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Regional Cooperation for Poverty Alleviation and Food Security in South Asia

Sachin Chaturvedi*

Abstract: This paper explores the various options available within the framework of regional cooperation for addressing issues like poverty alleviation and food security in the Asian region. This becomes important in context of Doha Development Agenda (DDA) which has called for linking up trade with poverty reduction efforts. The paper suggests joint marketing of various products from Asian developing countries for increasing the market profile, apart from collectively addressing issues like introduction of new technologies for enhancing productivity. The paper also addresses some of the policy constraints such as restricted market access, growing digital divide and emerging non-tariff barriers to be attended on a priority basis.

I. Introduction

The proposed trade integration in South Asia through SAFTA has again placed at the center-stage bringing in some pertinent issues in context of trade and food security debate in the region. The challenges in terms of loss of livelihood security and fall in the commodity prices in the agriculture sector are some of the apprehensions being raised at various fora, especially civil society organizations.[1] Though simultaneous issuance of the SAARC Social Charter may partially address some of these fears, but much more needs to be done given the fact that by 2015 the region would be food deficient by 16 million tonnes and by 2030 the magnitude would be of the order of 26 million tones.[2] The quality of food available in the region is also a great concern as 40 per cent of world's malnourished, almost 330 million people, are in South Asia. This challenge becomes much more pressing given that 28 pre cent of the GDP in the

* Fellow, RIS, New Delhi Email: sachin@ris.org.in. This is revised and updated version of the background note prepared for FAO Regional High-Level Roundtable on Eradication of Poverty and Food Insecurity, 23-24 February 2004, Bangkok. Author would like to thank Dr Nagesh Kumar, Dr Saifullah Syed and Dr S K Mohanty for their comments on earlier drafts. The usual disclaimer applies

region comes from agriculture and more than 70 per cent of the population is dependent on this sector.

Food security related issues have been an area of priority concern at the SAARC policy/work agenda right from the early days of its inception but largely the onus has been on the national governments. It was at the Colombo Summit of 1991 that the poverty eradication was addressed as a major goal. However, not much happened in between and the deadline for poverty alleviation of 2002 passed just like that. It is rather recent that a regional perspective is being developed on the operational aspects as well. Enthused by the continuous decline in population affected by food insecurity and the global emphasis on Millennium Development Goals (MDGs), SAARC Secretariat has reinvigorated the poverty alleviation and food security related programmes in the region. Added impetus comes from the fact that South Asia has emerged as the second fastest growing region in the world. During 1980-2000, the average annual growth rate has remained more than 5 per cent for the region as a whole.

In this context, at the Islamabad Summit earlier this year, two important proposals were discussed in the backdrop of Independent South Asian Commission on Poverty Alleviation (ISACPA) Report. The proposals included a special project on 'Freedom from Hunger', for which a 'SAARC Food Bank' was proposed, apart from a SAARC Poverty Alleviation Fund, towards which India announced to contribute $100 million for projects outside India. As a follow up in the July Meeting of Foreign Ministers' at Islamabad, food security related programmes were discussed but the detailed modalities are to be worked out before the forthcoming Dhaka Summit.

At this point, it is important to realize the relevance of a combination of strategies at the regional level that would enable national governments to manage food and nutritional security and poverty alleviation programmes in a larger perspective. In this discussion paper an effort is being made to delineate some contours of such a strategy. In this context, possibility of regional trade as a source of managing the food security should be explored. Since most of the member countries have opted for removal of QRs and have liberalised the agricultural trade, such policy initiatives may provide a ready market for small and marginal producers of various agricultural commodities. This would eventually provide employment in the field and in the market, thus boosting income and food distribution across the region. Dorosh (2001) has shown how rice import liberalisation in Bangladesh has helped in stabilising the rice prices in Bangladesh even in the adverse weather conditions.

It is therefore important that Asian countries should evolve a trade regime in agricultural products which could fully take into account their particular needs. The regional cooperation also would have to work for generating income through expanding range of economic opportunities. In this endeavour, it is important to identify exact role of regional and sub-regional cooperation for addressing key constraints in marketing the agriculture output of the region, generating income in the rural areas and ensuring market access with stability in the international enterprises. In this paper, an effort has been made to discuss some of these issues. Section II discusses the broad commitments in the Asian region especially by the ASEAN and the SAARC on food insecurity and poverty reduction. Section III attempts to assess specific aspects of regional and sub-regional cooperation in four different areas. Conclusions are drawn in the last section.

II. Approach to Food Security and Poverty by Regional Groupings in Asia

Almost all the regional trade groupings have shown keen interest in tackling the whole issue of food security and poverty alleviation. The NAM meeting at Kuala Lumpur in Malaysia also considered one of such proposal. It was mentioned that conservative estimates of capital flows in recent years indicate that even a token tax of a quarter per cent could generate annual revenues of the order of $300 billion.[3] If this were to form the corpus of a Global Poverty Alleviation Fund, one may make dramatic progress towards the objectives, which were outlined at the Millennium Development Summit and the World Food Summit. It is also interesting to see how these issues are being addressed at the regional groupings like ASEAN and SAARC.

It may be relevant here to analyze whether regional trade in South Asia would strengthen the efforts being made towards ensuring food security in the region in terms of either enhancing the domestic availability or in terms of reducing the supply variability. This would largely have to be assessed in terms of trade creating ability of such an integration, especially in the agriculture sector. The intra-SAARC trade, at present, is a tiny 3.8 per cent of the region's total trade. The overall trade via third countries, like Singapore and Dubai, is estimated at $1.5 billion a year.[4] In the region, SAFTA would eventually replace SAARC Preferential Trading Agreement (SAPTA) of 1993 for trade liberalization, on a preferential basis. However, for sometime both would co-exist. SAFTA moves the region to higher levels of trade and economic cooperation by "removing barriers to cross-border flow of goods. It provides Bhutan,

Bangladesh, Maldives and Nepal - the Least developed countries (LDCs) - special and differential treatment "commensurate with their development needs." It bills India, Pakistan and Sri Lanka as "Non-Least Developed Countries" (NLDCs).

ASEAN has undertaken several initiatives to address the social impact of the recent economic and financial crisis and to deal with the problem of poverty. Regional cooperation in human capital development focuses on the sharing of best practices in and capacity building for employment promotion, manpower planning, skills training, social monitoring, and design of emergency social safety nets. These projects are being implemented in the frameworks of the ASEAN Plan of Action on Rural Development and Poverty Eradication and the ASEAN Action Plan on Social Safety Nets to ensure that measures are taken to protect the most vulnerable sectors of the communities.

With all ASEAN countries having acceded now to the Agreement on the ASEAN Food Security Reserve, the total earmarked quantity for the ASEAN Emergency Rice Reserve stands at 87,000 metric tonnes. Total rice production in the ASEAN region in the 1998/99 which was around 86 million tonnes, exceeded the total consumption demand by 14 per cent. ASEAN has also established the ASEAN Food Security Information Homepage to promote information exchange on food security.[5]

Such concentrated efforts are lacking in SAARC. A meeting of SAARC Agricultural Ministers was held in Islamabad, Pakistan, in 1996, which strongly underscored that while national efforts must continue to remain the main element of any strategy to eradicate hunger, it is equally important to forge a strong global coalition for ensuring food security. The coalition must implement effective steps at all levels - international, regional and national to promote food security. The SAARC Agriculture Ministers also resolved that comprehensive actions must therefore be taken to increase agricultural production through enhanced investment, effective utilization of appropriate technology, improvement in soil fertility and the optimal use of water resources.

At the international level, SAARC collectively supported the Rome Declaration on World Food Security and the World Food Summit Plan of Action.[6] This has been further supported by the social charter adopted at the 12th SAARC Summit at Islamabad. The wider goal is to ensure the adequate and sustained production and distribution of food so that adequate food is available for all at

reasonable prices at all times with special provision for the chronically undernourished, underprivileged and other vulnerable groups of society. The SAARC Summit 2002 called on the donor countries, international financial institutions, as well as UN Specialized Agencies, including FAO, to support, facilitate and encourage transfer to and access by developing countries of new farming technologies through preferential terms and concessions.

Later at the Declaration of the Eleventh SAARC Summit held at Katmandu in January 2002, the Heads of State or Government expressed their firm resolve to combat the problem of poverty with a new sense of urgency to address the widespread food deprivation and malnutrition in the region. In a follow-up preparatory meeting to the 'World Food Summit: Five Years Later', the SAARC Food and Agriculture Ministers reaffirmed their commitments to the Rome Declaration on World Food Security and the World Food Summit Plan of Action, adopted at the World Food Summit in Rome in 1996 and also towards the decisions of the UN Millennium Summit 2000.[7] The idea proposed was to ensure access of SAARC to the various developments in the agricultural sector for attaining the goal of food security for the people in South Asia within the shortest possible time

There are two important regional-level SAARC initiatives for poverty alleviation that need to be mentioned. The Report of the Independent South Asian Commission on Poverty Alleviation (ISACPA) was presented at the 12th SAARC Summit in early January 2004 in Islamabad, Pakistan. The 11th SAARC Summit at Kathmandu had also directed the Council of Ministers to review, on a continuous basis, the Regional Poverty Profile to be prepared under the SAARC Secretary-General with the support of related UN agencies and other institutions. The SAARC Regional Poverty Profile 2003 has already been published and it brings out important lessons from the regional poverty situation.

Work on the second issue of the SAARC Regional Poverty Profile 2004 is underway.[8] However, as mentioned earlier, a more integrated approachs needed to address poverty in South Asia. This calls for devising pro-poor growth and development policies that are more effective.

III. Food Security and Intra-regional Trade

In recent years several studies like Dorosh (2001), Goletti (1994) have placed empirical evidences to show how increased trade has helped in ensuring food security. Dorosh (2001) especially establishes the point that after the poor

harvest of 1997 and flood of 1999, private traders took advantage of the agricultural trade liberalization and imported more than thousand metric tonnes of rice which could augment domestic supplies. Goletti (1994) traces out the reforms in the food grain sector leading to trade liberalization and allowing more space for the private sector participation. This helped in the integration of domestic markets and thus more nets for price shock absorption. In this context the regional cooperation in South Asia needs to focus on food security related programmes in the context of managing changes catalyzed by global and regional economic integration and agricultural trade liberalization.

Though South Asia in the last decade or so has come out from the inward-looking import substitution policy, intra-regional trade as an instrument for ensuring food security has not been adequately explored. Intra-regional trade in South Asia has been very low and unstable. Though value of agriculture trade has gone up in absolute terms, the share of agricultural output in total trade has declined. However, the import of food in countries such as Bangladesh, Nepal, Bhutan, Pakistan and Sri Lanka was continuously high through out the 1990s on account of weather related cyclical fluctuations. In case of Bhutan and Pakistan this has been as high as 20 per cent of the total imports. In case of Bangladesh and Sri Lanka it hovered around 15 per cent while in Nepal it was roughly around 10 per cent of total imports. Table 1 summarizes the patterns of imports in the South Asian countries over the last few years in terms of its origin. It is apparent that the intra regional trade in agricultural commodities is highly volatile. In some cases this volatility is directly related to the overall trend in the agricultural imports. For instance, in case of Maldives and Nepal the overall decline in agricultural imports during 1999-2001 had its shadow on the imports from the region. However, both these countries have increased their imports from outside the region though the exports from these countries have largely been targeted to the region.

In case of Bangladesh, despite the continuous growth in total agricultural exports, the share of intra-regional export declined continuously from 5 per cent in 1998 to 1.5 per cent in 2000 with marginal increase in 2002. Similarly, in the total agricultural imports, Bangladesh's dependence on the region gradually declined from 42 per cent of imports in 1998 to 38 per cent in 2002 (Table 2). In case of Pakistan and India both exports and imports to the region have declined over the years while in case of Sri Lanka agricultural trade has consistently gone up. While Sri Lanka's exports have gone up from 6 per cent in 1998 to nearly 8 per cent in the year 2002, the imports have increased from

Table 1: Share of South Asian Agricultural Imports in Intra-Regional Trade

	Value of Total Agricultural Trade ('000 US $)			Value and Share of Intra Regional Trade in total(% share)		
Imports	1998	2000	2002	1998	2000	2002
Bangladesh	1424745	849822	1110196	595518	249663	432668
				41.80	29.38	38.97
Bhutan	33116	33116	33116	32064	32064	32064
				96.82	96.82	96.82
India	3344555	2246083	3286849	307505	150708	155711
				9.19	6.71	4.74
Maldives	76837	80594	76025	24096	25602	27020
				31.36	31.77	35.54
Nepal	116398	177672	177672	40867	69415	69415
				35.11	39.07	39.07
Pakistan	1504096	1096804	1144248	73234	115962	51864
				4.87	10.57	4.53
Sri Lanka	819333	776452	855650	192339	197346	242570
				23.48	25.42	28.35

Table 2: Share of South Asian Agricultural Exports in Intra-Regional Trade

	Value of Total Agricultural Trade ('000 US $)			Value and Share of Intra Regional Trade in total(% share)		
Exports	1998	2000	2002	1998	2000	2002
Bangladesh	360123	467628	393601	17500	7404	6920
				4.86	1.58	1.76
Bhutan	14990	14990	14990	14888	14888	14888
				99.32	99.32	99.32
India	6099882	6245715	6809506	711302	471329	685857
				11.66	7.55	10.07
Maldives	56502	40547	55305	12723	13553	13854
				22.52	33.43	25.05
Nepal	35294	70868	70868	32417	69955	69955
				91.85	98.71	98.71
Pakistan	1025163	715973	809029	271443	75468	52745
				26.48	10.54	6.52
Sri Lanka	950317	988616	983851	62496	50171	77896
				6.58	*5.07*	*7.92*

23 per cent in 1998 to 28 per cent in 2002. The export basket of South Asia reflects the growing diversification of agriculture, which is moving towards commercial and high value crops. Even within cereals the specialization is more towards HYV rice and wheat.[9] Some countries in South Asia have evolved their own diversification strategies. It has been found that Nepal has expanded in crops like lentil and pigeon pea while Pakistan has attached greater priority to chic pea. However, area under fruits and vegetables has expanded considerably in all the countries[10].

Informal trade also plays an important role in the South Asian region. They informed trade has expanded. Several policy initiatives have been launched to bring it in the formal stream of economic relations, but still it has been flourishing over the years. Studies conducted at Research and Information System for the Developing Countries (RIS) and under the South Asia Network of Economic Research Institutes (SANEI) have shown the magnitude and direction of informal trade. It is clear from these studies that agricultural commodities occupy an important place in the informal trade.

In case of India-Bangladesh informal trade food and live animals occupy 59 per cent.[11] The magnitude of the informal trade is estimated to be somewhere around $299 million. The airborne informal trade from India to Sri Lanka was estimated to be $161 million (2000-01) of which agricultural commodities accounted for almost 4 per cent. While the magnitude of seaborne informal imports in India from Sri Lanka were estimated to be of $2.5 million of which spices accounted for 23 per cent.[12] Similarly, the informal trade from India to Nepal was estimated to be $196 million of which processed food accounted for 16 per cent and unprocessed food 14 per cent.[13] In case of Pakistan the trade is estimated to be close to $1 billion while that for Bhutan is $33 million. Out of this the exports in the agricultural sector occupies 37 and 47 per cent respectively.[14]

Thus the SAARC countries need to evolve an effective regional trade regime in agricultural products for ensuring better market access for their produce. The region also needs to undertake measures which are essentially trade facilitating but go beyond the usual trade framework for meeting the food security targets. For instance, the region lacks mechanisms like marketing chains and other resources for which regional cooperation may be put in place. As South Asia is dominated by small farms (80 per cent are small farms with average size less than 0.6 hectares) and they are quite competitive as far as the production costs

are concerned. Their disadvantage is in terms of high transaction costs resulting from low volume of surplus and poor infrastructure.[15] Thus regional efforts to explore ways and means for ensuring access to distribution chains may help a great deal. In this regard, technology cooperation for value addition is also essential. Similarly, while highlighting the importance of promoting agriculture, indigenous skills, and small scale and cottage industries to address the rural poverty, it is essential to enhance cooperation in agricultural research and extension. The adoption of improved agricultural technologies and farming practices can have direct impact on household food security provided they are suitable to the poorest farmers and generate net income growth. In some of these initiatives private sector can well be invited to be part of the various ventures.

IV Regional and Sub-regional Cooperation for Food Security and Poverty Alleviation

It is important to understand how regional cooperation can address some of the specific challenges faced by South Asia in addressing major constraints in the agriculture and rural sector. In this section, an effort is being made to identify some of the key areas for such cooperation.

IV.1 Regional Cooperation for Securing Better Market Access and Better Returns on Produce

IV.1.1 Overcoming the Non Tariff Barriers

Among the various concerns of the developing countries related to trade and environment, the one that has generated a lot of debate is the use of stringent environmental standards as non-tariff barriers against trade with developing countries. There are countries in Asia, which have experienced losses in exports because of difficulties to comply with certain sanitary and phyto-sanitary (SPS) standards in the import markets.[16] LDCs in the region such as Bangladesh had to bear the cost of upgrading sanitary conditions for frozen shrimp industry to satisfy the EU and the US hygiene requirements.[17] It is estimated that $18 million was spent to upgrade plants in 1997-98. The total compliance cost that is required to maintain Hazard Analysis Critical Control Points (HACCP) is estimated to be $2.2 million per annum.

In this regard avenues may be explored to overcome these impediments to the trade. Though SPS Agreement of WTO emphasizes on countries to participate in the process of formulation of international standards at Codex Commission and such other agencies but it becomes difficult to participate in the meetings

as cost of participation is high for developing countries. It is often observed that the developing countries have to make extra ordinary efforts to lobby in favour of or against any particular standard proposed or rejected by developed country groupings. The possibility of joint participation and taking a common stand by all countries of the region may be more effective strategy. Similar approach may be evolved towards HACCP and for working out equivalence related issues.

The HACCP-based approach is currently being incorporated into the new hygienic codes under development by the Codex Commission. Such a safety management systems approach is also being insisted upon by many countries including USA, Canada, Australia and many members of the European Union both in the domestic and overseas trade at present for more risk prone products such as marine, meat, poultry and dairy.

The concept of equivalence has been recognized in the SPS Agreement and is also being encouraged at the international level by the Codex Alimentarius Commission with a view to using pooled resources more effectively, avoiding duplication of inspection and testing, and ensuring that health and safety requirements are met effectively. These also serve as an important means of facilitating trade by recognition of the standards and certification systems of the exporting country to provide for an equivalent level of protection against health risks as those of the importing countries and this would also lead to reduced rejection rates and provide for reduced inspection of export products in overseas markets. Such agreements could be signed between the importing country and the SAARC countries as a group – a form of regional agreements for recognition of the equivalence of specified SPS measures. In this regard, Regional Eco labels may also be considered to overcome high cost of certification.

IV.1.2 Cooperation for Joint Marketing

Liberalization of trade and investment regime at the regional level should facilitate restructuring of the enterprises by making them more efficient. There is thus a need to explore possibilities for joint marketing strategies at the regional level. This may include promotion of joint ventures between regional commodity exporters for quality packaging and marketing and value addition. The commodity may include tea, coffee, jute, cardamoms, basmati rice, etc. which are currently exported in bulk and are subject to low unit value realization. This would also promote branding and marketing of products. In this regard,

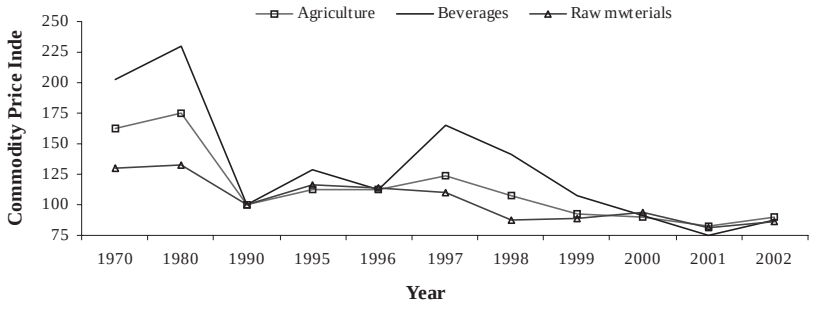
formation of regional consortia by the exporters may be considered as they may think of taking over a few marketing and distribution chains in the developed countries. This consortium may also facilitate mobilization of resources for such a takeover.

The need of such a consortium becomes more profound as it has also been found that small farmers have not been able to bargain effectively for a better price in the wholesale market. Absence of infrastructure and improper management coupled with the lack of market intelligence and credit systems has made these farmers more vulnerable.[18] This is more so in the cases of perishable products such as fruits, vegetables and flowers. Regional cooperation in this area for marketing may help in overcoming some of these hurdles. Such a consortium would help reduce the post harvest losses due to lack of marketing strategies and networking.

IV.1.3 Ensuring Stability in Commodity Prices

There is a continuous decline in the agriculture prices especially in the South Asian region. As Figure 1 shows, the commodity prices in the year 2002 are far below their level of prices in 1970s. The most affected commodities are tea and coffee which have adversely affected export interests of India and Sri Lanka. The declining prices of commodities have exerted a significant squeeze on the earnings of these countries. This has been especially severe for the primary commodity exporting and oil importing economies.[19] These adverse external developments can easily lead to a breakdown of the growth process and may further push these countries towards a negative growth rate. The international trade regime should provide extra attention towards these developments and support the affected countries as they lack the resources to cope with falling

Figure 1: Trend in the Price Index of Primary Commodities (1990=100)



and unstable prices. Since the increase in the domestic farm support in the industrialized countries largely from 1998 the commodity prices have crashed tremendously. The Official Development Assistance (ODA) from OECD has also continuously declined in the 1990s, which was a major source of foreign exchange for LDCs.

In several Asian countries, huge stock of food is preserved to tackle uncertain weather conditions. However, due to lack of investment in infrastructural services a large amount of grain is lost. An alternative to public stocks could be to use private commodity exchanges either to contract for forward supplies of grains at a fixed price at a future date or else to buy the tradeable auction to acquire grain at a given price at some future time. If sub-regional cooperation in Asia is encouraged in this direction, then it may have enough buyers and sellers which may facilitate functioning of such exchanges which would provide flexibility of management with no loss of grains. This may also help in price stabilization of their produce.

IV. 2 Promoting Joint R&D for Food Security and Poverty Alleviation

IV.2.1 Advancing Research for Productivity/ Yield Enhancement

In last decade or so the stagnation in productivity of major food crops has become a cause of concern in the rural areas. Several national and international research agencies are already working in this direction. However, there is scope for initiating joint research projects at the regional level to address these concerns.

Biotechnology offers several ways by which average yields can be directly increased. One is through improvements in the “architecture” of the plant to enable it to absorb more photosynthetic energy or convert a larger portion of that energy into grain rather than stem or leaf. This was, in essence, the “Green Revolution” approach of breeding dwarfing genes into plants so that the plants could make better use of fertilizer and water and produce more grain. This approach is being pursued again in the new rice architecture being studied by the International Rice Research Institute (IRRI), as well as by some private sector interests undertaking research in the fundamental mechanisms that control plant architecture. Another approach, for climates where this is useful, is to modify the plant for a shorter growing season by enhancing its efficiency in the use of fertilizer, pesticides and water. Molecular hybridization has also been demonstrated to increase the productivity of several crops, including rice and wheat, by

15 to 20 per cent. But it must be noted that the on-farm yield improvements observed so far have been for transgenic varieties developed to reduce on-farm production costs rather than for the purpose of increasing yields. However, it is not yet clear whether yield increasing experiences so far reflect a one-time advance, or the first stage of a continuing increase in yields. In this regard, regional cooperation may be considered as there are many new technologies that will, over time, be applicable for plant improvements. The most reasonable conjecture is that the new technologies will continue to provide yield increases, which would benefit all the stakeholders and may be introduced on a regular basis. One may be sure that each of the associated yield increases will be somewhat more than historical trends.[20]

IV.2.2 Establishing Regional Gene Banks

In recent years increasing evidence of commercialization of products based on biodiversity and related knowledge systems have come to light. A major contribution to this trend has been the rapidly expanding biotechnology industry. An associated development has been the increase in the number of patents and other forms of IPRs based on biodiversity and traditional knowledge system. As a result of these developments it has become imperative for the developing countries to ensure that they get their share of benefits arising from the commercialization of biodiversity and related knowledge system. In light of the above, the Asian countries should aim at establishing an IPR Data Bank, which should have two functions.

In the first instance, the Gene Banks should develop detailed documentation of the accessions that they have made. Secondly, the Gene Banks should coordinate their activities with the IPR granting authorities in the countries of the respective regions so as to keep an account of the IPRs based on biodiversity and the related knowledge that have been taken. The information generated should be made publicly available through internet in order to support all organizations engaged in the policy making in IPR and also in technology and product development. FAO and other agencies have helped in capacity building for conservation of germplasms in the region. This needs to be further strengthened so as to make indigenous application of biotechnology in these countries possible. The Asian region needs to develop mechanisms to pool and access the germplasms for cereals and other primary crops and jointly work for improvement of these varieties. This would save on the cost of establishing additional *ex situ* facilities and would also facilitate tapping of R&D synergies in the region.

IV.2.3. R&D for Nutritional Enhancement

There are many possibilities by which new technologies may help in improving the nutritional value of cereals by enhancing the presence of special nutrients or chemicals. The Asian countries should come forward to tap the potential of biotechnology for addressing food and nutritional insecurity related challenges. In this endeavour, the relationship between the public-private research institutes assumes key importance. A commercial example is the increase in the levels of biotin (vitamin H) for application in animal and human nutrition. Biotechnology has been targeted at rice for improving Vitamin A content in rice to overcome the related iron deficiencies.[21] Vitamin A deficiency, which also interferes with the bio-availability of iron, affects 413 million children worldwide, i.e. 7 per cent of the world population. Rice endosperm does not contain any pro-vitamin A. However, through different techniques transgenic plants carrying the genes produced seeds with yellow endosperm have been developed. The biochemical analysis has confirmed that this yellow colour indicates the presence of pro-vitamin A.[22] Public sector breeders have also been looking into similar special purpose applications, such as inserting genes so that vitamin A and iron becomes available through the consumption of rice.[23] Regional cooperation in this area may further strengthen the efforts being made for nutritional security through the management of micronutrients.

IV.2.4 Promoting Technical Work on IPM for Sustainability

In past few years, the twin agricultural problems which have received constant attention in developing countries are the rising cost of agricultural production and environmental pollution caused by agricultural inputs.[24] Increase in pesticide use has been one of the major contributing factors in this regard. The global pesticide market is now being estimated at $ 38 billion, of which the Asian market accounts for roughly $ 7 billion.[25] The adverse social and economic implications of chemical pesticides are very well documented in most of the international environmental reports. In this context, integrated pest management (IPM) has been a widely recognized alternative technique towards the development of an environmentally sustainable agriculture. A significant advancement in biotechnology has been the integration of traditional techniques with modern technology for production of biopesticides.

Biopesticides are being produced by a handful of private companies and, at present, it accounts for only three to four per cent of the global pesticide market. In this regard, experience of cocoa producers from Indonesia is worth noting. Cocoa holds a great value for the livelihoods of

the countless villagers who grow it in the countries like Indonesia where it is the second largest produce. The farming is concentrated on the island of Sulawesi where cocoa is mainly grown on plots of 1.5 hectares or less. The supply of cocoa beans to American chocolate manufacturers was valued at over $140 million, and about 85 per cent of them came from Sulawesi. In the year 2000, the infestation of the cocoa pod borer (CPB), a pest that has destroyed up to 40 per cent of the Sulawesi crop, threatened the livelihood of the smallholder farmer. CPB infestation also reduced the quality of cocoa. However, timely access to techniques like Integrated Pest Management (IPM) has helped farmers to retain their export share without compromising with the quality and environment.

This could become possible with the formation of a group called 'Success Alliance' comprising of importers and donor agencies. South Asian countries could also think of a similar network. Some of the non-profit organizations like ACDI/VOCA have also played an important role in Indonesia. So far more than 37,000 farmers have been trained in integrated pest management. Crop losses have dropped by nearly 30 per cent, and incomes have increased by an average of $541 per year. Due to this success and the strong partnership with the chocolate industry, ACDI/VOCA has received USAID funding to train an additional 40,000 farmers and to expand the activities to a new province West Papua.

The Alliance has also received funding from the Dutch government to train farmers and traders on grading and quality selection and on farmer organization and leadership, so that farmers can begin group selling and buying of inputs. Under the "Success Alliance" project, ACDI/VOCA's private sector partners, including Hershey's, ADM and Master foods, have agreed to purchase at least $10 million per year in cocoa beans from Sulawesi. This guarantees a market for smallholders' cocoa, and ensures chocolate companies' access to more and better beans for their products. The "Success Alliance" in Indonesia has also served as the model for new projects in the Philippines and Vietnam. This may also be considered for the rest of the Asian region.

IV.2.5 Bridging Digital Divide

The recent introduction of third-generation mobile technology in Asia has further raised the concerns about the widening digital divide as countries in South and Southeast Asia, are still struggling just to get a dial tone.[26] In Bangladesh, there is one telephone line for every 100 people, while in India and Pakistan, the ratio is only a little better. Further, access in wireless is still

more limited. It is difficult to have high-speed communication in China, India and Indonesia. Some of these countries do not have the resources to get the equipment and develop the applications.

This also limits the application of new trade instruments like e-commerce. The importance of e-commerce is that it allows enterprises to become efficient in all the stages of their production and distribution processes. While more and more people are using the internet which is a prerequisite for e-commerce, the increase is not indicative of increase in e-commerce. The importance of e-commerce is that it allows enterprises to become efficient in all the stages of their production and distribution processes. According to the International Telecommunication Union (ITU) the number of Internet users worldwide stood at 500 million people at the end of 2001 while in South Asia the number is very low. In India the total number of internet users is 7 million and 1 million in Pakistan. The number in other South Asian countries is just in few thousands. Therefore, there is an urgent need in South Asia for developing a regional information infrastructure which may be called as South Asia Information Network that could facilitate the unique ability to market goods and services, provide consumers with timely information and an additional means of guiding consumers to the producers.

The South Asia Information Network may also work towards the development of small businesses so that they manage their finances and expenses online and place orders online through business-to-business portals where farmers and producers may ensure getting best prices. However, this may require additional resources, expertise and broadband connectivity to take full advantage of the information technology. The agenda at this network may also include developing software packages in the regional languages which then may be made available to farmers and other marginal sections of the society. Also to develop low cost equipment/computers, which can be used in the rural areas. Similarly, development of graphic interface/touch screen to make them accessible to relatively less educated rural folks.

IV. 3 Encouraging Exchange of Experiences and Expertise

IV.3.1 Community Food Banks

Apart from encouraging community boards, it may also be worth attempting to establish Community Food Banks (CFB) at the village level itself. The CFB can be started with the help of the local authorities at the village level, with initial food supplies coming as a grant or as a support for micro-credit programme.

Later, such CFBs can be sustained through local purchases and from continued Government and international support for food for eco-development and food for nutrition programmes. A concept on these lines has been developed by Rashtriya Mahila Kosh (RMK), New Delhi and MS Swaminathan Research Foundation at Chennai in India.

It is envisaged that the CFBs may also help in overcoming the problems like malnutrition and ensuring best practices for sustainable development. The CFBs are also gender sensitive in their approach and thus may also help in fostering social harmony. A community based food and water security system can help foster a people centered and people controlled method of ending food insecurity at the level of each individual. The CFBs can be entrusted with some pronounced objectives. This may include the delivering of fortified food for overcoming under and malnutrition. Food for eco-development with particular reference to the establishment of water banks, seed banks and gene banks, land care, control of desertification and afforestation.

These activities will relate to nutritional support to old and infirm persons, pregnant and nursing mothers and infants and pre-school children. This would also relate to the immediate relief operations following major natural catastrophes like drought, floods, cyclone and earthquake, as well as to meet the challenge of seasonal slides in livelihood opportunities. These objectives may be attended through the different self-help groups of local women and men under the overall guidance of a community food bank council under the local bodies. This would facilitate development of a self-help revolution in combating hunger.

IV.3.2 Work on Microfinance by SEWA and Grameen Bank

In South Asia two important organizations Self Employed Women's Association (SEWA) and Grameen Bank have worked for popularizing microfinance as an instrument by empowering community especially women in rural villages. As discussed, it is important to link up any effort on community food bank with microfinance. A sharp focus would have to be on women as they share the larger burden of food insecurity. It is often observed that several women workers and producers are involved in production, trading and the service sector but they do not have access to financial services. Self-employed women face major financial problems of lack of working capital and non-ownership of assets. As a result often their productivity declines.

One of the key features of microfinance programme, as introduced by SEWA is the prevalence of client friendly delivery systems, where clientele is made up

of economically active low-income women. They also introduced doorstep banking and thus further expanded the range of economic activities. The bank also operates through extension counters in the city. In order to decentralize the activities of SEWA Bank further and effectively reach integrated financial services to clients, SEWA Bank's "hand holder" team was developed in 2000. Besides offering savings, loan and insurance related financial advice, they also counsel women to plan for the future, advise them on SEWA and SEWA Bank's services and products and facilitate their linkage to SEWA's services. In other words, they provide all round advice and friendship to clients at their home or place of work. In several rural areas of Bangladesh, Grameen Bank has strengthenedthe microfinance programme by providing credit to small and marginal farmers for marketing of their produce. They also collect savings and loan repayments, as well as paying visits in case of over dues or when a pre loan check visit is needed, prior to sanction of a loan. They know their clients' circumstances intimately – a very valuable necessity in the microfinance business.

The work of SEWA and Grameen Bank makes it clear that banking with poor is viable and peoples' ownership of the organization is important along with that poor women can save and have the capacity to repay loans even at market rates of interest.[27] But the poor need Suitable Delivery Mechanisms as door-to-door services, simple procedure, need for assistance in banking operation and matching of collection schedule with cash flow. Further, it is found that continuous contact is the key for success. There is need for information sharing and training, financial counselling and integrated financial services.

IV.3.3 Rural Technologies/Communications

Grameen Bank of Bangladesh has also supported communication technology which may well be used in the rural areas across the region. In Bangladesh, where average incomes is less than $200 per year particularly in rural areas one might not see it a promising territory for a mobile phone company.[28] But Grameen Phone has shown otherwise. The Grameen Bank has pioneered a new model for rural telephones based on shared access – one phone per village – operated by a local entrepreneur. The bank loans a villager, usually a woman, the money to buy a mobile phone; she sells access to the phone to her neighboring villagers, who pay for calls in cash. As documented in an independent study by the Canadian International Development Agency and a more recent analysis by the World Resources Institute, such village phones have been a commercial success, each phone generating revenues that average $90 per month – twice what the

company earns from its urban mobile phones. The pent-up demand for telephone service and the ability and willingness of poor people to pay for it have turned out to be enormous. Not only are the phones profitable; they have also been a social success, providing economic benefits and improving the lives of villagers in ways that put most antipoverty programmes to shame. Incomes of the phone entrepreneurs have risen sharply. And phone calls can now substitute for a trip to the city that would cost villagers ten times as much as a call. The village phones have enabled farmers to get fairer prices for their crops, and allowed people to discuss important occasions with relatives.

IV.3.4 e-Governance Applications

The advent of IT as a tool for delivery of products and services has also brought a fundamental shift in the manner of public governance with the emergence of e-governance.[29] Information technology can empower rural people by allowing access to information and by providing tools for analyzing it. In agriculture, for instance, the technology may help in keeping the information about the land records readily available for farmers. This may also provide details about market demand, prices, rainfall conditions and details about various inputs required on the farms.

The Gyandoot project (Messenger of Information), attempted in Madhya Pradesh, India is one of the prominent examples of e-governance for rural areas.[30] The project was proposed as a low cost, self-sustainable and community owned rural intranet project on the G2C model (government to citizen). During the course of the project computers in 20 village centres were wired through a intranet network. These are being managed by local youth, on commercial lines, without any salary and stipend. This project has helped farmers in various ways for example, farmers in the Bagadi village were getting a rate of Rs. 300 per quintal from local trader for their potato crop. Through the intranet the farmers found that the current rate in the Indore market was Rs. 400 per quintal. They now take their produce to the Indore market directly. Similarly, sometime back epidemic among cattles in a particular block in this village was immediately informed in the whole district within half an hour. This could save several lives and helped farmers in coping up with the adverse production conditions.

IV.3.5 Sharing Experiences for Meeting Food Standards

The regional cooperation could be effective in sharing costs of compliance with the emerging environmental standards. The regional cooperation could also cover creation of regional institutional infrastructure such as test laboratories where the costs are high. The geographical contiguity in the region would

facilitate the optimal utilization of such infrastructure. Joint training programmes and other measures to build local capacity would also be fruitful. The regional cooperation could cover joint development of products which meet the new regulations and hence sharing the costs.

In this context, a case in point is a highly successful project for development of aflatoxin risk free groundnut jointly conducted by the Indian Council of Agricultural Research and the UNDP. This project successfully brought down the aflatoxin levels to 0-5 PPB in 80 per cent of the samples at the end of three-year term project in a high risk area of Andhra Pradesh, India against the permissible limit of 15 to 20 PPB in developed countries such as Australia, Canada, and USA.[31] Such projects could be fruitfully undertaken at the regional level. Similarly, UNCTAD along with ESCAP supported a project in Bangladesh to help marine industry cope up with new standards.[32] The project has facilitated and effectively transferred new technologies in fish handling, processing, packaging, quality control and marketing. These were done through various training programmes, viz. training programme in Fish Handling, Quality Control and Value-Addition, HACCP Verification and Audit Training Programme, Training Programme in Laboratory Techniques and Advanced Training in Laboratory Techniques. The training and exposure imparted during the programmes enabled the Bangladesh industry to address various product safety related issues through the implementation of new quality/safety assurance systems such as HACCP.

IV. 4 Exploring New Opportunities

IV.4.1 Organics

The market for organics has recently expanded very fast. The United States is the largest single-country market for organic foods, with $4.2 billion in sales for 1997 (Table 3). The organic food market in the EU is estimated to be worth $4.5 billion. In Europe, Germany ($1.6 billion), France ($508 million), and the United Kingdom ($445 million) have large organic retail sales. Consumer preference for organics is strong throughout the EU, with 20 per cent to 38 per cent regularly or occasionally purchasing organic foods. Retail price premiums in Europe vary between 10 per cent to 50 per cent above conventional products. Import shares are highest in Germany and the United Kingdom, which are major food processors in the Europe.

However, in this regard, some constraints have come up which needs to be addressed on priority.[33] These problems range from industrial processing to export of these products. These impediments are in the area of production,

Table 2: Market Size for Organic Products

Country	Approx. Retail Value (US $)	Year[a]	Organic Share of Total Food Sales	Import Share of Organic Sales	Average Retail Price Premium
Austria	$270 million	1997	2.5%	30%	20%-30%
Belgium	$75 million	1997	1.0%	50%	20%
Denmark	$190 million	1997	<3.0%	25%	15%-40%
France	$508 million	1996	0.4%	10%	25%-35%
Germany	$1.6 billion	1997	1.5%	60%	30%
Netherlands	$230 million	1997	1.5%	60%	15%-20%
Sweden	$200 million	1997	2.0%	30%	15%-50%
United Kingdom	$445 million	1997	2.0%	70%	0%-30%
Canada	$68 million	1995	1.0%	80%	30%
Australia	$60 million	1995	0.2%	0%-13%[b]	12%-65%[b]
China[c]	$1.2 billion	1995	6.0%[d]	0%	30%
Japan[c]	$1.7 billion	1997	1.0%	1%	20%-30%

[a] Year given is for retail value data; [b] varies by state; [c] in this country, organic includes "low chemical"; [d] based on production value, not retail sales.**Source**: American Journal for Agriculture Economics, Vol. 80 No. 5, 1998, pp. 1125-1129.

marketing and infrastructure. Certification is seen as a barrier to small growers due to its costs. Asian regional cooperation may be explored to address challenges like coming from standards which are too high and are creating unfair barrier to production and trade. In the region there is no local certification systems for organic products, and farmers have to depend on foreign certification agencies like IFOAM and SKAL. This is very expensive and is feasible for big holdings only. Regional arrangements may reduce the cost of certification. Some regional agencies may also consider launching of regional Eco labels to reduce the cost of certification.

IV.4.2 New Traits in Crops through Biotechnology

In South Asian countries, the crop production is largely rain-fed which poses several challenges for the agriculture. Joint efforts may be made at the regional level to explore possibilities for introduction of new traits in plants and crops, for instance, addressing draught and salinity resistance. In this regard, private sector partnership may be explored at the regional level. In the MDG statement, role of private sector has been identified. So far biotechnology in food grains has addressed development of a single trait only. This has mostly been herbicide and pesticide tolerance.

Recently, some companies like Garst Seeds, a subsidiary of Advanta, have developed maize hybrids, which can tolerate two different classes of chemical herbicides.[34] In the United States, currently about 20 per cent of the maize production is destined for such markets, with the production of high-fructose corn syrup and of alcohol being the largest of a number of the industrial uses.[35] Maize and sorghum are among the crops that produce a high yield of starch/ energy per hectare, and are the leading temperate zone crops for this purpose. In essence, it has become possible to vary the feed or starch production characteristic of important crop plants within wide bounds, making it possible to use almost any starch producing plant for many industrial purposes.

These developments may have significance for rice and other cereals, which are more widely grown in developing countries. To the extent that imported cereals are priced higher than those domestically grown, using starch and other traits from domestically produced bio-engineered cereals in developing country industries could lead to costs savings and boost farm incomes. Another important possibility is genetically altering crop plants for the production of proteins of pharmacological significance. Some of the patents in this area have wide applicability to different products, including for example, to the production of

maize. New varieties of transgenic maize that contain higher oil levels to boost energy and improve feeding efficiency or have characteristics to reduce phosphorous in animal waste are examples that are currently under development.[36] In an interesting development, that is certainly relevant to feed grains, is a patent covering the insertion of a protein into plants, which when eaten would facilitate control of animal parasites.

V Concluding Remarks

The post-Green Revolution agriculture production scenario seems to pose several challenges for food security in developing countries. It is high time that agricultural R&D plans prioritise investment on new technologies so as to rightly balance or rather supplement the traditional techniques with new technologies. In this regard, regional and sub-regional programme would have to take note of possibilities of cooperation in the areas such as establishing gene banks, promoting sustainable aquaculture and ensuring integrated pest management. The other side of technology management comes up from the growing literature on digital divide especially in context of South Asia. The projects like 'Gyandoot' shows that the e-governance would be the key issue in rural areas for providing right information at the right time for marketing of agriculture produce in the days to come.

Since the launching of several initiatives in the South Asian region for overcoming poverty and malnutrition in the early 1990s some success has been achieved but it is very far to get into any kind of complacency. The world has some 842 million people suffering from hunger of which 798 million, that is 95 per cent, live in the developing world. Approximately, 503 million, accounting for a 63 per cent of the under-nourished people in the developing countries of the world are in Asia and the pacific region and of which 37 per cent are in South Asia.

In this regard, though the region has shown keen participation at the recent global commitments like the Doha Development Agenda (DDA) where the international community ensured that the tackling of poverty be part of the broad trade agenda, followed by the various other meetings like at Monterrey and Johannesburg which later led to the launching of MDGs. However, the South Asian region faces a major challenge of building coherence among various policy endeavours especially in the realm of macroeconomic management strategies, regional integration plan and domestic agricultural policies in the context of food security management and poverty alleviation. The region would

not only have to define the role of the regional trade for ensuring food security and avoid price variability but would also have to seriously consider various measures other than trade.

The recent empirical evidence on the contribution of Indo-Bangladesh trade in stabilizing rice prices in Bangladesh even during adverse season is case in point. This should set tone for wider policy perspectives in the region. Similarly, measures for promotion of border trade should be viewed for wider economic development at sub-regional and regional level as this may help in widening the scope of complementarities that may exist in the region. In this regard, efforts may be made for improving the infrastructure related to transit transport, administration and trade facilitation.

At the national level other policy measures include increased investment in research, extension, rural infrastructure, expanded credit availability, input subsidies and other financial incentives. It is also important that at national level there is deliberate attempt on the part of policy planners to follow the push the price down approach so that food security is not adversely affected the price movements. In this regard, regional trade may play an important role. For this insights may be drawn from national experiences like, for instance, in India commodity futures is increasingly becoming popular among small cultivators for hedging against high or low prices. Commodity derivatives exchanges have created a resurgent trade platform integrating farmers, traders from all over India for efficient price discovery and price risk management. Currently, commodity broking firms have become aggressive in tapping potential farmers' participation in future contracts. To increase the reach of price risk management, brokers have started educating the farmers on how future contracts is useful on real time prices. This needs to be streamlined and strengthened through proper institutionalization mechanism. The experiences of SEWA and Grameen bank in expanding micro credit programmes in rural areas and using that as an instrument for income generation and expansion of range of economic activities are worth considering under the exchange of experiences programme for regional cooperation. But they would have to be linked with food security programmes for further success.

The other measures may include evolving a novel approach as has been attempted by ASEAN+3 in terms of ASEAN Food Security Information System (AFSIS) to facilitate food security planning, implementation, monitoring and evaluation in ASEAN. This kind of institutional approach may eventually also

help in data standardization and harmonization of statistical survey techniques to evoke similar policy response. Like in ASEAN, South Asia may also undertake more intensive programmes for greater market information to encourage efficient trading and investment in market infrastructure.

The South Asian governments should support the formation of a Working Group on Trade and Food Security which would be charged with ensuring that WTO rules and their implications do not undermine the implementation of the Millennium Development Goals (MDGs) and Plan of Action adopted at the World Food Summit. In this regard a coherent strategy may also be developed along with the cash giving food donor countries, as per the provisions of the New Food Aid Convention (1999), to promote local agricultural development through regional and local markets to use their cash contributions for "triangular transactions". This means purchasing food from a developing country for supply to a recipient country or for a local food deficient region in the same country. The South Asian countries also need to work for ensuring their market access for agriculture commodities. The twin strategy as suggested should include addressing trade restricting measures such as NTBs and evolving joint marketing strategies for their products. It has been observed that the WTO Agreements on SPS (Sanitary and Phytosanitary Measures) and TBT (Technical Barriers to Trade) are being used for protectionist purposes and thus adversely affect the trade.

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