

Rising food prices in South Asia: A policy framework to mitigate adverse effects

S. Mahendra Dev
January 2013

Disclaimer: The views expressed in this Development Paper are those of the author(s) and should not necessarily be considered as reflecting the views or carrying the endorsement of the United Nations. Development Papers describe research in progress by the author(s) and are published to elicit comments and to further debate. This publication has been issued without formal editing.

South and South-West Asia Office (SSWA)
Economic and Social Commission for Asia and the Pacific (ESCAP)
C-2 Qutab Institutional Area, New Delhi-110016, India
Email: sswa.escap@un.org

Dr. Nagesh Kumar, Director

CONTENTS

FOREWORD	5
ABSTRACT.....	7
1. INTRODUCTION	9
2. IMPACT OF COMMODITY PRICES ON ECONOMY AND SOCIAL SECTOR	10
Impact on Well Being of Children.....	11
3. POLICIES NEEDED FOR COUNTRIES WITH FAVOURABLE TERMS OF TRADE...	12
4. POLICY OPTIONS FOR COUNTRIES WITH UNFAVOURABLE TERMS OF TRADE	13
Food price increase and short term policy responses of the countries in South Asia	13
Strengthening Social Protection Measures	13
Issues under social protection programmes	14
Policies for Agricultural Development	17
Price Policy and Input Subsidies in Agriculture: Pros and Cons.....	18
Small Farm Holdings in South Asia: Challenges	19
Opportunities for Small Holding Agriculture	22
Research and Extension to Increase productivity	23
Technological Innovations.....	23
Institutional Innovations	25
5. PROMOTING REGIONAL CO-OPERATION.....	27
6. GLOBAL LEVEL COOPERATION	27
Triangular cooperation in increasing agricultural productivity	29
Mechanisms at national, regional and international levels	30
WTO and agriculture	30
7. CONCLUSION.....	31
REFERENCES	31

FOREWORD

The Development Papers Series of the ESCAP South and South-West Asia Office (ESCAP-SSWA) promotes and disseminates policy-relevant research on the development challenges facing South and South-West Asia. It features policy research conducted at ESCAP-SSWA as well as by outside experts from within the region and beyond. The objective is to foster an informed debate on development policy challenges facing the subregion and sharing of development experiences and best practices.

This paper prepared for ESCAP by Professor S. Mahendra Dev describes the impacts of rising prices on South Asian countries and provides an overview of the various policies, which governments in South Asia can use to mitigate risks associated with the rising cost of food in the subregion, including what they can do through regional and international cooperation.

We hope that this paper will contribute to the ongoing debate on how to provide food security and food price stability in the subregion.

Nagesh Kumar
Director, ESCAP South and South-West Asia Office
and Chief Economist, ESCAP

Rising food prices in South Asia: A policy framework to mitigate adverse effects

S. Mahendra Dev¹

ABSTRACT

The recent commodity boom has seriously affected South Asia, particularly due to higher food prices and their impact on the welfare of poor and vulnerable populations. This paper describes the food crisis and its effect on the region and then goes on to outline policies that countries in the region need to put in place in order to mitigate the risks associated with the adverse effects of the commodity boom. National policies, as well as regional and global level cooperation efforts are needed to improve agricultural productivity and reduce speculative activities that threaten food price stability in South Asia.

JEL Code(s): O13, Q32, O53

Key words: Food, Commodity Prices, South Asia

¹ Director and Vice Chancellor, Indira Gandhi Institute of Development Research (IGIDR), Mumbai, India and an ESCAP Consultant. This paper grew out of an earlier paper produced for ESCAP focused on the entire Asia-Pacific region.

Rising food prices in South Asia: A policy framework to mitigate adverse effects

1. INTRODUCTION

The global economic crises that started in 2008 have exposed commodity markets to increasing price volatility and raised concerns for higher inflation, food security and poverty reduction. Of course, volatility is not a new thing for commodity prices if we analyse historical trends. One has to worry about the long term trend of rising prices and the commodity boom in 2000s and particularly in the last five years. Both supply and demand factors and other factors like speculation activities have been responsible for this boom. During the food crisis of 2006-08, there are five major drivers of rising global food prices. They are: (a) long term supply problems; (b) rise in oil prices; (c) Changes in demand due to bio fuels; (d) depreciation in dollar and low interest rate in the US and speculative activities; (f) export restrictions of developing countries (Lustig, 2008). Thus, surge in food prices is 'both a real and a monetary phenomenon and both market-driven and policy-induced'. (p.3, Lustig, 2008).

There are new determinants of commodity markets. For example, agricultural commodity prices are increasingly linked to prices of other commodities, particularly energy prices. Exchange rates are also playing an increasing role in markets. Financial innovations also made agricultural commodities into a whole new asset class in recent times. Climate change leads to extreme events (e.g. droughts, floods) that are more frequent and more intense.

The financial crisis since 2008 has added new dimensions to the factors responsible for increase in food and other commodity prices. Initially, oil prices have declined but rose again. Similarly, there was volatility in food prices which declined initially but increased significantly in 2010 and 2011. Financialization of commodity markets has increased which led to more speculative activities in commodity markets. There is also significant link between oil and food prices. On the demand side, population growth and increase in incomes particularly demand from China has led to commodity boom.

Although the underlying causes for the rise in food prices and financial crisis are different, they are interconnected through their implications on financial stability, food security and political security (Braun, 2008). At the global level, the capital was diverted from the collapsing housing market to speculation in agricultural futures. Speculative activities were partly responsible for the rise in global food prices. The food crisis increased general inflation and impact on macro economic policies. Similarly, the financial crisis can have impact on employment, poverty, agriculture investment and social sector expenditures. Therefore, both food and financial crisis may have adverse impact on food and nutritional security of Asia and undermine the poverty reduction efforts and the gains over the last several years if large sections of the population do not cope with rise in commodity prices and financial crisis. These two crises can potentially further exacerbate and deepen existing vulnerabilities for the poor and disadvantaged groups including women and children.¹

The impact of commodity boom will be different for the countries with the countries with favourable terms of trade and the countries with unfavourable terms of trade in South Asia region. The commodity boom may trap poor countries in specializing in few volatile commodity activities. This may reduce their long term growth prospects. On the other hand, the boom may lead to reduction in economic growth and rise in poverty in the countries with unfavourable terms of trade. The boom may also have adverse social and long term impacts in the long run in these countries. It may, however, be noted that in both groups of countries, the net buyers are adversely affected. The impact of net sellers depend on how opportunities of commodity boom is availed by them.

January 2013

The objective of this paper is to discuss policy options to mitigate the risks of adverse effects of the rise in commodity prices for pursuing more balanced and equitable regional integration in South Asia region. The countries of this region should pursue this objective that gives necessary policy space at national level, trade opportunities and international support to poor countries that are commodity exporters to protect their import competing sectors and foster new and less volatile economic activities and to the developing countries that are not commodity exporters to continue to diversify their economies and to increase the productivity of their agricultural sector by expanding productive employment out of agriculture which in turn will increase the domestic market for agriculture markets.

In this paper we discuss policy options focusing on food and oil price boom. Section 2 briefly describes the impact of commodity prices, particularly food prices, on economic and social welfare of the poor. Section 3 addresses what policies are needed for countries with favourable terms of trade? Section 4 looks at what policy options there are for countries with unfavourable terms of trade. Section 5 asks what should be done to promote regional cooperation, and Section 6 looks at the actions needed at global level. Section 7 concludes.

2. IMPACT OF COMMODITY PRICES ON ECONOMY AND SOCIAL SECTOR

The commodity boom has adverse impact on economy and social sector of many countries in the South Asia region. We concentrate here on the impact of food prices in 2000s. ESCAP (2011a) has estimated that economies in Asia and Pacific would lose 1.5 percentage point of GDP growth cumulative over 2011 and 2012 due to higher fuel and food prices as compared to 2010. ESCAP (2011b) has also estimated that additional 19.4 million people in the region remained in poverty due to increased food and energy prices in 2010, and people in some South Asian countries were amongst the most affected.

On the recent increase in food prices in 2011 in Asia region, simulation results suggest that “ if a 30% increase in global food prices persists throughout 2011, gross domestic product (GDP) growth for some food-importing countries in the region, GDP growth could be choked off by up to 0.6 percentage points. If this is combined with a 30% increase in world oil prices, GDP growth could be reduced by up to 1.5 percentage points compared with the baseline scenario where food and oil price hikes do not occur” (page v, ADB, 2011). It is known that higher food prices would increase food insecurity and reduce the gains from poverty reduction. “A 10% rise in domestic food prices in developing Asia (home to 3.3 billion people) could push an additional 64.4 million into poverty, or lead to 1.9 percentage increase in poverty incidence based on the \$1.25 a-day poverty line” (ADB, 2011). South Asia is more adversely affected than other countries of the Asia-Pacific region.

A study in eight countries estimates that the rise in food prices between 2005 and 2007 increased poverty by 3 percentage points on average. Extrapolating these results globally suggests that, as a result of the rise in food prices, total world poverty may have increased by 73-105 million people (World Bank 2008). FAO's food insecurity numbers in 2007 show that 75 million more people were added to the total number of undernourished relative to 2003-05. The rising prices have increased 41 million hungry in Asia and 24 million hungry in sub-Saharan Africa. India has around 231 million undernourished population.

High food prices would have different effects on net sellers and net buyers. However, net buyers are large in number including all urban poor and majority of rural poor. It is true that net sellers are likely to benefit from rising food prices. However, the constraints on agriculture may prevent the farmers to respond in the short run. Some of the small producers who have a marketable surplus could become worse off with higher prices. This is because typically a small producer sells the surplus immediately in the post harvest season, when prices are low, and buys food when prices are high.

Rising food, commodity and oil prices have increased the general inflation. Apart from food price rise, increase in general inflation would hurt the poor and vulnerable sections. While some countries rely less on food grain imports, its reliance on petroleum products is large (e.g. India). As a result, given the sharp

increase in oil and commodity prices, some countries has experienced terms of trade loss and had impact on current account balances. It has adverse economic and social impact on the poor. Earlier, the loss of income in terms of trade has been compensated by remittances and exports of services. Now, the global financial crisis will affect these external flows to the country.

General inflation could rise due to higher food prices. If wages also rise as a consequence, inflation could spiral, causing inflationary expectations with the general level of prices rising further. Higher food prices can reduce economic activity in the country as inflation will reduce consumption, savings and investment. Combination of all these activities would slow down aggregate demand. Due to higher inflation in India, Central Banks tightened monetary policy resulting in high interest rates. Rise in interest rates would result in reduced aggregate demand and slowing down of the economy. The economic slowdown may reduce employment and has adverse effect on the poor households. This would lead to problems for women and children.

Impact on Well Being of Children

A study on Young Lives (an International Study of Childhood Poverty) indicates that high food prices will have impact on children in two ways (Dercon, 2008). First one is the short run impact of family budgets. The constraint on family budget would not only lead less food available or cheaper food purchased but there is also less funds for non-food items such as health and education. Secondly, it will have long term impact on children's health, psycho-social well being and their educational achievements.

The project on Young Lives for India reveal interesting results regarding impact of poverty and stunting on children. There is a significant impact on learning and achievements in India. A comparison of educational and psycho social indicators for average children from the poorest quintile with the richest quintile shows the writing skills were substantially lower in India's poor as compared to that of the rich (Table 1). The reading skills, grade aspiration gap are lower for the poorest quintile. Similarly, the educational and psychosocial indicators are lower for the stunted children as compared to non-stunted children for India (Table 2).

Table 1. Educational and psychosocial indicators (comparing average children from the poorest quartile with the average children from the richest quartile)

	India
Grade deficit (in years) between poorest and richest quartile	-0.3*
Writing Skills:% of children that write without difficulty (deficit in percentage points)	-24.7*
Reading skills :% of children that can read without difficulty (deficit in percentage points)	-11.2
Sense of Shame/embarrassment index (deficit in percentage points)	-5.1*
Grade aspiration gap (in years)	-1.2*

Source: Table modified from Dercon (2008)

Note: Richest and poorest 25% of households defined in terms of household total consumption per capita. *Denotes statistical significance of spending power to explain outcomes, at 10% or less

January 2013

Table 2. Educational and psychosocial indicators comparing (average) stunted and non-stunted children

	India
Grade deficit (in years) between stunted and non-stunted children	-0.3*
Writing Skills:% of children that write without difficulty (deficit in percentage points)	-7.0
Reading skills :% of children that can read without difficulty (deficit in percentage points)	-2.5
Sense of Shame/embarrassment index (deficit in percentage points)	-3.0*
Grade aspiration gap (in years)	-0.4

Source: Table modified from Dercon (2008).

Note: *Denotes statistical difference at 5%

A Rapid Price Impact Survey 2008 in Bangladesh was conducted by the World Bank to know the household responses to price rise (Viswanath, 2008). Around 1200 rural and 800 urban households were interviewed in this survey. The results of the survey are given in Table 3. It shows that around 43% households in rural areas reduced their educational expenses while 9% of rural households have taken children out of school

Table 3 Household Responses to the Food Price Increase (%): Bangladesh

	Urban	Rural	Total
Reduce Quantity of Food Intake	72.3	77.9	75.7
Switch to lower quality food	86.9	87.8	87.5
Reduce non-food expenditures	86.0	86.5	86.3
Spend savings/sell belongings	43.5	46.5	45.3
Take out loans	46.3	59.9	54.5
Gift/help from community members	0.9	9.3	6.0
Take children out of school	6.5	8.8	7.9
Decrease education expenses	32.5	43.2	39.0
Work more/increase production	24.6	39.8	33.8
Stop loan payment	3.1	6.1	4.9

Source: Viswanath (2008)

3. POLICIES NEEDED FOR COUNTRIES WITH FAVOURABLE TERMS OF TRADE

The commodity exporters should avoid Dutch disease by taking appropriate policies. These countries should promote import competing and non-resource export sectors and expand economic diversification and productive employment. Macro policies, sector level policies and micro economic interventions are needed for this purpose. Countries such as Afghanistan, Bhutan, India, Iran etc. have increased the terms of trade because exports are much more than imports. All the countries that have experienced increase in terms of trade from 2000 to 2010 are major exporters of primary products.

Macro policies: Intervention in foreign exchange market (e.g. buying dollars and selling local currency) may be needed so that local currency is not overvalued. Direct interventions would help in avoiding Dutch disease and building up foreign exchange reserves. Central banks could issue bonds in order to reduce the excess liquidity of local currency. Thus, appropriate monetary policies would help in tackling the effects of commodity boom on financial sector. Similarly fiscal and trade policies can also be used to encourage non-resource export sectors.

Sectoral policies and micro interventions: The sectoral policies to promote non-resource sectors and tax and banking policies are needed in the region to help the commodity exporters. For example, at sectoral level, resource sectors can have better linkages and complementarities with the non-resource sectors. Tax policies can be used to encourage spending on domestically produced goods and restricting consumption of imported luxury goods. Development banks can be established to use the resource rents for transfer of technology, expanding productive capacities of the economy and increasing productive employment and increase public expenditure on health and education to invest in human capital.

Other measures like transparency in the management of resources to prevent rent grabbing, promoting sustainable management of natural resources to prevent over-exploitation and effective implementation of social protection programmes are needed for the poor countries that are commodity exporters.

4. POLICY OPTIONS FOR COUNTRIES WITH UNFAVOURABLE TERMS OF TRADE

In South Asia, many countries (Bangladesh, Maldives, Nepal, Pakistan, Sri Lanka) had unfavourable terms of trade during 2001-2010. Although India had favourable terms of trade during this period, currently India is having current account deficit of nearly 4 per cent of GDP and is facing a balance of payments problem now.

Food price increase and short term policy responses of the countries in South Asia region

Countries in South Asia region have adopted different short term responses in dealing with price rise in agricultural commodities. ESCAP (2011) provides some of the responses of the countries in the region. ADB (2011) had done a survey among developing member countries about the domestic policies to deal with the rising food prices. The policies were classified as “(i) food price stabilization (such as through removal or cuts in import taxes or value-added taxes, increases in buffer food grain stocks, export restrictions, or price controls and consumer subsidies; (ii) self sufficiency programmes (largely producer subsidies); and (iii) safety nets (such as targeted or conditional cash transfers, food-for-work programs, food-aid programs, or feeding programs) (p.16, ADB, 2011). The survey results of ADB indicate that the countries in the region have largely taken self-sufficiency measures rather than imposed trade restrictions to tackle the recent increases in international food prices.

For example, Bangladesh has taken several measures to tackle food price inflation during 2007-08. These include active participation and intervention in the food grain market, expanded operation of existing safety net programs, and provision of increasing rice production (Hossain, 2010). India banned rice and wheat during 2006-08 crisis and continued till recently. But now India liberalized trade in rice and wheat and exports increased significantly. Some countries have used food based safety net programmes to address rising food prices. Some of these include food support targeted at vulnerable populations (Afghanistan), up to 1 million tonnes of rice imported for food-based programmes (Bangladesh).²

Strengthening Social Protection Measures

Responding to the shocks and vulnerabilities of the poor and marginalized through social policy has been one of the major functions of the governments all over the world. Policies related to social protection assume importance in this context, as they would directly deliver support to the needy. By now it is recognized that presence of social protection can maintain social cohesion and can improve or prevent irreversible losses of human capital

January 2013

An important justification for public interventions in social protection programmes has been improvement in welfare of the poor and equity. Recent research has shown risk and vulnerability justification should be added since the poor do not have formal instruments for risk mitigation and coping. For example, Devereux (2006) says that ‘Social protection describes all public and private initiatives that provide income or consumption transfers to the poor, protect the vulnerable against livelihood risks, and enhance the social status and rights of the marginalized; with the overall objective of reducing the economic and social vulnerability of poor, vulnerable and marginal groups’ (p.1). Recent food, fuel and financial crises are examples of shocks faced by the poor. The social protection measures are necessary in order to reduce chronic poverty and to safeguard the poor from increasing risks or shocks. The recent theory and evidence “offers a new perspective on social protection policies in poor countries, suggesting that there is a scope for using these policies to compensate for the market failures that perpetuate poverty, particularly in high-inequality settings” (Ravallion, 2003). It deals not only with social risks (sickness, old age, unemployment and social exclusion) but also with programmes that secure income such as food security, employment, education, health etc. Social protection thus deals with both absolute deprivation and risk and vulnerabilities. This applies to the present context of commodity boom and the need for strengthening social protection in the region.

Social protection programmes cover food based programmes (e.g. public distribution systems and nutrition programs), wage employed programmes (e.g. Mahatma Gandhi National Rural Employment Guarantee Act of India), self employed programmes (women’s groups in Bangladesh and India) and other cash transfer programmes. One has to add social pensions also to this list because the number of old age persons is increasing in the region.

Social pensions which are generally cash transfers, not linked to contributions, are instruments for expanding old age security. Social pensions can be universal or resource tested. Universal pensions—also referred to as basic pensions—are paid to all individuals who reach eligibility age, sometimes with residency restrictions (Holzmann et al, 2009). Resource- tested pensions are, in addition, conditional on a maximum level of income, or of asset holdings, or both. Holzman et al (2009) indicate that “there is a broad consensus that retirement income transfers, and in particular social pensions, have played an important role in reducing poverty (p.10)”.

Issues under social protection programmes

1. *There are two views on social protection:* One view is that it is a wastage and funds do not reach the poor. Often it results in work disincentives for both taxpayers and recipients. Therefore, it is better to focus on rapid growth and spending more on health and education than on social protection programmes. Even if they are given, it is better to provide cash transfers. The majority view, however, is that there is a need to maintain an acceptable minimum floor of social protection for social cohesion and to prevent irreversible losses of human capital in hard times. Good social protection programmes promote high return investments by households, particularly important during periods of adjustments/shocks/crises (Subbarao, 2003)³.

2. *Self Employment Programmes:* Micro credit and self help group models are big movements in South Asia’s social protection. Group approach seems to be working well. There are several successful models in South Asia. There is a need for credit, technology and skill improvement. India’s experience shows that besides providing credit to finance self-employment activities, micro lending programmes induce numerous secondary effects that work for the empowerment of women. These include literacy, increased respect within the household and the community, and improvement of living standard of the household, as women tend to invest their earnings in the children and the upgradation of the house and other living conditions. Self-employment programmes frequently fail to make a significant dent on poverty because they fail to increase productivity levels of small businesses (Chadha, 2003). To this purpose bulk purchases of inputs and collective marketing of outputs can contribute to organize their economic activity effectively. Social empowerment has improved. There is a view that economic empowerment has to be improved.

3. *Wage Employment Programmes:* The public works programmes are significant in countries like India and Bangladesh. Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) in India is one of the biggest programmes in the world. One view is that NREGA is reasonably working well. Most evaluations of NREGA show that implementation has been more effective than any of its predecessor schemes. This is because of many innovations in design and implementation of the scheme. NREGA introduced a rights based framework and legal guarantee of work. Earlier programs could be withdrawn by a government at will. It has time bound action to fulfill guarantee of work within 15 days of demand for work and demand based availability of funds from the government budget. There is a decentralized system (panchayats for implementation) without contractors. Transparency and accountability through social audits, and better M&E systems are the important features of the programme. It is supposed to strengthen grass root processes of democracy infusing transparency and accountability in governance. There are, however, several problems such as awareness problem among workers, implementation and administrative problems, monitoring and evaluation problems, lack of professionals etc. Those who support the NREGA argue that these problems have to be solved and the scheme has to be strengthened. Some others argue that it should be extended to skill based workers. Farmers in India complain that NREGS is creating problems for agricultural operations and it should be stopped during peak seasons.

4. *Food Based Programmes:* Apart from households, these are useful for children and women. Leakages and targeting errors are high in some of the South Asian programmes (e.g. PDS in India). Delivery services have to be improved. Thailand has improved nutrition with child focused programmes.

5. *Social Security for unorganized sector:* Informal or unorganized sector has large in the total workers in many developing countries of the region. For example, China and India have large share of unorganized workers in the total. The unorganized sector is characterized by poor conditions of work, low earnings and lack of any social security. It would be an important concern of public policy to see that a basic minimum measure of social security in the unorganized sector is ensured. India is one of the few developing countries which quantified the workers and their characteristics in this sector. Main issue is that only organized workers constituting 8 per cent of workers have social security provisions. Present schemes in the unorganized sector cover only 5 to 6 per cent of unorganized workers. National Commission on Enterprises for the Unorganized Sector (NCEUS, 2008) argued for a universal minimum social security coverage. The minimum level of social security has three major components: (a) accident or death of the registered worker; (b) health cover to take care of sickness of the workers and their family members, maternity benefits to the spouse or self ; (c) old age pension for those belonging to the poor households and provident fund to those outside this segment. There are different views on the proposals of NCEUS. These are: (a) It should be citizen based than worker based; (b) international experience shows that with low per capita income India can not afford social security for all its workers and it should be gradual; (c) with poor public health facilities, health insurance may not work; (d) heterogeneity of the workers has to be taken into account and uniform policies may not work; (e) unpaid family labour is not covered. Moreover, it is a huge task covering more than 400 million unorganized/workers.

6. *Social Protection for Migrant Workers:* Traditional residence-based social protection measures do not meet the needs of rural-rural and rural-urban migrant workers. Migration within countries is also high in many countries of the region. China has large number of migrant workers. India has large seasonal migration and they do not get benefit from schemes like public distribution system and social security measures. Policies and programmes must be designed to include migrant workers in social protection programmes.

7. *Universal vs. Targeting:* There is an increasing demand for universal social protection measures. Saith (2008) advocates for ‘the widening of the agenda of social policy away from the prevalent narrowly focused approach that relies on various forms of instrumental exclusionary targeting based on inherently flawed notions of absolute poverty, towards a more holistic vision of the universalization of socio-economic security that locates the issue of poverty within the broader analytical frames of vulnerability and well being’ (p.9). Targeting costs can be classified into four types. They are administrative, incentive

January 2013

(dead-weight), disutility and stigma, and political . The administrative and political economy costs are more serious as compared to other costs but can be minimized in the case of self targeted public works. In India also there is lot of discussion on universal vs. targeting.

8. *Direct Cash Transfers:* There is a demand for changing some of the present social protection programmes into direct cash transfers either conditional or conditional. Several arguments in favour of direct cash transfers are: choice to the poor, relieve financial constraints, less administrative costs and less burden on administration, reduction in inequality in subsidies and, reduction in patronage and corruption (Kapur et al, 2008). There is a need to have some type of CCTs particularly for women and children to improve social protection. At the international level, there are many examples of CCTs. Cash transfers are preferred to food or other in-kind transfers as cash increases the purchasing power of the households. Conditional cash transfers that have worked well include the food-for-education program in Bangladesh, Mexico's PROGRESA program and the Bolsa Escola in Brazil. Those oppose the cash or CCTs argue that if there are problems in the quantity and quality of hospitals and schools, CCTs would be less useful. The issue in some of the developing countries is that one has to strengthen the public health and education. Shah (2008) argues that direct cash transfers are not magic bullets and reduction in poverty requires much more than solutions such as direct transfers.

9. *Efficiency in Implementation and Inclusive Governance are important:* There is a disconnect between policies and implementation. It is argued that the region has many social protection programmes but effective implementation is important. The focus of reforms can now be shifted to more efficient delivery systems of public services and inclusive governance. Governance should not be technocratic implemented from above but it should be participatory. Unfortunately public accountability is lacking particularly in many of the countries in the region. The bureaucracy who undertakes the responsibility of implementing many policies and programmes has eroded over time. Nexus between politicians and bureaucracy led to corruption and leakages in anti-poverty programmes. There is an urgent need to have appropriate institutional structures for better implementation. Participatory approach, bottom-up approach, social mobilization, social audit and decentralization can improve the effectiveness of the programmes. It is being increasingly recognized that use of information technology (IT) leads to better monitoring and implementation of social protection programmes. There is also need to have administrative, police and judiciary reforms in some of the countries.

10. *Rights Based Approach:* Rights approach plays an important role in improving implementation for development programmes. Right to food, right to health and right to education, right to employment, right to have social security and right to information etc. put pressures on governments to deliver the services to citizens. Rights based approach for social protection would be important. Rights based approach is important but everything need not be legal.

11. *Strengthening Universal Capability Enhancing Programmes:* There is a need to strengthen and expand programmes that improve capabilities of these households. Health and education programmes in the countries of the region have to be improved. There are six problems in social sector particularly in South Asian context. These are: (a) Low levels of social indicators; (b) slow progress; (c) significant regional, social and gender disparities; (d) low level and slow growth in public expenditures particularly on health; (e) poor quality delivery systems; (f) privatization of health and education. These deficiencies have to be corrected.

12. *Priority for women and child issues:* Although there are commitments by governments on equality and rise in the emphasis on equality of women, it had only a limited impact in reducing disparity and discrimination of women. There has also been failure in child development in terms of health, nutrition and quality education. Therefore, priority should be given to the social protection programmes relating to women and child rights. For example, strengthening nutrition programmes for improving nutrition is one example of respecting child rights.

13. Barriers to Entry: There are several barriers for extension of social protection programmes in developing countries of the region. One has to focus on relaxing these constraints. These are given below.

(a) *Resources and Institutions:* Enough resources and institutions are needed for spending and successful implementation of social protection programmes. GDP growth has to be high to have more revenues through rise in tax/GDP ratio. Even if we have high growth, political will is important for higher allocations to social protection schemes. The performance of some of the public and other institutions are not satisfactory. There is a need to revive some of the public institutions and improve performance of existing institutions.

(b) *Economic and social (caste etc.) Inequalities:* There have been significant divides in the economy and society. They are: rural-urban, regional, gender and social. It was thought that economic development would remove the social problems. However, the content of planning and other policy measures and especially the manner of its implementation in the countries of the region were powerfully influenced by the prevailing social structure and the vested interests.

(c) *Illiteracy and low education :* Illiteracy and low level of education can be constraints for effective implementation of these programmes. For example, in India, only around 15 percent of the female workers have education of middle school or above. These low levels of education can be a constraint to implement social protection schemes successfully.

(d) *Weak public sector administrative mechanism:* There is a saying that some of the countries in the region are excellent in framing good policies but fails in implementation. Main problem is the weak public sector administrative mechanism particularly in some of the poorer provinces. This can also act as barrier for extension of the programmes.

(e) *Gender bias:* Gender bias particularly in South Asia countries is another barrier for extension. For example, malnutrition levels in South Asia are almost double to those of Sub-Saharan Africa. Major part of the explanation for this ‘South Asian Enigma’ is attributed to gender bias.

(f) *Capacity Building at local level:* The role of local councils and village communities in implementing social protection programmes is increasing. But, capacity of these institutions in implementing the programmes is weak in many states.

(g) *Less participation of NGOs and civil society in some programs:* One of the reasons for successful implementation of schemes in Bangladesh is due to large presence of civil society and NGOs. In some of the countries in Asia-Pacific region, the involvement of NGOs is less although in recent years their presence is increasing.

(i) *Resistance from the local elite:* Some of the social protection programs have threatened the existing feudal systems at village level. As a result, there is a resistance from local elite for implementing some of the social protection programmes. In this context, there is a need to address structural inequalities in rural areas.

Policies for Agricultural Development

With the increase in population and incomes, demand for commodities particularly food is going to increase significantly in the developing countries of the region. Although prices may come down in the near future, there is likelihood of rise in food commodity prices again. Increase in agricultural productivity is the major solution for addressing the effects of commodity boom in the medium to long term.

Yields of many crops can be increased in the South Asia region. For example, Yields of top ten producers for paddy shows that yields in Bangladesh and India are much lower than the world average of 4.31 tonnes per hectare (Table 4). The yields in these countries can be improved to reach at least world average if not to the average of 656 tonnes in China. Similarly, wheat yields can be improved further in India and Pakistan (Table 5).

January 2013

However, several measures have to be undertaken to increase productivity in agriculture. These are: investment in agriculture and rural infrastructure (e.g. irrigation, rural roads), land and water management, increase in efficiency of fertilizers, credit, technology and extension, diversification of crops and marketing.

Table 4. Yields for Top Ten Global Paddy Producers
(tonnes per hectare), 2008

Countries	Yields
China	6.56
Japan	6.49
Vietnam	5.22
Indonesia	4.90
World	4.31
Brazil	4.23
Bangladesh	4.00
Myanmar	3.72
Philippines	3.70
India	3.37
Thailand	2.97

Source: Ministry of Agriculture, Government of India based on FAO data

Table 5. Yields for Major wheat producing countries
(tonnes per hectare), 2008

Countries	Yields
France	7.10
China	4.76
Ukraine	3.67
World	3.09
USA	3.02
Canada	2.85
India	2.80
Russian Federation	2.46
Pakistan	2.45
Turkey	2.35
Australia	1.58

Source: Ministry of Agriculture, Government of India based on FAO data

Price Policy and Input Subsidies in Agriculture: Pros and Cons

Some countries support agriculture through setting prices for agricultural commodities. Output price fixation gives assurance for producers to invest more in agriculture. However, empirical evidence shows that price policy leads shifts in cropping patterns and does not increase yields. For example, if a country increases rice prices, the area under rice would increase but yields may not rise. The terms of trade in favour of agriculture can improve investment in agriculture. However, studies have shown that aggregate supply response is limited due to price policies. The supply is more responsive to non-price factors like irrigation, technology and infrastructure. Moreover, prices are useful only those who participate in the market. In other words, price support policy may not be helpful for those who produce for self consumption and do not have marketable surplus.

Subsidies: The question of subsidies in agriculture has emerged as an important issue in recent policy debates. Undoubtedly, subsidies are effective in pushing agricultural growth to a certain extent, but it is important to make sure that they do not become a permanent feature of a country's economy.

Input subsidies are having adverse effect on environment in agriculture. These policies are leading to degradation of land and water. These subsidies caused severe deterioration of the systems due to the neglect of their maintenance in addition to becoming fiscally unsustainable. Further, they have led to the highly wasteful use of canal water, ecological degradation from water logging, salinity, pollution, excessive consumption of electricity, and over drawl of ground water resulting in the shortage of drinking water in several parts of the country. Similarly, the prevailing heavy subsidy on nitrogenous fertilizers perpetuates inefficiencies in the domestic fertilizer industry. Irrigation and use of power seems to be as high under small farm as compared to large farms. However, these are cornered by the farmers in irrigated areas and those in unirrigated areas do not get these subsidies. Most of the fertilizer subsidy also goes to the farmers under irrigated area. The benefit flowing to the farmers and consumers of food is illusory, as it is leading to the degradation of soil on account of excessive chemicalisation and adverse NPK ratio. A fixed quantity of fertilizers sufficient for one or two hectares may be subsidized for all the farmers, if necessary through a system of input coupons, requiring them to purchase the remaining quantities in the market at the going rates.

Who gets these subsidies? During the initial stages of the adoption of new technology in agriculture some of these subsidies may be justified as 'front-up costs'. Over time it was found, that the richer provinces and well-irrigated areas, certain crops, and sometimes rich farmers captured a disproportionately high share of the major input subsidy programmes of fertilizer, power, irrigation and credit.

Another issue regarding subsidies is that whether these should be withdrawn without improving the efficiency in supplying inputs. While withdrawing subsidies, care should be taken to remove inefficiencies in production and distribution of inputs and services. For example, a farmer may not pay the full cost of power if reliable and continuous electricity is not supplied. The distribution systems are sometimes characterized by inefficient transmission and widespread pilferage. Irrigation system is characterised by inflated costs on account of bad design, inferior quality of services and inefficiencies in management, delays and leakages in construction. Due to these inefficiencies, the actual subsidy going to the farmers using these inputs is far less than what is projected. A case for reducing subsidies will be strengthened if the input use efficiency improves.

There seems to be some trade-off between input subsidies and public investment in agriculture. The problem of mounting subsidies and its effect in terms of crowding out public agricultural investment has been highlighted in many countries. For example, in India, public investment declined from 3.4% of agricultural GDP in the early 1980s to 1.9% in 2001-03. At the same time subsidies increased from 2.9% to 7.4% of agricultural GDP (GOI, 2007).

However, since 2004-05, there has been improvement in agricultural investments in India. The share of investment in agriculture as per cent of GDP in agriculture increased from 13% in 2004-05 to 20% in 2009-10.

Small Farm Holdings in South Asia: Challenges

More than 80 per cent of agricultural holdings in South Asia are small farms (less than 2 ha). India and Bangladesh have respectively 93 million and 14 million small farmers. The average size of operational holdings is only 0.5 hectares in Bangladesh, 0.8 hectares in Nepal and Sri Lanka, 1.4 hectares in India and 3.0 hectares in Pakistan. There has been decline in average size of farms in Asia-Pacific region (Table 6). India has more than 80 per cent of the holdings under small farms with 44 per cent of cultivated area.

The role of small farms in development and poverty reduction is well recognized (Lipton, 2006). The global experience of growth and poverty reduction shows that GDP growth originating in agriculture is at least twice as effective in reducing poverty as GDP growth originating outside agriculture (WDR, 2008). Small holdings play important role in raising agricultural development and poverty reduction.

Small holdings also face new challenges on integration of value chains, liberalization and globalization effects, market volatility and other risks and vulnerability, adaptation of climate change etc. (Thapa and

January 2013

Gaiha (2011). Recent “world-wide processes of farm change –commercialisation of increasing proportions of input and output: institutional developments such as super markets; privatization of key aspects of technical progress, and of output and process grades and standards – now indicate large farm focus” (p.59, Lipton, 2006). Therefore, support is needed for small holdings in the context of these world-wide processes of farm change. There are also high returns from investments in agricultural R&D, rural roads and other infrastructure and knowledge generation.

Table 6. Changes in farm size and land distribution in South Asia

Country	period	Land distribution		Average farm size (hectares)		Change in total number of farms (%)	Changes in total area (%)
		start	end	Start	End		
Smaller farm size, more inequality							
Bangladesh	1977-96	43.1	48.3	1.4	0.6	103	-13
Pakistan	1999-00	53.5	54.0	3.8	3.1	31	6
Smaller size, less inequality							
India	1990-95	46.6	44.8	1.6	1.4	8	-5

Source: Thapa and Gaiha, 2011 taken from World Bank, 2007

There are many issues and challenges for small holding agriculture in Asia-Pacific region. Some of the general issues that confront marginal-small farmers as agriculturalists are: imperfect markets for inputs/product leading to smaller value realizations; absence of access to credit markets or imperfect credit markets leading to sub-optimal investment decisions or input applications; poor human resource base; smaller access to suitable extension services restricting suitable decisions regarding cultivation practices and technological know-how; poorer access to ‘public goods’ such as public irrigation, command area development, electricity grids; greater negative externalities from poor quality land and water management, etc.

Role of women: The importance of women in agriculture has been increasing. These proportions have increased over time. Agriculture is becoming increasingly feminized as men are migrating to rural non-farm sector. They work in “land preparation, seed selection and seed production, sowing, in applying manure, fertilizer and pesticides, weeding, transplanting, threshing, winnowing and harvesting etc as well as in animal husbandry and dairying, fish processing, collection of non timber forest produces (NTFPs), back yard poultry, and collection of fuel wood, fodder and other products for family needs” (GOI, 2007). Despite their importance, women are continually denied their property rights and access to other productive resources. Protecting women’s rights in land, enhancing infrastructure support to women farmers, and giving legal support on existing laws, will facilitate recognition for women as farmers and enable them to access credit, inputs, and marketing outlets.

Land Issues: Land and tenancy security: There is evidence that relatively successful implementation of even a modest package of land reforms dramatically improve the prospect of the poor. Regarding small and marginal farmers, they own and cultivate some land but it is a limiting factor for getting resources. Therefore, tenancy security is important for small holding farmers.

Land relations are extremely complicated and this complexity has contributed significantly to the problems facing actual cultivators. Unregistered cultivators, tenants, and tribal cultivators all face difficulties in accessing institutional credit and other facilities available to farmers with land titles. One priority is to record and register actual cultivators including tenants and women cultivators, and provide passbooks to them, to ensure that they gain access to institutional credit and other inputs. As part of the reforms, lease market should be freed and some sort of security for tenants has to be guaranteed. This will ensure availability of land for cultivation on marginal and small farmers. The land rights of tribals in the agency areas must be protected. There is considerable scope for further land redistribution, particularly when waste and cultivable lands are taken into account. Complementary inputs for cultivation (initial land

development, input minikits, credit, etc.) should be provided to all assignees, and the future assignments of land should be in the name of women.

Is there trade-off between land ownership/land tenure and productivity? Proper property rights on land would increase investments on land which in turn increases productivity. We have already mentioned that the share of women in agriculture is increasing. But, they do not have land rights particularly in South Asia. Granting them land rights can improve productivity. Regarding farm size and productivity, small farmers have higher land productivity as compared to large farms. This is partly because small farmers put more self-employed labour in their farms. In other words, higher labour input contributes to higher land productivity in small farms. On the other hand, labour productivity tends to be lower in small farms as compared to large farms.

Tenancy reforms in West Bengal of India have improved productivity in the state. On land market, the Report of the Steering Committee for the 11th Five Year Plan of India recommended the following. “Small farmers should be assisted to buy land through the provision of institutional credit, on a long term basis, at a low rate of interest and by reducing stamp duty. At the same time, they should be enabled to enlarge their operational holdings by liberalizing the land lease market. The two major elements of such a reform are: security of tenure for tenants during the period of contract; and the right of the land owner to resume land after the period of contract is over” (GOI, 2007).

Low level of formal education and skills: Education and skills are important for improving farming practices, investment and productivity. Estimates for India shows that literacy and mean years of education are lower for small holding farmers compared to medium and large farmers. For example, literacy among males and females for marginal farmers respectively were 62.5% and 31.2% while the corresponding numbers for medium and large farmers were 72.9% and 39%. Similarly, mean years of education for males among marginal farmers was 3.9 as compared to 5.3 for medium and large farmers. It is important for small holding farmers to have a reasonable level of awareness regarding information on agriculture. The low level of farmers’ education limits public dissemination of knowledge.

Credit and Indebtedness: Small holdings need credit for both consumption and investment purposes. Increasing indebtedness is one of the reasons for indebtedness among these farmers in recent years. Indebtedness for the small & marginal farmers from formal institutional sources is lower than large farmers and the reverse is true in the case of informal sources. The dependence on money lenders is the highest for sub-marginal and marginal farmers.

Globalization challenges: Increasing globalization has added to the problems faced by the small holding agriculture. The policies of huge subsidies and protection policies by developed countries have negative effects on small holding farmers in developing countries. If support is not given to small farms, globalization may become advantageous for large farms. There has been adverse impact of trade liberalization on the agricultural economy of the region’s growing crops such as plantation, cotton and oil seeds in which foreign trade is important. With liberalization, the issue of efficiency has become highly relevant as domestic production has to compete with products of other countries. In the recent years domestic prices of several agricultural commodities have turned higher than international prices. To compete in the global market, the countries needs to reduce various post- harvest costs and undertake suitable reforms to improve efficiency of domestic markets and delivery systems. To be able to successfully compete in a liberalized trade regime, therefore, there is need for a paradigm shift from merely maximizing growth to achieving efficient growth. For farmers, perhaps the single most adverse effect has been the combination of low prices and output volatility for cash crops. The effect of volatility in international prices on domestic agriculture should be checked by aligning tariffs with the changing price situation.

Impact of climate change: Climate change is a major challenge for agriculture, food security and rural livelihoods for millions of people including the poor in Asia-Pacific region. Adverse impact will be more on small holding farmers. Climate change is expected to have adverse impact on the living conditions of

January 2013

farmers, fishers and forest-dependent people who are already vulnerable and food insecure. Rural communities, particularly those living in already fragile environments, face an immediate and ever-growing risk of increased crop failure, loss of livestock, and reduced availability of marine, aquaculture and forest products. They would have adverse effects on food security and livelihoods of small farmers in particular. In order to have climate change sensitive and pro-poor policies, there is a need to focus on small farmers. Agriculture adaptation and mitigation could provide benefits for small farmers. The coping strategies would be useful to have long term adaptation strategies. There is a significant potential for small farmers to sequester soil carbon if appropriate policy reforms are implemented. The importance of collective action in climate change adaptation and mitigation is recognized. Research and practice have shown that collective action institutions are very important for technology transfer in agriculture and natural resource management among small holders and resource dependent communities.

Water problems: Water is the leading input in agriculture. Development of irrigation and water management are crucial for raising levels of living in rural areas. Agriculture has to compete for water with urbanization, drinking water and industrialization. Small holding agriculture depend more expensive water sources as compared to large farmers who has more access on canal water. Ground water is depleting in many areas of India. Marginal and small farmers are going to face more problems regarding water in future. Therefore, water management is going to be crucial for these farmers.

Diversification: There has been diversification of diets away from foodgrains to high value products like milk and meat products and vegetables and fruits. The increasing middle-class due to rapid urbanization, increasing per-capita income, increased participation of women in urban jobs and impact of globalization has been largely responsible for the diet diversification. Hi-value products have caught the fancy of the expanding middle class and the result is visible in the growing demand for hi-value processed products. There is growing demand for non-foodgrain items. Diversification to high value crops and allied activities is one of the important sources for raising agricultural growth. Since risk is high for diversification, necessary support in infrastructure and marketing are needed. Price policy should also encourage diversification. Small and marginal farmers can get higher incomes with diversification. But, there are risks in shifting to diversification as the support systems are more for food grains. There is a need for support systems for diversification to help the small holder farmers.

Risk and vulnerability: There is enough evidence to suggest that poor and poorest of the poor households are vulnerable to a range of risks affecting individuals, households or whole communities which can have a devastating effect on their livelihoods and well-being. They have higher exposure to a variety of risks at individual or household level. Some of them are (a) health shocks: illness, injury, accidents, disability; (b) labour market risk: many work in informal sector and have high risk of unemployment and underemployment; (c) harvest risks, life cycle risks, social risk and special risks for vulnerable groups. In addition, they have community risks such as droughts, floods, cyclones, structural adjustment policies etc. Small and marginal farmers are vulnerable to all these risks. Most of the coping mechanisms followed by households are: borrowing, sale of assets, spending from savings, assistance from relatives and govt., expanded labour supply, child labour, bonded labour, reducing consumption, migration etc. Comprehensive social protection programmes discussed above are required to address the negative effects due risks and vulnerabilities. The effectiveness of these programmes has to be improved so that small and marginal farmers can also benefit from these programmes. Crop insurance programmes and future markets have to be strengthened to reduce risks in price and yields.

Opportunities for Small Holding Agriculture

In spite of above challenges, there are many technological and institutional innovations which can enable marginal and small farmers to raise agricultural productivity and increase incomes through diversification and high value agriculture. Before going to technological innovations, we discuss below the policy issues under research and extension in agriculture. These are also applicable to small and marginal farmers.

Research and Extension to Increase productivity

There is a plateau in yields in the green revolution' areas. The yield growth for many crops has declined in the 1990s. Technology plays an important role in improving the yields. There are weaknesses in the existing systems². Some of these are (a) there is inadequate emphasis on the needs of rainfed areas, which account for over 60% of cultivated area; (b) crop bias with major focus on rice and wheat; (c) proliferation of programmes resulting in resources being spread thinly and lack of focus in areas of relevance and opportunity; (d) inadequate priority to emerging challenges, particularly post-harvest, marketing and environmental conservation; (e) the multiplicity of institutes with overlapping mandates has led to duplication of research work; (f) lack of accountability, less emphasis on multidisciplinary research, weak interaction among researchers, extension workers and farmers and the private sector and, excessive centralization of planning and monitoring.

There is a need to shift away from individual crop-oriented research focused essentially on irrigated areas towards research on crops and cropping systems in the dry lands, hills, tribal and other marginal areas. Dry land technology has to be improved. In view of high variability in agro-climatic conditions in such unfavourable areas, research has to become increasingly location-specific with greater participation or interaction with farmers. Horticulture crops that are land-saving and water-saving should be encouraged in dry land areas. Research has to be improved on horticulture crops.

Progress in post-harvest technology is essential to promote value addition through the growth of agro-processing industry. Private sector participation in agricultural research, extension and marketing is becoming increasingly important especially with the advent of biotechnology and protection being given to intellectual property. However, private sector participation tends to be limited to profitable crops and enterprises undertaken by resource rich farmers in well-endowed regions. Moreover, private sector is not interested in research for better techniques of soil and water management, rainfed agriculture, cropping systems, environmental impact and long term sustainability. Therefore, the public sector research has to increasingly address the problems facing the resource-poor farmers in the less endowed regions. The new agricultural technologies in the horizon are largely biotechnologies. Effective research is needed to have biotechnologies suitable to different locations in India.

Regarding extension, the existing systems in many countries are top-down in its approach and there is little participation by the farmers. There is a need to take corrective steps to deal with the near collapse of the extension system in most countries. In the absence of public provision of such services, the resource poor and gullible farmers are becoming the victims of exploitation by the unscrupulous traders and money lenders interested in selling inputs such as seeds, fertilizers and pesticides. There is, therefore, an immediate need for reforming and revitalizing the existing agricultural extension system in the country. The main ingredient of reforms should be : (a) active involvement of farmers through user groups/associations; (b) participation by the private sector and the NGOs; (c) increasing use of media and information technology including cyber kiosks to disseminate the knowledge on new agricultural practices and the information on output and input prices; and (d) building gender concerns into the system, for example, by manning the extension services predominantly by women . The returns to investment on research and extension will be much higher on agricultural growth as compared to other investments.

Technological Innovations

It may be noted that agricultural technologies are 'scale neutral' but not 'resource neutral' (Singh et al, 2002). Small holder-oriented research and extension should give importance to cost reduction without reduction in yields. Therefore, new technological innovations are needed. "These include low external input and sustainable agriculture approaches based on ecological principles but without the use of artificial chemical fertilizers, pesticides or agro-ecological principles but without the use of artificial

January 2013

chemical fertilizers, pesticides, or genetically modified organisms; and biotechnology” (Thapa and Gaiha, 2011).

The need for adopting the methods of an evergreen revolution has become very urgent now. As Swaminathan (2010) mentions, among other things, there are two major pathways to fostering an evergreen revolution. The first is organic farming. Productive organic farming needs considerable research support, particularly in the areas of soil fertility replenishment and plant protection. The other pathway to an evergreen revolution is green agriculture. In this context, ecologically sound practices like conservation farming, integrated pest management, integrated nutrient supply and natural resources conservation are promoted. Green agriculture techniques could also include the cultivation of crop varieties bred through use of recombinant DNA technology if they are good in resisting to biotic and abiotic stresses or have other attributes like improving nutritive quality (Swaminathan, 2010).

Zero Tillage: Cultivation practices such as zero-tillage (which involves injecting seeds directly into the soil instead of sowing on ploughed fields) combined with residue management and proper fertilizer use can help to preserve soil moisture, maximize water infiltration, increase carbon storage, minimize nutrient runoff, and raise yields. It is expanding rapidly in India. In 2005, in the rice–wheat farming system of the Indo-Gangetic plain, farmers adopted zero-tillage on 1.6 million hectares; by 2008, 20–25 percent of the wheat in two Indian states (Haryana and Punjab) was cultivated using minimum tillage. (WDR, 2010). Public sector led improved technologies have also been helping small farmers in several countries.

Rural women play a significant role in animal husbandry and are directly involved in major operations like feeding, breeding, management and health care. As the ownership of livestock is more evenly distributed with landless laborers, and marginal farmers, the progress in this sector will result in a more balanced development of the rural economy, particularly in the reduction of poverty and malnutrition. As Singh et al (2002) mentions, priorities for live-stock technology development are animal health, nutrition, and reproduction.

Nutrient Management: Nitrogen applied in fertilizers, manures, bio solids and other N sources are not used efficiently by crops. Management strategies to improve the nitrogen use efficiency of crops which reduce fertilizer requirements focus on fertilizer best management practices. A note written for IFPRI by Flynn (2009) says that the best practices should look at application type, application rates, application timing and application placement. For example, balancing application rates of nitrogen with other required nutrients including phosphorus, potassium and sulphur is a major way of improving nitrogen use efficiency. Similarly, appropriate nitrogen application rates are important in order to have effectiveness on yields.

Another way is switching to organic production which can reduce fertilizer use. Better use of existing organic sources of nutrients, including animal manure, crop residues, and nitrogen-fixing crops such as legumes. Such organic nitrogen sources may also contribute to raising sequestration of carbon in soils (Flynn, 2009). However, yields have to be maintained with organic farming as compared to cultivation with chemical fertilizers.

Bio-technology: The term biotechnology covers a wide range of scientific techniques and products that can be used in numerous ways to boost and sustain the productivity of crops, livestock, fisheries and forests. Though agricultural biotechnology is used synonymously with genetic modification by general public, there are many techniques in biotechnology apart from genetic modification. The other techniques are –genomics and bioinformatics, marketed-assisted selection, diagnostic procedures, micro propagation, tissue culture, cloning, artificial insemination, embryo transfer and other technologies (Rao and Dev, 2010).

Some of the South Asian countries are promoting GM crops such as Bt cotton. Bt cotton is being used in a big way in India. Recently India had two revolutions in technology. One is BT cotton and the other is hybrid maize. Studies on Bt cotton showed that small farmers benefited from the introduction of this

technology. The green revolution technologies have been utilized by upper strata of farmers and later gradually spread to other strata. But in the case of biotechnological application, the small farmers also made use of the technology well since the beginning. However, we have to be careful about GM crops particularly food crops as we do not know enough about food safety of these crops.

Information technology: Changes in information technology will help in a big way to improve agri-business and incomes of small farmers. Indian private companies and NGOs are global leaders in providing information to farmers, as a spinoff from India's meteoric rise as a world leader in ICTs. *E-Choupal* has expanded access to internet in rural areas. Up to 6,400 internet kiosks were set up between 2000 and 2007 by ITC Limited, one of the largest agricultural exporters. It reaches about 4 million farmers growing a range of crops - soybean, coffee, wheat, rice, pulses or shrimp - in over 40,000 villages. They get free information in their language about local and global market prices, weather forecasts, farming practices and crop insurance. It serves as a purchase centre, cutting marketing costs and allowing farmers to obtain a bigger farm price. The M. S. Swaminathan Research Foundation established Knowledge Centers in Pondicherry in 1997. With the support of the Indian Space Research Organization, centers in each village are connected by satellite to a hub at Villianur. The women self-help groups use the centers' computers to manage their business accounts and coordinate their activities, using video links with the other villages.

The declining costs of ICTs are giving small farmers much greater access to information. Mobile phone coverage in Asia is expanding at breakneck speed. Computers are now being linked through mobile phone networks to greatly expand the scope of information. By linking communication technologies to market exchanges in commercial centers, even small farmers can overcome the enormous informational asymmetries that limit their bargaining power in traditional supply chains. The revolution in mobile phones is helping the small farmers to get information about crop prices and input prices and other related information on agriculture.

Institutional Innovations

Small holding agriculture faces many challenges. But, a number of innovative institutional models are emerging and there are many opportunities for small and marginal farmers. Institutions relating to (a) land and water management, (b) group or cooperative approach for inputs and marketing and, (c) value chains and super markets can enhance productivity, sustainability and incomes of small holding agriculture.

Institutions for sustainable land and water management

Development of irrigation and water management are crucial for raising levels of living in rural areas. Major areas of concern in irrigation are: decline in real investment, thin spread of investment, low recovery of costs, decline in water table, wastages and inefficiencies in water use and, non-involvement of users. Both investment and efficiency in use of water are needed. Major areas of reforms needed in irrigation are: stepping up and prioritizing public investment, raising profitability of groundwater exploitation and augmenting ground water resources, rational pricing of irrigation water and electricity, involvement of user farmers in the management of irrigation systems and, making groundwater markets equitable (Rao, 2005). Watershed development and, water conservation by the community are needed under water management.

Environmental concerns are among the policy priorities in the region. Particularly degradation of land and water is alarming. Groundwater tables are depleting at an alarming rate. The de facto privatization of groundwater and subsidized power supply are the main culprits. There has been a neglect of minor irrigation sources like tanks. Shortage of drinking water has accentuated and quality of water has declined over time.

An integrated approach is needed for water resources management in the region. Institutions like the water user associations (WUAs) and watershed committees are important for water management. An appropriate strategy should integrate institutional approaches with market principles. Since institutional

January 2013

innovation (Water user associations) is already in place for canal irrigation, it is time now to implement volumetric pricing. There is a need to de-link water rights from land rights in order to ensure equity and sustainability.

In the case of land and forestry, watershed approach and Joint Forest Management are crucial for protecting the environment. The critical issue is sustainability of these programmes. Although watersheds have shown positive economic impact, the social issues are missing. More participatory approach and involvement of women would lead to sustainability of watershed development approach. In the case of JFM, the focus is more on high income areas like timber. Low value products constituting sources of livelihoods for the poor have low priority. Customary rights of the tribals on podu (shifting cultivation) have to be recognised. Awareness and involvement of the civil society is a precondition for checking environmental degradation. Environmental movements would have a discerning impact in this regard.

Women's collectives: Women's cooperatives, producer women's groups and other forms of group efforts, where they do not already exist, should be promoted to overcome constraints of small and uneconomic land holdings, for the dissemination of agricultural technology and other inputs, as well as for marketing of produce (Agarwal, 2010). There has also been greater emphasis on women's collectives. For example, Deccan Development Society (DDS), an NGO in Andhra Pradesh of India enables women from landless families to access various government schemes to establish claims on land, through purchase and lease. There are "four critical steps that ensured local food security in an experiment by the Deccan development society in Andhra Pradesh where the 'sangams' – women's collectives (i) improved 6,000 acres of degraded land, (ii) dalit women took cultivable land on lease, (iii) organised their own public distribution of grains with accent on coarse cereals consumed by 65 per cent of our rural population; built grain banks at village level, and (iv) made systematic collection and preservation of seed varieties" (Krishnaraj, 2006).

Institutions for Marketing of Small Holdings: For small and marginal farmers, marketing of their products is main problem apart from credit and extension. In recent years, there has been some form of contract arrangements in several agricultural crops such as tomatoes, potatoes, chillies, gherkin, baby corn, rose, onions, cotton, wheat, basmati rice, groundnut, flowers, and medicinal plants. There is a silent revolution in institutions regarding non-cereal foods. New production –market linkages in the food supply chain are: spot or open market transactions, agricultural co-operatives and contract farming (Joshi and Gulati, 2003). One of the most successful producer organization is the Indian dairy cooperative which in 2005 had a network of more than 100,000 village level dairy cooperatives with 12.3 million members (see BIRTHAL et al 2008). Contract farming has a potential to help the small and marginal farmers overcome constraints in accessing inputs, credit, extension and marketing.

While the pros of contract farming are potentially many, the sponsoring companies may be unreliable, may exploit a monopoly position, and/or have inefficient management and marketing problems that could result in manipulation of quota and non-fulfillment of commitments. Contract farming in India is neither backed up by law nor by an efficient legal system. This is the single most constraint to widespread use of contract farming. The legal system can be improved with legislative measures like the model contract and code of practice, registration of contracts with marketing committees and tribunals for efficient, speedy and corrupt-free dispute resolutions.

Most important problem for the small farmers is output price fluctuations. There is a big gap between producer prices and consumer prices. There are different models for marketing collectively by the small and marginal farmers. These are: self-help group model, co-operative model, small producer co-operatives and contract farming. Thus, group approach is needed for getting benefits from marketing.

Super markets and supply chains: Small farmers can benefit from the emerging super markets and value chains. The presence of super markets as retail trade is rapidly expanding in the emerging economies. According to Reardon and Mitten (2011), this process has developed in an astonishing speed: Supermarkets now enjoy a retail share of 50-60% in South America, East Asia (China excluded) and

South Africa; and a 30-50% in Mexico, Central America and much of South East Asia. While in South Asia, it is experiencing strong annual growth. Improvements in supply chains in South Asia can help small farmers to get better prices.

5. PROMOTING REGIONAL CO-OPERATION

Another important policy is to improve regional cooperation among governments in Asia and the Pacific region in order to tackle the effects of commodity boom. For example, at the “regional level price shocks can be managed cooperatively by establishing regional food stocks such as the Rice Reserve Initiative of ASEAN+3 and the South Asian Association for regional cooperation (SAARC) food bank” (p.viii, ESCAP, 2011). Some understanding about not having export bans during rise in commodity prices is one form of regional cooperation.

A study on South Asia (Deb, 2011) provides areas of regional co-operation in the following areas.

(a) Joint Agricultural Research and other projects: Development of new varieties, hybrids and breeds, development of water management techniques, development of natural resources management techniques, cooperation in remote sensing and GIS, biotechnology research, weather and flood forecasting, disaster management research.

(b) Develop joint projects for technology exchange with specific targets: exchange of germplasm, exchange of varieties and breeds, crop husbandry practices, animal husbandry practices, fisheries management techniques, water and natural resource management techniques, post harvest and processing technologies.

(c) Set targets for capacity building and development and development of regional facilities: development of human resources, establishment of SAARC Gene Bank, common vaccination system against livestock diseases, SPS complaint facilities and certification system, organic farming and certification system, promotional environmental goods.

(d) harmonize standards, policies and acts: plant variety act, biodiversity and indigenous knowledge protection act, biodiversity and indigenous knowledge protection act, set common standards for SPS and facilitation of quarantine procedure, setting standards and packaging requirements, regional adaptation trials and variety/breed release systems .

Regional cooperation also has to address climate change issues by ensuring effective implementation of national adaptation and mitigation strategies, and of current and future funding mechanisms. Regional organizations like SAARC (South Asian Association for Regional Cooperation) should play important roles in technology and knowledge transfer (ADB, 2009). For example, the regional initiatives can focus on agriculture and food security, livelihoods and ecosystem services as all of these contribute to mitigation and adaptation of climate change.

6. GLOBAL LEVEL COOPERATION

Global cooperation is equally important to take care of the risks due to global commodity boom.

As requested by G20 Summit in Seoul, FAO, OECD, the World Bank group, IFAD, UNCTAD, WFP, WTO, IMF, IFPRI and the UN HLTF joined forces for the first time to produce a policy report on ‘price volatility in food and agricultural markets: policy responses’. FAO and OECD coordinated the preparation of this important report

G20 agriculture ministers’ meeting in Paris in June 2011 agreed for an action plan on food price volatility and agriculture. They commit to five main objectives for this action plan, as follows: “(i)Improve agricultural production and productivity both in the short and long term in order to respond to a growing agricultural commodities demand; (ii) increase market information and transparency in order to better

January 2013

anchor expectations from governments and economic operators; (iii) strengthen international policy coordination in order to enhance confidence in international markets and to prevent and manage food market crisis more efficiently; (iv) improve and develop risk management tools for governments, firms and farmers in order to build capacity to manage and mitigate the risks associated with food price volatility, in particular to the poorest countries; (v) improve the functioning of agricultural commodities' derivatives markets through the work of Finance Ministers and Central Bank Governors" (p.3).

On agricultural productivity, the G20 agricultural ministers agreed to strengthen agricultural research and innovation and support results based agricultural research for development through our national agricultural research systems, the Consultative Group on International Agricultural Research (CGIAR) and the Global Forum on Agricultural Research (GFAR). As a first step, they propose an International Research Initiative for wheat Improvement (IRIWI) in order to coordinate the research efforts on this major crop for food security.

Market information and transparency is one of the important recommendations of the ministerial group. They agreed to launch the Agriculture Market Information System (AMIS) in order to encourage major players in the agri-food markets to share data, promote greater shared understanding of food price developments and, to enhance existing information systems.

The declaration also indicates the need for strong global governance for achieving global food security. The FAO is considered as a central organization within the global governance architecture on food security. The importance of international trade is also recognized in improving food security and in addressing the issue of food price volatility. It also recognizes the need for further analysis between biofuels production and food production.

The action plan agrees that managing the risk and mitigating the adverse impact of excessive food price volatility would lead to long term agricultural development and strengthen global food security. It encourages the multilateral, regional and national development banks or agencies to set up a risk management advisory mechanism to enable information and best practices sharing. Lastly, it is also recognized that better regulated and transparent agricultural financial markets are indeed key for well-functioning physical markets.

World Development Report (2008) identifies a global agenda for agriculture in the 21st Century. The elements of the global agenda include : achieving global justice and equity, conducting global R&D for the poor in an era of privatization, conserving genetic resources for future food security, reducing transboundary costs from pandemic animal and plant diseases and invasive aspects, exercising global environmental stewardship for sustainable development, managing the global commons in the context of climate change and , reducing the transaction costs of trade through rules and standards. Success of all these elements need for global coordinated efforts across sectors and institutions. The institutional requirements differ depending on the type of global public goods (See Box 1).

Regarding climate change related problems, global cooperation is important. At the international level, new mechanisms have to be devised to provide a range of public goods including climate information, forecasting, research and development of crops adapted to new weather patterns, and techniques to reduce land degradation (WDR, 2010). The Clean Development Mechanism (CDM) of the Kyoto Protocol has its limited coverage of afforestation and deforestation. Deforestation has to be included as it contributes nearly a fifth of global GHG emissions. Carbon financing has to be extended beyond sector mitigation to land-use programmes such as grasslands restoration and forest conservation that offer benefits to the poor. We have to incorporate agricultural adaptation and mitigation in the international climate change negotiations. It provides opportunities for financing and provide technologies for adaptation and mitigation particularly for vulnerable population and areas in developing countries.

BOX 1 : *Delivering international public goods***Agricultural research**

The CGIAR is one of the most successful of the global institutional innovations in the 20th century. A collective effort with informal governance, it started with 18 members (funders), a budget of \$100 million (in 2007 U.S. dollars), and four research centers in 1971. It has since grown to 64 members, 25 of them developing countries, with a budget of \$451 million (14 percent from developing countries), supporting 15 research centers. Investing in the CGIAR has paid off handsomely.³⁹ The system helps countries benefit from scale economies in R&D (chapter 7).

Nonetheless, the CGIAR's funding and focus have become issues in maintaining its relevance. There has been a shift toward country-specific, short-run payoffs in development activities, driven by preferences of individual donors rather than by collective action. These activities are at the expense of strategic investments in international public goods with long-term payoffs, such as the conservation and improvement of genetic resources, biotechnology, plant breeding, and natural resource management.

The CGIAR also has to interact with a range of new stakeholders. A good example is the Harvest Plus Program, which uses conventional crop breeding to produce crops with increased micronutrient content. The program illustrates new ways of doing business: It provides funding to 10 CGIAR centers and collaborates with universities, government agencies, and NGOs in both developed and developing countries. The program works in 20 developing countries and has attracted \$52.2 million in grants, including \$28.5 million from the Gates Foundation.

Genetic resources

The growing movement to manage the genetic resource commons spurred the International Treaty on Plant Genetic Resources for Food and Agriculture, which promotes the conservation and sustainable use of plant genetic resources and the fair and equitable sharing of the benefits arising out of their use for food and agriculture. To support this, the Global Crop Diversity Trust was established in 2004 by Bioversity International and the FAO to develop and promote a global genetic conservation system for important crops covered by the treaty. The trust has a target of \$250 million in endowments, with more than \$115 million pledged to date.

The Treaty on Plant Genetic Resources was negotiated for seven years, in response to and in harmony with the Convention on Biodiversity. Other international agreements also affect the exchange and conservation of genetic resources. These include the Trade Related Aspects of Intellectual Property Rights (TRIPs) agreement under the WTO, the Convention on Biodiversity, the Intergovernmental Committee on Genetic Resources, Traditional Knowledge and Folklore under the World Intellectual Property Rights Organization. Harmonizing the agreements is an ongoing challenge because they have been developed in different sectors by government officials from different ministries (trade, agricultures, environment, and culture).

Food safety and quality

Codex Alimentarius, led by the FAO and WHO, is a long-standing example of international interagency, public-private sector cooperation in food standards, labeling practice, hygiene, and additives. The International Organization for Standardization (ISO), a nongovernmental network of 157 national standards institutions, which come together to agree on comparable international standards, has sections on agriculture and on food technology.

The Sanitary and Phytosanitary Measures Agreement of the WTO defines transparent rules and standards governing cross-border movements of products. Progress has been modest since countries have different values and risks associated with food products, leading to differences in their interest in setting rules and standards. The private sector has also introduced a wealth of new standards. Yet the efforts to harmonize standards offer potentially very large payoffs. Support for good analytical work to understand the benefits, costs, and risks is important to inform international negotiations.

Transboundary spread of animal diseases

A remarkable example of international collaboration in controlling animal diseases is the near elimination of rinderpest, a highly contagious viral disease in cattle. In the early 1980s, the disease was raging across Africa, with losses estimated at \$2 billion in Nigeria alone in 1979–83, and spreading over much of Asia and into Europe. The Global Rinderpest Eradication Programme—led by regional organizations and supported by the FAO and other donor organizations—was created to coordinate the worldwide eradication of rinderpest by 2010 through the collaboration of community animal health workers, herders, NGOs, and governments in a systematic surveillance and vaccination program. Today, rinderpest is close to being eradicated, although possible circulation of the virus in the Somali ecosystem is still a concern. The benefit-cost ratio of the program is estimated between 1.4 and 2.6.

To reduce the risk of disease outbreaks and transmission, the response of industrial countries has been strong where there are risks to human health. Commitments to the Global Fund for Control of Highly Pathogenic Avian Influenza are now close to \$2.5 billion. But donor response generally has been reactive and not proactive in giving long-term support to surveillance and early alert systems in developing countries.

Sources: World Bank (2008) taken from these sources: <http://www.csiro.au>; Consultative Group on International Agricultural Research (CGIAR) 2006; Global Crop Diversity Trust 2006; Mariner, Roeder, and Admassu 2002; Pardey and others 2006; Perrings and Gadgil 2006; Pinstrup-Andersen 2006; Raitzer 2003; Unnevehr 2004; World Bank 2004a.

Triangular cooperation in increasing agricultural productivity

Triangular cooperation can enhance agricultural productivity. The UNCTAD expert meeting discussed 'how South-South and triangular cooperation can help poor economies reverse the decline in agricultural productivity and increase investment in agriculture, rural infrastructure and agricultural research and development' (UNCTAD, 2009).

January 2013

“Triangular cooperation exists when South-South cooperation is supported through partnerships with Northern donors who provide financial and/or technical assistance. It is regarded as the ‘third generation’ of cooperation, and, for many, it represents a promising field with great and still largely untapped potential” (UNCTAD, 2009). Some of the examples of triangular cooperation are FAO’s Special Programme on food security (SPFS) and the Japan International Cooperation Agency’s programme on research. For example, SPFS facilitates the transfer of techniques which are successful from one country to another. Under the SPFS system, over 100 countries are now involved and over half of them have started implementing their own customized national plans. FAO entered into a strategic alliance with Chinese government to deploy an additional 3000 South-South cooperation experts and technicians to national and regional food security programmes and this agreement was signed in 2006 (UNCTAD, 2009). Similarly, Japan partners with Brazil to transfer agricultural technology to other developing countries.

Mechanisms at national, regional and international levels to regulate food price speculation

At national level, speculation in food related markets can be regulated with macro and micro interventions. Macro policies like monetary and financial policies should regulate lending to traders on these activities. Similarly, micro level interventions on stocks and transparency in stocks etc. would help in regulating speculation. Similarly, regulation of futures and forward markets are needed.

At the regional and global level, we have already mentioned above about the measures needed for reducing speculation in food markets. For example, G20 forum stresses on increasing market information and transparency, improve and develop risk management tools to manage and mitigate risks and, improve functioning of agricultural commodities’ derivatives markets through work of Finance Ministers and Central Bank Governors. These measures at regional and global level can reduce speculation and price volatility.

WTO and agriculture

The Doha Development Agenda (DDA) talks proved elusive as developed countries failed to reduce farm subsidies. There are concerns about the level playing field for India which is required to enable it to benefit from the liberalisation of agricultural trade. The Uruguay Round of Trade Negotiations did not bring about trade liberalisation in agriculture, as expected. There has been no significant reduction in domestic as well as export subsidies given by the developed countries to their agriculture. Thus, the anticipated increase in exports of agricultural products from developing countries has not materialised. Therefore, a major issue is the continuation of high domestic support being provided to agriculture in the developed countries, especially the US and European Union in the West and Japan in the East.

Developed countries are also resorting to arbitrary as well as restrictive sanitary and phytosanitary (SPS) measures, which continue to represent a major obstacle to international trade in agricultural products. This usually affects exports of developing countries because the SPS measures are often developed in a non-transparent manner. A number of international standards are thus being developed without the participation of developing countries, which emphasises the need for providing special help to developing countries on technical matters relating to sanitary and phytosanitary (SPS) measures. Another problem is that the developed countries are linking agriculture changes to concessions in industry and services which would be damaging to many developing countries.

Developing countries want the reduction of farm subsidies by developed countries. These countries want livelihoods in their countries should be protected. They want a proposal to help poor farmers in developing countries to counter the effects of floods of subsidized imports which undermine their agricultural production and worsen their livelihoods. The developing countries do not want to accept any agreement that perpetuates unfair trade practices and does not address their development priorities such as food and land security, livelihoods, secure environment and rapid rural progress. They also have strong commitment to the issues affecting the LDCs, as well as to the small and vulnerable economies that have hitherto remained marginalized from the global trading regime.

It is important for all countries to revive global trade talks so that all countries benefit from trade so that agricultural development and food security can be achieved. Although the Doha round is stuck, the doors are still open for negotiations.

7. CONCLUSION

The objective of this paper is to discuss policy options to mitigate the risks of adverse effects of the rise in commodity prices particularly food prices for pursuing more balanced and equitable policies and regional integration in South Asia region. Several estimates showed that higher food and energy prices have adverse impact in food security and poverty of South Asia region. This region also has the highest number of children suffering from malnutrition in the world. There have been several short term responses in dealing with price rise in agricultural commodities in the region. However, long terms solution is to increase in agriculture productivity in South Asian countries. Small farmers dominate South Asian agriculture. There are many opportunities in technology and institutions for raising productivity of small farmers. Speculative activities in commodities have to be reduced in order to arrest rise in commodity prices. Apart from national policies, regional and global level cooperation is needed for higher agricultural productivity and reducing speculative activities.

REFERENCES

- Agarwal B. (2010) Rethinking agricultural production collectives. *Economic and Political Weekly* 2010; Vol.45(17)
- ADB 2009, *Building climate resilience in the agricultural sector of Asia and the Pacific*, Manila: Asian Development Bank
- ADB (2011), “Global Food Price Inflation and Developing Asia”, Asian Development Bank, Manila
- Bhutta, Z.A., F.Ahmad Bawany, A.Feroze, A.Rizvi (2008), “The Impact of the Food and Economic Crisis on Childhealth and Nutrition”, Draft Working Paper prepared for UNICEF conference East Asia and the Pacific Islands, 6-7 January 2009, Singapore
- Birthal, P.S., A.K. Jha, M.M. Tiongco and C. Narrod (2008), “Improving Farm to Market Linkages through contract farming: A Case Study of Small Holder Dairying in India”, IFPRI discussion paper 00814. Washington, D.C.
- Braun, Joachim von (2008), “Food and Financial Crisis: Implications for Agriculture and the Poor”, IFPRI, Washington D.C.
- Chadha, G.K. (2003), ‘Rural Non-Farm Sector in Indian Economy: Growth, Challenges and Future Direction’, Paper read at JNU-IFPRI Workshop on A Comparative Study of Economic and Agricultural Reforms in China and India, March 25-28.
- Deb, Uttam (2011), “Agricultural research and technology development under SAARC: Achievement and Unfulfilled promises”, paper presented at Fourth South Asian Economic Summit, Dhaka, Bangladesh, 22-23 October, 2011
- Dercon, Stephan (2008), Children and the Food Price Crisis”, Young Lives Policy Brief 5, Department of International Development, Queen Elizabeth House, University of Oxford.
- Devereux, S. (2006), “Looking at Social Protection through a livelihood Lens”, IDS IN FOCUS, Issue 01 Social Protection, May 2006
- Dreze, Jean and A. Sen (1989), *Hunger and Public Action*, Oxford : Clarendon Press

January 2013

- ESCAP (2011), “Economic and Social Survey of Asia and the Pacific: Sustaining Dynamism and Inclusive Development”, Bangkok
- ESCAP (2011a) “Rising food prices and inflation in the Asia-Pacific region: causes, impact and policy response” MPDD policy briefs, no.7, March 2011.
- Flynn, H.C. 2009. *The Role of Nutrient Management in mitigation*. Focus 16, Brief 7, An Agenda for Negotiation in Copenhagen 2020 vision for food, agriculture and the environment. Washington, D.C: International Food Policy Research Institute
- GOI (2007), *Report of the Steering Committee on Agriculture for 11th Five Year Plan*, Yojana Bhavan, New Delhi
- GOI (2007a), Economic Survey, Ministry of Finance, Government of India.
- Hassan, Aynul, Cloving Freire, M.Hussain Malik (2011),” High Commodity prices and food security in South Asia: Policy initiatives in view of supply uncertainties and price volatility”, paper presented at Fourth South Asian Economic Summit, Dhaka, Bangladesh, 22-23 October, 2011
- Holzman, Robert, D. Robalino, and N.Takayama (editors, 2009), *Closing the Coverage Gap: The Role of Pensions and other Retirement Benefits*,The World Bank, Washington, D.C.
- Hossain, M (2009), “The 2007-08 surge in rice prices: The case of Bangladesh”, in Ahmed, S. and HansG.P.Jansen (eds.), “Managing Food price inflation in South Asia” The University Press Ltd., Dhaka
- Hossain, M, (2011)”Food security in South Asia: what should be the policy interventions in view of supply uncertainties and price volatility?” Paper presented at Fourth South Asian Economic Summit, Dhaka, Bangladesh, 22-23 October 2011
- Joshi P K and A. Gulati (2003), *‘From Plate to Plough: Agricultural Diversification in India’*, Paper presented at the Dragon and Elephant: A Comparative Study of Economic and Agricultural Reforms in China and India’, New Delhi, India, March 25-26
- Kapur, Devesh, Partha Mukhopadhyay and A.Subrahmanyam (2008) “The case for Direct Cash Transfers to the Poor *Economic and Political Weekly*, April 12
- Krishnaraj, M. (2006), “Food security, Agrarian Crisis and Rural Livelihoods: Implications for Women”, *Economic and Political Weekly*, December 30, 2006
- Lipton, M. (2006), “Can Small Farmers Survive, Prosper, or be the Key Channel to cut Mass Poverty”, *Journal of Agricultural and Development Economics*, Vol 3, No.1, 2006, pp. 58-85.
- Lustig, Nora (2008), “Thought for Food: The Challenges of Coping with Soaring Food Prices”, Working Paper number 155, Centre for Global Development
- NCEUS (2008), “The Challenge of Employment in India: An Informal Economy Perspective”, Vol I- Main Report, National Commission for Enterprises in the Unorganized Sector, Government of India
- Rao, CHH (2005), “Agriculture, Food security, Poverty and Environment”, Oxford University Press, New Delhi.
- Rao, NC and Dev, S.Mahendra (2010), *Biotechnology in Indian Agriculture: Potential, Performance and Concerns*, Academic Foundation, New Delhi
- Rashid, Mansoor (2008), “Safety Nets: South Asia and World wide: Addressing Chronic Poverty and Coping with Shocks”, power point presentation at the conference on “South Asia Regional Conference on Managing Food Price Inflation” organized by the World Bank, November 15-16, Dhaka

- Ravallion (2003), "The Debate on Globalization, Poverty & Inequality: Why Measurement Matters", *World Bank Policy Research Working Paper 3038*.
- Reardon, T and B. Minten (2011), "The Quiet Revolution in India's Food Supply Chains", IFPRI Discussion Paper 01115, August 2011.
- Saith, Ashwani (2008), "Towards Universalizing Socio-economic Security: Strategic Elements of a Policy Framework", *Indian Journal of Human Development*, Vol.2, No.1, Jan-June, 2008
- Sen, Amartya (2005), "The Political Economy of Targeting", in Van de Walle, D., and K.Nead, (eds.1995), *Public Spending and the Poor: Theory and Evidence*, Johns Hopkins Press and World Bank, Baltimore
- Shah, Mihir (2008), Direct Cash Transfers: No Magic Bullet, *Economic and Political Weekly*, August 23, 2008
- Singh, R.B., P.Kumar and T.Headwood (2002), "Smallholder farmers in India: Food Security and Agricultural Policy", FAO, Regional office for Asia and the Pacific, Bangkok
- Swaminathan, M.S. (2007), "Agriculture Can not Wait: New Horizons in Indian Agriculture", Academic Foundation, National Academy of Agricultural Sciences
- Subbarao (2003), 'Systematic Shocks and Social Protection: Role and Effectiveness of Public Workfare Programs', Human development Discussion Paper, World Bank, Processed
- Swaminathan, M.S. 2010. *From Green to Evergreen Revolution, Indian Agriculture: Performance and Challenges*. New Delhi: Academic Foundation
- Thapa, G. and R. Gaiha (2011), "Smallholder farming in Asia and the Pacific: Challenges and Opportunities", paper presented at the Conference on new directions for small holder agriculture, 24-25 January 2011, Rome, IFAD
- UNCTAD (2009) "The role of South-South and triangular cooperation for sustainable agriculture development and food security in developing countries", Note by the UNCTAD Secretariat
- Vaidyanathan, A. (2006), "India's Water Resources: Contemporary Issues on Irrigation", Oxford University Press, New Delhi
- Viswanath, Tara (2008), "Impact of Rising Food Prices on Poverty: South Asia Region", powerpoint presentation at the conference on "South Asia Regional Conference on Managing Food Price Inflation" organized by the World Bank, November 15-16, Dhaka
- WDR. 2008. *Agriculture for Development*, World Development Report, Washington, D.C: World Bank
- World Bank (2008 a) *Rising Food prices: Policy Options and World Bank Response*", World Bank, Washington, D.C
- WDR. 2010. *Development and Climate Change*, World Development Report, Washington, D.C: World Bank
-