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Food Security in South Asia: Issues and Opportunities

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Foreword

Food security in developing countries is a serious, multidimensional problem. It is a complex and complicated phenomenon and involves a number of factors ranging from availability to access and utilisation of food. With the exception of a few developed countries, all countries have to import food to fulfil domestic demand. Developing and low-income countries, which are net food importers, are amongst the most vulnerable in the world. It is an established fact that to tackle the issue of food security, comprehensive and well-coordinated international effort is required.

Ensuring food security (physical availability and economic access to food) will continue to be a major challenge for the South Asia Region as well. To work on the issue of food security in the region, ICRIER, with support from Konrad Adenauer Stiftung (KAS), Germany, undertook this study that involved collaboration between the ICRIER research team and think-tanks in six other South Asian countries.

The paper synthesises the findings of eight papers prepared by scholars from all South Asian countries. Thus, this represents a Track II initiative in South Asia on the important issue of food security. I hope the paper will contribute to evolving a South Asian policy perspective on this issue.



(Rajiv Kumar)
Director & Chief Executive

September 7, 2009

Abstract

Food security is defined as economic access to food along with food production and food availability. Agriculture in the SAR (South Asian Region) is caught in a low equilibrium trap with low productivity of staples, supply shortfalls, high prices, low returns to farmers and area diversification - all these factors can be a threat to food security. South Asia still has the highest number of people (423 millions) living on less than one dollar a day. The region has the highest concentration of undernourished (299 million) and poor people with about 40 per cent of the world's hungry. Despite an annual 1.7 per cent reduction in the prevalence of undernourishment in the region in the past decade, the failure to reduce the absolute number of the undernourished remains a major cause for concern. Estimates by the Food and Agricultural Organisation (FAO) indicate that by 2010, Asia will still account for about one-half of the world's undernourished population, of which two-thirds will be from South Asia.

Though SAARC countries have established a food bank to meet the needs of food security in the region, it has not been operational even during times of crisis. This is despite the felt need of member nations to evolve mechanisms to make the SAARC Food Security Reserve operational.

It is against this background that this study has been undertaken. Conducted in collaboration with think-tanks from South Asian countries, it aims to identify issues relating to food security, the policy initiatives taken to tackle these issues, evaluate these policies and suggest measures to overcome identified constraints in order to improve the food security situation in the region.

Key Words: *South Asia, Food Security, Safety Nets, Food Bank*

JEL classification: *Q18, O57*

Food Security in South Asia: Issues and Opportunities¹

Surabhi Mittal and Deepti Sethi²

1. Definition of Food Security

Food security is a complex issue and its definition has evolved over time. The question of food security has a number of dimensions that go beyond production, availability and demand for food. The initial focus on food security as a global concern was on the volume and stability of food supplies. In the 1974 World Food Summit, food security was defined as “availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices”. In 1983, FAO expanded its concept to include vulnerable people securing access to available supplies, stating that food security meant “ensuring that all people at all times have both physical and economic access to the basic food that they need.” Later, the 1996 World Food Summit redefined food security to take demand, vulnerability and nutritional aspects into account. At the summit, countries agreed that “food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy lifestyle”. In 2002, an FAO Expert Consultation on food security gave a working definition of food security: Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. Household food security is the application of this concept to the family level, with individuals within households as the focus of concern (FAO 2002 Ch.2). Since then, several definitions have been provided by different organisations such as the World Bank, FAO and UNDP’s Human Development Report. In general, food security is defined as economic access to food along with food production and food availability. Food availability alone, therefore, does not ensure food security; access to food is equally important.

An FAO report, August 2008, defines food security in terms of the following four key aspects:

- **Food Availability** – Sufficient availability of food with the nation through domestic production, net imports (commercial or food aid) and carry-over of stocks.
- **Food Access** – Individual’s capability to purchase food and to be able to procure food through safety nets or availability.

¹The authors owe their gratitude to the South Asia country paper authors for inputs for this paper. KAS foundation is deeply acknowledged for the collaborative support to the study. Our special thanks to Joerg Wolf and Rajiv Kumar for helping in initiating this study. We are grateful to Praduman Kumar, Nisha Taneja, Shrawan Nigam, Purushottam Mudbhary and Raghu Dayal for valuable inputs during the course of the study.

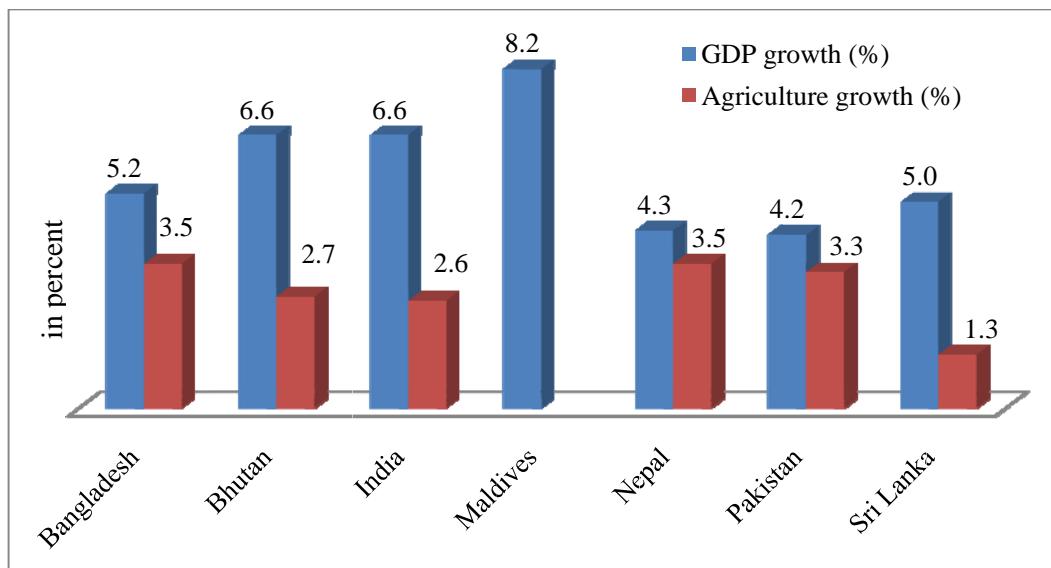
² Senior Fellow and Consultant respectively at ICRIER

- **Food Utilisation** – Consumption of food by the household in a proper form. It also takes into account food preparation, storage and utilisation, food safety, nutritional safety and dietary balance.
- **Food Vulnerability**- Vulnerability of the population to food insecurity due to physiological, economic, social or political reasons.

2. Issues under Food Security

South Asian countries have seen high annual economic growth rate, but relatively low growth rates in agriculture during the period 1993-2006 (fig 1). These countries also witnessed an increased, high level of growth in food consumption, primarily due to high population growth (fig 2).

Figure 1: Average Annual Rate of Growth, 1993-2006

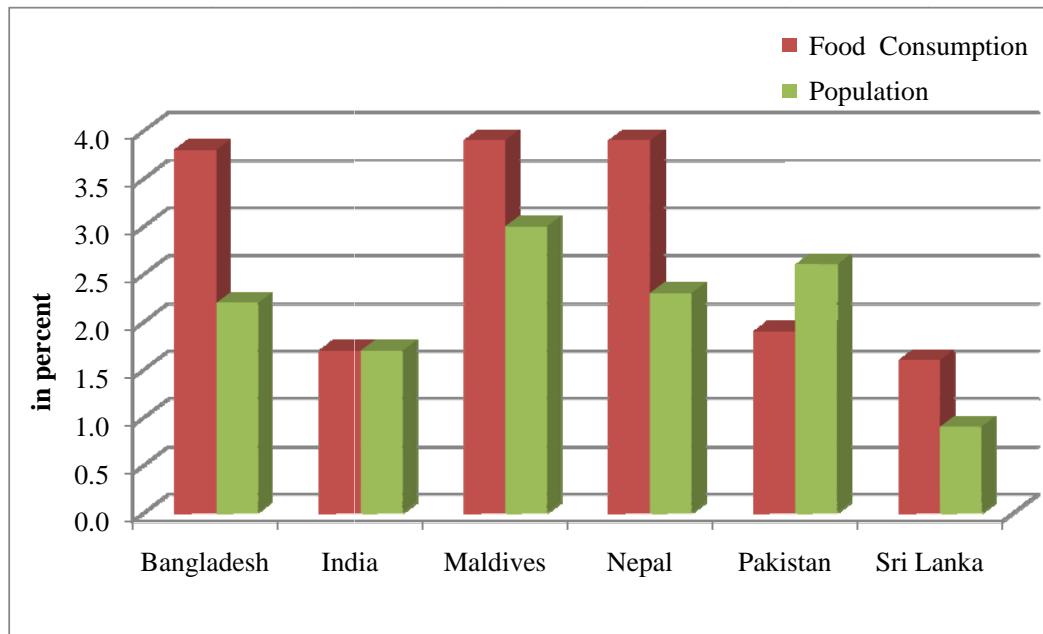


Source: World Development Indicators, 2008

However, despite the high growth rate in food consumption, the region has the highest concentration of the poor and undernourished (299 million in 2003 – WDR 2008) and accounts for 40 per cent of the world's hungry. An annual 1.7 per cent reduction in the prevalence of under-nourishment in the past decade has hardly made a dent in the absolute numbers of the under-nourished, something that remains a major cause of concern. (Fig. 3 and Table 1).

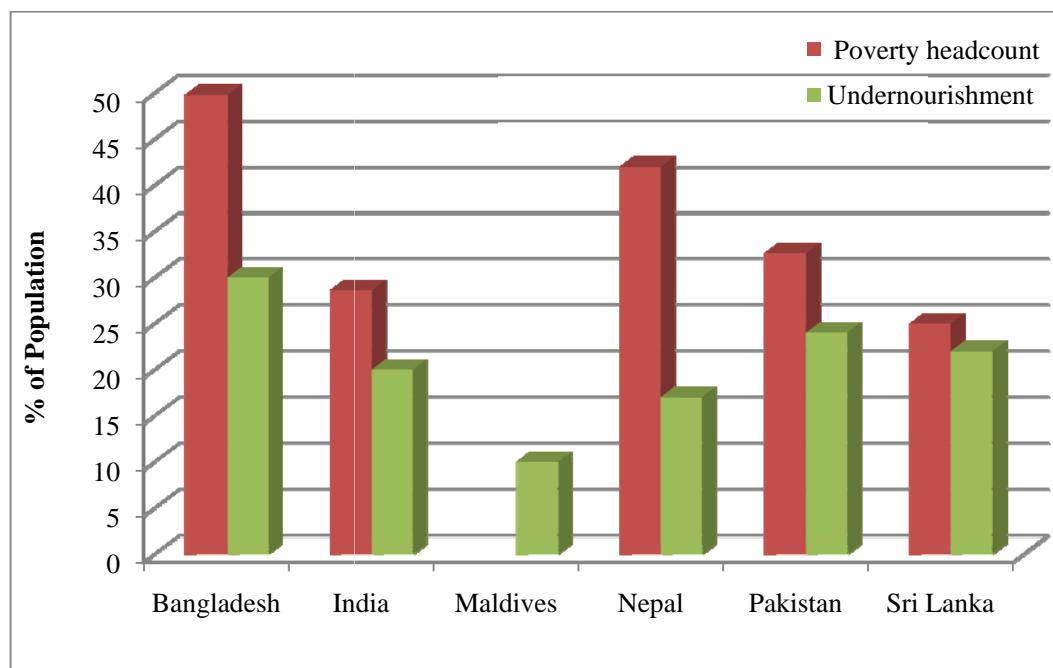
The Agriculture Development Report 2008 ranked South Asia as the second most undernourished, malnourished and food insecure region in the world. The FAO estimates indicate that, by 2010, Asia will still account for about one-half of the world's malnourished population, of which two-thirds will be from South Asia. The food security indicators for South Asia are presented in Table 1. These show the poor state of food security in these economies.

Figure 2: Average Annual ROG in Food Consumption and Population (1995/97-2001/03)



Source: FAO and United Nations Population Division

Figure 3: Incidence of Poverty and Food Insecurity



Source: FAO. Latest available figures of 2000-02

Table 1: Food Security Indicators in South Asia

Indicators	Bangladesh	India	Maldives	Nepal	Pakistan	Sri Lanka
	2002-04	2002-04	2002-04	2002-04	2002-04	2002-04
Population (million)	146.7	1065.4	0.32	25.2	153.6	19.1
Food Supply (kcal/person/day)	2200	2470	2600	2430	2320	2390
Number of undernourished (million)	44	209.5	31.9	4.4	37.5	4.2
Proportion of under-nourishment (%)	30	20	10	17	24	22
Dietary energy consumption (kcal/person/day)	2200	2440	2560	2450	2340	2390
	2000	2000		1996	1999	1996
National (Poverty headcount, (% of population))	49.8	28.6	-	42	32.6	25
Rural (Poverty headcount, (% of population))	53	30.2	-	44	35.9	27
Urban (Poverty headcount, (% of population))	36.6	24.7	-	23	24.2	15
	2000	1999-00		1995-96	1998-99	1995
Gini of income (%)	32	33	-	37	33	34
	1981-82	1990	1995	1995	1988	1986
Gini of dietary energy consumption (%)	18	18	14*	15*	18	16

Source: FAO

Apart from the endemic poverty and poor nutritional status of South Asian countries, there are signs of deterioration in the agricultural sector of the region. This has added to the pressures on food supply and hence, worsened the food security scenario. As seen in Table 2, the agricultural sector's contribution to GDP in 2006 was very low as was the growth rate for the sector that year. The declining contribution of agriculture to GDP has to be seen in the context of increasing agricultural population density (defined as the agricultural population per hectare of arable land under permanent crops) in all countries except Bhutan and Maldives (Table 3).

Table 2: Status of Agricultural Sector in South Asia

Countries	Value added as % of GDP in agriculture, 2006	Agriculture growth rate (annual % growth, 2006)	Employment in agriculture (% of total employment)
Afghanistan	36	-	-
Bangladesh	20	4.94	51.70 (2003)
Bhutan	22	1.67	-
India	18	2.68	52.00 (2007)
Maldives	-	-0.65	17.30 (2003)
Nepal	34	1.19	66.40 (2001)
Pakistan	19	1.58	43.00 (2005)
Sri Lanka	16	4.71	33.50 (2004)

Source: World Development Indicators, 2008

Table 3: Change in Agricultural Sector

Countries	Agricultural Population density			Per centage share of agriculture in GDP		
	1990-92	1995-97	2003-05	1990-92	1995-97	2003-05
Afghanistan	1.2	1.6	2.0	-	-	40.61
Bangladesh	8.3	9.4	9.3	30.00	25.95	20.98
Bhutan	2.7	2.2	2.3	35.38	32.52	24.93
India	3.0	3.2	3.4	29.31	26.66	19.34
Maldives	10.3	9.9	5.2	-	-	-
Nepal	6.7	7.5	8.7	48.72	41.57	36.36
Pakistan	3.1	3.2	3.4	26.03	26.11	22.34
Sri Lanka	4.5	4.6	4.5	26.31	22.44	18.04

Note: Agriculture population density- Agricultural Population per Hectare of Arable & Permanent crops Land (persons/ha)

Source: FAO, 2009 and WDI, 2008

Compounding problems on the food security front are other factors such as declining productivity as reflected in the annual growth rate of yield for cereals and the diversion of land for the production non-cereal commodities whose demand has increased with changes in the consumption pattern (Table 4). Yield for cereals has been on a constant decline in most of the countries and in some of them, the growth is

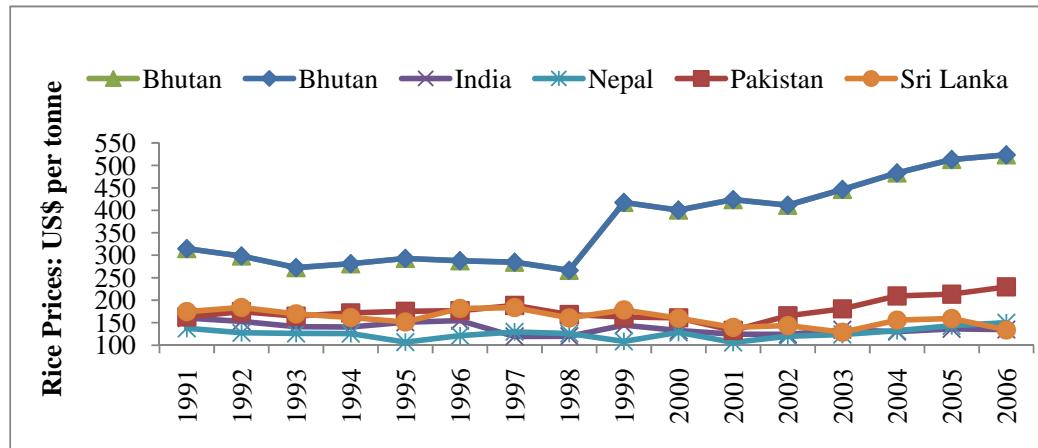
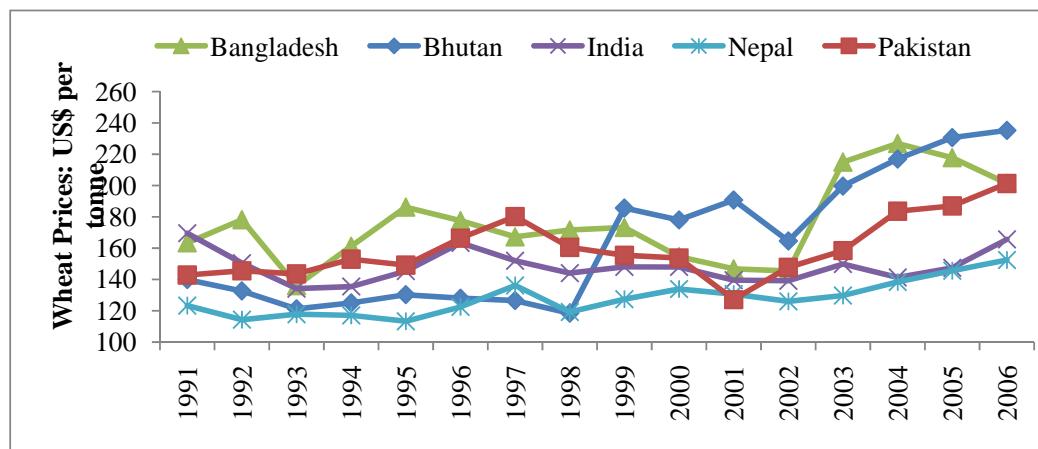
even negative. South Asian countries have consequently witnessed a sharp rise in the prices³ of rice and wheat (figure 4), posing a threat to the poor and vulnerable sections of the population in these countries.

Table 4: Average Annual Rate of Growth of Yields of Cereals in South Asian Countries

Countries	1981-85	1986- 90	1991-95	1996-00	2001-05
Afghanistan	-0.07	-2.71	0.12	-8.15	-
Bangladesh	2.77	4.33	-0.53	6.25	2.28
Bhutan	-1.02	-5.47	6.21	-0.85	-
India	4.17	5.59	2.3	1.39	0.63
Nepal	1.38	5.92	0.73	2.57	1.91
Pakistan	-1.41	0.15	2.26	4.14	3.98
Sri Lanka	2.58	-0.57	0.66	2.26	0.70

Source: Self computed from FAO data

Figure 4: Trends in Rice and Wheat Prices in South Asian Countries



Source: FAO Statistics, 2009

³ Producers prices are plotted in Figure 4

The productive potential of South Asia's rich geographical diversity holds promise in so far as its ability to mitigate these threats is concerned. But lack of political will, poor infrastructure, lack of appropriate policy frameworks, low level of regional integration and severe bilateral conflicts have severely impeded efforts to achieve food security in the region.

The other issue that needs special attention is the likely impact of climate change on agricultural productivity in South Asia and other parts of the world. The South Asian region is highly sensitive to the consequences of climate change⁴ and is known to be the most disaster prone region in the world. Purdue University's Climate Change Research Centre has shown that global warming could delay the start of the summer monsoon by five to 15 days within the next century and significantly reduce rainfall in much of South Asia. Rising global temperatures are likely lead to an eastward shift in monsoon circulation which could result in more rainfall over the Indian Ocean, Myanmar and Bangladesh but less over Pakistan, India and Nepal.

The fourth assessment report⁵ of the Intergovernmental Panel on Climate Change lists the consequences of climate change for the South Asian region. The melting of the Himalayan glaciers will lead to increased flooding and affect water resources within the next two to three decades. Crop yields could decrease by up to 30% in South Asia by the mid-21st century. This could hamper the achievement of many of the Millennium Development Goals (MDGs), including that of poverty eradication.

Climate change is expected to have severe socio-economic implications for South Asia. As three-fifth of the cropped area is rain fed, the economy of South Asia hinges critically on the annual success of the monsoons. In the event of a failure, the worst affected are the landless and the poor whose sole source of income is from agriculture and allied activities.

The HDR, 2006, has pointed out that in South Asia alone, 2.5 billion people will be affected by water stress and scarcity by the year 2050. A rise in temperature will negatively impact rice and wheat yields in the tropical parts of South Asia where these crops are already being grown close to their temperature tolerance threshold. While the direct consequences of climate change are associated with rise in temperatures, the indirect impact will be felt in terms of water availability, changing status of soil moisture, and pest and disease incidence.

The worst hit by these changes are likely to be farmers with small holdings in rain fed areas who constitute a majority of the farmers in this region and whose financial and technical capacity to adapt to climate variability and change is low. Landholdings are already very small due to large family sizes in this region. In the region's hilly parts, holdings are also fragmented, preventing farmers from reaping economies of scale. Some of the impact assessments for South Asian countries done in recent papers are presented in the Appendix, Table 1.

⁴ http://hdr.undp.org/en/reports/global/hdr2007-2008/papers/kelkar_ulta%20and%20bad_wal_suruchi.pdf

⁵ <http://www.ipcc.ch>

One of the most important areas in which bold initiatives need to be taken to achieve food security is intra-regional trade. SAARC nations need to define the role of regional trade as well as trade with non-SAARC nations. Issues that need to be addressed include the development of joint trade strategies, greater inter-regional trade, restriction in trade policies such as non-tariff barriers and trade facilitation measures that would help the smooth movement of food grains from surplus to deficit countries.

This paper takes a look at the policies and safety nets that each country of the SAARC region has adopted to ensure country-level food security and their efficacy before discussing the role of trade and the development of the SAARC food bank to ensure regional food security. It also proposes a way forward to achieve food security in the region.

3. Safety-net programmes - country policies

Household food security in many instances is more about income security than just the availability of food. It is the inability of the households to purchase food or have access to the physical storage of food, which leads to the household's food insecurity. In order to increase food availability, various macro policies and safety-net programmes such as building buffer stocks and controlling prices have been implemented in the countries of South Asia. Since food-based safety-net programmes are effective only if individuals have access to these facilities and many households do not have the income to buy food, some countries have introduced income based or employment generating programmes along with price control and distributive measures. Many South Asian countries have direct cash transfers too. The number of programmes, their magnitude, reaches and target population vary from country to country and also within the country. Some of the major safety nets of the South Asian countries that are directly or indirectly linked to the goal of food security are discussed below.

3.1 Afghanistan: The state of political and economic affairs is highly complicated in Afghanistan. Population is extremely vulnerable to food insecurity; the social, physical and political infrastructure does not provide bankable support to food security interventions and investments by the international community. The country's agricultural sector is also under extreme pressure. Farmers receive little professional guidance and limited opportunities for development of farming activities. Furthermore, employment opportunities are not increasing which could provide secure livelihood to a large segment of population especially in the rural areas. In this regard, there is a need for taking concrete steps to solve the problem of food insecurity. The National Risk and Vulnerability Assessment conducted in 2005 (NRVA 2005) by the Ministry of Rural Rehabilitation and Development together with the Central Statistic Office, Government of Afghanistan found that approximately 61 per cent of the Afghan population experienced low dietary diversity and poor to very poor food consumption. Around 30 per cent of the population does not get the minimum food requirements and is food insecure. Twenty per cent of the population suffers from chronic food insecurity. NRVA 2005 summarises food insecurity in Afghanistan as follows: "At the household level, food insecurity in Afghanistan is largely caused by inadequate access to food resulting from low household incomes." The 2006 drought affected rain-fed wheat and resulted in a reduction of yield in most

regions, further increasing food insecurity. In 2007, 6.5 million people faced food insecurity in Afghanistan according to the FAO.

The incidence of food insecurity has been increasing over time and in 2008, was further aggravated by a sharp price rise. Global food prices were a great cause of concern in 2008 with millions affected as the prices of staple foods rose, and remained higher than in previous years.

Afghanistan used to be a major exporter of fresh and dry fruits, but conflict and political disturbances destroyed orchards. Although international development agencies are helping the Afghans rebuild their orchards, both time and resources are needed for production to become sustainable. One of the necessary conditions for rebuilding public and private assets for food security is to improve the security situation across Afghanistan.

Various international development agencies have been working to achieve food security in the country. This includes a substantial amount of food aid. A bulk of the relief assistance that reached households in Afghanistan has been in the form of food. Where food aid commodities reached, they saved lives, discouraged migration and protected families from further indebtedness. Most of the aid was distributed in areas identified by the World Food Programme's Vulnerability Assessment.

The largest food aid programme in Afghanistan, the World Food Programme, extended from January 1, 2006 to December 31, 2008. The initial programme design aimed at covering 6.6 million beneficiaries over the three years with a target of 4.7 million beneficiaries in 2006. The current aim is to provide 1,010,000 tonnes of food aid to 11.2 million Afghans between January 2006 and December 2009 at a cost of US\$ 848 million. On average, WFP will distribute food to 3.7 million people each year, primarily in remote, food-insecure rural areas. WFP will target chronically poor and food-insecure families, school children, teachers, illiterate people, tuberculosis patients and their families, internally displaced persons and ex-combatants – with particular emphasis on the vulnerable group of women and girls. This programme is multi-faceted and targets food insecure areas with a number of activities, including Food for Work, Food for Training, and Food for Education, and is implemented in partnership with the Afghan government, non-government partners and communities.

Apart from the aid from the World Food Programme, the European Commission Humanitarian Aid Office has also arranged various food aid programmes in Afghanistan, beginning with a food aid programme valued at 6 million Euros per year in October, 2007. The Government of Afghanistan was provided with 8,700 tonnes of vegetable oil in 2006 and 8,200 tonnes in 2007 under a US Department of Agriculture (USDA)-supported Title I-funded Food for Progress Programme. USDA is also providing technical assistance for the reconstruction of Afghanistan's agricultural sector. Mercy Corps has monetised Food for Progress vegetable oil, including 2,000 tonnes of vegetable oil in 2005 and 10,000 tonnes of soybean oil in 2006. The proceeds from the sale of the commodities are being used to finance agribusiness, horticulture, and animal husbandry projects besides health activities in six provinces of Afghanistan. World Vision is implementing a USDA-supported multi-year McGovern-Dole International Child Nutrition (Food for Education) Programme in the province of Hirat.

According to the Afghanistan Food Security Monitoring Bulletin (AFSMB), August 2007, attention needs to be given to improving the selection criteria of food and the time of requirement of a particular food item at the local level and orienting the food for work programmes closely with the cycle of labour demand for agricultural activities. Steps were also initiated to strengthen the dialogue among implementing partners and local authorities on the programme selection and implementation process.

3.2. Bangladesh: The Government of Bangladesh has, over the past three and a half decades, introduced reform measures and policies for agricultural development in its quest for food security for all. In the 1970s and early 1980s, Bangladesh pursued a policy of agricultural modernisation by supplying modern agricultural inputs (seed, fertiliser and irrigation) and technology (HYVs and machinery) through government agencies and parastatal organisations like the Bangladesh Agricultural Development Corporation (BADC), and Bangladesh Water Development Board (BWDB). The government liberalised the seed market, allowed import of improved germplasm for research and development and developed its own facilities for producing foundation seeds (except for five notified crops - rice, wheat, sugarcane, potato and jute) through the Seed Policy Act of 1992 and 1998. It also encouraged the involvement of the private sector and NGOs in the seed delivery system.

More recently, the newly elected government has decided to extend fertiliser subsidy to fertilisers other than urea in a bid to promote balanced fertiliser use. Earlier, while the government procured and marketed urea at administered prices, the marketing of phosphoric, potassic and other fertilisers was left to the private sector. This resulted in a disproportionate rise in the prices of these, leading to imbalanced use of fertilisers.

During this period, the Bangladesh government also took a series of measures to expand its irrigation network. Minor irrigation systems have been developed in the country at a rapid pace. To promote the use of irrigation facilities, electricity for irrigation purposes is subsidised. In the 1970s and early 1980s, irrigation was promoted through public agencies, but, since the mid-1980s, the government began to involve the private sector too.

Output market-related interventions were made by the government through the domestic procurement of rice and wheat, distribution of food grains through the public food grain distribution system, and through tariffs on imported rice and wheat. Domestic procurement of both rice and wheat is made by the government with a view to providing support to farmers and to procure quantity of food grains required to support the public food grain distribution system. The government distributes rice and wheat under the Public Food grain Distribution System (PFDS) both through monetised channels like Essential Priority (EP), Other Priority (OP), Large Employee Industries (LEI), Flour Mill (FM), Open Market Sales (OMS), and Fair Price Card (FPC) and non-monetised (targeted) channels like Food for Work (FFW), Test Relief (TR), Gratuitous Relief (GR), Vulnerable Group Development (VGD), Vulnerable Group Feeding (VGF), Food for Education (FFE) and other relief channels.

To ease the deficit in food availability from domestic production, import of agricultural commodities was liberalised and import duties and para-tariffs on various food items were substantially reduced by successive governments.

Bangladesh has also invested in agricultural research and extension system. Until the mid-1990s, Bangladesh used to receive a large amount of international funds for agricultural research through direct support to the Bangladesh government and through the international projects of International Rice Research Institute (IRRI) and International Maize and Wheat Improvement Centre (CIMMYT). Since then, international support for agricultural research, particularly for rice and wheat, has declined. Public investment for agricultural research declined in the 2000s. In FY2007 and FY2008, government allocated special funds for agricultural research but utilisation of the allocated fund is constrained by procedural and institutional limitations. Currently, a big project titled National Agricultural Technology Project (NATP) is being implemented. The government has also encouraged private sector and NGO participation in the development and promotion of HYVs and hybrid rice. Four types of programmes are being implemented in 2009 - cash transfer programmes, food security programmes, micro-credit programmes and, special funds and development sector programmes.

3.3 Bhutan: Bhutan has initiated several agricultural, food and trade policies to increase food production and ensure food security in the country since the initiation of the first five-year plan in 1961. Since Bhutan did not have the resources and technological know-how, several multilateral and bilateral development agencies have supported Bhutan in achieving food self-sufficiency. In 1983, the International Development Research Centre (IDRC) and IRRI supported “Rice Farming Systems Research” to build Bhutan’s rice research capabilities and this lead to a remarkable process in rice production.

The Bhutan government’s policy to increase food production includes the sale of farm inputs such as seeds/seedlings, fertilisers and plant protection chemicals through private commission agents appointed by the concerned ministry. Subsidies on inputs, except those for promotional purposes, do not exist anymore. However, the transportation of inputs is subsidised even today to maintain cost uniformity throughout the country.

The government has been investing in the construction of roads to improve rural connectivity, setting up of Renewable Natural Resources (RNR) centres (120), research centres and in the training of ministry officials and farmers to improve food security. Bhutan has also set up the Food Corporation of Bhutan (FCB) to imports food to meet domestic demand. Besides, under the FAO and the Netherlands Partnership Programme (FNNP), the government chose rice, maize, citrus fruits and potatoes for pro-poor commodity chain analysis to both improve food security and increase rural incomes.

The key policy directives to enhance food security in Bhutan are to intensify and diversify production, to adopt an integrated approach to nutrient and pest management and to achieve at least 70 per cent self-sufficiency in food grains. Emphasis has been placed on developing and promoting high-value, low-volume cash crops that offer comparative advantages over other crops in capturing the off-season markets in India

and neighbouring countries; promoting the use and breeding of superior, healthy breeds of highly productive livestock; placing a higher priority on conservation than on commercial exploitation of forests and maintaining at least 60 per cent of the country's area under forest cover.

3.4 India: India's initiatives to ensure food security for its citizens ranges from concerted efforts to boost agricultural production to far-ranging market interventions aimed at both income and price stabilisation. Besides, measures have been introduced to improve the access to food of the really poor through public distribution and income generating schemes.

One of the first interventions by the Indian government was the passing of the Essential Commodities Act in 1955 to protect the poor from the vagaries of the market. The act conferred on the government the power to control production, supply and distribution of essential commodities to ensure equitable distribution of food grains at fair prices.

In the mid-1960s, the government ushered in what has widely come to be known as the 'green revolution' by encouraging the use of high yielding varieties of seeds, expansion of irrigation networks and active encouragement of the use of chemical fertilisers in a bid to boost the productivity of Indian agriculture. Most of the agricultural subsidies such as those for power and fertilisers were introduced to improve farmers' access to inputs that would help improve farm productivity.

One of the oldest initiatives taken by the Indian government was the establishment of a public distribution system (PDS) with the objective of making basic food grains available to all at affordable prices. It set up the Food Corporation of India under an act of Parliament in 1964 to oversee its implementation. The Corporation was entrusted with the task of both procuring food grains at minimum support prices announced for 24 crops by the government and regulating supply to ensure that prices remained stable by building a buffer stock of food grains. In effect, the Corporation has been the main instrument to implement the government's income and price stabilisation policies.

The TDPS has been plagued by poor administration and local resource constraints. Despite this, it has proved largely effective in ensuring food security both at the national and household levels. Several measures have been proposed to make the scheme more effective. One that was mooted in the Tenth Five-Year Plan was the issue of subsidy entitlement cards to eligible households. The subsidy entitlement was to be based on family size and composition. The cards would entitle the household to monthly food stamps from prescribed distribution centres which could be encashed for food from any food store at a subsidised rate. The proposal is now being implemented on a pilot basis.

Besides the TPDS, the Indian government has also implemented programmes for the benefit of more targeted groups. In 1975, it launched the Integrated Child Development Scheme (ICDS) to provide nutrition and healthcare services to children and pregnant women. The *Antyodaya Anna Yojana* (AAY), launched in 2000, sought to provide affordable food to below poverty level (BPL) households. The objective of the scheme was to make the TDPS more focused and targeted an identified 10 million

of the poorest of the poor in different states. Wheat and rice at subsidised prices of Rs.2 and Rs.3 per kg respectively are provided to these households under the scheme. State governments are expected to meet the distribution costs of the programme.

Another scheme that addresses the nutritional requirements of a specified target group is the mid-day meal scheme. The scheme was launched in 1995 for the benefit of students in government run and aided primary schools and in schools run by local bodies. Under the scheme, the government supplies free food grains to schools in quantities determined on the basis of specific nutritional requirements for a specified minimum number of days in a year.

In 2005, the government passed the National Rural Employment Guarantee Act to improve the livelihood security of rural households by providing them with guaranteed wage employment for a minimum number of days in a year. Semi-skilled and unskilled workers living below the poverty line in rural areas have been specifically targeted under the programme. Works undertaken in the programme aim to create enduring assets in rural areas and include projects such as land-levelling, bush clearing, deep ploughing, building of earthen bunds, flood control works and horticulture. These contribute to improved farm productivity and higher farm incomes.

The National Rural Employment Guarantee Scheme was preceded by the National Food for Work Programme (NFFWP) which was implemented in 2004 in 150 of the most backward districts of the country. These were identified by the Planning Commission in consultation with the Ministry of Rural Development and state governments. The objective of the programme was to provide additional resources apart from the resources available under the *Sampoorna Grameen Rozgar Yojana* (SGRY) to these backward districts to generate supplementary wage employment and provide food-security through the creation of need-based economic, social and community assets.

An important initiative towards food security was the launch of the National Food Security Mission (2007) to increase the production of rice by 10 million tons, wheat by 8 million tons and pulses by 2 million tons by the end of the Eleventh Plan (2011-12). To ensure that previous mistakes in policy formulation and implementation are not repeated, the Mission has put in place strong monitoring and evaluation mechanisms that involve all implementing and line departments. To begin with, a baseline survey will be conducted by the State Department responsible for Economics & Statistics to assess productivity levels and the resource endowments of selected beneficiary farmers. Local Panchayati Raj Institutions are actively involved in the selection of beneficiaries, implementing local initiatives in districts identified by the mission and identifying priority areas for Mission interventions.

Grain Bank in Madhya Pradesh (India)

In 2001, a self-help group of women, farmers and youth came together to set up a grain bank in the Betul district of Madhya Pradesh. The bank provided immediate access to food during emergencies; reducing or eliminating the need to borrow from local money lenders who charge usurious interest rates. Further, it reduced the dependence of the village community on government supplied grain. This was the origin of the grain bank scheme that today covers 30 villages with 700 households of which 618 households belong to the poorest section.

Each village community has developed its own unique, independent and self-reliant system of managing grain banks. The most notable feature of the scheme is that it is locally controlled and managed with a high degree of community involvement. In almost all villages, the borrower has to return the grain in kind, with the interest also in kind, to ensure that the corpus is intact. It is compulsory for women to make up 50 per cent of every grain bank committee. Usually, the committee has five men and five women.

The community takes a collective decision regarding distribution. Each individual family gets an equal share of grain. When the villages build up surpluses, the food is either sold for cash, or distributed in the village itself to prevent it from getting spoilt. The community also takes decisions on the distribution of foodgrains and money to families in an emergency. Interest rates, which are decided by community for both grain and money borrowed, are much lower than that charged by moneylenders.

In 2007, the Indian government approved two initiatives – the National Policy for Farmers and the Rashtriya Krishi Vikas Yojana – that take a holistic approach to agricultural development. It also proposes to pass a National Food Security Act in 2009 under which below poverty line (BPL) families will be provided with 25 kgs. of grain a month at a subsidised price of Rs.3 per kg.

3.5 Nepal: For the past 13 years, agricultural policy in Nepal has been shaped by the Agricultural Perspective Plan (APP), which covers the period 1995-2010. The APP strategy is to achieve economic growth and poverty reduction objectives through accelerated growth of agriculture. Perhaps reflecting the relative antiquity of the APP, food security receives scant mention, and what discussion does exist is largely confined to the improved access the poor will receive as a result of increased employment opportunities, and the lower prices that are a spin-off of increased production and efficiency.

The National Agricultural Policy (NAP) of 2004 added new food access provisions for vulnerable groups which are more radical than those of the APP. The interim constitution of Nepal 2006-07 recognised food sovereignty as a fundamental human right. Consequently, the government has approved a food security plan as part of the Three Year Interim Plan to ensure the right to sustainable food security for all. Various aspects of food and nutritional security are to be strengthened through proper

conservation and management of natural resources together with sustainable agricultural production, equitable distribution, increased employment opportunities, improved quality of food products and reduced vulnerability of the disadvantaged (children, old people, those from occupational castes, women, marginalised tribes and people living in inaccessible areas). The Food and Nutrition Security Plan (FNSP) that was subsequently introduced (NPC 2007) places emphasis on self-reliance, food safety, adequacy of nutrition and improved food access. As a specific food security programme, Nepal Food Corporation (NFC), a public sector organisation, has been distributing food to the deficit hill and mountain areas, for which the government provides transport subsidies. NFC cereals still do not necessarily reach the neediest households in the districts.

Other targeted food assistance programmes are implemented by the government with considerable financial and logistical support from donor agencies including the World Food Programme (WFP). The various modes of assistance include the following: provision of rural employment opportunities to the poor through the Rural Community Infrastructure Works Programme (RCIW), a food for education programme directed at improving the nutritional status of and school enrolment and attendance by children, a mother and child health initiative aimed at improving the health and nutritional status of pregnant women, nursing mothers and their young children, and emergency assistance in natural disasters.

3.6 Pakistan: Pakistan does not have any national food policy except for a few food security policies at the regional level. There is a plethora of food laws, mainly dealing with quality standards. Standards are also not addressed properly and require a complete overhaul. The Pakistani government neglected the issue of food security and just focused on measures to increase production. Though production did increase, it was not sufficient to meet the country's consumption needs.

In Pakistan, procurement, handling, marketing, storage and supplies are handled by the four provincial food departments and the national agency, the Pakistan Agricultural Services and Supplies Corporation (PASSCO). The Corporation was established in 1973 as a public limited company, fully owned by the federal government and six public sector banks. The agency has been entrusted with the tasks of procuring wheat and other agricultural commodities, providing price support to farmers, ensuring adequate supplies in deficit provinces/regions, intervening in the open market to stabilise prices of agricultural commodities and, above all, maintaining strategic reserves to meet any emergent situation. In 2006, the rated storage capacity with these agencies (PASSCO and provincial food departments) was 4.34 million tons, of which 2.45 million tons was with the Punjab Food department, 0.71 million tons with the Sindh Food Department, 0.16 million tons with the NWFP, 0.44 million tons with the Balochistan Food Department, 0.45 million tons with PASSCO and about 0.13 million tons with other agencies.

To assess the level of food security, the World Food Programme (WFP) Pakistan, undertook a preliminary food security analysis in 1998⁶ and, again, in 2003 for rural Pakistan. The results showed a rural-urban divide in terms of food security and the

⁶ Ref: [#team](http://www.sdpi.org/whats_new/recent_publications/fsareport/food_insecurity.htm)

final results concluded that a "state of food insecurity" prevailed in rural Pakistan. Even wheat surplus provinces were found, in the net, to be food insecure in terms of availability because of growing population pressure and the resultant rise in demand for food. It recommended that a national food security strategy should be formulated. It also recommended the integration of the institutional arrangements for implementing the strategy with those for other socio-economic interventions such as food availability and nutritional security at the national level. It also stressed that initiatives such as poverty alleviation should go hand in hand with those aiming at food security to make the development process responsive to the needs of the people.

The 2007-08 food crisis pushed the government to revisit food production and food security issues. In 2008, the Planning Commission of Pakistan formulated a task force on food security to provide policy recommendations to ensure food security. It was also asked to look into issues regarding procurement, medium-term research priorities, water resources and climate change.

Two major initiatives taken by the Pakistan government to improve food access are the Benazir Income Support Programme (BISP) and the Food Support Programme (FSP). BSP was initiated with an initial allocation of Rs.34 billion (US \$425 million approximately) for the year 2008-09. The programme was initiated to partially offset the impact of inflation on the purchasing power of the poor. Food prices have seen a sharp rise since 2005. In the years 2005-07, inflation stood at almost 10% with food inflation in the range of 13-15%. In 2007-08, the sharp rise in oil prices and primary products in the international as well as domestic market resulted in double-digit inflation, which almost halved people's purchasing power. The programme aims at covering almost 15% of the entire population, which constitutes 40% of the population below the poverty line. A monthly payment of Rs.1000 per family would increase the income of a family earning Rs.5000 by 20%. BISP will cover all four provinces.

The food support programme (FSP) was launched in 2002-2003 targeting the poor to improve their living standard by providing them financial support. A subsidy of Rs.2000 was given to around 1.25 million poor families in two biannual instalments of Rs.1000 through post offices countrywide. The government increased the rate of annual subsidy to Rs.2400 in 2003-04 and further to Rs.3000 in 2005-06. The programme's annual budget was increased from Rs.4.38 billion to Rs.6 billion in 2007-2008 to cover a larger number of the country's poor.

3.7 Sri Lanka: There are three main food security-related programmes in Sri Lanka targeted at special groups and the poor. These are Samurdhi programme, Thripasha Programme and the mid-day meal programme in schools. It is important to note that none of these are aimed specifically at ensuring food security; these are food-based welfare programmes with objectives that go beyond mere food security.

Sri Lanka's largest welfare programme, the Samurdhi programme, was launched in 1995 with the twin objectives of ensuring food security and reducing poverty. The programme covers two million households. Eighty per cent of its outlay is accounted for by a food stamp programme. Its biggest drawback has been poor targeting of beneficiaries. Intended to cover a target of 20 per cent of the population which is

below the poverty line, the programme actually covers half the total number of households in the country.

The Thripasha Programme focuses on the specific group of mothers in low income groups with children below the age of one. It is essentially a programme of food supplementation in which cereals, pulses and micro-nutrients are distributed free among the target group. Despite its sharply defined target population, this programme has also seen a considerable part of the subsidy offered going to ineligible recipients. Apart from problems of execution, the programme suffers from limited reach and inadequate monitoring of the health of recipients. The school mid-day meal programme targets children with the objective of improving school attendance and children's nutrition. The programme covers 500,000 children in 6,440 schools, which have at least 30 per cent malnourished children.

3.8 Maldives: The main source of food security in the Maldives is the fisheries sector. The Ministry of Fisheries, Agriculture, and Marine Resources (MOFAMR) is responsible for the sustainable management and development of fisheries, agriculture, and marine resources of the nation. One of the most important initiatives towards achieving food security in Maldives is the Hydroponics Agriculture Pilot Project taken up by MOFAMR in 2006. The project aims to promote the development of hydroponics production systems (it is a technique of growing plants without soil, in water containing nutrients) both by households and on a commercial scale, to help the country achieve food security as well as provide its citizens with an additional avenue of employment and income generation. The project also aims to increase the availability of high-quality horticultural products, which would improve nutritional status. There is considerable emphasis on raising awareness of the benefits of hydroponics among, and imparting training to, the young, especially in rural islands.

In addition, following the tsunami in 2004, an assessment of the food safety situation was undertaken to assist the Ministry of Health, Government of Maldives. Various food-safety monitoring guidelines were developed for food-processing units, resorts, hotels and guesthouses, and port health authorities (food imports). These guidelines were basically developed on the lines of "Good Manufacturing Practices" (GMP) and "Good Hygiene Practices" (GHP). Since the quality and safety of processed food products depends on the raw material used, these guidelines lay considerable stress on the assessment of "primary production" along with an assessment of food processing facilities.

In order to meet household or individual level food security in the country, the Department of Public Health organises food safety advocacy sessions to create awareness among the population regarding food safety. The government is considering the establishment of a National Food Safety Committee (NFSC) to provide a strong coordinating mechanism for uniform enforcement of food safety norms. NFCS also recommended that food safety education should be initiated in educational institutions in order to lay the foundation of overall good health of the young. This will ensure that the students who work in the hospitality and tourism sector will become role models in safe food practices and thereby strengthen the competitive advantage of Maldives as a tourism destination in all aspects.

Table 5: Summary of major food security Programmes in South Asian Countries

Countries	Programmes and Steps taken for Food security	Target Population	Coverage and implementation	Aspect of food security ⁷
Afghanistan	World Food Programme	Chronically poor and food-insecure families, schoolchildren, teachers, illiterate people, tuberculosis patients and their families, internally displaced persons and ex-combatants – with a particular emphasis on vulnerable women and girls.	3.7 million people each year. Since January 1, 2006.	Vulnerability
Bangladesh	Public Foodgrain Distribution System (PFDS)	Poorest population	Launched in 1975	Availability and Accessibility
Bhutan	Receive support from several multilateral and bilateral development agencies.			
	Food Corporation of Bhutan	Farmers	Established in 1974	Accessibility and Availability
India	Public Distribution System	Below Poverty Line Population	It is intended to serve poor who number more than 330 million.	Accessibility and Vulnerability
	Mid-day Meal Scheme	Students in govt. primary schools/ primary schools aided by govt. and run by local bodies.	The Scheme covers students of Class I-V and was launched in 1995	Utilisation
	Village Grain Banks Scheme	The revised scheme envisages inclusion of all willing BPL/AAY families in the villages which are to be	Launched during 1996-97 by the Ministry of Tribal Affairs in 11 States; since 2004, the scheme is being implemented	

⁷ The policy targets either of the four pillars of Food security- Availability, Access, Utilisation and Vulnerability.

Countries	Programmes and Steps taken for Food security	Target Population	Coverage and implementation	Aspect of food security ⁷
		identified by the State Govt. in food deficit areas	by the Department Food & Public Distribution.	
	National Food for Work Programme (NFFWP)	All rural poor who are in need of wage employment and desire to do manual and unskilled work.	150 most backward districts of India. Launched in 2000.	Accessibility
	Antyodaya Anna Yojana	5 % of the total population in the country who sleep without two square meals a day	One crore of the poorest families; launched in 2000.	Accessibility and Vulnerability
	Integrated Child Development Scheme	Children and pregnant women	Scheme was launched in 1975 in 33 Community Development Blocks. It covers 6118 blocks in the country including 4790 in rural areas, 805 in tribal areas and 523 in urban slums.	Utilisation
	Essential Commodities Act, 1955	General public	Launched in 1955 and it extends to the whole of India	Availability
	National Food Security Mission		Launched in 2007	Availability
	Rashtriya Krishi Vikas Yojana	Farmers	Covers all the states and UTs and launched in 2007.	
	Targeted Public Distribution System	Below Poverty Line	Scheme was intended to benefit about 6 crore poor families; launched in 1997	Accessibility and Vulnerability
	National Rural Employment Guarantee Act (NREGA)	Rural Households primarily semi-skilled or unskilled workers living below the poverty line in rural India.	Launched in 2005	Accessibility and Vulnerability
	Sampoorna Grameen Rozgar Yojana (SGRY)	Women, scheduled castes, scheduled tribes and parents of	ed in 2001 in all states and UTs	Accessibility

Countries	Programmes and Steps taken for Food security	Target Population	Coverage and implementation	Aspect of food security⁷
		children withdrawn from hazardous occupations.		
Maldives	Hydroponics Agriculture Pilot Project	Youth and school children	Taken up in 2006	Utilisation and Vulnerability
	Food Safety advocacy sessions (I & II)		May, 2005	Utilisation and Vulnerability
Nepal	Nepal Food Corporation	People in hill and mountain areas where there is food deficit	Established in 1974	Accessibility and Vulnerability
Pakistan	No food security programme as such - rather plethora of food laws. Only government of Punjab has a food policy but that considers only wheat for the food security policy and ignores the other components of food security.			Availability
Sri Lanka	There are food-based welfare programmes and not food security programmes: Samurdhi programme	People below poverty line	Two million households. Started in 1995	Accessibility
	Thripasha programme	Mothers among low income groups with infants under one year of age (lactating mothers)	Launched in 1973 and covers 600, 000 beneficiaries	Utilisation
	School mid-day meal programme	Children	Covers 500, 000 children in 6, 440 schools; started in 2004.	Utilisation and Vulnerability

4. Food Bank and Role of Trade – A move towards regional Food Security

The safety nets discussed in the section above highlight the role of individual governments in strengthening the food security situation in their respective countries. Although most of these programmes suffer from poor targeting and high administrative costs, the programmes have had a positive impact in terms of improving food access and availability and reducing poverty. At the regional level, however, the one factor that will play a critical role in ensuring a food secure region is trade. It will be necessary for South Asian countries to work towards enhancing regional trade relations and increased integration with the world market.

One step that was taken towards greater regional integration and co-operation was the establishment of the South Asia Preferential Trade Area. Later, the South Asia Free Trade Agreement (SAFTA) was put into place in a bid to overcome the shortcomings and inadequacies in SAPTA. A second was the establishment of the Food Bank. The Food Bank was to act as a regional food security reserve for SAARC countries during food shortages and emergencies, provide regional support to national food security efforts, foster inter-country partnerships and regional integration, and solve regional food shortages through collective action.

The Food Bank replaced the earlier Food Security Reserves which was established in 1988. The reserve had been created to address the problem of food insecurity in the region by building up a food buffer stock that could reduce food security risks, particularly after natural disasters - floods, cyclones, etc. The reserve was administered through the SAARC Food Security Reserve Board (SFSRB). The Board, composed of representatives from member countries, periodically reviewed the food situation, assessed production and consumption prospects and monitored prices, quality, food grain stocks and regional food trade. It also met once a year before the annual SAARC summit and reported to its council of ministers. The working of the reserve, however, failed to achieve the objectives for which it was set up and had limited success in addressing the food security concerns of the region.

The failure of the SAARC Food Security Reserve was due to its complicated processes, harsh conditions and the balance of payments crisis in the region. At the 15th summit in Colombo in August, 2008, the lessons learnt from the failure of the Food Security Reserve was put to use by SAARC members in their efforts to operationalise the Food Bank. The SAARC Food Bank's board met for the first time in Colombo in October 15-16, 2008 and finalised the modalities for determining prices on Fob basis, arranging deferred payments when this is requested for by a member country, exempting food grains and food products from regulatory duties by the releasing country and releasing food stocks from facilities closest to the requesting country. The bank initially aimed to build up a reserve of 241,580 metric tonnes of rice and wheat with each member country contributing a fixed proportion of the targeted stock. India's contribution has been fixed at 63.42%, followed by Bangladesh and Pakistan at 16.58% each, Sri Lanka and Nepal at 1.66% each, Maldives at 0.08% and Bhutan at 0.07%. Afghanistan's contribution was left unspecified and was to be decided later. An increase in the size of the desired stock in the food bank is now being considered in the light of last year's food crisis and the huge demand for food grains in the SAARC region due to its burgeoning population.

The main issue the Bank's board has to address is the speed and efficiency with which countries can access its food grains stock in times of emergency. A meeting of the South Asia Civil Society Forum, convened by the Nepal-based South Asia Watch on Trade, Economics and Environment (SAWTEE) in October, 2008 suggested to the SAARC Secretariat the following measures to simplify the operation of the food bank.

- a) periodically estimate food demand
- b) undertake measures to increase the storage capacity available in member states
- c) undertake regional food mapping in terms of vulnerable regions and populations to improve access to food in remote and inaccessible areas
- d) ensure greater political co-operation, establish a dispute settlement mechanism and put together public-private partnerships as integral parts of the Bank's procurement modality
- e) improve member countries' responsiveness to the needs of those in crisis through quicker decision making and simplified procedures
- f) adopt less rigid procedures and norms for price setting
- g) maintain an apolitical, non-partisan distribution system that is responsive to seasonal food insecurity
- h) ensure quicker movement of food grains and
- i) reduce storage and transportation costs and losses

While the establishment of the Food Bank is a good solution to periodic crises, it is more important for the region to have a long-term strategy to achieve food security in individual countries and the region as a whole. Unless each country of the region is food secure, regional security is not achievable. It is, therefore, equally important to look at productivity and distribution issues in the region. The development of a seed bank, investment in agricultural research and development, agricultural extension activities and transfer of technology are some of the measures that need to be taken to improve the region's food security.

In the area of agricultural research and development, members countries need to co-operate in the following areas: (i) the development of new varieties, hybrids and breeds, (ii) water and natural resources management techniques; (iii) new sciences such as remote sensing and GIS, biotechnology, weather and flood forecasting, disaster management; common data standard for GIS, etc; (iv) technology exchange - exchange of germplasm; exchange of variety and breed, crop and animal husbandry practices, water and natural resources management techniques, etc; (v) capacity building through development of human resources and development of regional facilities (such as SPS compliant facilities and certification system for organic farming and promotion of environmental goods with a view to ensuring food quality and safety); (vi) regional programmes for plant and animal trans-boundary pests and diseases control; (vii) harmonisation of policies and acts such as those relating to protection of plant variety, bio-safety protocols, biodiversity and indigenous knowledge.

Trade is another important way to enhance the food security situation. Trade in food commodities can play a decisive role in achieving food security and stabilising the prices of food. Imports help stabilise local prices while improving both availability

and access to food. SAARC nations need to define the role of regional trade as well as trade with non-SAARC nations.

There has been an increase in intra-regional agricultural trade with respect to 1995 trade levels in all South Asian countries except Pakistan with India being a major, net exporter of agricultural goods (Samaratunga and Thibbotuwawa, 2006). In 2004, 22 per cent of total regional trade was accounted for by agricultural trade in which India's share was 80 per cent. Bangladesh and Sri Lanka are the main markets for Indian agricultural products. Pakistan and Sri Lanka account for 8 per cent and 4 per cent respectively of agricultural trade in the region. The decreasing share of intra-regional agricultural exports in the region indicates an increase in intra-regional trade of non-agricultural products.

A brief country-wise review of the agricultural trade and its impact on food security in South Asian countries is presented here:

Afghanistan: Afghanistan is heavily dependent on imports from Pakistan and other neighbouring countries like Iran and Kazakhstan. Its food-related trade with its South Asian neighbour, Pakistan, is largely informal because of its huge and porous border with that country. Wheat flour is Afghanistan's main import, primarily because it has little milling infrastructure of her own.

The Pakistan government has recently taken steps to increase trade through formal channels. In May 2008 Pakistan approved the export of 50,000 tones of wheat to Afghanistan to avert a food crisis there on a government-to-government basis. However, Pakistan had limited success in promoting trade through formal channels. This is partly because the 'war on terror' in the region has worsened the security situation on the Pak-Afghan border and helped informal trade flourish and partly because the better quality of Pakistani wheat and wheat flour provides a strong demand stimulus to informal trade (and smuggling).

Bangladesh: Bangladesh is a net importer of both rice and wheat. Before 1993, the private sector was not allowed to import food grains but subsequently, commercial import of food grains has been done mostly through the private sector. Bangladesh has liberalised imports of food grains, a step that stood it in good stead after the floods in 1998 and 2004. In 2007-08, import duties were reduced to offset a sharp rise in food prices. At present, the import of rice, wheat, onions, pulses and crude edible oils are duty-free. However, despite the zero duty, import of rice was a problem in FY2008 because of restrictions imposed on rice exports by India. Bangladesh has also been facing problems in importing edible oils partly because of the imposition of an export tax on edible oils by Argentina and the one year export ban imposed on March 17, 2008 by India on all types of edible oil.

Bhutan: Traditionally, Bhutan has been a self-sufficient agrarian country whose population consisted mainly of subsistence farmers. They produced food and livestock products to feed themselves, rather than for sale. With economic development and increase in trade in the region, Bhutan was able to export some of the fruits and vegetables, particularly to India and Bangladesh. Food imports are critical for Bhutan's food security because of a 2.5 per cent annual population growth, economic development, shifting livelihood strategies from farm to non-farm sectors

and the evolution of the consumer basket. Due to geographical proximity and the bulky nature of food items, India has been the main source of supplies of food items to Bhutan.

Bhutan imposes no tariff or restrictions on imports of food items from India. Nor are there any restrictions on Indian exports even when domestic price rise has led the Indian government to restrict the export of cereals to other countries. This indicates the Indian government's commitment to ensure food security in Bhutan.

India: In the late 1980's, India initiated broad trade liberalisation and depreciation of the exchange rate which turned the terms of trade in favour of agriculture. The move followed the emergence of some surpluses created in rice and wheat. Imports and exports were strictly regulated to safeguard domestic producers and consumers. In most commodities, the level of exports and imports was determined by fluctuations in domestic supply, and exports were residuals. Similarly, imports were allowed in the wake of a fall in domestic production to fill the gap between domestic demand and supply. There was little emphasis on export-oriented production, and production patterns were strictly guided by the requirements of domestic consumers and self-sufficiency in all major commodities. Allocation of resources based on comparative advantage in trade hardly got any emphasis.

However, since the mid-90s, the reluctance to trade in agricultural commodities has declined and India saw the opportunities inherent in liberalising agricultural trade because of comparative advantage in some agricultural products. Among the South Asian economies, only India and Sri Lanka are net exporters of food.

Maldives: Maldives has been a major exporter of marine products but is dependent on imports for other food items. Its principal export destinations are Thailand, UK, Sri Lanka, Japan, France, and Pakistan. There was a sharp rise in exports of 142 % from US\$ 97 million in 1997 to US\$ 225 million in 2006, mostly of marine products. However, imports have risen even more sharply, registering a growth of 166 per cent during the same period. Its main items of import are food and fuel and energy products. Given its high dependence on food imports, food security remains a major cause of concern for the country.

Nepal is one of the most open, trade-dependent economies in South Asia, with a trade-to-GDP ratio of more than 50 per cent, an average tariff rate of about 14 per cent and virtually no quantitative restrictions. The overall agricultural tariff structure of Nepal is significantly below that of the WTO's bound rate in the Agreement on Agriculture. Other import charges⁸ are also highly favourable. There are no explicit export subsidies. The country is a net importer of food, particularly of cereals. According to official data, rice is the single largest item of cereal imports. Rice imports from India take place through both formal and informal channels. The long-standing Trade and Transit Treaty between Nepal and India is one bilateral agreement with significant influence on trade including in the agriculture sector.⁹ Additionally, Nepal also became a member of regional trade agreements (RTA) like South Asian

⁸ The other import charge includes: i) 8 percent agriculture development charge and ii) 1.5 percent local development charge.

⁹ Nepal also maintains pegged exchange rate with Indian Rupee.

Free Trade Agreement (SAFTA) and BIMSTEC which aims to mitigate the regional trade problems through greater regional economic integration.

Pakistan: In Pakistan, major trade and agriculture related policies are shaped through the direct intervention of and by advice from International Financial Institutions (IFIs). Pakistan started to deregulate agriculture and liberalise trade under the influence of IFIs well before the introduction of WTO. The removal of subsidies and trade liberalisation in the country started in the 1980s under the Structural Adjustment Programme (SAP). Now Pakistan is in the process of implementing agreements and modifying legal and administrative rules to ensure their consistency with rules and practices under the WTO.

Many NTBs have been removed, including those on import and export by government institutions. The list of negative import items has been significantly reduced. It is interesting to note that wheat does not figure significantly in Pakistan's regional trade – it has some trade with Bangladesh but volumes are very low. Wheat being the staple food of the country is a major determinant of food security in the country. Pakistan has not been self sufficient in wheat except for a few years. To meet domestic demand, Pakistan has had to import from the international market making it vulnerable to international price fluctuations.

Sri Lanka: Sri Lanka's domestic production meets more than 77 per cent of her food requirements with the rest being imported. The amount of food exports from total domestic food production is insignificant (just over 1%). At the individual commodity level, local production of all major food items except wheat flour, sugar and pulses which are imported in bulk quantities exceeds seventy five per cent of the total availability. Milk, fruits, onions and potato are the other major items that are imported in significant quantities, while coconut and fish are the two major food commodities exported although in small quantities, i.e. 6% and 4% of gross availability respectively.

Although food imports have been increasing in volume and value in absolute terms, their share in total imports and total exports have been declining. Total value of food imports almost doubled during the period from 2002 to 2007, but food imports as a percentage of total imports declined. In 2007, food imports amounted to 10.72% of overall export earnings, which is almost the same proportion recorded in 2000. As a whole, food availability at national level has been on the rise due to increased domestic food production as well as imports. However, this has not put pressure on the balance of payments because of rising export earnings. The macro availability of food has thus improved slightly without causing alarm during the 2000s. Being a small country, Sri Lanka is unlikely see any threat to its level of food security as long as the same trends continue and no serious constraints emerge in the global food market. This, however, does not mean that Sri Lanka's food security is problem-free.

Despite some move towards liberalisation of agricultural trade in South Asia, the sector was and remains highly protected – the bound tariffs on agricultural products are as high as 100-300 per cent in the WTO agreement on agriculture though applied rates are much lower. In recent years, the number of tariff bands has been reduced but the overall tariff rate on agriculture is still very high. (Samaratunga and Thibbotuwawa, 2006). Agricultural goods are also subject to high non-tariff barriers

though quantitative restrictions. For easier movement of food grains between countries of the South Asian region, member countries will have to address the issue of trade barriers, particularly non-tariff barriers. India will have to play a major role in this context given that she is the only major net exporter of food items in the region while all the other countries are net importers of food items.

5. Way forward and Policy Implications

Comprehensive and co-ordinated international effort is required to tackle the problem of food security in developing countries given its complexity and multidimensional nature and the dependence of developing countries on food imports to meet domestic food requirements. Within the South Asian region, a critical examination of domestic and trade policy is required to move towards greater food security.

5.1 Food Availability: Since the availability of food is a necessary condition to ensure food security, countries in South Asia will need to take measures to reverse the trend of declining productivity that has been evident in the recent past. This would imply substantial investments in agricultural research, extension and outreach programmes to disseminate technological know-how, effective communication that improves farmers' access to market information and improvement in the irrigation infrastructure.

In particular, agricultural research will need to focus on the development of new varieties that can withstand the adverse effects of climate change on productivity. Crop successes in the future will depend on strategic breeding improvements to relieve specific environmental and disease problems.

A substantial amount would also need to be invested in training people for extension and outreach programmes. Infrastructural development, particularly power and roads, must be accorded the highest priority to improve both availability and access. Existing policies such as the support price and procurement policies will need to be continued to stabilise incomes and prices.

It is also time for countries in the region to move away from the narrow focus on self-sufficiency and take into account their respective comparative advantages, particularly in today's context of increasing globalisation. This will, of course, require close co-operation at the political level between SAARC countries.

Besides increasing food production, emphasis must be laid on reducing wastage of food. To this end, integrated harvest management and integrated storage and transportation strategies need to be developed.

5.2 Food Access: Economic access to food supplies is a crucial aspect of food security. History shows that, at most times, there has always been enough food to feed the entire world population. However, income inequalities make economic access to food inequitous. Most South Asian countries have distributions schemes aimed at reducing such inequities. These need to be strengthened, primarily by sharpening the identification of beneficiaries to weed out those who are ineligible for distributive relief.

Measures to improve the asset endowment of the poor, improve market access to producers and the creation of more non-farm employment opportunities in rural areas are some of the measures that need to be taken up.

5.3 Food Utilisation and vulnerability: In most countries, adequacy of food intake has tended to revolve round a daily minimum calorie intake. No attempts have been made to assess the nutritional adequacy of diets to ensure good health and reduce morbidity rates. Food security programmes in the South Asian region must move away from the calorie intake-based measures of adequacy and nutrient-based measures and programmes that address nutritional deficiencies need to be introduced. This would require dove-tailing health care projects to food security programmes with a concomitant increase in the expenditure on health care.

The populations of hilly areas and areas that see frequent conflicts and regular natural disasters have been observed to be amongst the most vulnerable in terms of food security. While food security in areas prone to conflict requires greater peace efforts, disaster management policies need to be devised to mitigate the impact of natural disasters. It is also necessary to tackle social issues like alcoholism that affect intra-household food security. These have to be addressed through social interventions. Imparting nutritional education, particularly among women, apart from introducing schemes that enhance the access that women, children and other vulnerable groups have to food are measures that will help ensure greater food security.

5.4 Develop infrastructure: The strengthening of rural infrastructure is a priority area if food security is to be achieved. The following measures need to be taken to address this issue:

- Rebuild and improve the efficiency of the irrigation infrastructure on an urgent basis
- Improve transport infrastructure to improve rural connectivity
- Develop efficient market systems at local and national levels to control prices
- Regulate food markets to control artificial scarcities and rent seeking behaviour
- Develop mass storage and retail distribution facilities and
- Increase investment in targeted agricultural research and development

5.5 Strengthen Trade: Given the failure to operationalise the food bank so far, it is apparent that regional trade will have to play a far greater role in achieving food security. However, to increase the volume of regional trade, confidence building measures would be required, especially between India and Pakistan. This will, of course, be in addition to the dismantling of tariff and non-tariff barriers that impede the growth of intra-regional food trade in South Asia. Tariff adjustments, however, will need to be made keeping in mind the need to ensure a balance between domestic production and trade since there is no level playing field in global trade and

technological development. Care should also be taken to ensure that trade policy does not distort incentives given to local producers.

Other cross-border initiatives to improve food security in the region include the following:

- Harmonization of quality standards for food, animal and plant products and recognition of each other's sanitary and phytosanitary certification
- Mutual cooperation in physical infrastructure and human resource development for quality certification, particularly in view of the problems faced by relatively less developed countries like Nepal
- Improved regional connectivity to link the SAARC countries through the shortest routes and
- Removal of non-tariff barriers to cross-border trade in food including lifting of ban on import/export of food commodities within SAARC countries.

To conclude, regional initiatives such as the SAARC Food Bank or the build up of national buffer stocks are important for stabilising the prices of food grains during times of crisis. But in the long run, South Asian countries will have to aim for a steady, sustained rise in production through the development or acquisition of new technology to raise food production and utilisation. This would require the adoption of an integrated strategy that include measures to increase domestic production and expand social safety net programmes while simultaneously collaborating on various fronts, including the trade front. A focus on improving farm productivity to ensure greater global competitiveness and creating non-farm employment opportunities will help farmers overcome the challenges posed by declining productivity, increased pressure on land because of rising population and fluctuating prices of agricultural commodities. Given the severe political and economic constraints the region faces, this can be only be achieved by establishing institutional linkages and encouraging private investment.

Executive Summary

Food security is a complex issue with several dimensions. The definition of food security itself has evolved over time. FAO's August 2008 report defines food security in terms of food availability, access to food, utilisation of food and vulnerability to food insecurity due to political, economic or social reasons. Most developing countries fare poorly in terms of each of these four aspects of food security. Ensuring food security therefore requires comprehensive and co-ordinated international effort.

For the South Asian region with a large proportion of the world's poor and hungry, food security is a major challenge. Making the region food secure will require action both at the national and regional levels.

Most of the countries in the South Asian region face the twin challenges of a rapid rise in population, declining farm productivity and a lack of employment opportunities that translates into livelihood insecurity. Consequently, both availability of and access to food are adversely affected. Since regional food security presupposes food security at the national level, each country has to strengthen domestic production systems to overcome these challenges.

All countries need to step up their investment in research and development and extension services to increase productivity. Besides, investments on agricultural infrastructure such as irrigation and power and on road networks to improve rural connectivity also need to be stepped up. Integrated harvesting and storage and transportation strategies have also to be worked out to reduce wastage and losses due to improper storage.

One of the major issues that many South Asian countries need to tackle is the tendency to move away from the cultivation of staples towards the cultivation of other high value crops. This could prove a particularly tricky issue to handle since it involves a trade-off between raising farm incomes and meeting rising domestic demand for staples. An integrated strategy that includes productivity enhancing measures and appropriate pricing policies to create an incentive structure that balances the two objectives of raising farm incomes and meeting the demand for food will need to be put in place. It will also be necessary to strengthen social security systems, introduce well-targeted distribution schemes to improve food access for the poor, increase the incomes of the poor by increasing their asset endowment and create greater non-farm employment opportunities.

From a longer term perspective, South Asian countries also need to move away from the present bias towards calorie based food security programmes to ones that address the issue of nutritional deficiency. Rural areas, in particular, should be the focus of such programmes because the incidence of malnutrition and diseases is much higher there when compared to urban areas.

At the regional level, increased agricultural trade between South Asian countries will play a far more important role in achieving food security than initiatives like the setting up of the SAARC Food Bank which is essentially a mechanism to handle emergency situations. Regional trade between SAARC countries is at present impeded by fairly high tariff and non-tariff barriers. Reducing these barriers while

simultaneously ensuring that trade policies do not distort domestic incentive systems would go a long way in promoting regional agricultural trade.

It is also important for South Asian countries to address the issue of the speed and efficiency of food movements from surplus to deficit areas across the region particularly in a crisis situation. This would require addressing issues regarding the efficiency of transportation and transportation infrastructure and the development of storage capacities within different countries.

There are other areas where South Asian countries would benefit from increased co-operation. One is in the field of agricultural research and development, particularly in areas relating to the development of new varieties, hybrids and breeds and to the development of new sciences such as remote sensing and GIS, biotechnology etc. Co-operation in the field of research and development is also critical in the context of the expected impact of climate change that includes rising temperatures, water stress, and increased incidence of pest attacks and plant disease.

Regional initiatives to end the endemic conflicts in the region are also required if food security is to be achieved. Regions prone to conflict and natural disasters and the hilly regions of South Asian countries are amongst the most vulnerable in terms of food security. Accelerated peace efforts are required to at least ensure that conflicts do not exacerbate the already fragile food situation in South Asia.

Appendix Table 1: Summary of Climate Change Impact on Agriculture in South Asian Countries

Country	Impact on Agriculture
India	<p>Wheat yields in central India may drop by 2% in a pessimistic climate change scenario (GoI 2004). Kumar and Parikh (2001) show that even after accounting for farm level adaptation, a 2 °C rise in mean temperature and a 7 % increase in mean precipitation will reduce net farm revenues by 8.4% in India. Districts in western Rajasthan, southern Gujarat, Madhya Pradesh, Maharashtra, northern Karnataka, northern Andhra Pradesh, and southern Bihar are highly vulnerable to climate change. Numerous physical (e.g. cropping patterns, crop diversification, and shifts to drought-/salt-resistant varieties) and socio-economic (e.g. ownership of assets, access to services, and infrastructural support) factors come into play in enhancing or constraining the current capacity of farmers to cope with adverse changes (TERI 2003)</p> <p>The major foodgrain producing regions of Haryana, Punjab and western Uttar Pradesh experience the most negative effects, along with the coastal districts of Tamil Nadu. Punjab and Haryana are significant from the perspective of food security in India. These regions are also facing severe depletion of groundwater resources due to intensive cultivation techniques. Temperature rise of 1.5 degree centigrade and 2 mm increase in precipitation could result in a decline in rice yields by 3 to 15 %. Sorghum yields would be affected and yields are predicted to vary from +18 to -22 % depending on a rise of 2 to 4 degree centigrade in temperatures and increase by 20 to 40 % of precipitation. (IPCC 2001).</p>
Bangladesh	<p>On an average during the period 1962-1988, Bangladesh lost about 0.5 million tons of rice annually as a result of floods. This amounts to nearly 30% of the country's average annual food grain imports (Paul and Rashid 1993). Karim et al (1996) project a net negative effect of climate change on the rice yields. The estimated impacts on rice yield vary between -6% to +14% depending on different climate change scenarios.</p>
Bhutan	<p>In Bhutan, upland crop production, practiced close to the margins of viable production, can be highly sensitive to variations in climate. Climate change will cause the cultivating zone to shift upwards to unsuitably steep slopes if temperatures increase by 2 °C. It is also expected to increase the severity and frequency of monsoonal storms and flooding in the Himalayas, which could aggravate the occurrence of landslides. In addition to the danger to life and property, some of the generated sediments may be deposited in agricultural lands or in irrigation canals and streams and will result in a deterioration in the quality of agricultural lands and hence productivity. (NEC 2000).</p>
Sri Lanka	<p>Most crops, e.g., coarse grain, legumes, vegetables, and potato are</p>

	<p>likely to be adversely affected due to climate change. The highest negative impact is estimated for coarse grains and coconut production.</p> <p>A rise in temperature by half a degree is expected to increase the frequency of droughts and extreme rainfall events. This, in turn, is expected to reduce rice output by 6 %. Increased dryness will also adversely affect yields of key products like tea, rubber, and coconut (MENR 2000). With the tea industry in Sri Lanka being a major source of foreign exchange and a significant source of income for labourers, the effects are likely to be grave. An ongoing AIACC project confirmed that changes in the monsoon rainfall pattern and an increase in maximum air temperature are likely to be the two key factors that will affect coconut production in the principal growing regions. The projected coconut production after 2040 in all climate scenarios, when other external factors are non-limiting, will not be sufficient to cater to local consumption because of population increase. Among the different stakeholders in coconut industry, the coconut oil (CNO) industry would be most affected.</p>
Pakistan	In the hot climate of Pakistan, cereal crops are already at the margin of stress. An increase of 2.5°C in average temperature would translate into much higher ambient temperatures in the wheat planting and growing stages. Higher temperatures are likely to result in decline in yields, mainly due to the shortening of the crop life cycle, especially the grain filling period. A report by ministry of environment highlighted that crops like wheat, cotton, mango, and sugarcane would be more sensitive to increase in temperatures compared to rice. The flow of Indus river is also likely to affect cotton production in Pakistan, which might be detrimental to the economy as it is the country's main cash crop. Wheat yields are predicted to decline by 6-9 % in sub-humid, semiarid, and arid areas with 1°C increase in temperature (Sultana and Ali 2006), while even a 0.3°C decadal rise could have a severe impact on important cash crops like cotton, mango, and sugarcane (MoE 2003).
Nepal	Soil loss is a major cause of decline in agricultural production in Nepal and the negative effects of climate change may further aggravate this situation. The impact of a rise in temperatures on wheat and maize is expected to be negative.

*Source: HDR 2007/08 from a background paper.
http://hdr.undp.org/en/reports/global/hdr2007-2008/papers/kelkar_ulka%20and%20bhadwal_suruchi.pdf*

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