Liberalization and Agricultural Exports of India

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Introduction

The advent of globalization, liberalization and privatization in the wake of ushering in of new economic policies have thrown up newer kind of challenges before the country that require some bold initiatives on the part of policy makers. Ironically, major changes in institutional arrangements happened at a time of crisis. For instance, India adopted the New Economic Policy in July 1991 when there was a serious financial and budgetary crisis looming large (Singh, 1998). The agricultural policy reforms have come upfront as a result of this economic liberalization in India. Even though economic liberalization programme was not primarily focused on agriculture, the strategy of reforms was aimed at creating a more favourable policy framework for agricultural development and was expected to provide a powerful thrust to growth and modernization of agriculture in future through favourable terms of trade. Earlier, despite declining share of agriculture in total GDP of India, Alagh (1998) had categorically emphasized upon increasing trends in vegetables, fruits and meat exports in the face of decline in volume of trade in food, beverages and tobacco. Even Nayyar and Sen (1994) found high and significant growth potential for income and employment in horticulture, e.g. fruits and vegetables. This was an indicator of growing significance non-traditional exports as against traditional ones.

In fact, the new policy environment was designed to create a favourable climate for agricultural output to increase. Effective exchange rate adjustment and trade reforms were expected to improve the terms of trade of tradable agriculture, make it internationally competitive and enable it to record large increases in exports and output (Bhalla, 1995). Simultaneously, freeing agriculture from internal control in domestic trade along with removal of undue protection given to the industry was expected to have positive impact on agricultural terms of trade and hence on overall agricultural production with emphasis on non-traditional commodity exports.

Under such a changing economic scenario and circumstances what prospects do the agricultural exports hold and what do the relative potentials for export of traditional agricultural commodities as against the non-traditional ones look like and what steps are to be initiated to realise such potentials are the issues raised and matters for investigation in this study. The study also traverses into domestic demand and supply aspects of various commodities with special emphasis on non-traditional ones in particular and traditional ones in general with a view to evaluate India's export trade in these commodities in the near future and direction of trade.

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Data and Methodology

Data used for this study were collected from various secondary, viz., annual publications of Food and Agricultural Organisation of the United Nations (FAO) "Trade Yearbook", FAO; International Trade Statistics Yearbook, Volume II Trade by Commodity; UNCTAD Commodity Yearbook and FAO Commodity Review and Outlook, FAO and United Nations 'Statistical Yearbook', New York, and also from various published articles, etc. encompassing the period between 1980 and 2003.

In order to assess the effect of trade liberalization on traditional and non-traditional exports from India, the entire period between 1980 and 2003 is divided into two sub-periods, i.e. period before liberalization (1980-1990) and period after liberalization (1991-2003). In this study, exponential trend equations have been fitted to the time series data obtained for various parameters in order to compute compound rates of growth that were also tested for their significance by the student 't' statistics.

The study initially evaluates the balance of trade of India encompassing the period between 1980 and 2003 and subsequently examines export trade of India in various traditional and non-traditional agricultural commodities with the extension to assessing the structural changes in share of India in Asia and world exports of these commodities in both quantity and value terms during the given 1980-2003 period. It also analyses future demand and supply scenario in some of the high value non-traditional commodity exports from India.

Liberalization and Agricultural Sector

Owing to the sheer size of India's agricultural sector and the importance of agricultural products in the consumer budget, agricultural performance and agricultural policy have an economy-wide impact. The country launched significant efforts and a march towards trade policy reforms in 1991. Earlier, it was visualized that the reduction of tariff, delicensing and encouragement to foreign investors in the manufacturing industry would promote competition, leading to efficiency and reduction in the cost of production, which in turn contribute to availability of industrial goods at real lower prices, thus, correcting terms of trade in favour of agriculture. In its wake, it was also visualized that the outflows of resources from agriculture might be arrested accruing a major gain to the agricultural sector (Sharma and Tiwari, 1993).

The new agricultural policy declared by the Government of India on 31st March 1993 suggested to provide fresh concessions to agricultural exports with a view to boost the volume of agricultural exports further. The main objective of all this process was to encourage the establishment of export oriented units in the agricultural sector. In order to propel the economy towards greater exports, sweeping changes were brought forth in the trade policy, which ranged from devaluation to abolition of Cash Compensatory Scheme (CCS) and EXIM Scripts in addition to partial convertibility of rupee. The main aim of this measure was an increased accent

on liberalisation so as to achieve not only rapid and sustained growth in agriculture but also ensure growth in the industrial sectors as well.

India's Trade Balance

In a highly competitive world market of today where every country is struggling to export some or the other commodity, how best India can meet the challenges and the needs arising from the globalization process will depend on export capabilities of the country. Because of highly diversified nature of agricultural produce, India has a unique opportunity in the free trade regime under World Trade Organisation (WTO). The key elements for strengthening the agricultural trade of the country are import substitution and export promotion measures. These two important planks if pursued logically can also help reduce the external debt burden of the country while improving it's the foreign exchange reserve position.

So far as India's trade is concerned, the scenario over the past two decades or so is not very encouraging. This is evident from the estimates reported in Table 1 with respect to imports and exports of agriculture as well all-merchandise products of India encompassing the period between 1980 and 2003.

Table 1: Trade of Indian Agriculture: (1980 – 2003)

(In Million US $)

Particulars	TE 1982	TE 1993	TE 2003	CGR (%)		
				1980-1990	1991-2003	1980-2003
Total Agricultural Exports	2826 (33.17)	3243 (16.01)	5753 (11.15)	0.02	6.12*	4.14*
Total Agricultural Imports	1762 (11.98)	1224 (5.47)	4282 (6.92)	-0.94	12.43*	4.08*
Net Agricultural Exports	1064	2019	1471	2.53	-3.44	3.66
Total Merchandise Export	8519	20260	51609	8.07*	9.39*	9.61*
Total Merchandise Import	14707	22364	61874	5.01*	10.51*	7.57*
Balance of Trade	-6188	-2104	-10265	-	-	-

Source: Estimates are based on figures compiled for various years from United Nations 'FAO Trade Yearbook', FAO

Note: 1) Figures in parentheses are the percentages to the total exports and imports
2) * - indicate significance of growth rates at 1 per cent level of probability

Though the trend over the period between 1980 and 2003 shows marginally above 4 per cent annual growth in agricultural exports with period after liberalization registering more than 6 per cent annual growth in the same, the annual growth in agricultural imports during the period of liberalization is almost twice the growth in agricultural exports during this period. As a result, the growth in agricultural imports between 1980 and 2003 has come very close to the growth in agricultural exports during this period, which stood marginally higher than agricultural import growth during the overall given period. Interestingly, while India followed export promotion and import substitution before the period of liberalization, the trend reversed in the post liberalization period as import growth expanded rapidly during this period.

Although agricultural exports registered much lower growth as compared to agricultural imports during the period between TE 1993 and TE 2003, the export trade of India in agricultural

commodities was much higher than import trade of India in these commodities during this period. Consequently, India's share in agricultural exports of Asia and world grew more rapidly during the period of liberalization (Table 2). In fact, while India showed perceptible annual growth of nearly 4 per cent in the agricultural exports of Asia and world between 1991 and 2003, this share was rather negative during the preceding 1980-1990 period.

Table 2: India's Share in Asia and World Exports: (1980 – 2003)

(Amount in Million US $)

Agricultural / Total Exports	TE 1982	TE 1993	TE 2003	India's Share (%)					
				TE 1982	TE 1993	TE 2003	CGR (%)		
							1980-1990	1991-2003	1980-2003
Agricultural Exports									
- Asia	39952 (7.88)	53784 (5.05)	71489 (3.36)	7.07	5.64	8.05	-3.02	3.78*	1.06
- World	292754 (15.10)	342122 (9.33)	459492 (6.88)	0.97	0.89	1.25	-1.94	3.45*	1.64*
Asia's Share in World (%)	13.65	15.72	15.56	-	-	-	1.12*	-0.32	0.58*
All-Merchandise Exports									
- Asia	507000	1065875	2126780	1.69	1.90	2.43	2.01*	2.24*	1.35*
- World	1938255	3665397	6677561	0.44	0.55	0.77	1.74*	3.17*	2.60*
Asia's Share in World (%)	26.16	29.08	31.85	-	-	-	-0.26	0.91*	1.23*

Source: Estimates are based on figures compiled for various years from United Nations 'FAO Trade Yearbook', FAO and United Nations 'Statistical Yearbook', New York

Note: 1) Figures in parentheses are shares of Agricultural Exports of Asia and World in their respective All-Merchandise Exports (Total Exports)

2) * - indicate significance of growth rates at 1 per cent level of probability

In due course of time, not only share of agricultural exports of India in her all merchandise exports have declined but these shares also fell sharply and steadily in the case of Asia and World. This is an indication of the fact that it is not India, which has shown falling share of agricultural exports but this trend holds good even for rest of the world. Significant expansion in India's share in agricultural exports of Asia and World during the period of liberalization is certainly a welcome trend. However, India still has a lot of catching up to do in order to effectively compete in the fast growing international market.

India's Agricultural Exports

In the present milieu, significant changes in the export strategies encompassing the agricultural sector, however, have taken place. Vertical integration of production and marketing agencies has brought about structural changes in the economy. And, in this pro-liberalization environment, the export of agricultural commodities without doubt has gained considerable strength due to their inherent export advantages. However, identification of various commodities, which are favourable for export in the light of new economic environment and examination of the role of agricultural exports in the world trade market are crucial in the changing world trade scenario. If we evaluate export trade of India in various agricultural commodities over time, we find significant changes. The past two decades reveal considerable fluctuation in agricultural

export growth of India. The estimates relating to structural changes in export trade of India in various traditional and non-traditional agricultural commodities along with rates of growth in the same during pre- and post liberalization periods both in quantity and value terms are brought out in Table 3, which also provides an insight into the changes in value of exports of commodities listed in this table in relation to total agricultural exports of India over the given period.

Table 3: Structural Changes in India's Agricultural Exports: 1980 - 2003

Commodities	Quantity Terms (in '10 000' MT)						Value Terms (in Million US $)					
				CGR (%)						CGR (%)		
	TE 1982	TE 1993	TE 2003	1980 - 1990	1991 - 2003	1980 - 2003	TE 1982	TE 1993	TE 2003	1980 - 1990	1991 - 2003	1980 - 2003
1. Cereals	70.20	89.66	799.59	-2.14	20.06*	15.27*	251.71	370.24	1436.12	1.78	12.51*	13.45*
2. Pulses	0.42	3.03	15.71	14.35*	21.08*	22.74*	2.40	17.06	75.77	16.02*	18.90*	22.88*
3. F&V	-	-	-	-	-	-	251.35	497.51	1139.39	5.90*	8.39*	7.64*
4. Coffee	8.68	11.20	16.39	1.61	4.00*	4.07*	220.66	149.81	153.57	-2.17	-1.13	0.22
5. Tea	22.09	17.15	17.78	-0.91	1.00	-1.15*	487.56	405.93	342.42	1.21	-0.54	-2.01*
6. Oilseed Cake & Meal	132.42	387.19	260.11	5.18	-4.50	4.69*	169.15	580.99	509.88	6.93*	-2.28	6.96*
7. Tobacco	9.20	7.77	12.03	-5.64*	5.78	1.84	195.99	132.76	208.94	-8.94*	6.50	1.37
8. Groundnuts	3.25	8.85	10.81	0.56	13.55	9.48*	33.84	27.53	69.82	-5.57	13.95	6.09
9. Soybeans	0.18	0.18	8.33	7.36	36.24	6.47	0.35	0.35	21.26	10.23	36.47	7.34
10. Cottonseed	0.21	0.08	0.04	-	-0.84	-9.84*	0.27	0.12	0.40	-	10.27	-1.69
11. Sunflower Seed	0.20	0.14	0.14	-	6.78	-3.11	0.19	0.15	0.95	-	24.44*	10.17*
12. Sesame Seed	0.88	4.51	17.55	17.11*	13.97*	16.49*	7.10	29.29	118.06	14.47	13.88*	16.38*
13. Rapeseed & Mustard	0.44	0.01	2.79	-68.08*	74.02*	3.92	1.36	0.03	6.91	-64.53*	59.27*	3.32
14. Cotton Lint	8.85	15.27	5.87	1.02	-15.59	-5.75	129.00	181.98	59.61	0.05	-17.64	-6.67
15. Jute & Bast Fibres	3.05	0.65	0.89	-9.70	4.30	-4.19	9.30	1.69	1.38	-12.75	-0.78	-6.76*
16. Castor Oil	4.83	11.05	16.00	3.95	3.55	7.85*	40.10	76.38	115.41	-	4.51	7.21*
Total (1 to 16)	-	-	-	-	-	-	1800.33	2471.80	4258.91	1.95	4.99*	5.22
Total Agril. Exports	-	-	-	-	-	-	2825.93	3033.57	5753.30	0.02	6.12*	4.14
Share (%)	-	-	-	-	-	-	63.56	81.66	73.87	1.92	-1.06*	1.04

Source: Estimates are based on figures compiled for various years from United Nations 'FAO Trade Yearbook', FAO

Note: * - indicate significance of growth rates at 1 per cent level of probability

An overall analysis drawn from Table 3 reveals that the annual average export trade of India encompassing 16 selected commodities put together was about US $ 1800 million during TE 1982 and it constituted about 64 per cent of the total agricultural exports of India during this period. During the early nineties, the total value of trade in the selected commodities not only increased to US $ 2472 million but their combined share in the total agricultural exports of India had also grown substantially to 82 per cent. Since there was considerable expansion in the exports of majority of the selected commodities between TE 1993 and TE 2003 owing to serge in international agricultural prices, the annual average total value of agricultural exports in the selected commodities registered a significant rise, so much so that their value was estimated at

US $ 4259 million during TE 2003, which accounted for 74 per cent share in total agricultural exports of India during this period. Further, as the annual growth in agricultural exports of India in the selected commodities put together was slower (5 per cent) as compared to growth in total agricultural exports (6.12 per cent) between 1991 and 2003, the share of these selected commodities in total agricultural exports of India declined marginally during this period. However, this decline in share of exports in the post liberalization period was mainly due to fall in the export trade of some of traditional commodities from India like coffee, tea, oilseed cakes and meals, cotton lint and jute. In contrast, some other non-traditional commodities, viz., fruits and vegetables, oilseeds including castor oil, registered substantial growth in their export trade during more liberalized market environment. But, the rise in non-traditional exports could not reverse the trend of falling share of the selected agricultural commodities in total agricultural exports of India between 1991 and 2003 as the decline in export trade of traditional exports was sharper than rise in non traditional exports from India during this period.

India's Share in Asia and World Exports

There has been considerable increase in agricultural exports of India after the early nineties chiefly because of liberalization of trade and several trade policy changes coupled with serge in international prices of many agricultural commodities that gave real boost to Indian agricultural exports. The upswing in agricultural exports of India in due course of time has also filtered into significant increase in her share not only in Asia but also in total world export trade. At the same time, for some commodities the share of India in Asia as well as in total world export trade has come down over time, e.g., coffee, tea, oilseed cakes and meals, tobacco, cotton lint and jute, especially in quantity terms. The changing scenario in terms of India's share in Asia and in the total World export trade in quantity and value terms over the period between 1980 and 2003 is presented in Table 4.

Evidently, agricultural exports of India have undergone some major changes over the past two decades. The foregoing analysis is a pointer to the fact that the share of India in Asia as well as in the world agricultural export trade have fluctuated to a considerable extent. While share of India in Asia and in the world trade of majority of the commodities has expanded significantly, particularly after the early nineties, there has also been steady decline in her share of traditional exports not only in Asia but also in the world export market. When traditional commodities of India such as cotton lint, jute, tea, coffee and tobacco have shown rather slow growth in their exports and, in fact, appeared to have lost their momentum in the international trade, non-traditional commodities such as fruits and vegetables (F&Vs), oilseeds including castor oil, etc. and also certain other commodities like wheat and pulses among foodgrains have grown in importance and have shown very high growth in their export trade as compared to trade in other agricultural commodities.

Table 4: Structural Changes in India's Share in Asia's Agricultural Exports

(in per cent)

Commodities	Quantity Terms						Value Terms					
				CGR (%)						CGR (%)		
	TE 1982	TE 1993	TE 2003	1980 - 1990	1991 - 2003	1980 - 2003	TE 1982	TE 1993	TE 2003	1980 - 1990	1991 - 2003	1980 - 2003
	India's Share in Asia											
1. Cereals	5.42	3.31	16.47	-6.36	13.28*	8.96*	6.88	7.80	18.31	1.96	7.04	8.22*
2. Pulses	0.46	1.43	5.93	4.35	20.07*	17.53*	0.57	2.28	7.85	8.41	17.10*	17.77*
3. F&V	-	-	-	-	-	-	7.09	7.53	12.21	0.07	5.01*	2.44*
4. Coffee	22.01	16.09	12.16	-3.43	-2.67*	-1.24	26.35	20.84	18.55	-3.56	-1.16	-0.91
5. Tea	33.61	22.83	19.60	-3.43*	-1.49	-2.46*	37.99	27.55	22.20	-1.98*	-2.03	-2.62*
6. Oilseed Cake & Meal	41.15	40.92	33.97	-6.10	-2.01	1.17	38.82	46.81	53.40	-4.62	1.82	3.99*
7. Tobacco	24.73	20.43	14.14	-2.25	-2.24	-3.51*	21.34	13.07	5.15	-7.56*	-6.92	-8.43*
8. Groundnuts	12.03	13.28	15.11	-7.51	11.92	4.29	14.40	7.31	15.52	-10.71*	13.52	2.31
9. Soybeans	1.08	0.27	13.52	-16.58	46.32*	7.51	0.64	0.20	11.79	-12.20	44.55	7.95
10. Cottonseed	3.51	2.08	0.72	0.51	-1.12	-9.67	3.83	1.62	3.97	-1.13	6.82	-4.18
11. Sunflower Seed	16.19	3.19	2.37	-10.42*	3.60	-10.45*	4.43	0.43	2.33	-10.98*	21.14*	-3.22
12. Sesame Seed	9.66	14.83	49.03	3.31	12.99*	10.35*	10.69	15.31	49.88	3.00	12.26*	10.10*
13. Rapeseed & Mustard	26.28	0.09	77.82	-56.12*	82.66*	21.39	24.13	0.26	83.87	-50.16*	65.46*	21.52
14. Cotton Lint	11.54	15.91	3.39	-6.19	-20.91	-9.06*	10.76	14.29	3.43	-5.00	-20.45	-9.05*
15. Jute & Bast Fibres	5.93	1.99	2.87	-6.62	3.51	-1.98	6.05	1.59	1.89	-9.44	2.38	-2.63
16. Castor Oil	70.11	80.11	97.81	-0.92	1.88*	2.12*	68.81	78.76	96.77	-0.42	1.96*	2.06*
	India's Share in World											
1. Cereals	0.31	0.38	2.94	-2.18	18.29*	14.22*	0.62	1.04	3.75	3.90	12.02*	12.93*
2. Pulses	0.14	0.46	1.83	4.26	18.31*	16.64*	0.16	0.74	2.70	9.46*	17.21*	18.55*
3. F&V	-	-	-	-	-	-	1.04	0.93	1.16	-1.83	2.33*	0.24
4. Coffee	2.30	2.25	2.82	-1.12	2.07	2.09*	2.19	2.18	2.23	-1.19	-0.80	0.99
5. Tea	23.47	14.70	12.69	-3.68*	-1.32	-2.91*	26.49	17.17	12.96	-2.04*	-2.37	-3.57*
6. Oilseed Cake & Meal	4.93	9.30	4.40	0.60	-7.77*	1.09	2.99	7.91	5.05	3.84	-4.88	4.10*
7. Tobacco	6.47	4.65	3.50	-5.91*	-1.45	-3.82*	4.55	2.42	1.00	-9.58*	-6.92	-8.18*
8. Groundnuts	4.13	7.15	8.79	-2.60	12.86	6.59*	5.13	3.44	8.29	-6.36	13.94	3.56
9. Soybeans	0.01	0.01	0.13	7.89	26.91	2.89	Neg.	0.01	0.14	12.48	28.66	4.57
10. Cottonseed	1.20	0.17	0.03	-7.21*	-8.23	-18.57*	0.93	0.14	0.20	-5.95	1.99	-11.67*
11. Sunflower Seed	0.09	0.06	0.05	-0.10	3.39	-6.26*	0.03	0.02	0.11	-6.12*	23.19*	8.11*
12. Sesame Seed	3.47	9.13	23.32	10.09	9.70*	10.80*	3.69	8.29	25.08	8.52	11.07*	11.15*
13. Rapeseed & Mustard	0.19	Neg.	0.36	-51.87*	63.53*	16.58	0.18	Neg.	0.33	-46.86*	52.55*	17.63
14. Cotton Lint	1.97	3.09	0.87	-1.20	-17.04	-7.06	1.78	2.62	0.76	-1.13	-16.91	-7.04
15. Jute & Bast Fibres	5.74	1.91	2.75	-6.91	3.59	-2.00	5.81	1.49	1.76	-9.91	2.44	-2.82
16. Castor Oil	29.47	63.51	80.13	3.09	2.15	5.98*	27.82	60.96	76.21	3.57	2.13	5.80*

Source: Estimates are based on figures compiled from United Nations 'FAO Trade Yearbook', FAO
Note: * - indicate significance of growth rates at 1 per cent level of probability

There is also no denying the fact that India's share in Asia and particularly in the total global exports for various fruits and vegetables is still meagre. Despite the fact that various fruits and vegetables recorded dynamic growth rates in their exports, India's share in the world for most of these horticultural products fluctuated with the course of time. In fact, majority of the

commodities listed in Table 3 registered considerable instability in their export trade during the period between 1980 and 2003 with the period of liberalization (1991 to 2003) recording a considerable stability as against the period preceding it.

Demand-Supply Perspective

A recent integrated supply and demand model developed at International Food Policy Research Institute (IFPRI) and Indian Agricultural Research Institute (IARI) by Kumar, Rosegrant and Hazell estimates key parameters relating to supply, demand and trade of cereals econometrically. On the supply side, this model considers production of each cereal crop by taking into account input prices and total factor productivity (TFP) growth, which in turn is driven by investment in research, extension, irrigation, and infrastructure. Using this model, two alternative scenarios are explored: (a) continued decline in productivity due to further slowing in public investment, and (b) sustained growth in productivity at the levels prevailing in the 1980s, through a recovery in public investment in agriculture. On the other hand, demand projections in the model are driven by growth in population, urbanization, income, and changes in income distribution. The estimates relating supply, demand and net exports of cereals from India for the reference year 1995 and 2020 are brought out in Table 5.

Table 5: Projected India's Cereal Supply, Demand and Net Exports for 1995 and 2020

(million metric tons)

Year/Cereal	Declining Productivity Growth			Sustained Productivity Growth		
	Supply	Demand	Net Exports	Supply	Demand	Net Exports
1995						
Rice	79.5	77.5	2.0	79.8	77.5	2.3
Wheat	59.7	63.5	-3.8	60.0	63.5	-3.5
Course Grains	32.7	39.7	3.0	32.9	29.7	3.2
Total Cereals	171.9	170.7	1.2	172.7	170.7	2.0
2020						
Rice	120.5	124.5	-4.0	134.0	124.5	9.5
Wheat	107.6	111.0	-3.4	127.3	111.0	16.3
Course Grains	42.3	57.9	-15.6	48.0	57.9	-9.9
Total Cereals	270.4	293.4	-23.0	309.3	293.4	15.9

Source: IFPRI-IARI Projections by Praduman Kumar, Mark Rosegrant and Peter Hazell (*http://www.ifpri.org. /2020/briefs/number23.htm*)

One of the major causes of concern of this study is continued deceleration in productivity from declining support to agriculture. This scenario leads the demand for cereals to exceed domestic production by 23 million tons by 2020, which stands double the highest historical levels of imports. Nearly two-thirds of these imports will be accounted for by coarse grains because of their very slow growth in production and substantial growth in their demand for livestock feed.

Contrary to the above scenario, if recent historical growth in productivity is maintained, India will be in a much stronger trade position. As is discernible from Table 5, exports of wheat and rice from India would considerably offset the deficit in coarse grains, generating net cereal exports of nearly 16 million tons. These estimates emphasizes upon the need to strengthen efforts

to enhance production by maintaining or increasing productivity through public investment in irrigation, infrastructure development, research, and efficient use of water and plant nutrients.

Generation of exportable surplus for cereal crops is one end of the spectrum, the other end being generation of significant exportable surpluses with respect to high value horticultural crops that have acquired fresh grounds in the international trade owing to favourable world prices for these valued crops in the free trade regime. Among horticultural commodities, F&V in particular require special attention. A comprehensive study on 'Demand Projections for South Asian Countries' is brought out very recently by Paroda and Kumar (2004), which not only provides an insight into the estimates relating to the annual growth in domestic demand for F&V for 2000-15, 2015-30, and 1995-2030 with low and high growth in per capita income but also estimates pertaining to projected demand, required increase in production by the year 2030 over the existing 1994-96 average production to meet the domestic demand, average annual increment in production during 1965-95 and domestic demand during 2000-30, etc. Demand related estimates encompassing fruits and vegetables produced in India are shown in Table 6.

Table 6: Projected Demand for Fruits and Vegetables and Some Other Indicators for India

	With Low Growth in Per Capita Income (3.5 % of PCGDP)		With High Growth in Per Capita Income (5.5 % of PCGDP)	
A. Annual Growth[@] in Domestic Demand (%)	Fruits	Vegetables	Fruits	Vegetables
2000-15	2.7	2.7	3.4	3.5
2015-30	1.5	1.4	1.8	1.7
1995-2030	2.3	2.3	2.9	2.9
B. Projected Demand (Thousand Tons)				
1995	39867	69117	40921	71100
2000	47688	83388	51774	91165
2015	69678	123824	84099	151861
2030	84336	150823	106126	193562
C. Required Increase in Production by the Year 2030 Over the Existing 1994-96 Average Production to Meet the Domestic Demand (%)				
	121	135	178	202
D. Average Annual Increment in Production During 1965-95 and Domestic Demand During 2000-30 (Thousand Tons)				
Production:				
Fruits: 1965-80	361.0			
1980-95	1237.3			
Vegetables: 1965-80	1273.5			
1980-95	1364.9			
Domestic Demand				
2000-15	1466.0	2695.7	2155.0	4046.4
2015-30	977.2	1799.9	1468.5	2780.1

Note: @ Low income growth = 3.5 per cent annual per capita GDP growth,
High income growth = 5.5 per cent annual per capita GDP growth.
# The State of World Population, UNFPA, 1998.
PCGDP = Per Capita Gross Domestic Product.
Source: Complied from Paroda and Kumar (2004)

The estimates shown in Table 6 appear to be achievable in the light of current pace in the rate of growth in fruits and vegetable production in India. Not only this, there is every possibility of generating adequate exportable surplus of these high value crops after meeting the domestic requirement. Nonetheless, estimates also reveal that it is only in the case of fruits that India will

be able to generate exportable surplus but not for vegetables as projected human demand will be higher than the projected domestic demand for vegetables. Due to shrinking natural resources and in the face of rise in demand for food because high population and income growth, diversification of agriculture will be the major course of action in the future not only in India but in entire South Asia. Diversification of agriculture coupled with high attention given to developing post-harvest infrastructure with focus on value addition technologies and on agro-processing industries will not only help in curbing post-harvest losses but also in improving quality through proper storage, packaging, handling and transport. In this sequel, the role of biotechnology in post-harvest management and in value addition should not be ignored.

Conclusions

Agricultural exports of India have always been fraught with high fluctuations. In spite of significant production expansions in many agricultural commodities, India's global agricultural trade has remained at lower ebb. A lack of vision and a directionless agricultural export planning on the part of our policy planners seem to be responsible for this not so-encouraging scenario. However, it is to be further noted that though India's share for most of the selected commodities in the total Asian and world exports encompassing them fluctuated during the past two decades, a fillip received to their exports in the wake of liberalization of policies also meant encouraging trends. Notwithstanding the dwindling India's share of world agricultural exports, it is hoped that a regime of liberal trade policy measures will propel this country's international market share in these commodities in future, in general. And, adoption of such international trade friendly measures is likely to benefit India's horticultural exports, in particular. In brief, it deserves mention that the country's strength lies in its rich bio-diversity, diversity in agro-climatic conditions, a large labour force, the low use of agro-chemical. All this can provide a boost to the export trade of India in agricultural products.

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