using complementary foods for young children: 18 percent of children receive complementary foods too early and nearly 40 percent too late. Even when complementary foods are introduced, they are not given in appropriate amounts or in the right manner. According to the recommended IYCF practices, for children in the 6–23 month age group, a child can be said to have access to a minimum acceptable diet (MAD) if it is given milk and milk products, and food from at least four different food groups, and is fed at least the recommended minimum number of times. International evidence suggests that a habitual diet that satisfies this criteria reduces the risk of both stunting and underweight (Marriott et al. 2012). According to the DHS 2014, however, the diets of only 23 percent of children

---

<sup>6</sup> Recent research, reported in a series of papers in *The Lancet* in 2013, has led to the view known as the "1,000 day window of opportunity," which includes the period of a child's life as a foetus and the subsequent two years. It is now generally agreed that this is the period in which nutritional interventions will pay the highest dividends.

ages 6–23 months in Bangladesh met this criteria. An alternative estimate puts the figure at 39 percent (HKI/JPGSPH 2015), but even this is well below the target of 52 percent set for 2016 by the government in its Health, Population and Nutrition Sector Development Programme (HPNSDP). This poor quality of diets leads to micronutrient deficiencies, which can seriously damage both physical growth and cognitive development.<sup>7</sup>

A part of the problem of inadequate complementary foods lies in the lack of availability and affordability of the right kind of food for infants, but no less important are the cultural norms of child feeding. This is evident by noting the pattern of IYCF practices across educational and wealth groups. Unlike in the case of exclusive breastfeeding, IYCF practices do improve with education, but, even for the mothers who had completed secondary education, recommended practices were followed in less than half the cases (42 percent) in 2014, according to DHS data. Similarly, among the wealthiest quintile, only 32 percent followed the recommended practice.

The economic problem of availability and affordability of complementary foods can be mitigated partly through agricultural diversification so that varieties of non-cereal foods can become readily available and partly by ensuring widespread availability of micronutrient-fortified complementary foods at affordable prices.<sup>8</sup> These issues have already been discussed.

The problem with cultural practices, however, needs to be addressed by adopting nutritional interventions that include behavioural change communication (BCC) on nutrition. A recent experimental study carried out by IFPRI demonstrates that interventions that included BCC as part of a cash transfer programme for poor women with small children led to improvement in child feeding practices resulting in a significant reduction in stunting in northwest rural Bangladesh, while interventions without BCC did not have this effect (Ahmed et al. 2016b). Similar results have been found in a pilot project for conditional cash transfer, called Shombhob, supported by the World Bank (Ferré and Sharif 2014).

The nutritional status of children and adults alike are also influenced massively by the quality of water, sanitation, and hygiene—a group of factors that has collectively come to be known as “WASH.” Among the three components of WASH, Bangladesh has made the most progress in sanitation, followed by access to safe drinking water (albeit spoiled to some extent by arsenic contamination)<sup>9</sup> but remains far below the desired level in terms of personal hygiene. As mentioned earlier, spectacular reduction in the practice of

---

<sup>7</sup> In 2011–2012, the prevalence of anaemia in preschool-aged children was 33.1 percent, vitamin A deficiency was 20.5 percent, and iodine deficiency was 40 percent. Among non-pregnant, non-lactating women, these rates were 26 percent for anaemia, 5.4 percent for vitamin A deficiency, and 42 percent for iodine deficiency (ICDDRDB et al. 2013).

<sup>8</sup> Research shows that locally produced ready-to-use supplementary foods (RUSF) are both effective and acceptable to the children (Ahmed et al. 2014).

<sup>9</sup> During the period from 1990 to 2015, access to improved sanitation has gone up from 50 percent to 89 percent and access to safe drinking water has increased from 68 percent to 87 percent in Bangladesh (UNICEF/WHO 2015).

open defecation constitutes the most important improvement on the front of sanitation. Still, the problem of lack of sanitation remains far from resolved, as over 40 percent of latrines are still classified as “unimproved” (World Bank 2015). Improvement in personal hygiene has proved to be an even bigger challenge. Among all the elements of personal hygiene, handwashing with soap has the greatest impact on disease and malnutrition. But Bangladesh lags severely behind in this practice. A recent study has found that only 27 percent of caregivers (of children) use appropriate handwashing behaviour, defined as using soap on two key occasions: after own defecation and before preparing food and feeding children (HKI/JPGSPH 2015). Shockingly, even among the top wealth quintile, only 35 percent of caregivers were found to display appropriate handwashing behaviour. Clearly, a key intervention at household and community level is promotion of handwashing with soap, which can reduce the number of diarrhoeal episodes by 42 to 47 percent, and thereby play an important role in reducing the burden of undernutrition.

Finally, serious attention must be paid to the problem of acute malnutrition (wasting) among children under five, which, as noted earlier, has shown very little improvement over the years. The Government of Bangladesh has an explicit policy of treating both moderate and severe acute malnutrition at health centres and in the community, but evidently the efforts have not been effective enough to date. Much more attention should be paid to prevention rather than treatment through, for example, social protection schemes like the School Feeding programme discussed earlier. However, for those who are already in the category of severe acute malnutrition (SAM) and are thus at a very high risk of dying, appropriate therapeutic treatment would be needed. Currently, access to such treatment is severely limited; serious effort must be made to overcome this limitation.

## **GOVERNANCE ISSUES FOR FOOD SECURITY AND NUTRITION**

As food security has been a persistent concern in Bangladesh ever since its emergence as an independent nation, the governance structure for managing food security is relatively well advanced. By contrast, since nutrition began to emerge as a matter of public concern only in the 1990s, the related governance structure is much less advanced and is still evolving. Furthermore, since food security and nutrition are interlinked phenomena, their respective governance should also ideally occur through an integrated framework. But the actual practice falls short of the ideal.

The famine of 1974 had a decisive influence on food policy and the governance of the food system in Bangladesh. Avoiding a repeat of the famine remained uppermost in the minds of donor programmers and government policymakers for the next two decades. During this period, food and agriculture policies gradually used procurement and pricing policies to move in the direction of increased production and stable prices while simultaneously reducing the regressive subsidies through the rationing system and

targeting what remained to the vulnerable poor. All of this was supported by a system that was geared towards responding to shocks, through price monitoring, scalable food transfers and subsidies, and deregulating foodgrain trade.

From the 1990s, more significant reforms of the PFDS system were undertaken, marking a shift towards more targeted food transfers to the vulnerable extreme poor and emergency measures as donors pushed for further market-oriented reforms. Further reforms were instituted after a fertilizer shortage in 1995 turned into a political crisis and a subsidized fertilizer supply through market dealers was established. Massive efforts to feed people during disasters, price volatility, and most recently the recurrent *monga* crisis (a seasonal food crisis in the northwest region of the country), have been mounted, and these have mostly been successful. Any complacency was rudely jolted, however, when Bangladesh proved to be susceptible to global volatilities during the recent global food and fuel price crises that started in 2007–08, amid two major cyclones. The government has responded by a combination of measures, including widening its international trade relations for rice beyond India, increasing the capacity and quality of public procurement for price stabilisation and safety nets, and agricultural and agro-industrial investment, including fuel subsidies and agricultural credit. Considering the longer time horizon, however, food policy has shifted away over time from relying on intervention in food markets and food aid to a more market-based system with targeted and emergency interventions through which the stocks in the foodgrain reserve are rotated; a market regulatory framework, including most recently around food safety issues, has also been developed.

Reflecting the multidimensional nature of food security, several institutions are involved in its governance, which reflects the range of sectors and concerns that shape food security. Four main bodies are charged with formulating and implementing food security policies, as currently laid out in the National Food Policy and Plan of Action. These are: (1) Food Planning and Monitoring Committee, a cabinet-level committee chaired by the Minister of Food, that draws on the work of the Food Planning and Monitoring Unit (FPMU) to provide “overall leadership and oversight in the formulation of food security and nutrition policies;” (2) Food Policy Working Group, an interministerial coordination mechanism that facilitates cross-sectoral participation in the implementation of the National Food Policy and its associated Plan of Action; (3) the FPMU, a government unit under the Ministry of Food that acts as a secretariat of the Food Policy Monitoring Committee and is “responsible for monitoring the food security situation in Bangladesh and the implementation of related policies;” and (4) thematic teams, which are specialized inter-ministerial bodies led by different Directorates of FPMU.

Since 2006, Bangladesh has had a National Food Policy, the goal of which is to “ensure a dependable food security system for all people of the country at all times” by meeting three objectives: (1) to ensure adequate and stable supply of safe and nutritious food; (2)

to enhance purchasing power of the people for increased food accessibility; and (3) to ensure adequate nutrition for all (especially women and children). Between 2008–15, this policy was being implemented through the National Plan of Action (NPA), which identifies 26 areas of intervention and a Country Investment Plan (CIP) with 12 programmes.

Donors have historically played a significant role in food security policymaking, but the impetus is and has been for some decades driven by government policy and enjoys strong local ownership. Despite the multi-sectoral approach taken to food security policy, and the acute political significance of national food security and protection against food shocks, the approach to policymaking has been generally fairly centralized and expert-led, with substantial evidence generation and monitoring systems influencing key policy decisions (Jahan and Shahan 2016). By contrast, nutrition policy (as distinct from security of access and availability of food) has to date been less well-coordinated, and the alignment with the political goals of the government has to date been far weaker (Taylor 2012).

The nutrition policy of Bangladesh has evolved through four different phases. The first phase started just after the independence of the country through incorporating a provision within the 1972 constitution that declared the improvement of the nutritional status of the citizens as a basic responsibility of the state. Consequently, efforts were taken to devise policies that would help the state in performing its responsibilities, and, in 1974, the Institute of Public Health and Nutrition was set up to assist the government in “...formulating policy and strategy for nutrition related activities and programs” (GOB 2011). This was followed by the establishment of the Bangladesh National Nutrition Council (BNNC) in 1975. However, during this phase, other than setting up the basic institutional structures, the government did not show any strong political commitment towards implementing the constitutional provision.

The development of the Bangladesh Integrated Nutrition Project (BINP) in 1996 marked the beginning of the second phase, and it is considered as the first large-scale policy intervention on nutrition adopted by the government. BINP adopted an “inter-sectoral and rights-based approach” and focused on behaviour change communication, micronutrient supplementation, and deworming on a large scale using the country’s strong network of NGOs. The outcomes were rather modest, however. The implementation of the plan covered only 16 percent of the rural population, and even where it reached the impact was very little.

In 2002, BINP was scaled up into the National Nutrition Programme (NNP) with support from a World Bank-led consortium. NNP has so far been the largest single provider of comprehensive nutrition interventions targeting adolescent girls, women, and children. It was administered by the government and implemented by local NGOs. Although the programme was based on a robust design tailored to local needs, it covered only about 30 percent of the total population, and its efficacy was questioned. The targeting of the

programme beneficiaries was not appropriate while the food supplement provided to children and women was of low nutritional quality. Accountability in the programme was suboptimal and, moreover, the monitoring and evaluation mechanisms were weak. The programme did not cater to the needs of children with severe acute malnutrition (SAM), and it did not cover any of the cities which have substantial slum populations.

In light of these weaknesses, the government closed the NNP and introduced the new Health, Population and Nutrition Sector Development Programme (HPNSDP 2011–2016), with a view to mainstreaming the nutrition services with existing health and family planning services. With the mainstreaming of nutrition in 2012, the National Nutrition Services (NNS) was launched by the MOHFW as a standalone line directorate in the Directorate General of Health Services (DGHS). The cornerstone of the programme was a network of community clinics across the country, which were developed to provide essential services through a partnership between the government and the community.

However, serious problems still remain. An interim assessment of NNP commissioned by the World Bank points to a number of current and future challenges (Saha et al. 2015). The report identified some fundamental issues in terms of the overall design of the NNS, its execution and governance, and suggested that adequate coverage of interventions at a community level is unlikely to be achieved during the period of the current operational plan. In particular, the NNS was thought to be too ambitious with too many activities expected to be delivered and too many delivery platforms. The study identified a lack of clarity on the respective roles of “health assistants” and “family welfare assistants” in delivering nutrition services alongside their existing tasks, which had traditionally focussed on family planning, antenatal care, referral, immunisation, and TB control. Interviews with frontline staff members “revealed their almost complete lack of awareness or knowledge about nutrition-related services and low exposure to NNS training.”

Yet another major problem relates to inter-Ministry and interdepartmental co-ordination of a plethora of nutrition-related interventions. At the national level, at least eight line ministries of the Government of Bangladesh have mandates about nutrition, and it has remained a challenge to ensure collaboration between these ministries. The main governance problem arises from competition between the Ministry of Health and Family Welfare (MoHFW) and the Ministry of Food (MoF) for the nutrition space. The nature of the problem is neatly summarized by a recent Save the Children (2014: 5) report: “...the MoHFW maintains a multi-sectoral nutrition Steering Committee as part of HPNSDP (2011–2016). The Ministry of Food has a Food Policy Monitoring Committee, which stems from the Country Investment Plan (CIP)... Given that the MoHFW is recognized as the government lead on nutrition, it overlaps substantially with the CIP, clearly representing competing initiatives that generated a rivalry for the ‘nutrition space’ between the MoF and the MoHFW. Neither committee has been able to effectively mobilize consistent and high level participation from other ministries accountable in delivering nutrition results.”

There are reasons to believe that this competition is not about to disappear. The Ministry of Food (MoF) is in the process of formulating a new food and nutrition policy and its upcoming new CIP will have an important component on nutrition. This raises the question of whether MoF and MoHFW will be able to work in collaboration especially when the MoHFW has just formulated the National Nutrition Policy (2015) and is working towards developing the National Plan of Action for Nutrition (NPAN). In principle, there is nothing wrong in having two such separate plans because the plan prepared by MoF could focus on nutrition-sensitive interventions while the plan prepared under the auspices of MoHFW could focus on nutrition-specific interventions. But in practice, there has been a good deal of overlap in the past, creating co-ordination issues that were not always effectively resolved. Weakness of co-ordination also meant that possible synergy between the two types of interventions could not be fully exploited.

The preceding discussion suggests that the reform of nutrition governance would have to focus on two ends of the governance spectrum. At the top end, strong and effective co-ordination will be needed both in order to avoid unnecessary overlaps and to extract possible synergies between various types of interventions. The new National Nutrition Policy marks an important step in this direction by making the MoHFW the lead coordinating agency among the ministries and by reviving the Bangladesh National Nutrition Council (BNNC) as the overarching supra-ministerial coordinating body. BNNC has not been effective in the past; if the future is to be any better, the prime minister, who chairs the committee, will have to attach the highest degree of priority to it—the kind of priority currently being given only to a number of infrastructural mega-projects.

At the field level of governance, where services are delivered, a couple of issues deserve emphasis. First, although service delivery through community clinics has been problematic in the past, it must be recognized that there is nothing fundamentally wrong with the idea as such. Community clinics must remain the lynchpin of any future system of nutrition-service delivery, but their operation must be made more effective by enhancing the skill-level of the staff who had so far dealt with health and family planning issues much more than nutrition.

Second, as part of the process of strengthening the community clinics, serious attempt must be made to harness the expertise and specific skills of the many NGOs that are serving the people throughout the country. It is understandable that the experience with the NNP makes some people apprehensive about involving NGOs, but it is arguable that the problem arose not so much from involving the NGOs as from the failure of the government to supervise, monitor, and guide their activities or to integrate them effectively with government services. A better way must be found to achieve the desired integration between NGOs and the public sector.

## CONCLUDING OBSERVATIONS

The Government of Bangladesh is committed to freeing its people from the burden of food insecurity and malnutrition. There is no shortage of targets and commitments in this regard, nor any shortage of programmes and policies. Over the years, the government has also demonstrated a commendable willingness to make experiments in policy design and to learn from both new knowledge and old mistakes. In short, good intentions are not the binding constraint to achieving the goal of freedom from hunger and malnutrition. However, if the goal is to be achieved in the not-too-distant future, the intentions must be replaced with actions— principally, in terms of money and accountability.

According to the CIP, total resources available for promoting food security and nutrition in the year 2014/15 was US\$8.8 billion, out of which 63 percent was funded by the Government of Bangladesh from its own resources, and the remaining 37 percent by development partners. Breaking down food security into its three dimensions, it has been estimated that as of 30 June 2015 their shares of total expenditure were as follows: 56.8 percent for availability, 40.7 percent for access, and 2.5 percent for utilization. There is a systematic difference in the way the government and the development partners allocate their resources into the three dimensions of food security: the government has a larger share in the programmes related to availability and access, while the development partners have a relatively bigger presence in the programmes related to utilization. Thus, of the resources allocated to availability and access, the government's shares were 63 percent and 65 percent, respectively, whereas of the resources allocated for utilization, the development partners' share was 78 percent (FPMU 2016).

Scaling up the kinds of interventions that have been advocated in this review—for example, with respect to agriculture and social protection as well as nutrition-specific interventions—would require considerable additional investment of resources. Costing these interventions is not within the purview of the present exercise, but it is obvious that these are not going to be cheap. A costing exercise is currently underway in connection with the implementation of the National Plan of Action for Nutrition (NPAN) for the new National Nutrition Policy.

A joint GOB-USAID exercise has estimated that the resources needed to scale up a set of nutrition-specific interventions would add another 1.24 percent to the total government budget (Howlader et al. 2012). There is no corresponding estimate of how much extra it would cost to scale up the nutrition-sensitive measures, but there is little doubt that it could cost several times more than in the case of nutrition-specific interventions. A rough idea can be obtained from a recent exercise done in the context of reporting to the international initiative of Scaling Up Nutrition (SUN) movement. According to this exercise, currently Bangladesh's expenditure on nutrition-sensitive interventions are

more than six times that on nutrition-specific interventions (IFPRI 2015).<sup>10</sup> The FPMU staff suggest that these estimates are not very reliable, mainly because acceptable methodologies for identifying the nutrition-sensitive components of food security policies have yet to be formulated.<sup>11</sup> Nonetheless, these figures at least indicate that a large jump would be needed in the nutrition-sensitive sphere as well, far outstripping the jump in nutrition-specific interventions, and thus calling for a correspondingly large increase in total expenditures on food security and nutrition.

Increased budgetary allocations will have to be accompanied by the establishment of a transparent and effective accountability system. Simply to make commitments and allocate funds that eventually either do not materialize or are not utilized efficiently would not serve any useful purpose. “Stronger accountability is key,” as the *Global Nutrition Report 2014* rightly proclaims (IFPRI 2014). Bangladesh has taken a step in the right direction by joining the SUN movement, which requires participating countries to first maintain clear and transparent accounts of how they are striving to achieve the targets and then discuss them in multiple stakeholder fora to receive feedback and advice.

This process can be further strengthened by explicitly adopting a rights-based approach. An important idea behind the rights-based approach is that the duty-bearer—in this case, the State—would willingly subject itself to a general scrutiny of whether it is fulfilling its obligations or not. It is important to realize that in general adopting the rights-based approach does not entail the obligation that the State must achieve all its goals immediately. The human rights discourse allows for “progressive realization” of rights over a period of time in recognition of constraints imposed by resources. But it does entail two requirements: (a) first, the State must try to achieve the goals as expeditiously as possible given the constraint of resources and set time-bound targets accordingly, and (b) second, make the targets and corresponding achievements (or failures, as the case may be) are subject to scrutiny by the rights-holders and other stakeholders. It is also important to realise that under the rights-based approach the failure to meet targets set under an agreed-upon scheme of progressive realization does not necessarily entail culpability for the duty-bearer, because it is recognised that in some cases actual results may be beyond the control of duty-bearers. But, in such cases, the duty-bearer must still be called into account, to explain the failure, and only in the event of unconvincing explanations would culpability follow.

---

<sup>10</sup> About 1.0 percent of the budget goes to nutrition-specific activities and 6.3 percent to nutrition-sensitive activities. These estimates are reported as preliminary and an upper bound.

<sup>11</sup> At the same time, the FPMU’s own breakdown according to the three dimensions of food security cannot be used to obtain a breakdown between nutrition-sensitive and nutrition-specific interventions. This is because not all interventions for availability and access are nutrition-sensitive, and not all nutrition-specific interventions are counted while estimating expenditures for utilization (owing to the fact that not all such interventions are included in the CIP). FPMU is planning to attempt a breakdown between nutrition-sensitive and nutrition-specific interventions in its future monitoring reports, but no such breakdown exists at the moment.

By signing up to the SUN movement, the Government of Bangladesh has already travelled a long way towards agreeing to subject itself to such an accountability system in the sphere of food security and nutrition. Where it falls short is the absence of any means to determine culpability. This is where the right-based approach can complete the journey. By explicitly recognising people's right to food and adequate nutrition, the State accepts that the right-holders have the right to call the State into account, and hold it culpable in the event of avoidable failures. By so doing, the rights-based approach adds a much-needed punch to the accountability system that it otherwise lacks. There is no better way for the Government of Bangladesh to confirm that it is serious in its commitment towards food security and nutrition than to explicitly adopt the principles of the right-based approach while formulating its strategies for food security and nutrition with a view to achieving zero hunger by the year 2030.

## RECOMMENDATIONS

The problem of food insecurity and malnutrition is inherently multidimensional. Actions, therefore, must also be taken on many fronts at the same time; as such, any plausible list of detailed recommendations will have to be inordinately long. Instead of going in that direction, this review makes its recommendations in the form of five central messages. Within each message, some detailed recommendations are made, but this is done mainly for illustrative purposes; no attempt is made to be comprehensive. It is expected that if the central messages are found compelling, the government will then be able to proceed to prepare a detailed plan of action.

### **Promote a Diversified, Resilient and Nutrition-Sensitive Agriculture**

As the producer of food and as the provider of income for a vast proportion of the poor, agriculture must feature as a core component of any strategy for ensuring food security and nutrition of the people of Bangladesh. Recent slowdown in the growth of agriculture is, therefore, a matter of serious concern. Investment in new technologies and effective dissemination of the requisite knowledge across all farmers—large and small—should receive the highest priority, so that the slowdown in growth can be first reversed and then the sector be restored to a higher sustainable growth path.

Just as much attention must be paid to the pattern of growth as to the rate of growth itself. Several features of the required pattern of growth may be noted. First, agriculture needs to be diversified—both within the portfolio of crops and between crop and non-crop agriculture. Diversification is essential for a number of reasons—it has the potential to increase the farmers' incomes on a sustainable basis (thereby contributing to the access dimension of food security); it will strengthen resilience against climatic shocks if products and technologies are appropriately chosen (thereby enhancing the sustainability of any improvement in food security and nutrition); and it can make available a wide range of foods which are rich in protein and essential micronutrients (thereby contributing to the

utilization aspect of food security and better nutritional outcomes).

In order to promote diversification, the government will have to act on two fronts. On one hand, it will have to provide direct support to the farmers through measures such as creation and dissemination of appropriate technologies and providing protection against excessive price fluctuations through insurance services and market regulation. Special attention must be paid to the climatically vulnerable zones. At the same time, the government will have to provide an enabling environment in terms of institutions and legal structure so that market-based agricultural value chains can flourish to serve the small farmers better.

Second, attempts must be made to make agriculture more nutrition-sensitive. Diversification by itself will serve this cause to some extent, by making available products containing a range of nutrients beyond calories. But there is scope for enhancing the cause further by taking deliberate steps such as promotion of technologies for producing fortified foods of various kinds and adopting behavioural change communication (BCC) strategies to ensure their adoption on a wide scale.

Third, a conscious attempt will have to be made to render the production structure and technologies more resilient to climatic shocks, which are likely to become increasingly severe in the foreseeable future. A resilient agricultural system can only be ensured through adaptive behaviour on the part of agricultural communities. The skills and experience of NGOs and other community-based organizations must be harnessed so as to mobilize the farmers in the process of adaptation, which will often require actions at the community level rather than at individual levels.

## **Recognise Women as the Key to Achieving Sustainable Food Security and Nutrition**

Women occupy a key position in the whole spectrum of strategies for food security and nutrition—both as targets of interventions and as agents of change. Since healthy children can come only from healthy mothers, the need for targeting women as recipients of interventions, both for their own sake and for the sake of their children, is pretty obvious. It is important to realize, however, that what matters here is not just the nutrition and healthcare the mother receives during pregnancy. The entire biological history of the mother matters, including her own birthweight at the beginning of her life, how she was fed and taken care of as a child, her physical stature as an adult, at what stage in life she started child-bearing, the quality of antenatal care and nutrition she received during pregnancy, and the quality of post-natal care and nutrition she received during lactation. Interventions are needed on all these fronts, covering the whole of a woman's life cycle through to the end of her reproductive life.

It is equally important to recognise their role as agents of change as well. The evidence

produced in this review has shown that women play a key role (a) in ensuring diversification of agriculture, (b) in ensuring that household diets are diversified so as to receive a balanced intake of nutrients, (c) in taking care of the health and nutrition of the household as a whole, and of children in particular, and (d) in implementing proper infant and child feeding practices, especially when aided by incentives and training. Interventions aimed at improving food security and nutrition must recognise this all-pervasive role of women's agency.

This recognition would necessitate on the one hand that traditional male-centric approaches to government interventions will have to be abandoned in many cases and on the other that attempts must be made to remove the socio-cultural impediments that women traditionally face in realizing their full potential as agents of change. To some extent, women's agency has already been strengthened in recent years—through rapid expansion in female education, increased control over reproductive behaviour, and women's entry into labour and credit markets—thanks largely to the emergence of the garments industry and the microcredit revolution. These tendencies need to be strengthened further.

### **Ensure through the Social Protection System that No One is Left Behind**

The present review has demonstrated that while Bangladesh has made significant improvement on the front of food security and nutrition in recent decades, inequalities between the rich and the poor are growing both in the extent of food security and the quality of nutritional outcomes. If this trend is not reversed, it is almost inevitable that many people—both adults and children—will fail to enjoy food security and adequate nutrition, even if the country achieves, on average, the goal of zero hunger by 2030 in line with the SDGs. The analysis contained in the review has also shown that there are reasons to worry that the nutritional goals, in particular, may not be achieved, even on the average, if the current pace of progress is not substantially accelerated. In that event, the poor will be left behind even more. Steps must be taken to ensure that no one is left behind.

The main responsibility of ensuring this will fall on general economic policies that determine the course of income distribution over time. But specific interventions will also be needed, for example, in the spheres of social security strategy and health and nutrition interventions. Fundamental reforms will be needed in the current social security system, which is not adequately focussed on those who need it the most. The same is true of both health and nutritional interventions: the rich gain from them much more than the poor.

The new National Social Security Strategy (NSSS) has taken a big step forward by moving towards a life cycle approach so that interventions can be tailored to the specific needs of different stages in life. A couple of strategic approaches will be needed in order to derive the maximum possible benefit from this move. First, wherever possible, the social protection measures should be made nutrition-sensitive—for example, by using fortified

food wherever food transfer is involved and focussing on the first 1,000 days of life while offering child benefit transfers. Secondly, it must be ensured that, while implementing the life cycle approach, the poor and the vulnerable are targeted on a priority basis at each stage of the cycle. In order to achieve this goal, it will be essential to utilize the poverty database that is currently being developed as the basis of targeting. More importantly, significant reforms will have to be made in the nature of governance—especially at the local level—so that the poor and the marginalised are not bypassed.

## **Create and Disseminate Relevant Knowledge**

In order to accelerate the pace of improvement in the state of food security and nutrition, it will be necessary to both create new relevant knowledge and to disseminate both new and old knowledge among the right target groups.

Examples of new knowledge include: (a) What kind of products and technologies are most suitable for agricultural diversification given the geoclimatic as well as social context of Bangladesh?; (b) What kind of adaptation strategies would best serve the cause of building resilience against climatic shocks?; (c) What kind of transfer modalities would render social safety net transfers efficient, equitable, and nutrition-sensitive at the same time?; and (d) What kind of social security strategies would best serve the urban poor, who have been bypassed by the mainstream social security system so far?

Effective dissemination of knowledge is perhaps even more important. A good deal of proven knowledge already exists about what are the most effective ways of improving food security and nutritional outcomes. The problem lies only partly in the lack of resources; a major limitation lies in the weakness of implementation, due largely to inadequate or ineffective dissemination of the relevant knowledge. The review has highlighted several such instances, where the relevant knowledge exists and yet problems persist making it hard to improve the nutritional status of the people.

For example, it is well-known that early marriage and teenage pregnancy is detrimental to the health of not only the girls themselves but also to their babies; indeed, this is one of the principal mechanisms through which undernutrition is perpetuated through intergenerational transmission. And yet, the practice has remained alarmingly stubborn over the years despite remarkable progress made in female education, female agency, and general economic conditions. The review has also noted how issues such as inappropriate infant and young child feeding (IYCF) practices, poor personal hygiene, and the emerging problem of obesity in some clearly identified segments of the society continue to persist—not for lack of relevant knowledge but because the value of the existing knowledge is not fully appreciated by the relevant actors.

In order to overcome these problems, targeted interventions will often have to be accompanied by an appropriate BCC strategy; the present review has demonstrated that

this often works. More generally, massive awareness raising campaigns must be launched in all such areas. Bangladesh can boast an excellent track record of such successful campaigns in a number of areas—such as family planning, child immunization, oral rehydration, and, to a lesser extent, sanitation. More than any other country, Bangladesh should therefore be able to deal with the persistent problems mentioned above, by drawing upon its rich legacy of successful mass awareness raising campaigns.

### **Adopt the Human Rights Based Approach**

The human rights approach should be adopted as the overarching framework within which the strategies for food security and nutrition are to be situated. There are both intrinsic and instrumental reasons for adopting this approach.

The intrinsic reason lies in the recognition that the rights to food and nutrition are fundamental human rights, which the Government of Bangladesh has accepted in principle, even if only by implication, by ratifying the *International Covenant on Economic, Social and Cultural Rights* (ICESCR).

The instrumental reason is that the explicit adoption of the rights-based approach is one of the most effective ways of improving accountability of government actions. There is no shortage of commitments the Government of Bangladesh has made—both nationally and internationally—to ensure food security and nutrition of its people. There is no shortage of plans and programmes in these spheres either. With an expanding fiscal space, the government is also evincing a willingness to allocate more resources to these ends; and the development partners also seem eager to assist the government in this regard. But no amount of formal commitment, policies or resources will actually deliver the results unless these are accompanied by transparent and effective accountability mechanisms. And one of the most effective ways to enhance accountability is to adopt the rights-based approach because the very essence of the approach is that the rights-holders—that is, the people—can hold the duty-bearers—that is, the State—accountable for its actions, or its inactions, as the case may be. Therefore, there is no better way for the Government of Bangladesh to confirm that it is serious in its commitment towards food security and nutrition than to explicitly adopt the principles of the rights-based approach while formulating its strategies for food security and nutrition with a view to achieving the SDG goal of zero hunger by the year 2030.

# REFERENCES

- Ahmed, A. U., Hernandez, R., Abedin, Z., Ghostlaw, J., Hossain, N., Quabili, W., Sufian, F. and Tauseef, S. (2016a). "The Feed the Future Zone of Influence in Bangladesh: Changes in Selected Indicators from 2011 Baseline to 2015 Midline." (PowerPoint presentation). Bangladesh Policy Research and Strategy Support Program, IFPRI: Dhaka.
- Ahmed, A. U., Rashid, S., Sharma, M. and Zohir, S. (2004). *Food Aid Distribution in Bangladesh: Leakage and Operational Performance*. Food Consumption and Nutrition Division, International Food Policy Research Institute: Washington, DC.
- Ahmed, A. U. (2004). *The Impact of Feeding Children in School: Evidence from Bangladesh*. International Food Policy Research Institute: Washington, DC.
- Ahmed, A. U., Hoddinott, J. F., Roy, S., Sraboni, E., Quabili, W. R. and Margolies, A. (2016b). *Which Kinds of Social Safety Net Transfers Work Best for the Ultra Poor in Bangladesh? Operation and Impacts of the Transfer Modality Research Initiative*. International Food Policy Research Institute and World Food Programme: Dhaka.
- Ahmed, S. S., Narayan, A. and Zaman, H. (2009). "Are the Poor Protected? Vulnerability and the Role of Social Safety Nets," in A. Narayan and Zaman, H. (eds.) *Breaking Down Poverty in Bangladesh*. The University Press Limited: Dhaka.
- Ahmed, T., Choudhury, N., Hossain, M. I., Tangsuphoom, N., Islam, M. M., de Pee, S., Steiger, G., Fuli, R., Sarker, M. S. A., Parveen, M., West Jr., K. P and Christian, P. (2014). "Development and Acceptability Testing of Ready-to-use Supplementary Food Made from Locally Available Food Ingredients in Bangladesh." *BMC Pediatrics* 14.
- Ahmed, T., Mahfuz, M., Ireen, S., Ahmed, A. M. S., Rahman, S., Islam, M. M., Alam, N., Hossain, M. I., Rahman, S. M. M., Ali, M., Choudhury, F. P., and Cravioto, A. (2012). "Nutrition of Children and Women in Bangladesh: Trends and Directions for the Future." *Journal of Health and Population Nutrition* 30 (1).
- BBS. (Bangladesh Bureau of Statistics). (2012). *Report of the Household Income and Expenditure Survey 2010*. BBS: Dhaka.

- Behrman, J. R., and Deolalikar, A. B. (1987). "Will Developing Country Nutrition Improve with Income? A Case Study for Rural South India." *Journal of Political Economy* 95: 492–507.
- Behrman, J. R., and Wolfe, B. L. (1984). "More Evidence on Nutrition Demand: Income Seems Overrated and Women's Schooling Underemphasized." *Journal of Development Economics*, 14: 105–128.
- Béné, C., Waid, J., Jackson-de Graffenried, M., Begum A., Chowdhury, M., Skarin, V., Rahman, A., Islam, N., Mammun, N., Mainuddin, K., and Amin, S. M. A. (2015). *Impact of Climate-Related Shocks and Stresses on Nutrition and Food Security in Selected areas of Rural Bangladesh*. World Food Programme: Dhaka.
- Black R. E., Victora C. G., Walker S. P., Bhutta Z. A., Christian P., de Onis, M., Ezzati, M., Grantham-McGregor, S., Katz, J., Martorell, R. and Uauy, R. (2013). "Maternal and Child Undernutrition and Overweight in Low-Income and Middle-Income Countries." *Lancet* 382: 427–451.
- Black, R. E., Allen, L. H., Bhutta, Z. A., Caulfield, L. E., de Onis, M., Ezzati, M., Mathers, M. and Rivera, J. (2008). "Maternal and Child Undernutrition: Global and Regional Exposures and Health Consequences." *Lancet* 371: 243–60.
- Bredenkamp, C., Buisman, V. and de Poel, E. V. (2014). "Persistent Inequalities in Child Undernutrition: Evidence from 80 Countries, from 1990 to Today." *International Journal of Epidemiology* 43 (4): 1328–1335.
- Brouwer, R., Akter, S., Brander, L. and Haque, E. (2007). "Socioeconomic Vulnerability and Adaptation to Environmental Risk: A Case Study of Climate Change and Flooding in Bangladesh." *Risk Analysis*. 27 (2): 313–326.
- Burchi, F. (2012). "Whose Education Affects a Child's Nutritional Status? From Parents' to Household's Education." *Demographic Research* 27: 681–704.
- Chakraborty, B. and Akter, F. (2014). *Acceptability of Fortified Rice by Participants of Government Social Safety Net Programmes. Research and Evaluation Division (RED), BRAC: Dhaka.*
- Chowdhury, A. M., Bhuiya, A., Chowdhury, M. E., Rasheed, S., Hussain, Z. and Chen, L. C. (2013). "The Bangladesh Paradox: Exceptional Health Achievement despite Economic Poverty." *Lancet* 382: 1734–1745.
- Cleland, J., Phillips, J. F., Amin, S. and Kamal, G. M. (1994). "The Determinants of Reproductive Change in Bangladesh: Success in a Challenging Environment." In *Regional and Sector Studies*. World Bank: Washington, DC.
- Coly, A. N. et al. (2006). "Preschool Stunting, Adolescent Migration, Catch-Up Growth, and Adult Height in Young Senegalese Men and Women of Rural Origin." *Journal of Nutrition* 136: 2412–2420.
- Crookston et al. (2013). "Postinfancy Growth, Schooling, and Cognitive Achievement: Young Lives." *American Journal of Clinical Nutrition*, September 25; doi: 10.3945/ajcn.113.067561.

- CUS (Centre for Urban Studies). (2005). *Urban Slums of Bangladesh; Mapping and Census 2005*. Dhaka; MEASURE Evaluation, USA; NIPORT, Dhaka.
- El Arifeen, S., Christou, A., Reichenbach, L., Osman, F. A., Azad, K., Islam, K. S., Ahmed, F., Perry, H. B., and Peters, D. H. (2013). "Community-based Approaches and Partnerships: Innovations in Health-service Delivery in Bangladesh." *Lancet* 382: 2012–2026.
- El Arifeen, S., Christou, A., Reichenbach, L., Osman, F. A., Azad, K., Islam, K. S., Ahmed, F., Perry, H. B. and Peters, D. H. (2013). Community-Based Approaches and Partnerships: Innovations in Health-service Delivery in Bangladesh." *Lancet* 382: 2012–2026.
- FAO/IFAD/WFP (Food and Agriculture Organization of the United Nations/International Fund for Agricultural Development/World Food Programme). (2015). *The State of Food Insecurity in the World 2015. Meeting the 2015 International Hunger Targets: Taking Stock of Uneven Progress*. FAO: Rome.
- FAO/WHO. (Food and Agriculture Organization of the United Nations/World Health Organization). (2014). Bangladesh Country Nutrition Paper. International Conference on Nutrition 21 Years Later (Rome). Rome and Geneva.
- Ferré, C. and Sharif, I. (2014). "Can Conditional Cash Transfers Improve Education and Nutrition Outcomes for Poor Children in Bangladesh? Evidence from a Pilot Project." Policy Research Working Paper. World Bank: Washington, DC.
- FPMU (Food Planning and Monitoring Unit). (2015). *National Food Policy Plan of Action and Country Investment Plan: Monitoring Report 2015*. Ministry of Food, Government of Bangladesh: Dhaka.
- FPMU (2016). *National Food Policy Plan of Action and Country Investment Plan: Monitoring Report 2016*. Ministry of Food, Government of Bangladesh: Dhaka.
- Gautam, M. and Faruquee, R. (2016). *Dynamics of Rural Growth in Bangladesh: Sustaining Poverty Reduction*. World Bank: Washington, DC.
- Georgiadis, A. (2014). "Can Stunting Be Reversed? Yes, and Peru Is Showing Us How," *The Guardian*, 16 October 2014.
- GOB (2011). *Operational Plan for National Nutrition Services*. Government of Bangladesh: Dhaka.
- GOB (2015a). *National Social Security Strategy (NSSS) of Bangladesh*. Planning Commission, Government of Bangladesh: Dhaka.
- GOB (2015b). *National Strategy on Prevention and Control of Micronutrient Deficiencies, Bangladesh (2015–2024)*. Institute of Public Health Nutrition, Ministry of Health and Family Welfare, Government of Bangladesh: Dhaka.
- GOB (2015c). *Bangladesh Standard Specification for Fortified Rice*. Bangladesh Standards and Testing Institution: Dhaka.
- GOB (2015d). *Annual Report 2013–14: School Feeding Programme in Poverty-Prone Areas*. (in Bangla). Directorate of Primary Education, Government of Bangladesh: Dhaka.

- Golden, M. H. (1994). "Is Complete Catch-Up Possible for Stunted Malnourished Children?" *European Journal of Clinical Nutrition* 48 (1): S58–S70.
- Gwatkin, R. D., Rutstein, S., Johnson, K., Pande, R. P. and Wagstaff, A. (2000). "Socio-Economic Differences in Health, Nutrition and Population in Bangladesh." (Mimeo.) HNP/Poverty Thematic Group, World Bank, Washington, DC.
- Gwatkin, R. D., Rutstein, S., Johnson, K., Suliman, E., Wagstaff, A. and Amouzou, A. (2007). *Socio-Economic Differences in Health Nutrition and Population: Bangladesh*. World Bank: Washington, DC.
- Haddad, L., Alderman, H., Appleton, S., Song, L. and Yohannes, Y. (2003). "Reducing Child Malnutrition: How Far Does Income Growth Take Us?" *World Bank Economic Review* 17: 107–131.
- Headey, D., Hoddinott, J., Ali, D., Tesfaye, R. and Dereje, M. (2014). "The Other Asian Enigma: Explaining the Rapid Reduction of Undernutrition in Bangladesh." Discussion Paper 01358. International Food Policy Research Institute: Washington, DC.
- Headey, D. (2013). "Developmental Drivers of Nutritional Change: A Cross-country Analysis." *World Development* 42: 76–88.
- Heltberg, R. (2009). "Malnutrition, Poverty, and Economic Growth." *Health Economics* 18: 77–88.
- HKI and JPGSPH. (Helen Keller International and James P. Grant School of Public Health). (2015). *State of Food Security and Nutrition in Bangladesh: 2014*. BRAC University: Dhaka.
- Hoddinott, J., Alderman, H., Behrman, J. R., Haddad, L. and Horton, S. (2013). "The Economic Rationale for Investing in Stunting Reduction." *Maternal and Child Nutrition* 9 (Suppl. 2): 69–82.
- Hossain, M. M. (2014). *In-Depth Monitoring of 'School Feeding Programme in Poverty Prone Areas'*. IMED, Government of Bangladesh: Dhaka.
- Hossain, N. (2007). *The Politics of What Works: The Case of the Vulnerable Group Development Programme in Bangladesh*. Chronic Poverty Research Centre, University of Manchester: Manchester.
- Howlader, S. R., Sethuraman, K., Begum, F., Paul, D., Sommerfelt, A. E. and Kovach, T. (2012). *Investing in Nutrition Now: A Smart Start for Our Children, Our Future. Estimates of Benefits and Costs of a Comprehensive Program for Nutrition in Bangladesh, 2011–2021*. PROFILES and Nutrition Costing Technical Report. Food and Nutrition Technical Assistance III Project (FANTA), FHI 360: Washington, DC.
- Hussain, A. M. Z., Talukder, M. Q. K. and Ahmed, T. (2015). "Nutrition Background Paper to Inform the Preparation of the 7th Five Year Plan." Planning Commission: Government of Bangladesh: Dhaka.
- ICDDR, UNICEF, GAIN, IPHN. (2013). *National Micronutrient Survey in Bangladesh in 2011-12*. Centre for Nutrition and Food Security, ICDDR: Dhaka.

- IFPRI (International Food Policy Research Institute). (2014). *Global Nutrition Report 2014: Actions and Accountability to Accelerate the World's Progress on Nutrition*. Washington, DC.
- IFPRI. (2015). *Global Nutrition Report 2015: Actions and Accountability to Advance Nutrition and Sustainable Development*. Washington, DC.
- Jahan, F. and Shahan, A. M. (2016). "Agenda Shaping and Accountability in Public Policies: An Analysis of the Food Policy of Bangladesh." In N. Ahmed (ed.) *Public Policy and Governance in Bangladesh*. Routledge: New York.
- Kennedy, E. and Peters, P. (1992). "Household Food Security and Child Nutrition: The Interaction of Income and Gender of Household Head". *World Development* 20 (8): 1077–85.
- Khan, A. E., Scheelbeek, P. F. D., Shilpi, A. B., Chan, Q., Mojumder, S. K., Rahman, A., Haines, A. and Vineis, P. (2014). "Salinity in Drinking Water and the Risk of (Pre)Eclampsia and Gestational Hypertension in Coastal Bangladesh: A Case-Control Study." *PLOS One* (9).
- Khuda, B. (2011) "Social Safety Net Programmes in Bangladesh: A Review," *Bangladesh Development Studies* XXXIV (2): 87–108.
- Kohler, H.-P. (2012). "Population Growth." PSC Working Paper PSC 12-03 and Copenhagen Consensus 2012 Challenge Paper. Population Studies Centre, University of Pennsylvania, and Copenhagen Consensus Centre, Copenhagen. [http://repository.upenn.edu/psc\\_working\\_papers/34](http://repository.upenn.edu/psc_working_papers/34).
- Mahmud, I. and Mbuya, N. (2015). *Water, Sanitation, Hygiene, and Nutrition in Bangladesh: Can Building Toilets Affect Children's Growth?* World Bank: Washington, DC.
- Mannan, M. A. and Ahmed, B. N. (2012). "Impact Evaluation of Vulnerable Group Development (VGD) Program in Bangladesh." Reported to Ministry of Women's and Children's Affairs, Government of the People's Republic of Bangladesh. Bangladesh Institute of Development Studies: Dhaka.
- Marriott, B. P., White, A., Hadden, L., Davies, J. C., and Wallingford, J. C. (2012). "World Health Organization Infant and Young Child Feeding Indicators: Associations with Growth Measures in 14 Low-income Countries." *Maternal and Child Nutrition* 8 (3): 354–70.
- Menon, P., Ruel, M. T., Loechl, C. U., Arimond, M., Habicht, J., Peltó, G., and Michaud, L. (2007). "Micronutrient Sprinkles Reduce Anemia among 9- to 24-Mo-Old Children When Delivered through an Integrated Health and Nutrition Program in Rural Haiti." *Journal of Nutrition* 137 (4): 1023–1030.
- MHC (Mahbub ul Haq Centre). (2014). *Human Development in South Asia 2014. Urbanization: Challenges and Opportunities*. Islamabad.
- MOF (2015). *Poverty and Inequality in Bangladesh: Journey Towards Progress (2014-2015)*. Ministry of Finance, Government of Bangladesh: Dhaka. Accessed from: [http://www.mof.gov.bd/en/budget/14\\_15/poverty/poverty14-15EN.pdf](http://www.mof.gov.bd/en/budget/14_15/poverty/poverty14-15EN.pdf).
- Morshed, K. A. M. (2009). *Social Safety Net Programmes in Bangladesh*. The United Nations Development Programme (UNDP): Dhaka.

- Myers et al. (2014). "Increasing CO2 Threatens Human Nutrition." *Nature* 510: 39–142
- NIPORT (National Institute of Population Research and Training). (2015). *Bangladesh Urban Health Survey, 2013*. MEASURE Evaluation, International Centre for Diarrheal Disease Research, Bangladesh (ICDDR): Dhaka.
- NIPORT et al. (1997). *Bangladesh Demographic and Health Survey 1996-97*. NIPORT and Mitra and Associates, Dhaka and Macro International, Calverton, Maryland, USA.
- NIPORT et al. (2005). *Bangladesh Demographic and Health Survey 2004*. NIPORT and Mitra and Associates, Dhaka and Macro International, Calverton, Maryland, USA.
- NIPORT et al. (2009). *Bangladesh Demographic and Health Survey 2007*. NIPORT and Mitra and Associates, Dhaka and Macro International, Calverton, Maryland, USA.
- NIPORT et al. (2013). *Bangladesh Demographic and Health Survey 2011*. NIPORT and Mitra and Associates, Dhaka and Macro International, Calverton, Maryland, USA.
- NIPORT et al. (2015). *Bangladesh Demographic and Health Survey 2014*. NIPORT and Mitra and Associates, Dhaka and Macro International, Calverton, Maryland, USA.
- Olney, D. K., Pedehombga, A., Ruel, M. and Dillon, A. (2014). "The Impacts of an Integrated Agriculture and Nutrition and Health Behavior Change Communication Program Targeted to Women in Burkina Faso on Children's Growth, Anemia, and Diarrhea: A Cluster-Randomized Controlled Trial." (Unpublished manuscript) International Food Policy Research Institute: Washington, DC.
- Osmani, S. R. (2015). "The Growth-Equity Nexus in Bangladesh: An Analysis of Recent Experience." *Bangladesh Development Studies* XXXVIII (2): 1–59.
- Osmani, S. R. (with Latif, M. A., Sen, B. and Ahmed, M.) (2015). *Poverty and Vulnerability in Rural Bangladesh*. Dhaka: Institute of Microfinance and the University Press Limited.
- Osmani, S. R. and Bhargava, A. (1998). "Health and Nutrition in Emerging Asia." *Asian Development Review* 16 (1): 31–71.
- Quisumbing, A. R., Brown, L. R., Feldstein, H. S., Haddad, L. and Pena, C. (1995) *Women: The Key to Food Security*. International Food Policy Research Institute: Washington, DC.
- Rabbani, G., Rahman, A. A., and Islam, N. (2010). "Climate Change and Sea Level Rise: Issues and Challenges for Coastal Communities in the Indian Ocean Region." In D. Michel and A. Pandya (eds.). *Coastal Zones and Climate Change*. The Henry L. Stimson Center: Washington, DC.
- Rabbani, M. G., Rahman, A. A., Shoef, I. J. and Khan, Z. M. (2015). "Climate Change and Food Security in Vulnerable Coastal Zones of Bangladesh." In U. Habiba, M. A. Abedin, A. W. R. Hassan, and R. Shaw (eds.). *Food Security and Risk Reduction in Bangladesh*. Springer: Tokyo.

- Rahman, H. Z. and Choudhury, L. A. (2012). *Social Safety Nets in Bangladesh, Vol. 2: Ground Realities and Policy Challenges*. Power and Participation Research Centre (PPRC) and the United Nations Development Programme (UNDP): Dhaka.
- Rahman, H. Z., Choudhury, L. A. and Ali, K. S. (2012). *Social Safety Nets in Bangladesh, Vol. 1: Review of Issues and Analytical Inventory*. Power and Participation Research Centre (PPRC) and the United Nations Development Programme (UNDP): Dhaka.
- Rahman, H. Z., Hulme, D., Maitrot, M. and Ragno, L. P. (2014). *Social Protection in Bangladesh: Building Effective Social Safety Nets and Ladders Out of Poverty*. The University Press Limited: Dhaka.
- Rahman, R. I. (2014). "Growth of Rural Non-farm Activities in Bangladesh: Implications for Household Income and Employment." Policy Brief No. 1404. Bangladesh Institute of Development Studies: Dhaka.
- Ramalingaswami, V., Jonson, U. and Rohde, J. (1997). "Commentary: The Asian Enigma." In *The Progress of Nations*, UNICEF: New York.
- Ruel, M. T. and Alderman, H. (2013). "Nutrition-Sensitive Interventions and Programmes: How Can They Help to Accelerate Progress in Improving Maternal and Child Nutrition?" *Lancet* 382: 536–551.
- Saha, K. K., Billah, M., Menon, P., El Arifeen, S. and Mbuya, N. V. N. (2015). *Bangladesh National Nutrition Services: Assessment of Implementation Status*. World Bank Studies. World Bank: Washington, DC.
- Santos, I., Sharif, I., Rahman, H. Z.; and Zaman, H. (2011) "How Do the Poor Cope with Shocks in Bangladesh? Evidence from Survey Data." Policy Research Working Paper no. 5810. World Bank: Washington DC.
- Save the Children. (2014). *Nutrition Governance in Bangladesh, A National and Upazila Level Assessment*. Dhaka.
- Shahabuddin, Q., Asaduzzaman, M., Clay, E., and Jones, S. (2009). *Price Support, Domestic Procurement Programme, and Public Stock Management*. Policy Brief No. 2. Bangladesh Institute of Development Studies: Dhaka.
- Singh, A., Park, A. and Dercon, S. (2014). "School Meals as a Safety Net: An Evaluation of the Midday Meal Scheme in India", *Economic Development and Cultural Change* 62 (2): 275–306
- Smith, L. C. (2015). *Quantitative Impact Evaluation of the SHOUHARDO II Project in Bangladesh*. TANGO International for USAID and CARE: Bangladesh.
- Smith, L. C., and Haddad, L. (2000). *Explaining Child Malnutrition in Developing Countries: A Cross-country Analysis*. International Food Policy Research Institute: Washington, DC.

- Spears, D. (2013). "How Much International Variation in Child Height Can Sanitation Explain?" Working paper. Princeton University: Princeton, NJ.
- Spears, D., Ghosh, A. and Cumming, O. (2013). "Open Defecation and Childhood Stunting in India: An Ecological Analysis of New Data from 112 Districts." *PLoS ONE* 8: e73784.
- Sraboni, E., Malapit, H. J., Quisumbing, A. R. and Ahmed, A. U. (2014). "Women's Empowerment in Agriculture: What Role for Food Security in Bangladesh?" *World Development* 61: 11–52.
- Tanner, J. (1981). "Catch-Up Growth in Man", *British Medical Bulletin* 37 (3): 233–38.
- Taylor, L. (2012). "The Nutrition Agenda in Bangladesh: Too Massive to Handle?" Institute of Development Studies: Sussex.
- UNICEF/BBS (United Nations Children's Fund and Bangladesh Bureau of Statistics). (2015). *Multiple Indicator Cluster Survey 2012–2013*. Dhaka.
- UNICEF/WHO (United Nations Children's Fund/World Health Organization). (2015). *Progress on Sanitation and Drinking Water: 2015 Update and MDG Assessment*. Paris and Geneva.
- von Grebmer, K., Bernstein, J., Prasai, N., Yin, S. and Yohannes, Y. (2015). *Global Hunger Index 2015*. International Food Policy Research Institute: Washington, DC.
- WFP (World Food Programme). (2011). *Summary Report of the Impact Evaluation of School Feeding in Bangladesh*. Dhaka.
- WFP (2015). *Food Insecurity and Undernutrition in the Urban Slums of Bangladesh*. A 2013 Survey of Slum Households in Dhaka, Barisal and Sirajganj. Dhaka.
- WFP/BBS/IFAD (World Food Programme/Bangladesh Bureau for Statistics/International Fund for Agricultural Development). (2012). *Undernutrition Maps of Bangladesh*.
- World Bank (2005). *Maintaining Momentum to 2015? An Impact Evaluation of Interventions to Improve Maternal and Child Health and Nutrition Outcomes in Bangladesh*. Operations Evaluation Department, Washington, DC.
- World Bank (2006). *Social Safety Nets in Bangladesh: An Assessment*. Bangladesh Development Series Paper no. 9. Dhaka.
- World Bank (2012). *Bangladesh: Towards Accelerated, Inclusive and Sustainable Growth—Opportunities and Challenges*. Dhaka.
- World Bank (2013). *Bangladesh Poverty Assessment: Assessing a Decade of Progress in Reducing Poverty, 2000–2010*. Bangladesh Development Series, Paper no. 31. Dhaka.
- World Bank (2014). *Income Support Program for the Poorest Project*. Washington, DC.
- Zhang, Z., Rashid, S., Ahmad, K. and Ahmed, A. U. (2014). "Escalation of Real Wages in Bangladesh: Is it the Beginning of Structural Transformation?" *World Development* 64: 273–285.



