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Sustaining Food Security: Achievements and Challenges

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Food security exists when all people, at all times, have access to sufficient, safe and nutritious food to maintain healthy and productive lives. The key elements of food security are: a) availability of enough food from domestic production and /or imports to meet the demand, b) access of the food to all people at all times through enough incomes and affordable prices, c) proper hygiene and sanitary practices and safe water for utilization of food to have optimum impact on health and nutrition, and d) a regulatory framework in place and its proper implementation for controlling contamination to ensure food safety.

I: Achievement in Food Security

Availability of food

Food security in Bangladesh has long been synonymous with achieving self-sufficiency in rice production, the dominant staple food. The Bangladesh economy has made respectable progress in rice production, tripping production from 11 million tons in 1971 to 33.8 million in 2013. The progress in reduction of fertility has contributed to respectable reduction in population that has reduced the pressure on the growth in demand for food. The per capita rice production has increased substantially over the level at independence. The growth of production was achieved by fast adoption by farmers of higher yielding crop varieties developed by scientists, supported by rapid expansion of irrigation infrastructure through private investment in tube wells, favorable supply of agricultural credit and subsidies on fertilizers and irrigation.

Notable progress has also been achieved in the production of potatoes and vegetables. The growth has been particularly impressive in the last decade. The major problem faced by potato and vegetable production is the volatility in prices leading to large temporal and seasonal fluctuations in prices and production. The production of most other food crops - pulses, oilseed and sugarcane - has either remained stagnant or has declined. The

production of oilseeds has picked up in recent years due to favourable prices, progress in the development of higher yielding varieties, and identification of favourable agro-ecological niche. The dependence of Bangladesh on the world market for the availability of pulses, edible oil and sugar and milk has been growing, along with wheat that does not suit the agro-ecological environment of Bangladesh.

Bangladesh has rich biological resource base for fish production. For balanced nutrition, fish occupies a significant position in the dietary habits of the people. The growth in fish production was sluggish in the 1970s, it picked up in the 1980s, and was very rapid (6.6% per year) in the recent years due to expansion of pond aquaculture. Entrepreneurs have started converting deep-water rice lands into fish ponds and engaging in highly productive and profitable intensive pond aquaculture. The prices of cultured fish such as tilapia, koi, and pangas have declined compared to other fish. Because of low prices for cultured fish, fish is now affordable to most low income consumers. Limited progress has been made in the production of meat and milk and eggs. With economic progress the demand for animal products has grown by more than five percent per year. The number of cattle and other animals has grown by only 1.8 percent per year during 2007-13, while the number of poultry birds has increased by 3.5 percent. The growth in livestock and poultry farming is constrained by lack of feed, risk imposed by avian flu and other animal diseases, and poor processing, storage and marketing infrastructure.

Access to food

The availability of food in the market is not enough for achieving food security. In a market economy, the access to food depends on four elements: a) production- based entitlement that depends on the ownership of land, b) trade-based entitlement that depends on adequate import and affordable market prices, c) labour based entitlement that depends on the employment and wages, and d) transfer based entitlement that includes gifts, remittances from relatives, and relief and social protection provided by the government. The ability of the household and the people to access food is the outcome of the complex operation and interactions of all these elements.

In Bangladesh, 70 percent of the people live in rural areas where agriculture is the major source of livelihood. Almost 60% of the rural households are engaged in farming. The farming household can access their food from self-production and/or trading the surplus with other foods available in the local market. But the landownership is highly unequally distributed, and so is the access to food from self-production. Almost 30% of the households do not own any land and another 35% own only up to half an acre. Such tiny landownership is insufficient to meet the food needs of the households, even if the farmer uses cutting edge technologies. A tenancy market is in operation that provides access to land to landless and marginal landowners for farming. But the terms and conditions of tenancy do not favour tenants. So, a large proportion of marginal and tenant farmers go to the market to access food as their own production (after payment of rent and interest for loans) is inadequate to meet the household need.

The dominant determinant of access to food is the level and the growth of income. In Bangladesh, the per capita income remained almost stagnant till the end of 1980s due to slow growth of GNP and high population growth. The income growth per year has accelerated since 1990, reaching 6.2 per cent in recent years. But, the income is highly unequally distributed and the disparity has been growing. As a result nearly one-third of the people still (2010) live below the poverty line, with inadequate income to access food from the market.

An indicator often used to assess the capacity of the poor to access food from the market is the level and trend in real wages. This indicator shows that since the mid-1990s there has been a favourable trend in the income of the households who depend on selling labour in the market, such as agricultural wage labourers, transport operators and construction workers. The only low-income group who have not been able to increase their real income are industrial labourers, particularly the unskilled workers in the garment industry and the fixed wage earners in the public sector.

The hike in food prices after the food crisis in 2007-08 has had a negative impact on the real wages and access to food. Sharp increase in food grain prices significantly dicreased the real income of poor households who spend over half of their income on staple food. At the same time the volatility in producer prices increases risks and uncertainty, and

discourages the subsistence farmer to invest in agriculture. The volatility in food prices remains an issue for achieving seasonal and temporal stability in food security.

Bangladesh is often at the mercy of natural calamities such as floods, droughts and cyclones. Riverine Bangladesh also witnesses frequent land erosion causing thousands of people to lose their land every year. Despite the gains achieved by Bangladesh in augmenting availability of staple food, a safety net program is essential to insulate the poverty stricken population from chronic as well as temporary food insecurity that results from external shocks. A number of food safety net programs are in operation in Bangladesh, each with its own specific objectives and target population. These include Test Relief, Vulnerable Group Feeding, Vulnerable Group Development, Food for Work, Employment Guarantee Scheme, etc. A number of social protection programmes such as vulnerable group feeding, allowance for destitute women, and old age pensions have also been introduced to support food security of the extremely needy people.

The government has given high priority to the safety nets programme for ensuring food security. Currently nearly 2.0% of the GDP are allocated for safety nets and social protection. The evaluation of the programmes however revealed several limitations; a) large overheads due to operation of a large number of small programs by different ministries and departments often with the same objectives, b) improper targeting of beneficiary households due to political pressure, and c) leakages in implementation from rent seeking at various stages.

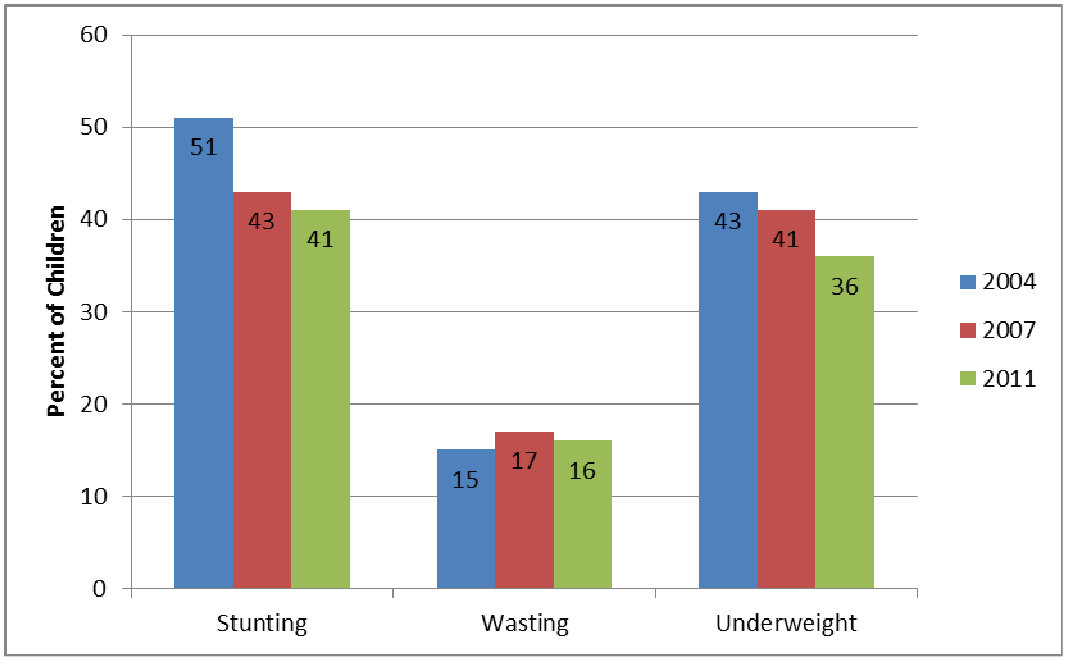
Achieving nutrition security

The acceleration in economic and agricultural growth has made a positive impact on the diversity of food intake, away from the rice and vegetable based diet to diet containing fish, egg and meat. The numbers in The 2010 Household Income and Expenditure Survey (HIES) reveals that the **average** level of consumption has reached the adequacy level for rice and vegetables, and about to be reached for fruits and fish, but serious deficiency persists for quality food such as pulses, oil, and livestock products. The average numbers masks serious **inequality** in the distribution of consumption across the income scale. While the richer sections of the society are being able to gradually reduce their cereal intake and increase the diversify in their diet, the poor still have an unmet demand for

rice. For all the other food items, consumption for all income groups have increased, marginally for the bottom 40% but substantially for the top 20%. A recent IFPRI study notes that nearly 20% of the population is still calorie deficient and the gender disparity in calorie intake still persists.

Bangladesh has made significant progress in reducing under-nutrition for the children (see Figure 1). The prevalence on underweight children for their age declined from 60% in 1990 to 36% in 2011, and is on track for achieving the target set by the Millennium Development Goals (MDGs). However, progress in reducing stunting, the indicator of chronic malnutrition, shows a less encouraging picture. The level is still about 41%, much higher than countries in sub-Saharan Africa, many of them have lower levels of income than in Bangladesh. Over 2007 to 2011, the level of stunting declined by only two per cent points. Stunting affects the cognitive ability and the immunity of the children from diseases. The prevalence of wasting, an indicator of current nutritional status, remains at an alarming level of 15 to 17%, with very little improvement over time.

Figure 1. Nutrition situation of under-5 children in Bangladesh, 2004 to 2011



Source: Bangladesh Demographic and Health Surveys, 2004, 2007, 2011

Low birth weight for the new born in Bangladesh (22%) is among the highest in the world. The nutritional status of women shows a better trend. The proportion of women with chronic energy deficiency has declined from 52% in 1997 to 25% in 2011. But the prevalence of obesity among women and children is growing. The hidden hunger, the insufficiency in the intake of iron, zinc and Vitamin A that causes major diseases such diarrhoea and anaemia and poor eye sight, remain a major health and nutrition issue.

An emerging health issue is availability of safe food. A growing concern is the use of harmful chemicals by marketing intermediaries in the processing and preservation of perishable foods. The government has enacted a food safety act in 2013 to address the problem. The issue is whether the provision of the act could be enforced. As in many other regulatory areas, those in charge of implementing the regulatory provision may go for rent seeking instead of strict enforcement of the Act.

II: Sustaining Food Security: Challenges and Opportunities

Can Bangladesh sustain the gains achieved in food security and make further progress towards sustainable food security?

Challenges

The main challenge in the way of progress towards food security emanates from continuing growth of population. The progress in reducing population growth, from 3.0% per year at independence to about 1.2% now, is laudable. But there are indications that the progress made in fertility reduction has slowed down in recent year. In Chittagong and Sylhet divisions to total fertility rate is still higher than three, while the national average in 2.3, and it is less than two in Khulna Division. Strong traditional norms, and socio-cultural conditions in the Chittagong and Sylhet Divisions contribute to low acceptance of family planning that will not be easy to overcome.

The population is still increasing by 1.8 million every year. Rice production has to increase by 0.4 million tons every year to meet the need for staple food for the growing population. The increase in domestic production at that rate would be difficult due to several supply side factors.

The arable land has been shrinking by 0.6% every year due to demand from housing and industries, and infrastructure, as well as loss of land from river erosion. With global

warming and climate change, another one-sixth of the land may be submerged with brackish water over the next 40 years due to rising sea levels with adverse impact on soil salinity. The on-going climate has made the monsoon more erratic, raising risks in sustaining the growth in crop production.

The soil fertility has been declining due to overexploitation of soil nutrients, and imbalanced use of fertilizers. The ground water aquifer has gone down due to over mining of ground water through irrigating dry season irrigated rice (*boro* rice) that was the predominant source of growth of rice production over the last two decades. The low hanging fruits with regards to irrigation expansion and technological progress have already been harvested. Due to all these factors the potential for further increase in production during the dry season irrigated rice farming is getting limited.

Opportunities and the government's role

There are some silver linings however. With economic progress people now have capacity to access a diversified diet with intake of less rice and more quality food. The per capita consumption of rice has been declining by almost 1.5 kg per person per year. Japan and South Korea had the same experience during their process of economic development. So, despite the growth of population the demand for rice may remain stagnant or even decline if Bangladesh can sustain rapid growth in per capita income.

There is potential for further increase in rice production through intensification of land use in the vast coastal region and the depressed basins as haor and char land where single crop system (it covers about 25% of the land) still prevails. The intensification is possible through use of shorter maturity crop varieties that have already been developed by our R&D system. The risk in rain fed rice cultivation could be reduced by the diffusion of submergence tolerance, drought tolerance, and saline tolerance varieties in adverse agro-ecological environments, such the southern coast and the haor areas in the Northeast, and the flood-prone areas in the river and coastal islands (*chars*). With the reduction of risk, farmers could increase utilization growth augmenting inputs which they now use in sub-optimal dozes. The government can play a vital role in this area by strengthening the R&D institutions, capacity enhancement of researchers through fellowships for graduate and post-graduate level training in international research centres and advanced

educational institutions, and promoting farmer-participatory validation of improved technologies.

The hybrid rice which produces 20% higher yield than the presently grown inbred varieties has been introduced in Bangladesh, but the diffusion has proceeded slowly because of poor grain quality. If breeders succeed in developing good quality hybrid rice, we can produce an additional 5.0 million tons of rice from the five million hectares of boro land.

Bangladeshi farmers are smart in adopting finer crop management practices. But the gap in yield between farmers' field and research stations is still moderate to large. The yield gaps of existing varieties could be reduced with the adoption of finer crop management practices, such as the System of Rice Intensification (SRI), wet and dry irrigation system.

More difficult challenge is accelerating the growth in the production of non-rice foods, such as pulses, oils, fish and animal products. The demand for these nutritious food items has been growing fast with economic prosperity. There is a need to reduce the growing import dependence for non-rice foods to insulate the domestic market from the price volatility of the world market. The R&D system must find ways to fit in lower yielding crops such as pulses and oilseeds in the rice-based system and to develop higher yielding varieties.

Although Bangladesh has made good progress in pond aquaculture by converting low-lying rice lands into fish ponds, the fast flood plains that remain under water for four to six months during the year remain under exploited. Since these are common property resources, no investment is made for fish culture and hence the fish yield is very low, a fraction of that achieved in the same ecosystem in Vietnam and Cambodia. We need to organize the local community - land owners, the landless and the fisher folk for culture fishery, and ensure a fair distribution of produce among them for a harmonized community based fish culture. The NGOs may be encouraged to expand their operation in the seasonal flood plains. This is an area of huge increase in fish production in future.

The government should provide an enabling environment to link farmers to markets with expansion of processing and storage facilities and removing constraints in the value chain.

Recently women's involvement in agriculture has been growing. Women's labour is an additional resource that can contribute to substantial increase in the production of quality food. Women are already heavily engaged in homestead based vegetable and fruit gardening, and subsistence based poultry and livestock farming. The potential is large in this area. The government and NGOs should support women farmers in playing a greater role in sustaining food security by providing easy access to knowledge of improved technology and disease management, supply of quality seeds, and access to finance at easy terms. Through production and consumption of home produced nutritious food, and better care of the children, particularly on appropriate feeding practices such as early initiation of breast feeding, compulsory breast feeding for the first six months after birth, and complementary feeding with nutritious food, women can be instrumental in linking agriculture to nutrition and reducing under-nutrition and malnutrition.