RIS DISCUSSION PAPERS

Addressing Sanitary and Phytosanitary Agreement: A Case Study of Select Processed Food Products in India

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and
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RIS-DP # 39/2003

Research and Information System for the Non-Aligned and Other Developing Countries

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International Food Safety Regulations
And Processed Food Exports Study Series
(RIS/IFSR Study Series)

The International Food Safety Regulations and Processed Food Exports (IFSR) Study Series are integral to a research study initiated at RIS in collaboration with a multi-country and therefore multi-institutions linkage programme. The research study sponsored by the Australian Centre for International Agricultural Research (ACIAR) is entitled "International Food Safety Regulation and Processed Food Exports from Developing Countries: A Comparative Study of India and Thailand". The partner institutions are RIS from India; Australian National University and University of Melbourne from Australia; University of Thammasat, Bangkok, Thailand and the International Food Policy Research Institute, Washington.

The research study is driven by a set of primary objectives. The main aim is to assess impact of food safety standards on exports from India and Thailand. The study is undertaken in order to contextualise the ground realities with the application of the Sanitary and Phytosanitary (SPS) Agreement and the associated conflict resolutions that are available within the World Trade Organisation (WTO). The outcome of the study will be meaningfully utilised in strategic planning to enhance market access for Indian food exports in the global trade.

India and Thailand being agricultural resources rich developing countries, role of SPS measures in limiting market access to primary food and processed food require some proactive efforts and such interests are in the forefront of the research study.

The research study is to be conducted in four stages and may extend up to 2 ½ to 3 years. The study was launched on 29 June 2002 in India and is progressing smoothly as planned. An inception Workshop for all partner institutions was successfully concluded in Bangkok during 1-4 October 2002. The next Workshop has been planned in New Delhi during April 2003 and will be hosted by RIS.

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ADDRESSING SANITARY AND PHYTOSANITARY AGREEMENT: A CASE STUDY OF SELECT PROCESSED FOOD PRODUCTS IN INDIA

by

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This paper draws from a report prepared for Research Project "International Food Safety Regulation and Processed Food Exports from Developing Countries: A Comparative Study of India and Thailand". Valuable inputs were received from participants of the New Delhi Workshop, particularly from Ms Shashi Sareen, Director General, EIC; Ms Pooja Jain provided research assistance in the preparation of the paper.

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I. INTRODUCTION

The world has witnessed a significant reduction of import duties especially since the Kennedy Round. Lately there has been a reduction also in the unilateral application of quotas and other traditional non-tariff barriers. However, a considerable number of such barriers in the shape of technical regulations and standards still persist. Whereas, technical standards and regulations (including sanitary and phyto-sanitary controls) in themselves may not admit to be a trade barrier, their use and/or adoption in practice has been found to raise new obstacles to imports and to give protection to domestic producer as trade barriers in the importing countries.[1]

Standards-related measures include mandatory technical regulations, voluntary standards, and conformity assessment procedures that determine whether a product meets the requirements of a particular regulation or standard.[2] They affect virtually every aspect of daily life. Objectives of standards-related measures include protecting health, safety and the environment; informing the consumer; ensuring inter-operability between the products of different manufacturers; and identifying quality. Some standards-related measures may, however, also discriminate unnecessarily against the products of foreign competitors.

Standards Code, defines the international rights and obligations of member countries with respect to the development or application of standards-related measures that affect trade. The agreement is based on the principle that countries have a right to adopt and apply standards-related measures as long as these do not restrict international trade more than is necessary.

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* This paper draws from the India Country Report prepared for an ongoing Research Project entitled "International Food Safety Regulation and Processed Food Exports from Developing Countries: A Comparative Study of India and Thailand".

1 See 'Regulating Exports', Economic and Political Weekly, Vol.37, No.40, October 5:4085 for a case in marine exports from India.

2 The Indian experience has been explored in Mehta, Rajesh and J. George (2002) International Food Safety Regulations and Food Exports: An Exploration into Research Agenda, RIS/IFSRSS # 1: 1-53.

Determining the desired level of health, environmental or consumer protection is the starting point for regulatory or standards-setting processes. Standards-related measures may be one of several policy options for achieving the chosen level of protection. The obligations of the SPS agreement apply to the measures that are used to achieve the level of desired protection, not to the level of protection itself.

We start by recognising significant differences between the perceptions and institutional capacities of developing countries as compared with developed countries when implementing agreements on SPS under WTO were penned. The Article 9 of the SPS Agreement in this context talks about technical assistance and capacity building in the first instance. On the other hand, a relaxation (Article 10 and 14) for the least developed countries is also provided. Notwithstanding these concessions, developing countries fears on SPS becoming increasingly important in the future and developing into significant barriers to trade have come true.[3] Among the difficulties identified by the developing countries on application of SPS to trade are the high cost of adaptation, the irrelevance of foreign standards to local conditions, the lack of timely and adequate information and consequent transaction costs, the difficulties in understanding the requirements as well as testing and monitoring them, the perceived lack of scientific data for specific threshold or limiting values and the uncertainty that arises from rapidly changing stringent requirement in overseas market.[4]

Although the SPS agreement has established certain standards for the application of measures, disagreements between countries about these measures often involve complex issues not specifically addressed by the texts of the agreements. First, the agreement requires measures to be based on scientific principles, but scientific research on certain topics may not exist or existing research may be inconclusive. For example, the lack of sufficient research on certain effects of afflatoxin in peanut affects India's exports to EU.

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[3] See WTO (2002) Overview of Developments in the International Trading Environment – Annual Report by the Director General, WT/TPR/OV/8, p:23.

[4] Mehta, Rajesh & J. George (2002) 'World Trade in Agricultural Products and Shifting (goal)–Post Syndrome (SPS) Standards of Food Safety', Financial Express (Under Communication) further elaborates with special reference to the political economy of trading blocks.

Second, the SPS agreement requires measures to be based on an assessment of risk, but governments may have different risk tolerances or may disagree about how to ensure certain minimal levels of risk. Such a disagreement exists between EU and India on marine products. Finally, because of domestic pressures or larger outstanding trade or political issues, governments may be unwilling or unable to change their measures. An EU ban in place since the mid-1980s that prohibits importing meat treated with growth-promoting hormones appears to be linked, in part, to such issues.

Moreover, in attempting to resolve such concerns, the government may not fully understand a foreign government's reasons for establishing a measure and therefore may have difficulty determining what strategy will be most effective to resolve the issue or assessing whether its efforts are having any impact. If additional research is required, such research can be time consuming to complete and that in the short to medium term impacts on the trade.

The rules regarding the appropriate use of SPS measures in relation to trade present new challenges to the government. First, determining whether foreign measures comply with WTO rules requires input from trade agencies as well as regulatory agencies with technical and scientific expertise. These regulatory agencies were originally set up to achieve domestic objectives but now are increasingly expected to be involved in addressing international trade issues. Moreover, efforts to address these measures must take into account domestic regulatory efforts to ensure the standards of locally produced and imported products. The adjudicative and legislative domain,[5] indeed, require to be blended with the new export order. Such transformation into a facilitation of export trade, inter alia takes time

Against this brief backdrop, the paper is attempting to get to the ground realities prevailing in India in as much as the application of SPS measures are concerned. The following Section takes a quick overview of the salient features of the agro food exports and the food processing industry in India. Section III provides an examination of impact of SPS in destination markets, especially an analysis of the available rudimentary detention information. In Section

[5] This theme is being further developed in Mehta, Rajesh and J. George (2002) 'SPS Measures: A Study of Adjudicative and Legislative Roles Since 1995' RIS/IFSRSS#4(forthcoming).

IV, case studies of select processed foods and agro products are presented in order to assess the width of the Spectrum of influence consequent to SPS measures implementation. The concluding observations are contained in Section V.

II. AGRO-FOOD AND PROCESSING SECTOR IN INDIA

The Indian agricultural sector since the economic reforms program in 1991 has been witness to a number of changes.[6] The most dominant amongst these has been conscious attempts to address the WTO obligations in a whole set of activity spectrum starting with the domestic farm and farmer level to the consumers. In the light of rapidly changing food habits as well as the food basket, the agro-food and processing sectors are immensely keyed into addressing the emerging challenges.

Primary products from the agriculture and allied sectors lend itself to a series of opportunities to create various time, form and space utilities and the Indian producers are serious in addressing trade related challenges in this sector.[7] Since the new order of trade requires planned and sustained exports, quality consciousness and such technicalities are gaining primacy across the spectrum. Application of SPS measures run through this wide spectrum of production, processing and distribution. A more significant anchorage to various stages of this spectrum could be appreciated in Section IV that attempts analyses of five product lines.

The processed food exports is handled by two apex level agencies, namely, Agricultural and Processed Food Export Development Authority (APEDA) and Marine Products Export Development Authority (MPEDA). The Ministry of Food Processing Industries (MFPI) being the nodal government entity is proactively involved with the food processing industries within the macro issues of policies and plans for the sector. The business of this nodal ministry (MFPI) is organised under the following broad categories:

(1) Fruit and Vegetable Processing Industry (including freezing and dehydration).
(2) Food Grain Milling.
(3) Processing and Refrigeration of Agricultural Products, Dairy Products, Poultry and Eggs; Meat Products.

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6 Contemporary discourses at the national as well as the sub-national levels where actual production take place rightly assumes significance. See George J. (2001) "Can NDA's farm fundamentalism really help the farmers?" Financial Express, 20 April. A reference to Desai, Bhupat M., (2002), "Terms of trade and technical change: strategies for agricultural growth", Economic and Political Weekly, 23 February: 801-804 is most helpful.

7 For example, see CII-McKinsey (1998) FAIDA-Modernising the Indian Food Chain, CII and McKinsey & Co.Inc. New Delhi, pp.1-178.

(4) Processing of Fish (including canning and freezing).
(5) Planning Development and Control (PDC) Bread, Oilseeds, Meals (edible), Breakfast Foods, Biscuits, Confectionery, Malt Extract, Protein Isolate, High Protein Foods, Weaning Foods and Extruded Food Products.
(6) Beer including non-alcoholic beer.
(7) Alcoholic drinks from non-molasses.
(8) Aerated Waters and Soft Drinks.
(9) Establishment, Technical Assistance, Advice to Fish Industry (Servicing of the Development Councils for Fish Processing Industries).
(10) North Eastern Regional Agricultural Marketing Corporation.

MFPI is charged with the implementation of various food safety and quality concerns codified in various legislations. For example, the Fruit Products Order (FPO-1955) promulgated under Section 3 of the Essential Commodities Act 1955 prescribes minimum norms for sanitary and hygienic conditions of premises of manufacturing units in addition to laying product standards. MFPI is closely associated with the Codex Contact Point in India, namely, the Directorate General of Health Services (DGHS) in the Ministry of Health and Family Welfare.

The average processor of food products will be categorised as small in size of operation and put in the small scale sector of industries. Since the capital investment in these average food processing industries is extremely low, caution is required in interpreting and applicability of SPS guidelines for them. On the farm front, it is important to remind ourselves that the average size of operational land holding as estimated in 1990-91 is 1.57 hectare and there are 105.3 million operational holdings. Interestingly more than 3/4th of these operational holdings are in the marginal and small size holdings where the average size of operational holdings is about 0.92 hectares.

II.1 ***Trade Indicators***

Although agriculture sector share in the national income has shown a decline from 55 per cent in the early 1950s to about 30 per cent in the 1990s and about 24 per cent in the recent years, nearly 2/3rd of the population of the country derive their livelihood support directly from the agriculture and allied activities. This is an indication that agricultural production dynamics has a strong bearing in our discussion on agricultural exports.

Agricultural exports, against this backdrop, constituted nearly 17 per cent of the total exports from India during 1990/91. The share of agricultural exports during 1996/97 was around 20 per cent. After 1996/97 there is consistent declining trend (Table II.1). We may recall that according to the Trade Statistics released by the Ministry of Commerce, the agriculture and allied product exports during April-March (2001-02) declined to US$ 5846 million over US$ 5925 million of the previous year wherein the marine exports took the major blow followed by the plantations products. This steep decline is reflected in the fall of agricultural and allied products in the total exports from India and as depicted in Table II.1. There is no reason to lament that agriculture and allied sector exports constitute a mere 6.15 per cent of the total export basket. Export of processed foods to hard currency areas apparently under SPS measures became more stringent. It would be interesting to probe why and how this declining trend in the agricultural exports is continuing in the recent past few years.

Table II.1: Percent Share of Exports of Agriculture and Agriculture Products to Total Exports From India, 1990/91 – 2000/01

Year	Per Cent Share of Agri Exports (HS 1-24) to Total Exports (HS 1-99)
1990-91	16.52
1991-92	18.31
1992-93	16.97
1993-94	17.44
1994-95	16.66
1995-96	19.98
1996-97	19.97
1997-98	18.75
1998-99	18.46
1999-00	15.66
2000-01	13.88
2001-02	13.43

Note: Shares worked out using US Dollar figures.
Source: Estimated based on CMIE, *India Trades*

However, such a probe needs to be preceded by a close examination of certain broad trade ratios that can be estimated based on the available macro data sets (Table II.2). It is estimated that the ratio of agricultural exports to GDP has shown a steady rise from 1.32 percent in 1986/87 to 1.97 percent in 1995/96. The ratio of agricultural imports to GDP, on the other hand, showed a rise from 0.78 per cent in 1986/87 to 1.02 percent in 1995/96. The mixed picture

indicates the adjustment process consequent to new export order following WTO triology of the Agreement on Agriculture namely, market access, export subsidy and domestic support.

Table II.2: Important Indian Trade Ratios in Per Cent, 1986/87- 2000/01

Year	Total Exports/GDP	Agri. Exports/GDP	Agri. Imports/GDP
1986/87	4.79	1.32	0.78
1987/88	5.32	1.19	0.69
1988/89	5.74	1.06	1.04
1989/90	6.77	1.19	0.74
1990/91	6.81	1.32	0.63
1991/92	7.97	1.43	0.56
1992/93	8.51	1.39	0.74
1993/94	9.53	1.72	0.56
1994/95	9.63	1.55	0.93
1995/96	10.79	1.97	1.02
1996/97	11.24	1.95	0.78
1997/98	9.36	1.82	--
1998/99	8.74	1.63	--
1999/00 P	9.09	1.42	--
2000-01 P	10.73	1.51	--

Note: Based on official exchange rate between the Indian Rupee and US Dollar.
P- Provisional;Q- Quick estimates -- not calculated
Source: *Economic Survey*, Ministry of Finance, Government of India, different issues.

We need to recall that economic reform measures initiated in 1991 do get reflected in these summary statistics. For illustration, a lower balance of trade relative to GDP during the period 1991/92 – 1994/95 in contrast to earlier and later periods do give out positive signals. It can be argued that these signals, in fact reiterate that the transition from an import substitution phase towards the export led phase is on and the agricultural sector is equally partaking in the shift (See the graph in Annex 2).

II.2 ***Agro-Food Exports: Trends, Patterns and Economic Significance***

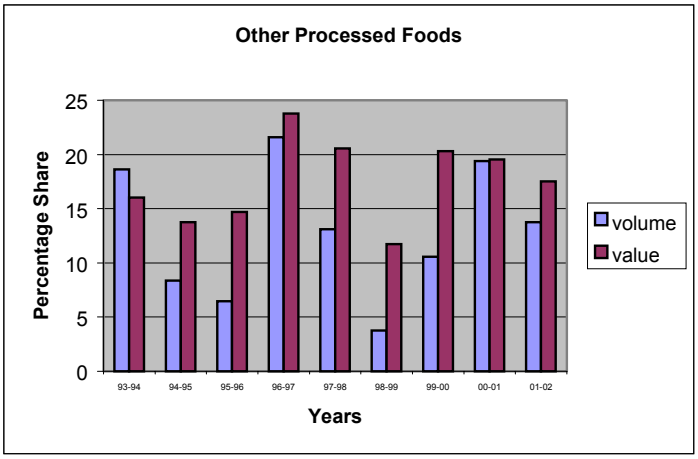
The growing importance of the agricultural exports can be delineated from these figures presented in Table II.2 and explained above. An examination here leads us to probe another aspect of the agricultural exports, namely, the composition of such a basket. In Table II.3 we present such a picture for our discussion.

Table II.3: Exports of Principal Agricultural Products from India (In percent)				
Principal Products	**1998-99**	**1999-2000**	**2000-2001**	**2001-02**
Tea	8.9	7.3	7.2	6.1
Coffee	6.8	5.9	4.3	3.9
Cereals	24.8	12.9	12.4	16.5
Tobacco	3.0	4.2	3.2	2.9
Spices	6.4	7.3	5.9	5.3
Cashew	6.4	10.1	6.8	6.4
Sesame & Niger Seeds	1.3	1.5	2.2	2.2
Guargum Meal	2.9	3.4	2.2	1.4
Oil Meals	7.7	6.7	7.5	8.1
Processed Fruits & Vegetables	3.0	3.7	4.1	5.1
Fruits & Vegetables	1.1	1.5	2.0	3.5
Meat & Meat Preparations	3.1	3.4	5.4	5.5
Marine Products	17.2	21.1	23.2	20.8
Others	7.4	11.0	13.6	12.3
Agricultural Exports	100.0	100.0	100.0	100.0
Percent of Agri to Total Exports	18.5	15.6	13.8	13.43

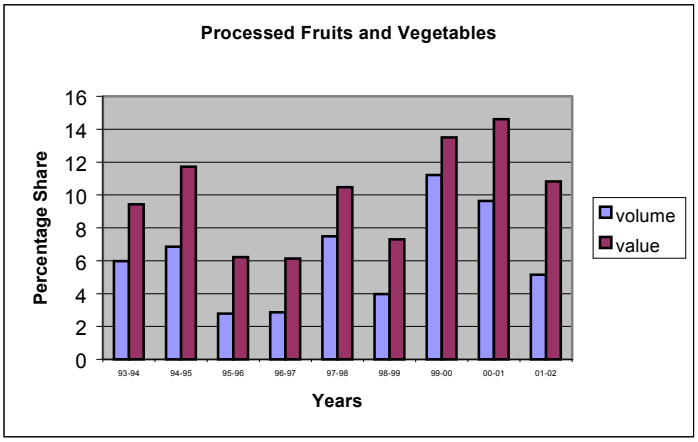
Note: (1) Only principal agricultural products shown in Column (1).
(2) Share estimation carried using US dollar values of exports.
Source: *Economic Survey 2001-2002,* Ministry of Finance, Government of India.
Economic Division, Ministry of Commerce, http://commin.nic.in

A close look at Table II.3 reveal that the value addition to primary agricultural produce incorporated through some processes do show a positive pattern albeit in the selected three year period. For illustration, Sesame & Niger Seeds share in the export basket goes up from 1.3 per cent in 1998-99 to 2.2 per cent in 2000-01. The 6-percentage point increase during 1998-99 to 2000-01 in the share of marine products during this period is indeed significant. The processed fruits and vegetables, fresh fruits and vegetables have shown an increasing share in these selected three years (see the accompanying graph for a visual depiction).

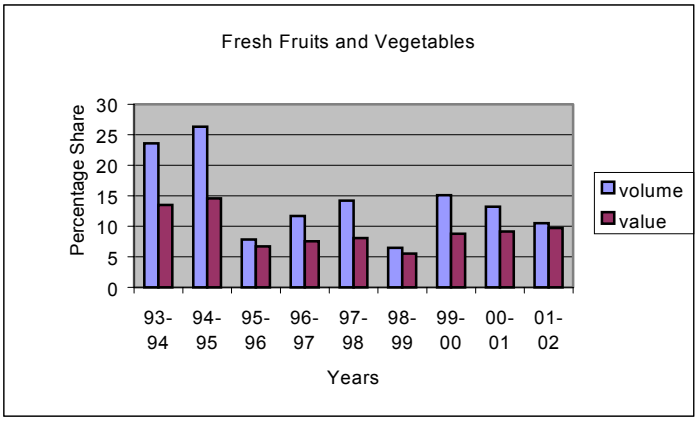
Graph II.1



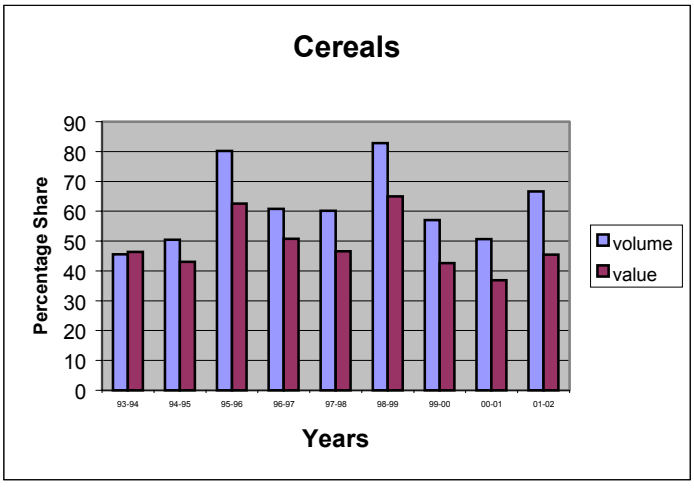
Graph II. 2



Graph II.3

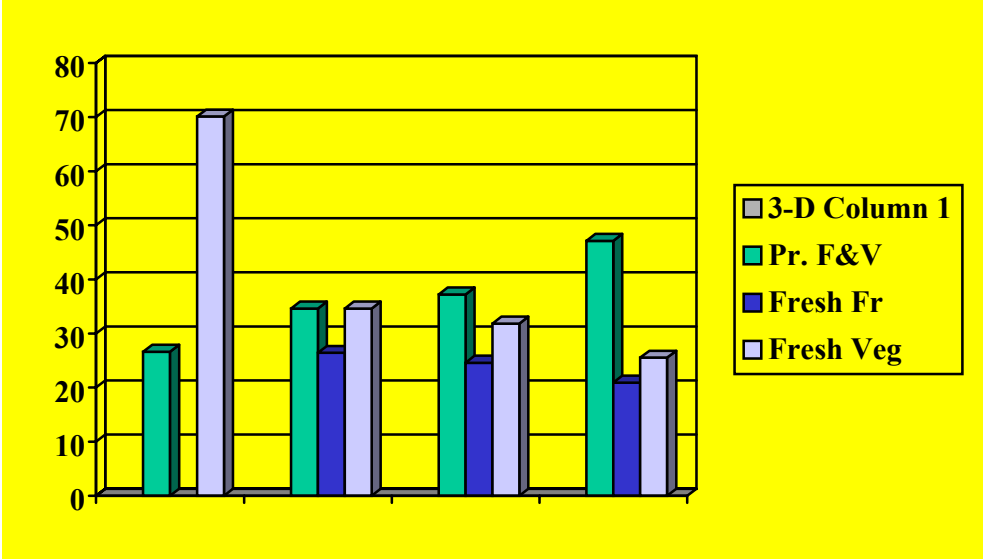


Graph II.4



Case of Processed F&V

Graph II.5



The data available with APEDA and visually depicted in Graph II.5 show that the share of processed fruits and vegetables in the total horticulture products export has gone up from about 27 per cent in 1992-93 to slightly over 47 per cent in 1999-00. Along side the share of fresh fruits and vegetables comes down sharply from about 70 per cent in 1992-93 to about 46 per cent in 1999-00. In this connection, it may be opportune to mention that the plan outlay for horticulture during the 10th Plan (2002-07) period is expected to be tripled to Rs. 4500 crores from Rs. 1400 crores during the 9th Plan period.

The panel of graphs succinctly show the volume-value interface in various agro food exports. The primary food exports like cereals and fresh fruits and vegetables, especially cereals category, expectedly show primacy of volume over value in export markets. For example during 2001-02 cereal exports in volume accounted for about 67 per cent of the total export volumes whereas only about 45 per cent of the total exports value was realised from this category of exports.

The contrast is available in the processed fruits and vegetables exports. A look at Graph II.2, for example, indicate that during 2001-02 about 5 per cent of total export volume accounted for about 11 per cent of the total value of agro food exports. There appears to be strong case for

value addition to primary agricultural exports through the processing activity. The application of SPS measures therefore becomes fundamental to any strategy aimed at enhancing export earnings.

A detailed discussion of food-processing industry taking into account comparable data set and commodity basket composition is carried out to understand the dynamics of the process.

We have used the International Standard Industrial Classification (ISIC)* of all economic activities Revision 2 categorization for our subsequent discussion. As a recap the commodity classification is given below to facilitate smooth discussion. The output and export set of data available to the researchers have been used to design a revision 2 listing of manufacturing. The main advantage is the comparability over time and space across output and exports of a particular product line.

ISIC Revision 2

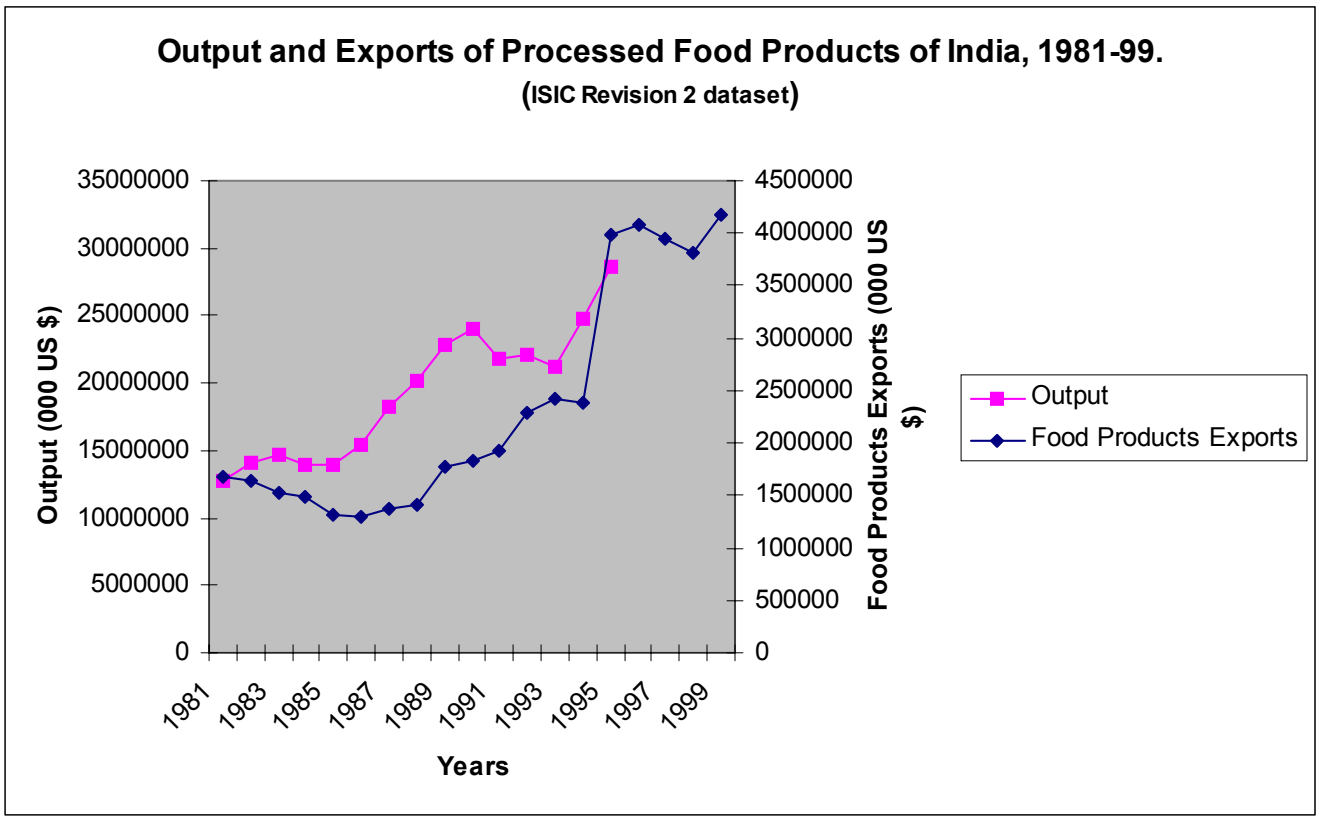
ISIC classification	*Description*
MANUFACTURING	
311/2	**Food Manufacturing**
3111	Slaughtering, preparing and preserving meat
3112	Manufacture of dairy products
3113	Canning, preserving and processing of fruits and vegetables
3114	Canning, preserving and processing of fish, crustacean and similar foods
3115	Manufacture of vegetable and animal oils and fats
3116	Grain mill products
3117	Manufacture of bakery products
3118	Sugar factories and refineries
3119	Manufacture of Cocoa, chocolate and sugar confectionery
3121	Manufacture of food products not elsewhere classified
3122	Manufacture of prepared animal feeds
313	**Beverage Industries**
3131	Distilling, rectifying and blending spirits
3132	Wine industries

* This classification is based on Athukorala, Prema-Chandra and Kunal Sen (1998), "Processed Food Exports from Developing Countries." Food Policy, Vol.23,No.1:41-54.

3133 Malt liquors and malt
3134 Soft drinks and carbonated waters industries

314 3140 Tobacco Manufactures

Graph II.6



A sharp impact of trade liberalization initiated during the early 1990s can be seen (Graph II.6) in the growth rate (Table II.4) especially in the food products exports. The nearly 15 percent per annum growth rate achieved in the exports of processed food products during the period 1991-95 needs therefore to be viewed against the backdrop discussed in the previous paragraphs, namely, rising trend of agricultural product exports. A few patterns, however, need to be flagged here. First, in the decade of 80s food products exports growth rate did not match with the output growth rate. Second, during the 1991-95 period the food product exports growth rate is more than double that of the output growth rate. A look at Graph II.6 will indicate that this happened

due to a spurt in export during 1994-95. Third, less than 1 percent growth rate in the food products export (during 1995-99) require a close examination with respect to not only output growth rate but also with respect to commodity classes and destination of exports. Be that as it may, the importance of processed food exports in the period under consideration does get highlighted.

Table II.4: Output and Exports of Processed Food Products of India, 1981-99

Period	Output Growth* (Per cent per annum)	Export Growth* (Per cent per annum)
1981-90	7.00	0.33
1991-95	6.59	14.95
1996-99	N.A.	0.34

Note: (1) Comparable data sets of ISIC used for estimation
(2) N.A. denotes relevant data set not available.
*Based on log-linear equation.
Source of data: World Bank:www1.worldbank.org/wbiep/trade/TradeandProduction.html

A close examination of the processed food products with respect to both outputs as well as exports requires to be carried out, at this preliminary stage, to enable us to *a priori* understand the incidence of SPS regulations impacting on India. In Table II.5, column (10) we present a picture of principal food products that account for over 95 per cent of the total food exports from the country.

II.3 *SPS-Relevant Processed Food Exports by Commodity Groups*

We can draw out some broad contours from a critical look at the data on share of different food products. The category meat and meat preparations (3111) and fruit and vegetable preparations (3113) do not show much variation in the share out of the total food exports over the period 1981-1999. However, year to year variations is more pronounced in 3111 in comparison to 3113 after 1991. The role of SPS regulations perhaps could be considered along with the destination of these products export. The category sugar factories and refineries (3118), although forming a very tiny share in the total food exports in the late 1990s, do indicate market machinations.

If we consider the post-1991 period and take out the share of Tobacco manufacturing (3140), the total share of remaining commodity groups indicates a growing importance of grain mill products (3116). The share of this product group has increased significantly during nineties. The research issue, as pointed out earlier, would be to delineate the SPS regulation impacts, if any. Interestingly, the share of food classification 3121 over the same period (1991-1999) shows a decline from about 30 per cent to about 20 percent. This is almost switching the share with food classification 3116. Apparently export growth is not autonomous. The history of agricultural exports from India is a story of considerable variations between years.

For example, after the economic reforms programme was launched during 1991 (Annex 2 Graph) the agricultural exports during 1970-71 to 1990-91, in contrast did not show such a variation. We can clearly discern absolute and relative farm exports growth in pre and post reform period. Similarly the pattern showed a much steeper year to year variations after 1995-96 when WTO obligations became effective.

Thus subsequent to economic reforms, post-1991, there are obvious indications that the indirect effect of trade liberalisation, exchange rate adjustment and effects of restrictions on agricultural exports are positive and significant. A further elucidation can be observed from the per cent share of principal food products in output that conforms to ISIC classification in Table II.6.

Therefore, the pattern appears to be getting clearer as one keeps raising the question why, where and how with these figures. Nonetheless, challenges for the country in the exports market of these commodity classifications would also appear to be crucially linked to the production framework. We would briefly turn to this dimension for an aerial view.

Table II.5: Process Food Export from India According to by Principal Commodity Groups (ISIC Classification), 1981-99 (% share)									
Year	**3114**	**3115**	**3116**	**3121**	**3111**	**3113**	**3118**	**3140**	**Total**
1981	5.97	9.21	19.81	38.56	6.38	1.64	3.15	14.82	**99.55**
1982	6.91	10.87	18.14	34.12	6.13	3.25	5.27	14.75	**99.47**
1983	8.76	12.52	10.50	36.62	6.16	3.19	11.01	10.45	**99.25**
1984	7.92	11.05	11.13	48.00	6.29	3.53	1.98	9.18	**99.10**
1985	9.23	11.47	13.54	43.57	6.42	4.38	0.99	9.74	**99.35**
1986	11.28	13.52	13.97	39.73	6.66	4.20	0.08	9.89	**99.38**
1987	10.22	11.47	21.12	38.70	7.09	3.80	0.66	6.17	**99.26**
1988	10.71	18.96	18.01	34.67	7.24	3.82	0.47	5.14	**99.04**
1989	8.55	21.82	17.20	36.10	6.05	3.42	1.16	4.82	**99.15**
1990	10.79	19.22	15.86	36.17	6.14	2.82	1.13	6.52	**98.66**
1991	11.52	22.03	17.32	29.76	6.46	2.64	3.31	5.54	**98.61**
1992	11.60	27.50	17.88	21.27	5.87	2.69	5.93	6.07	**98.83**
1993	13.05	33.81	18.41	18.61	5.88	2.39	2.32	4.11	**98.60**
1994	19.31	29.80	17.26	18.66	6.62	3.21	0.81	2.31	**97.99**
1995	10.97	23.65	37.37	13.91	5.49	2.48	3.78	1.19	**98.85**
1996	12.50	28.46	26.46	13.01	5.92	2.24	7.33	1.66	**97.61**
1997	14.24	28.13	23.58	19.47	6.52	2.71	1.73	1.81	**98.21**
1998	11.08	16.74	39.39	20.57	5.65	2.86	0.14	1.78	**98.24**
1999	11.08	16.74	39.39	20.57	5.65	2.86	0.14	1.78	**98.24**

Source of Data: Same as Table II.4

II.4 ***Production Trends***

The domestic production trends in the foods processing sector *inter alia* would suggest the dovetailing of volume-value theme of the export earlier discussed under II.2. In this context, the Ministry of Food Processing Industries (MFPI) of the country attains significance as a lead facilitator. However, in terms of production possibilities, MFPI in as much as SPS regulations are concerned, is expected to perform the crucial linkage role that could be both forward and backward. The institutional role although paramount as a focal point, production dynamics being dispersed over space and time hold crucial signals for determining the economic significance of SPS regulations. A reference to Table II.4 column (3) is sufficient to indicate that the output growth is not autonomous.[8] The history of agricultural exports as referred above comes into

[8] Analysing production dynamics is beyond the scope of this paper. However, consequences of WTO on the agricultural sector has been comprehensively addressed by Dhar, Biswajit and Sudeshna Dey (2001), 'Implementation of the Agreement on Agriculture: Issues and Options", RIS Occasional Paper No. 64:1-73. For a Crop or Commodity specific perspective reference to Chand, Ramesh (1999), 'Effects of Trade Liberalization on Agriculture in India: Commodity Aspects', CGPRT Centre Working Paper No.45:1-62 may be made.

sharper focus. Although, considerable output variation between years may impact on the marketable surplus getting available for exports, selective SPS measures role especially post 1995-96 cannot be discounted lightly.

A comparison of Table II.5 and Table II.6 indicate that certain food product classes that had insignificant share in the exports, report a sizeable share in the output. Examples are dairy products (3112) and Sugar factories and refineries (3118) in the over 10 percent share category. The other extreme example is that of meat preparations (3111) and fruit & vegetable preparations (3113) in the sub-1 percent share in production category.

Table II.6 – India: Output of Processed Food by Principal Commodity Groups (ISIC Classification) (Per cent)

Year (1)	3111 (2)	3112 (3)	3113 (4)	3114 (5)	3115 (6)	3116 (7)	3117 (8)	3118 (9)	3119 (10)	3121 (11)	3122 (12)	3131 (13)	3132 (14)	3140 (15)	Total (16)
1981	0.43	7.84	0.71	1.52	21.31	17.81	2.37	20.80	1.79	12.02	1.04	1.61	0.23	8.71	**98.18**
1982	0.30	7.17	0.49	1.83	21.56	17.91	2.11	24.47	1.12	11.35	1.02	1.26	0.33	7.66	**98.6**
1983	0.25	8.27	0.86	1.66	19.32	17.72	1.95	21.52	1.21	12.98	1.08	1.39	0.33	9.59	**98.12**
1984	0.19	10.09	0.70	1.71	18.91	18.71	2.24	16.80	1.64	15.31	1.17	2.01	0.32	8.11	**97.89**
1985	0.22	10.33	0.80	1.53	17.33	19.82	2.48	17.10	1.21	15.13	1.42	1.87	0.49	8.07	**97.82**
1986	0.21	11.50	0.61	1.56	16.45	20.12	2.13	18.27	1.86	13.13	1.32	2.05	0.39	8.04	**97.64**
1987	0.19	9.87	0.53	1.52	20.67	19.55	1.91	18.79	1.65	11.60	1.64	1.87	0.31	7.58	**97.68**
1988	0.19	9.43	0.58	1.38	17.97	20.31	2.18	21.47	1.25	11.29	1.56	1.86	0.34	7.65	**97.45**
1989	0.22	10.19	0.59	1.24	23.57	17.39	1.95	18.63	0.45	12.97	1.27	1.97	0.30	7.54	**98.27**
1990	0.24	8.19	0.38	1.45	23.55	17.21	2.21	19.14	0.48	12.75	1.64	1.93	0.60	8.23	**98.02**
1991	0.29	8.30	0.37	2.06	26.01	16.30	2.09	18.26	0.59	11.27	1.89	2.04	0.35	8.03	**97.88**
1992	0.39	10.09	0.47	2.31	23.81	16.52	2.02	18.05	0.56	11.05	1.96	2.17	0.14	8.26	**97.8**
1993	0.36	10.50	0.50	2.29	22.69	17.59	2.09	18.13	0.58	11.13	1.28	2.33	0.21	8.27	**97.96**
1994	0.38	8.91	0.51	2.93	22.18	17.06	2.14	20.24	0.24	10.63	2.08	2.81	0.30	7.19	**97.61**
1995	0.43	10.51	0.62	2.68	23.18	17.68	2.21	18.24	0.61	10.82	1.90	2.58	0.32	5.74	**97.52**

Source of Data: Same as Table II.4

We can, on comparison between the two preceding tabular data, delineate three broad patterns from the share of production data presented above. First, the production share is reported to be high (above 10 percent) but the corresponding export share is almost negligible. Secondly, production share is estimated to be less than 1 percent but the export share is below 5 percent. Examples for this group can be cited as fruits and vegetables preparations (3113), meat preparations (3111) etc.

The third major group is that of food products that has a high estimated share in both production and exports. For example, vegetable and animal oils & fats (3115); grain milling (3116) and the residual class food products not elsewhere stated (3121). The fourth major grouping of food products that emerge here is that of low share in both production and exports. Examples are all products in the beverage category namely 3131 to 3134. The point to be noted here is that SPS measures are applicable in a wide spectrum of activities that facilitate "farm to fork" integration in the food system.

A list of instances of selective application of SPS measures can be cited here to clarify how the food exports from India are impacted. For example, Australia, China and Japan, not allowing Indian Mangoes and Grapes on the ground that certain fruit flies are present. Ironically, China imposed a ban on Grapes for a species of fruit fly that does not exist in India. On the other hand, USDA allows entry to fruits and vegetables consignment only after detailed tests of the production area.

The Japanese stipulation of Vapour Heat Treatment (VHT) of fruits is yet another instance of SPS being key instrument for non-tariff barrier. The technological upgradation to meet with VHT protocol is a story of time and money investment for at least five years. This is in spite of the fact that success at the end is not assured. The introduction of regulation by EU prescribing unreasonably low levels of Octratoxin-A (OTA) in Coffee; method and sensitivity of estimating pesticide residue in vegetables, fruits, Honey, etc. are indeed unreasonable. The sum total of all these instances is that the exporting country will have to bear the cost without any expected commensurate return.

Another instance is the demand in EU for the residue monitoring plans for the previous years in association with the succeeding years. This stipulation will definitely deny market access to Indian agro products into EU market. The labelling stipulation in the importing country language too is a costly proposition keeping out Indian exporters.

To sum-up, the issues of food safety regulations for the country of India's magnitude with a wide spectrum of agro-climatic dimensions require a detailed examination in a logical

framework of different processes. The need for such an examination can be well highlighted if one could visualize a food market output and export matrix or the volume-value matrix with the respective share in the total for the country. The area of SPS relevant exports has strong backward and forward linkages and in India these dimensions have strong ramifications. Finally, processed food product lines depend on a host of players in both exporting and importing countries. Following Section is attempting to provide a detailed exposition to these dimensions.

III. PROCESSED FOOD EXPORTS AND IMPACT OF SPS IN DESTINATION MARKETS

The acceptance or rejection of any export consignment would primarily depend on the domestic inspection and certification procedure adopted for the agriculture and food products export from India on the other hand the import procedures in the destination market will be crucial in as much as the SPS measures are concerned.

III.1 Export Inspection System in India*

Export Inspection Council (EIC) and its related agencies provide certification and inspection services to the Indian export as well as other industries, both in regulatory areas as well as on voluntary basis.[9] During the year 2000-01, the following three types of export inspection and certification systems continued to be operational for agriculture and food products:

- Consignment wise Inspection (CWI)
- In Process Quality Control (IPQC)
- Food Safety Management Systems based Certification (FSMSC)

III.1.1 *Consignment Wise Inspection (CWI) System*

Under the Consignment Wise Inspection (CWI), each export consignment is inspected and tested by the recognised inspection agencies. Samples are drawn on the basis of statistical sampling plans, inspected and tested for verifying the conformity of products to the prescribed standards. Tests are carried out in the field and/or in the recognised inspection agencies' laboratories. During the year 2000-01, EIC and its agencies conducted inspection under the system on agriculture and food items valued at around Rs 2000.00 Lakhs. Details of value of

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* This sub-section is based on EIC Annual Report 2000/01.

9 Details about EIC can be obtained from Mehta, Rajesh and J. George (2002), *ibid*, RIS/IFSRSS # 1.

consignments inspected and rejected (value wise) by EIC for broad product groups are given in Table III.1.

This Table shows that EIC rejected exports worth Rs. 138 lakhs on the basis of consignment wise inspection. Out of total value of consignment-wise inspection of agriculture and food products the share of rejected consignment is 2.1 percent for Basmati rice and 2.3 percent for milk and milk products.

Table III.1: Consignment Wise Inspection by EIC and Related Agencies, 2000-01

Value in Rs. Lakhs

Scheme	Inspected	Rejected
Agriculture and Food		
Basmati Rice	4568.02	102.92
Black Pepper	5009.13	-
Cashew Kernels	333.94	-
Fish and Fishery Products	7670.27	
Milk & Milk Products	1561.13	35.68

Source: *Export Inspection Council* (EIC)

Details of total number of Agriculture and Food consignments inspected by the EIC during 2000-01 are shown in Tables III.2.

Table III.2: Number of Consignments Inspected Under CWI System, 2000-01

Products	Total
Agriculture and Food	
Basmati Rice	250
Black Pepper	233
Cashew Kernels	21
Fish and Fishery Products	1945
Milk & Milk Products	60
Chilled Dried Fish	53

Source: *Export Inspection Council* (EIC)

III.1.2 In-*Process Quality Control (IPQC) System*

The in-Process Quality Control (IPQC) system lays emphasis on the responsibility of manufacturers/processors in ensuring consistency in quality during all stages of production by adopting quality control drills and exercising control on raw materials and bought-out components, manufacturing process, packing and final testing. Manufacturing and processing units, adjudged as having adequate levels of quality control in all these areas, are approved by EIC based on the assessments. Units approved under this system are eligible to get certificate of export worthiness without further verification of the quality of the out going consignments by EIC and random spot check of the consignments are carried from time to time. Under the simplified inspection procedure, such units have been given the option, either to issue certificate of inspection of export worthiness on their own or to obtain certificate of inspection from EIC. During 2000-01, EIC exporting units under the system certified consignments valued at Rs 770.00 Crores. The total number of units under IPQC system stood at 18 as per details given in Table III.3.

Table III.3: Number of Consignments and Its Values Certified Under IPQC System, 2000-01

Products / **Agriculture and Food**	**Total No. of Consignments**	**Value Rs Lakhs**	**No. of Units**
Basmati Rice	1020	34760.9	9
Black Pepper	488	2113.7	9

Source: *Export Inspection Council* (EIC)

III.1.3 *Food Safety Management Systems Based Certification* (FSMSC)

In view of growing concern the world over regarding health and safety parameters of food items being imported, international standards on Food Safety Management Systems like HACCP/GMP/GHP have been developed. Based on such standards, which are being prescribed by several of India's trading partners of European Union, EIC has introduced certification of product quality integrated with the systems approach.

Currently, Fish & Fishery Products, Egg Products and Milk Products are being certified under the above system. Table III.4 gives the value of consignments certified under the system during 2000-01. It is important to note here that under the SPS system fish and fishery products account for about 99 per cent of the total consignments certified under FSMSC. Given such significance of fish and fishery products in our export basket a deeper analysis is carried out in the following section.

Table III.4: Value of Consignments Certified Under FSMSC, 2000-01

Rupees in Lakhs

Products	Total
Egg Products	4044.25
Fish & Fishery Products	486798.73
Milk & Milk Products	13.05
Total	**490856.03**

Source: *Export Inspection Council*, (EIC)

III.1.4 ***Fish & Fishery Products (F&FP) Certification Scheme***

Under the Export of Fresh, Frozen and Processed Fish and Fishery Products Act., compulsory pre-shipment certification of Fish and Fishery Products (F&FP) is being carried out by EIC. As on 31 March 2001, there were 108 units approved to process F&FP for export to European Union and rest were approved for processing F&FP for export to countries other than EU. These Include 8 freezer vessels approved for EU (Table III.5).

Table III.5: Agency wise Break-up of Fish & Fishery Products Approved Units, as on March 2001

Approved For	Total
Non EU	192
EU	108 (121*)
Total	**300**

Source: *Exports Inspection Council*, EIC.

*As per MPEDA:www.mpeda.com

Based on the experience gained and taking into consideration the need for having uniformity in the system of F & FP certification, the Executive Instructions laid down in the manual titled "Scheme for approval and monitoring of processing establishments/factory vessels for processing fish and fishery products for export to the EU" was revised and finalised in January 2001. The Executive Instructions were revised primarily to consolidate the operational instructions in one document for ease of implementation. The highlights of the revision include modifications in surveillance system for approved units, procedure for complaints handling and guidelines for dealing with unsatisfactory surveillance reports and failures in samples as well as other procedural aspects.

III.1.5 ***Egg Products***

Under the Export of Egg Products (Quality, Inspection & Monitoring) Rules, 1997, EIC and its agencies have been designated as Competent Authorities to ensure compliance introducing monitoring system for export of Egg Products. The prime objective of the scheme is to ensure that every processing establishment assumes responsibility for maintaining proper sanitary and hygienic conditions of the unit to ensure quality and wholesomeness of the product for the consumer and also meeting the specification requirements. This scheme provides for monitoring units. As on March 31, 2002, 3 establishments have been approved for export of Egg Products under the Rules.

The above-mentioned discussion indicates that the Indian quality inspection and monitoring system is very sensitive to the international food safety standards. The system is slowly and steadily evolving itself to meet with the challenges of SPS application.

III.2 ***Detention of Shipments by USFDA***

The other side of the story of agricultural exports is the dependant on the import procedure in the destination country. In what follows, we attempt an examination of detention of shipments by USFDA to gain a better understanding about the application of SPS in an importing country.

The US is probably the only country, which provides information on detention of shipments based on pre-inspection basis. Table III.6 provides number of detentions by US Food and Drug Administration. During May 1999-April 2000, total number of detentions by the US originating from all (52) countries were 9875. Out of 9875, 860 shipments originated from India. This was the maximum number of shipments rejected by USFDA originated from a single country. Since this is not a proper measure of rejection rate, Table III.6 also gives the number of detentions per $ one million imports from originating countries. The range of this parameter was 0.1-11.0, while the rate for India (shipments US $) was 4.5. To examine the rate of detention overtime, we estimated this parameter for recent months, i.e., September 2001-February 2002. Our results shows that the number of detentions per US $ one million has declined from 4.5 in 1999-2000 to 2.6 during 2001-2002. Similar estimates were also conducted for specific commodities groups of US imports from India, i.e. 'Shrimps & Tuna' and 'Mushrooms'. The detention rates for these sectors during 2001-02 were 1.3 and 56 respectively. It shows that the rejection rates of Indian 'Shrimps and Tuna' is lower than overall average rate, while the corresponding rate of mushroom is significantly very high.

USFDA also provides information on causes of detention of different shipments. The information based on September 2001-February 2002 show that 405 Indian shipments were rejected by USFDA. The results of (a) all commodities and (b) fisheries and marine products are given in Table III.7. A number of observations can be made from this Table:

(1) A significant number of Indian consignments were rejected on the basis of multiple reasons. For example, a consignment of Nishat Export (of black pepper) in September 2002 was rejected on the grounds of (a) FILTHY or adulteration, i.e. article appears to consist of a filthy, putrid or decomposed substance or to be otherwise not fit for food, and (b) SALMONELLA, i.e., the article appears to contain a poisonous and deleterious substance.

(2) Each rejected consignments was on the basis of 1.35 percentage of Reasons (Average) for all commodities, and corresponding 1.76 percentage for 'fish and marine products. Hence it shows that the reasons of the rejections are higher for fish and marine products.

(3) A large number of Indian consignments of all commodities were rejected by USFDA on the basis of (a) FILTHY, (b) SALMONELLA, (c) NOT LISTED, i.e. information regarding product was not provided. and (d) UNAPPROVED, i.e. a new drug without an approved application.

(4) A large number of Indian consignments of Fisheries and Marine products were rejected due to (a) FILTHY, (b) SALMONELLA and (c) INSANITARY, i.e. an item prepared, packed or held under in-sanitary conditions.

Table III.6: US Food Imports and Detention of Shipments by the US Food and Drug Aminstration[1]: Detentions and Number of Detentions per $million of Imports

Country group/country[2]	Export Value US$	No. of detentions	Number of detentions per 1 $m imports
May 1999-April 2000			
Total[3] (52 Countries)	-	9875	0.9
Mean	-	179	1.7
Range	-	11-860	0.1-11.0
India – All commodities		860	4.5
2001-2002			
India			
A. All Commodities, Sept. 01 - Feb. 02	138.82	3.64	2.6
B. Shrimps and Tuna, April 01- Feb. 02	149.6	167	1.1
C. Mushroom, April 01-Feb.02	0.25	14	56

Notes: 1. All Commodities, 2. The number of countries in each group shown in brackets, and 3. Total number of detention is net of shipments originating within the USA.

Sources: Compiled using data from the following sources.

1. Import detentions: US Food and Drugs Administration, OASIS Website www.fda.gov/oasis
2. Import/Export value: (a) UN trade-data tapes held at the International economic database of the Australian National university (imports), (b) Export Value of India to US: G.O.I. DGCIS.
3. Athukorala, Prema-chandra (2002), "Asian Developing Countries and the Global Trading System for Agriculture, Textiles and Clothing", in Adhikari, Ramesh and Prema-Chandra Athukorala (eds.) *Developing Countries in the World Trading System: The Uruguay Round and Beyond*, Edward Elgar, UK and US.

Table III.7: Causes of Detention of Indian Shipments by USFDA	
A. All Commodities, Sept. 2001 – Feb. 02	
Causes of Detentions	**No. of Shipments**
FILTHY	97
INSANITARY MANUFACTURING	1
FABRICATED INGREDIANTS	24
LACK FIRM: NAMES ETC.	6
NUTRITION LABEL	20
DIRECTION: HOW TO USE ETC.	9
NO PROCESS	15
COSMETIC COLOR	5
SALMONELLA	54
UNAUTHORIZED IMPORT	14
UNSAFE CP;	8
PESTICIDE	3
COL ADDED	1
FALSE	7
DRUG NAME	3
YELLOW H5	1
NO DMA	5
DR QUALITIC	5
UNSAFE ADD	13
NEED FCE	14
LACK N/C	12
REGISTERED	12
NO 510 (K)	4
USUAL NAME	5
MFRHACCP	1
NEWVET DR	1
HOLES	2
ENGLISH	1
POISNOUS	2
PERSONALRX	3
AFLATOXIN	1
NO ENGLISH	2
IMPTHACCP	1
COLOR LBLG	1
RX LEGENT	5
LABELING	5
DIETRYLBL	2
INSANITARY	1
INCONSPICU	1
CONTAINER	1
NOT LISTED	70

UNAPPROVED: NET DRUG WITHOUT APPROVAL	110
TOTAL	**405***
B. Fishery and Marine Products, Sept.01 - Aug.02	
FILTHY	73
SALMONELLA	62
INSANITARY	11
NEEDS FCE	02
MFR HACCP	01
IMPTR HACCP	01
NO ENGLISH	02
LIST INGRE	01
LACKS FIRM	01
LACKS NIC	01
USUAL NAME	01
NUTRIT LBL	02
TOTAL	**90***

* Total number may not tally with sum of individual causes, because in many shipments, more than one cause is mentioned for detention.

Source: USFDA Website.

For definition of causes of Detention: See USFDA Website.

IV. CASE STUDIES OF SELECT FOOD PROCESSING AND AGRO SECTORS

This section examines effects of SPS measures on market access of India for selected[10] products. We study the impact of stringent regulations in the food processing and agro products sectors in some developed countries on Indian exports, addressing questions not only regarding viability of compliance costs but also on their justification on safety grounds. We identify some market access barriers related to Non-Product-Related Process and Production Methods (npr-ppm) having little transboundary effects and examine their impact on costs, their effects on the local environment and the necessity or otherwise of meeting such standards. HAACP standards are specially considered in examining the above issues and sectors. Both primary and secondary information has been collected for this component.

IV.1 ***Marine Products****

IV.1.1 Sea Food

The European Commission in August 1997 banned fishery products from India. This extreme step was preipitated on three primary goods, namely, serious deficiencies with regard to infrastructure and hygiene in fishery establishments; potentially high risk for public health with regard to the production and processing of fisheries products; contaminated by micro organism, which may constitute a hazard to human health.

The Government, faced with the EC ban, issued an Order that specified elaborate process standards to maintain the highest quality standards as per the health requirements of the importing countries especially the European Community.

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[10] For a means-end diagrammatic depiction of market access facilitation a reference to Calzadilla-Sarmiento, Bernardo (2002), "UNIDO's Activities Related to Market Access Facilitation & SPS Measures", a power point presentation, can be made. Since our analytical approach is not similar, we are reproducing the UNIDO format at Annex 1 for easy reference. For a detailed theoretical discussion, see Beghin, John C. and Bureau, Jean-Christopher (2001) 'Measurement of Sanitary , Phytosanitary and Technical Barriers to Trade" OECD Report, Paris and Deardorff, Alan V. and Robert M. Stern (1997), 'Measurement of Non-Tariff Barriers, Economics Department Working Paper No. 179, OECD/GD(97)129.

* For greater details, see Kaushik, Atul and M. Saqib (2001), 'Environmental Requirements and India's Exports: An Impact Analysis', RGICS Working Paper Series No. 25, Rajiv Gandhi Foundation, New Delhi.

Box 1: The Indian Sea food Industry

Indian Seafood industry is some 45 years old. It started in 1953 with the first shipment of Shrimps to USA. Until 1960, Indian exports in the fisheries area consisted of mainly dried fish, dried shrimp, shark fins and similar products. Markets were largely confined to neighbouring countries like Sri Lanka, Burma, and Singapore. Around late 60s USA, France, Australia, Canada and Japan started emerging as important markets for frozen and canned items. Processing plants with modern machinery for freezing and canning sprang up mainly for exports. During 1980s the canned items have slowly disappeared and frozen items have become predominant.

The factories are located all along the coastal states. 95 per cent of the units are in small-scale sector. The industry employs over five million people directly and indirectly. These include a highly skilled and competitive work force. The women labour force is also quite predominant particularly in processes like peeling.

Marine Products (fish, shrimps, squid, lobsters, crabs etc.) constitute the largest single agricultural export. The exports of marine products stood at US$ 1213 million in 2001-02. The importance of marine exports to India is substantial. India's share of the total world market is 2.52 per cent (Source: MPEDA). It represents important potential growth area for Indian economy and opportunity for foreign exchange. Though the industry contributes only 3.4 per cent to India's Foreign exchange earnings, it contributes to over 7 per cent of the Net Foreign Exchange Earnings (Seafood Manufacturers Association). \

Yet, Marine exports are at some risk, partly because of failure to adhere to or attain international standards. India's marine exports attract automatic detention in the United States. Automatic detention means the product must be sampled and tested before it gains entry into the country, which means delays, storage costs and may be a substantial refusal rate.

The European standards are higher than the HACCP standards. The Seafood Exporters Association of India claims to have spent US$ 25 million on upgradation of their facilities to meet the regulations. Appropriate training of the personnel involved in various stages of production and processing were also addressed. Many of the standards adopted in the government Order are either not relevant for the product quality or are too stringent given the Indian fishing conditions and the legitimate objective, cumbersome and less costly procedures.

The EC approved plants are normally bigger plants with capacity of more than 10 tons per day. Before you enter the plant you have to take off your shoes for rubber boots, put on a hair cover, facemask and a gown. These units have chilling room with -28 degree C temperature. These factories are spotless with excellent facilities. EC approved plants are as

good as any plant in Europe and USA and even better than them at times. The floors are marble and spotless clean, the equipment stainless steel, very comfortable temperature, workers in uniform, enough space to work comfortably, provision for water for periodic cleaning of hands and raw material. Every effort is made to re-ice the shrimp or to put them in the freezer in brine between steps in the processing. The workers are similarly garbed, while the women who are de-heading the shrimp do not generally wear gloves (because they are too easily punctured). There are chlorine baths permanently put near them for hand dipping. There are more than adequate facilities for workers to change, rest and washrooms.

In most of the plants, there is in-house peeling facility as well as a proper record keeping routine is maintained. A microbiological laboratory is also part of the facility. It is clean and well equipped. There is a microbiologist. There are regular checks of the incoming material as well as finished products. The microbiological tests are done in external laboratories also to be doubly sure.

According to some industry experts, the most common occurrence is presence of '*coliform*' bacteria but they rarely found 'salmonella'. Since the first step is to wash the shrimps in cold brine, the contamination gets removed. There are many processing units like this in the country.

The second types of units are the ones who have applied for EC approval. These are the units (non-EU), which were exporting to EU before the ban came into effect but now are exporting to US, Japan and other places except EU. These units also have decent facilities. They did not have marble floors, polythene covers are provided as shoe covering rather than boots and head cover. The change rooms and laboratories are not luxurious but there are all provisions for hygiene. They also have laboratories. They have all the provisions required by HACCP manual but may be of a lesser standard than the EC norms. Basically their handicap is infrastructure. Probably they will not have the change room of the dimensions required by the EU. However it does not in any manner effect the hygiene part of the product.

The third kind is typically small companies with annual turnover of around Rs.2 crore. These are small structures. They do not have in-house peeling facilities and get peeling done from outside. They do have laboratories but few are functional. They are inferior than EC approved units. They have plenty of water and cleaning facilities. The hygiene conditions apparently are not bad but scope for contamination is quite high. These companies are exporting to China, etc.

The exporters feel that the concept is good but its adoption in totality for a developing country is rather difficult. For example, even potable water which is an absolute necessity is in shortage in the Cochin area, moreover the EU standards require that even floors and ceilings should be washed by potable water. It also has a social angle that our neighbours do not get water even for drinking. It is not easy to use 100,000 litres of water every day without any resentment from them. The units, of course, often have their own treatment plants for potable water. They feel that EU norms are too strict and a few things are irrelevant for product safety. They have been asked to follow norms that even European plants do not follow. In this sense there are double standards. For example they have to undertake 62 tests to check water standards. For some of the tests, they don't even have equipment to test in India.

Following these norms substantially increases the cost of production. Earlier production was mainly in bulk form; the equipment required was plate freezers, refrigeration equipment for freezing, and building for processing hall and cold storage. But the EU requirement of infrastructure to meet standards involves heavy investment in equipment and building apart from the running cost. It is now necessary for each factory to have Potable Water System, Continuous Power (Standby Generators), Effluent Treatment Plants, Flake Ice Machines, Chill Rooms and Laboratories. It is estimated that such upgradation involves an expenditure of rupees 1 to 2 crore per unit as a fixed cost. The banks are not willing to give loans. They want to see the performance for the last three years. Last few years were bad because of EU ban on exports from India. Even if they get loan the cost, at 18 per cent interest plus other running costs, is prohibitive.

As far as running costs are concerned, the compliance cost increases tremendously. It has been estimated that for a medium sized plant, overhead cost goes up to as much as 5 times. The processing cost has gone up from Rs. 2 per Kg. to Rs.7 per Kg. A crude break-up of the increased compliance cost is:

1. The number of records to be maintained per day has gone up to 160. Earlier only 2 people were employed as record keepers, now it has gone up to 16. On an average salary of Rs.2000 per month, the wage for only record keepers has gone by Rs. 28000 per month.
2. The number of operators has gone up from 8 to 16 because of additional machines like ETP, Chilled Room, Flake Ice Machine etc.
3. Earlier, peeling was done on contract by outsiders at Rs. 1 per Kg. Since EU enforces in-house peeling, the cost has gone up from Rs. 1 to Rs.7 per Kg.
4. The water consumption has increased 5 times.
5. The power consumption has increase 3 times.
6. Above all the general overheads have increased because of better quality of staff, equipment, dresses etc.
7. According to exporters and confirmed by MPEDA, the compliance cost for meeting the EC norms is 15 per cent-40 per cent of the FOB value. The cost is more for existing units. According to MPEDA, about two-thirds of the units will ultimately upgrade themselves to the EC norms while the rest would perish. This may result in some unemployment and social tensions. Another problem is that coastal fishing has virtually reached its saturation point. Any further growth may not be sustainable. Exporters are pleading for permission to shift to deep-sea fishing. However, the Government has got this studied and found that the fragile eco-system in the sea in the areas where shrimp is found would be disturbed. So no more permissions are being given for deep-sea fishing. These trends further affect the exporters, in addition to the problems they face in meeting the EC norms. Hence, the ire against the EC norms is accentuated, particularly because they find many of the details neither necessary nor implementable. Conducting 62 tests on the water to be used to process fishes is a standard they do not consider justifiable on the

ground of hygiene alone. Similarly, they find the specification of the size of wash rooms etc. unnecessary.

IV.1.2 Aquaculture

In view of the sustainability issues arising on shrimps harvested from the sea, there has been a gradual shift to acquaculture in India. This shift was assisted by MPEDA by providing technical assistance beginning in 1977-78. As a consequence, export of cultured shrimp in total export of shrimp has moved up to 42.9 per cent in quantity terms and 66.4 per cent in value terms by the year 1997-98. The total area under shrimp farming at the end of 1997-98 is estimated to be 141,591 hectare. Of this, more than 50,000 hectare is based on traditional shrimp farming practices in the states of Kerala, West Bengal and Karnataka. The rest is scientific farming with active assistance of MPEDA. The potential area for shrimp farming along the coast in India is estimated to be 1.2 million hectare, of which only about 10 per cent is currently being utilised. There is therefore a lot of scope for improving the production.

Environmental issues have emerged in acquaculture also, but these are emerging from domestic environmental concerns rather than international sustainability issues. The concerns arose in view of the reports of ecological and environmental effects of acquaculture in South East Asian countries. Experts, however, observe that the concerns are misplaced so far as India is concerned. According to them the apprehension that shrimp farming causes degradation of coastal zone is vague and baseless. In fact setting up of acqua farms in the coastal zone has helped in protecting the zone as most of these units have taken care to construct proper bunding with granite on the outer area facing the sea coast. In a way, these farms protect coastal zone against sea-erosion during monsoon. Acquaculture units are set up in fallow areas where land is inundated with saline or brackish water and the units do not encroach upon the traditional fishing or farming zones.

Concerns were also raised about the acute shortage of drinking water in the coastal areas and the suspicions that acqua-culture could have contributed to it. But as per the report submitted by NEERI to MPEDA after a detailed study and analysis: “there is no seepage of

drinking water wells because of shrimps farms, as the shrimp farms mostly remain in hard clay soil and the seepage is almost nil or in its minimum percentage". NEERI study also observes that salinity was not changing after a distance of 25 metres. Deterioration of ground water quality was not observed around the pond sides. Even so, MPEDA propagates the setting up of a buffer zone concept as per the requirements of the site conditions. Unlike Taiwan, the Philippines etc., India does not use ground water for acqua-culture. Acqua-culture checks environmental pollution and degradation also as imported and costly seed is used resulting in economic use. Effluents from shrimp farms are biodegradable. However, intensive culture systems aimed at high levels of production per hectare could have pollutants in the form of heavy metals (mercury, cadmium), pesticides and petroleum products. Government of Orissa has banned acqua-culture around the Chilka Lake because of this. The solution to this problem is to discourage intensive culture systems. MPEDA recommends a farming system that is sustainable in its technical assistance programmes.

In fact, acqua-culture provides an environmental win-win situation in coastal Kerala where rice and shrimp crops can be rotated on the same land. In fact, this has been traditionally practised in that area. Acqua-culture cannot be done during monsoon and takes only three to four months. On the other hand, rice can be grown only during monsoon. It is a fact that acqua-culture farmers have purchased land at premium from traditional agriculture farmers, and to that extent there is a shift from agriculture. This should be checked, at least in the interior region, and can be done by the States concerned through Land Utilisation Act. The environmental issues for acqua-culture are in fact of a different kind. For example, degradation of acqua-culture land due to pesticide residues discharged from agriculture land is threatening acqua-culture activity. Effluents from industrial belts along the coast may also contribute to the degradation. The fact that fish cannot survive in polluted water can be a boon for policy makers to ascertain which areas need corrective measures by looking at the acqua-culture units in the area.

The costs for acqua-culture were ascertained. Capital costs for unit of 180 hectares amounts to Rs.180, 000. Other costs include power (Rs.20 per Kg), feed (Rs.70 per Kg), watch and ward (Rs.10 per Kg), interest on loan (Rs.60 per Kg) and misc. (Rs.20 per Kg). On

the other hand, the returns are Rs.280, 000 per 180-hectare farm or Rs.300 per Kg. Clearly it is a profitable business and can provide a lot of employment (650 man-days per hectare as compared to 50 man-days in traditional farming). In Orissa, exporters claim that 8 per cent State Government sales tax is a burden, which does not get recovered even for exports and renders them less competitive in their export markets.

IV.2 ***Poultry***[*]

It may be remembered that two years back, India was de-listed from the list of approved countries in EU for the import of egg powders into EU for non-submission of Residue Monitoring Plan (RMP). It has been the tactics of EU countries to introduce newer, stricter residue limits every time they feel they need to restrict imports from developing countries like India.

Therefore, the issue of residue limits and the Residue Monitoring Plan itself has been used as an SPS measure very strongly by developed countries like EU and USA. India also suffer since no agency took the responsibility of preparing the Residue Monitoring Plan for animal products including egg powders and the matter was thrown from one Ministry/department to other. If this had been laid down clearly in the documents itself that who will do and implement, this matter could have been sorted out easily. The issue of proper and good documentation comes out very strongly even in this case. The second example of SPS measure which the developed countries are using is in the matter of granting equivalency to countries like India since we do not have a proper document and where some document exists, EU and USDA has just not bothered to grant equivalency to Indian standards for egg powders. Even after four years since having submitted the list of plants to be notified by EU they have not constituted a commission to inspect these plants in India, notify them and grant them equivalency. Thirdly, invariably the test certificates issued by Indian laboratories are not accepted in EU and other developed countries as these labs are not accredited to the labs of developed countries. Though,

[*] We acknowledge with thanks hours of discussion with Mr. S.K. Singh in formulating this section. All shortcomings are our responsibility.

the Indian labs follow the same testing methods and protocol for testing the samples. Therefore, the certification issue is also being used as an SPS measure by other countries.

Box 2: Poultry Sector: Select Features

While the importance of agriculture in national income has been declining, the importance of livestock in general and the poultry sector, in particular has been increasing. For instance, the share of agriculture (including livestock) in GDP declined from 34.7 per cent in 1980-81 to 26.1 per cent in 1996-97, but the share of the livestock sector increased from 4.8 per cent to 6.0 per cent. This relatively lower growth of agriculture resulted in the increase in the contribution of the livestock sector to agriculture from 13.8 per cent to 23.0 per cent. India produced 37 billion eggs in the year 2000-2001 and ranked fifth in the world in egg production. Similarly the country produced more than 1000 million broilers in the same year – eighteenth largest producer of the world.

A distinctive feature of Indian poultry is that it is self sufficient in terms of availability of several world known brands of commercial hybrid chicks, essential equipment and machinery, medicines and vaccines, compounded poultry feed, disease diagnosis, services poultry training programmes, and technical and skilled manpower. The industry is supported by a strong genetic base, where the productivity levels of broilers and layers are equal to the productivity levels observed in developed countries like US and EU. India is also one of the few countries in the world which has put into place and sustained SPF egg production project.

The size of broiler farm has in general increased. During eighties, broiler farms have had on an average a few hundred birds per cycle. Today, units with less than 5000 birds are very rare, and instead units with 10 to 15 thousand birds per week cycle is common. In terms of technology absorption too, farmers have tended to adopt newer technologies of feeding and watering system including management of health and hygiene. Small units are at a disadvantage because of high feed and transport costs, expensive vaccines and veterinary care services, and non-availability of credit. Some small units are reported to be shifting from layer to broiler production because output in broiler units can be realised in six weeks. And slowly a system of contract farming is seen emerging in these small broiler units: chicks, feed and medicines will be supplied by integrators.

India's participation in world trade of poultry has so far been negligible. The world trade in poultry in 1998 on exportable basis amounted to 5750 thousand tonnes (valued at $10,000 million). However, India's poultry exports amounted to a meagre 407 tonnes ($21 million). But is has very great potential in near future.

Eggs and eggs-based products account for most of India's poultry exports. Exports of hatching and table eggs have increased dramatically due to higher demand from the Middle East and South-eastern countries – from 500 metric tons (Rs. 6.11 million) in 1985 to more than 65000 metric tons in 1998 (Rs. 608 million). Similarly exports of eggs powder increased from a meagre Rs. 0.4 million in 1990 to more than Rs.500 million in 1996. After 1996, however, exports of eggs powder have tended to fall by 16 per cent in 1997 and 20 per cent in 1998. The factors affecting its exports are reported to be the SPS measures of the European Union. India also supplies specific pathogen eggs to the European Union for pharmaceutical purposes.

Kuwait, Oman, Saudi Arabia, UAE, and Yemen have been major importers of India's table and hatching eggs. Similarly, Germany, Austria, Japan, Netherlands, and Republic of Korea have been the most important markets for India's eggs powder. Due to a downturn in sales to the EU and a decline in demand in Japan, eggs powder exports declined sharply in 1998. Exports of eggs power from India are reported to have slid down further in 1999 and 2000. At present, only three out of six plants are operating and exporting.

India also exports live poultry in the form of DOCs. The main overseas export markets for India's live poultry are countries of the SAARC region.

Issues relating to animal welfare and environmental pollution by poultry units have been of increasing concern in developed countries like EU and US. But in India, these issues are not yet critical although they are discussed at length at various seminars and discussions on poultry production. But considering the globalisation and international trade in poultry products, these issues may assume significance after a few years because of pressures from importing countries like EU.

Indian Poultry sector is facing number of problems. A major problem affecting the Indian poultry industry is the lack of basic infrastructure – storage and transportation include cold chain. As a result, there are wild fluctuations in the prices of poultry products. A second problem is inefficient marketing system. Currently poultry products pass through various intermediaries before reaching the final consumer. The presence of so many intermediaries harms both the producer and the consumer. The producer does not get remunerative price for his product, while the consumer pays high price because of cascading of margins with so many intermediaries. A third problem relates to prices of feed resources. Maize or corn plays a major role in broiler production, as it constitutes 50-55 percent of broiler feed. As the broiler industry is growing at 15 percent per annum, the demand for maize is likely to increase. The required policy measures are: (a) improve infrastructure facilities which will help not only to stabilise the price of poultry products in the domestic market, but also make them available in far flung areas; (b) an efficient marketing channel that gives remunerative price to the producer, i.e. the marketing set up of the country should also grow on professional lines which may include traditional channels of traders to some extent in the intervening period; and (c) to increase maize production, we have to go for GMO varieties of seed, or alternatively find other sources/types of fed ingredients which can replace maize.

If we look into the US importation rules, it is inherently placed in their document that they can stop importation of poultry and poultry meat products from other countries on various grounds which are favourably placed in their hand and in their favour. The FSIS can suspend the eligibility of another country if it feels that an emerging sanitary measure is to be implemented to address a hazard that is so severe that no product can enter from a foreign establishment until a control is in place. In a second situation, if the other country does not provide satisfactory documentation of equivalent sanitary measure or if FSIS audit reveals that exporting country is not implementing a public health sanitary measure in the manner that FSIS determined to be equivalent, they can permanently stop eligibility of that country for export. They can further take action against a particular country if they feel that their products are adulterated or misbranded on on-site audit or because of Port of Entry re-inspection etc. These are the SPS measures in different garbs which are used and can be potentially used by the developed countries like USA for stopping exports from developing countries like India.

We should also keep in mind the environment and welfare issue adopted by EU. Legislation on Nitrate levels in Denmark and the growing trends towards organic production and their increasing cost on housing would further bring in new issues in the shape of SPS measures. In Germany, animal welfare is becoming an important issue and there is a general agreement to limit the bird density of broilers while small cages are to be banned and in future these rules are going to be stricter. After the BSE crises of late 2000 which damaged the reputation of EU's food and farming industry, Salmonella control in laying hens by costly vaccine has become a normal thing. In France, new manure disposal regulations and the traditional method of producing animals, slowly and at low density will be an important animal welfare issue for future. In Netherlands, high livestock density accompanied by tough regulations and manure disposal has resulted in eco-tax, which again has increased the cost of gas and electricity there. They are trying to bring in tougher rules on ammonia emission and current policy is to ban laying hen cages. There are Directives to regulate broiler bird densities and production. Similar example can be given of Spain, Hungary and Poland where these issues are emerging and they will be used tomorrow in the shape of SPS measure against developing countries like India. It has been observed, that many a times, Certificate of Foot and Mouth disease and anti-radiation are being asked from Indian egg processors which has nothing to do with poultry production and

even if there is an evidence of this disease in any part of the country, SPS Agreement clearly talks of disease-free zones, under Article 6, that clearly lays down that members shall take into account the level of prevalence of specific disease or pests, the existence of eradication or control program or proper criteria/guidelines which may be developed by relevant organisation. Finally, whereas Article 9 of the SPS Agreement talks of technical assistance or special and differential treatment to developing country members for phased introduction of SPS measures, these are not adhered to. Sometimes the non- availability of proper protocols, equipment and sampling procedures domestically also hampers the work of certification by the local testing labs. It is very very essential that attention is paid to the supply-chain at each stage to maintain proper health and hygiene requirements.

Poultry industry consist of both layers and broiler producing eggs, chicken meat and represents different stages starting from Great Grand Parents or Purelines which is followed by the next generation of Grand Parents and Parent Breeding Farm. Upto this stage, the science involved is pure genetics followed by very sound principles of management in poultry. Hatchery is the hub area either of broiler or layer where sanitation and hygiene plays a very major and critical role. This is one area where lot of care has to be taken otherwise the chicks production from incubators and hatchers can catch different diseases which will not only affect the health of the birds but also can create food safety problems for the consumers. There is a very close inter-relationship between each stage. Each link has to be protected from contamination. This chain can be in the form of vertical integration or independent companies can work in the production of purelines, great grand parents, parent stock. Similarly, independent companies can also work in the production of day-old chicks in their hatcheries, which can just be started by a parent-breeding farm. Food can be produced by the integrator himself as well as can be purchased from the farmers from outside sources in the form of broiler chicken and eggs.

In India, vertical integration has not taken its root very strongly and there are only few companies like VH Group of Companies who are involved in all the activities of the supply chain in a typical integrated operation. Most of the poultry operations operated otherwise are run by independent producers of Grand Parents, Parents and there is a large number of hatchery operators also. Similarly, poultry feed is produced by the integrator himself but at the same time

there are many companies who are involved in the feed production like Hindustan Levers, Godrej, Uttara Poultry Feeds, Poshak etc. There is a large number of commercial farmers both for layers and broilers and further processing of chicken and eggs is still at a nascent stage. There are about half a dozen egg processing plants out of which three are operating presently and two of them are HACCP compliant meeting the international standards.

During 1996 all 6 plants were exporting egg products to EU and other developed countries. Due to instance of EU for new residue limits of pesticides and instance for submission and execution of RMP by India as country; the export of egg powder declined significantly. In fact the capacity utilisation of all most all the units became negligible. In fact it led to the closure of 3 units. The export of egg powder has again starting picking up after 3 plants have got higher standards. To adjust these plants to higher standard and HACCP compliance, each unit had to invest around Rs 1.5 to 2.00 crores and operating cost has also increased by around 1 per cent.

Similarly, further processing is being done by companies like Venky's (India) Limited who are also suppliers to multi-national food chains like Domino's, Pizza Hut, KFC and TGI Fridays etc. Such plants are meeting the international standards but about half a dozen plants are also in operation that are basically doing whole bird slaughter and processing. About 97% of the chicken is still sold live in Mandies and typically some of the mandies (market yards) like Gazipur of Delhi, where more than 2,00,000 birds are traded everyday. The broilers are still sold live and that too on a score basis (20 number make one score). The layer farms, egg grading, washing and packaging has just started for export purposes. However, majority of the eggs are still sold in small numbers by small and marginal operators. This complex situation with many players in the chain indeed is a challenge to fully vertically integrated the system in the country. The food safety however becomes a major problem as there are so many handlers and these handlers are doing different jobs and many a times they may not be aware of the food safety requirements. Many companies operate from the primary breeding stage where rest of the chain is integrated and the control is centralised which may put them in an advantageous position in terms of food safety as compared with the companies that are not integrated. In countries like India, where live market still dominates and it is a major and significant outlet for chicken producers and marketers, the standards of food safety are little difficult to meet as the number of

butchers and processors selling the same are very large and above all there are no documented guidelines available which are either voluntary or can be enforced. To achieve an acceptable level of confidence in food safety, certain steps can be undertaken pertaining to risk assessment.

IV.3 ***Peanuts***[*]

Peanut exporters have a feeling that foreign markets put non-tariff barriers on their exports of agriculture products because they have to sustain their domestic agriculture, which involves higher costs than in India. They also face situations where they have to make distress sales in the face of buyers expressing their inability to accept the supplies because of some domestic standards in the importer's market. They feel, therefore, that Indian exporters may have to depend upon their domestic market or, at the most, the SAARC region for sustenance.

Some of the problems faced by the exporters appear to be genuine. For example, they find that different testing procedures and conformity assessment standards are required in different markets. Each test costs Rs.6000. Nobody has informed them of the justification for most of the tests. Further, tests are required by these foreign markets (EU) only for exports from Egypt and India and not for exports from USA and Argentina. Another problem is that while there is no import duty on 50-Kg bags, there is a duty on 5-Kg bags. This is because the foreign markets want to discourage retail consignments. They also face problems regarding genetically modified peanuts. While, some years ago, one foreign market encouraged use of GMOs, now another market has wanted an assurance that the peanuts supplied are without GMOs.

A more detailed study was done on the issue of aflatoxin presence in peanuts, as this appeared to be a major threat to peanut exports.

The EU Commission in Brussels has specified tolerance limits for aflatoxin contamination in peanuts and also testing methods. The proposed levels are 10 ppb (5ppb B1) for raw material and 4 ppb (2ppb B1) for consumer ready products. The new proposed sampling plan is similar to the Dutch Code, i.e., the analysis is to be done based on a 3 test Dutch code

[*] A reference to Kaushik Atul and M. Saqib (2001), ibid will be very helpful.

methodology from a randomly drawn 30 KGs sample. The new procedure is much more rigorous than is currently in force, as, should any of the 3 tests be found to be over the limit, the lot will be rejected.

This step is unwarranted from the scientific angle (as submitted by various agencies/governments). Laboratory test with small animals such as touts and rats which were fed highly contaminated feed (B1) on a daily basis have concluded that aflatoxin can cause cancer of the liver. But there is as yet, no clear evidence to prove that aflatoxins are carcinogenic in humans. This should be viewed against the backdrop of the fact that should a shipment of peanuts be found to contain aflatoxin, this does not mean that all peanuts are contaminated since aflatoxin is concentrated on very few nuts. Statistically, one would expect to find one contaminated nut in a sample of say, 5000 to 10,000 uncontaminated nuts. Experts have concluded that 75 per cent of the lots rejected under the proposed procedure would be below the established tolerance, i.e. uncontaminated material.

Further, the world over, especially the peanut supply origins like Argentina, China, India, South Africa, U.S.A., Vietnam etc. where peanut consumption is very high, nowhere has there been any findings/reports so far, to the effect that aflatoxin in peanuts led to increase in cases of liver cancer. And peanuts are consumed in a very big way by all strata of society especially the middle and lower class.

JECFA report says that Aflatoxin contamination of foodstuff is very low among EU nations and only a few members of the population suffer from hepatitis B. Considering the estimated risk at 20 ppb, it will be 0.0041 cancer cases per 100,000 population annually. Considering the risk at 10ppb, it will be 0.0039 cancer cases per 100,000 population annually. This shows that the downward adjustment of the standard from 20 ppb to 10 ppb would bring a reduction of the estimated cancer risk only by approximately 2 cancer cases annually per 1 billion people. It seems improbable that there would be any measurable risk differential between the hypothetical standards (20 and 10ppb) in populations with a low hepatitis B incidence like in the EU countries. And consider the possibility that denial of export market to farmers of a

developing country like India could result in starvation deaths in multiples of the estimated harm to life in Europe.

The JECFA had previously recommended that maximum permissible aflatoxin levels should be fixed as low as possible. But now, on the basis of further data available, it has modified its recommendation to reducing the intake as far "as is reasonably possible". Further, it should be noted that the JECFA's risk estimates are based on data that made no allowance for the substantial reduction in aflatoxin contamination achieved by mechanical removal of the nut skins and by the use of optical and electronic methods for sorting the nuts. The risk computations are thus based on aflatoxin levels, which are no longer applicable. This new data should be taken into account when finally specifying the future EU tolerance limits. For example, the Codex Alimentarius Commission had proposed a maximum limit of 15 ppb.

The implementation of the EU Commission's proposals would endanger the export of peanuts to the EU member countries. The planned tolerance limits of 2 ppb aflatoxin B1 and 4 ppb total aflatoxin in finished products are so low that they would almost certainly cause insurmountable difficulties and immense costs for production and export to the EU countries. Producers within the EU itself would also suffer unreasonably from these regulations. Whereas the WHO is proposing a limit of 15 ppb for all aflatoxin, the EU Commission is insisting on an upper limit of 10 ppb for the raw nuts, despite the fact that the aflatoxin content decreases during subsequent processing of peanuts. The latest JECFA study published in June 1997 demonstrates clearly that an increase in the upper limit for all aflatoxin from 10 ppb to 20 ppb would involve a theoretical risk of only two additional cases of liver cancer annually per one billion populations.

Box 3: Sampling Procedure: Peanuts

The proposed sampling plan is similar to the Dutch Code (3x10 Kg). The analysis is to be derived from a 3-test Dutch Code methodology from a randomly drawn 30-Kg sample. The new procedure is much more rigorous than is currently in force, as should any of the three tests be found to be over the limit, the lot will be rejected.

In the case of bulk raw nuts, the implementation of a regular monitoring policy presents difficulties because the aflatoxin will seldom be evenly distributed throughout a given batch and only a few nuts may be contaminated. For example, the contamination rate is estimated at 1:10,000 for groundnuts (peanuts).

The question is how large should the sample be in order to ensure that the test yields reliable data on the degree of aflatoxin contamination. Opinions differ on this point:

The FAO has recommended testing a single 20 kg sample for aflatoxin content from a batch of between 15 and 24 t. The FAO is of the opinion that this sampling procedure would yield results that are reliable enough to eliminate the risk for the consumer and that stricter requirements would bring no significant safety measure.

Whereas the EU Commission wants three samples of 10 kg each tested from a batch of between 15 and 24 t. According to the new regulation, the whole shipment will be rejected if only one of the three samples exceeds the tolerance level. It would be far more logical to calculate an average value from all 3 samples as an end result. On the basis of the risk estimate computed by JECFA, several experts object that the new procedure would mean an unnecessary waste of good product without actually benefiting consumer safety. It is also certain that this practice would lead to adverse effects on prices. The EU regulation is also criticised because it fails to specify how the sampling and testing of the final products circulating in the trade should be performed. Uniform criteria, which are binding for all EU member states, are also necessary for these products.

The European Snack Association's Nut Working Group has already expressed concern of the industry about the testing program and analytical methodologies through CIAA (the European Food and Beverage Association). The American Peanut Council has submitted documents showing significant increase in costs and rejections as a result of multi sample system. The UK Ministry of Agriculture - MAFF - (UK is the largest consumer of peanuts in Europe - approx. 25 per cent of the peanuts imported into Europe) has already stated that the proposals were more of a burden than required by current UK regulations and could result in unacceptable costs to both industry and enforcement without any prospect of improved consumer safety. Despite these protests the revised draft of the sampling plan still recommends a multiple sampling system. It is evident that such a change will have very serious implications on the

peanut industry. It is also significant to note that this EU proposal possibly contravenes the GATT/WTO agreement as it will erect artificial barriers and seriously discriminate against a number of producing countries, particularly third world and developing countries including India.

Box 4: Testing Plan Comparison - Cost Implications For Peanuts

Current Single Testing Procedure	Proposed EU Multi-Testing Procedure
Average MT cost: $800	Average MT cost: $800
Cost of testing : $50/lot	Cost of testing : $200/lot
(Lot = 20 tons)	(Lot = 20 tons)
	Rejection: 30 per cent
	(Based on experience of USA and Argentine testing under the Dutch Code of Practice)
Final Cost US $ 802/MT	Final Cost US $ 1157/MT

Finally, we may note that none of the European countries is a producer of peanut and to bring about such stringent import restrictions on a commodity for which they have to fully depend on other countries, without giving any heed to the suppliers, other experts and JECFA/WTO, will be unhealthy and may prove to be more troublesome than serving any useful purpose.

All this goes to indicate that the proposed legislation will be counter-productive both to the buyer as well as the seller, apart from paving way for numerous problems and bottlenecks for no reasonable cause. In other words, the risk that non-fulfilment would entail is not commensurate with the costs incurred.

IV.4 ***Mango Pulp***

There are only nine major exporters of mango pulp in the country. Sourcing is done primarily from South-India Chittor District of Andhra Pradesh and Krishnagiri District of Tamil Nadu. Exports of Mango pulp in quantity and value terms for the last three years for which figures are available is given in the chart below:

Table IV.1: INDIA: Exports of Mango Pulp

Year	Quantity (MT)	Value (Rs. Lakhs)
1995-96	36023	8461
1996-97	40302	10501
1997-98	45874	12531
1998-99	38133	13856
1999-00	72384	19653
2000-01	57303	26385
2001-02	76735	24134

APEDA has taken firm export promotion steps for mango pulp. Implementation of HACCP was done by APEDA with a partial financial assistance from Ministry of Food Processing Industries. During 1997-98, 12 processing units in Chittor District were taken up. Subsequently, 12 units in the Krishnagiri district of Tamil Nadu have been taken with an investment of about Rs.3.5 million in the same period.

The compliance costs for implementing HACCP would have been prohibitive, had APEDA not come to their rescue with both financial and technical assistance. All the participating units have implemented HACCP in the Chittoor District. Five units were assessed and certified by International Standards Certification (ISC) South Asia Pvt. Ltd. during 1998 mango season. Six units of Chittor District and 6 units of Krishnagiri District have been assessed during the 1999 mango season. National Sanitation Foundation (NSF) has recommended all participating units of Chittoor district for certification after the certification audit. In the case of all units in Krishnagiri District, certification audit of 6 units has been carried out by Quality Assurance Service (Australia) and all of these have been recommended for certification. Small

units have not been able to take benefit of APEDA's efforts. There have been problems in applying HACCP at the farm level because of the nature of farms and practices in India.

The quality norms under the Prevention of Food Adulteration Act (PFA) of India do not fully match with Codex. For example, PFA does not cover rules for the various tests for water as required under Codex. According to some small exporters, HACCP has not been followed in pulp industry! There is a general awareness about HACCP, but they think it has not been passed as a law so far and they do not have to worry about it yet, especially because there is no consumer insistence in India for such standards. They admit that HACCP will certainly increase market accessibility, but they will have problems in adopting them. Some of the problems pointed out were:

(a) Since land holdings of orchards are small and the raw material is procured by contractors, it will be impossible to keep records at the field level as required for HACCP. The general age of orchards ranges between 3 – 100 years, so it will be difficult to keep control;

(b) Since this industry is seasonal (3 months) it is not feasible to adopt these standards, because you have to retrain staff, and the units cannot keep permanent staff. Training new staff every year is also not possible;

(c) It will be more viable for large plants or industrial houses, which deal in multiple products, work throughout the year and have their own orchards. But most of the units are small in this sector and HACCP will not suit them;

(d) As far as financial aspect of HACCP compliance is concerned, units, which are setting up now, will not have any problem. It does not cost much for new units, but the old units will have to revamp their infrastructure. It is a costly affair; according to rough estimates the cost for following HACCP will increase by 40 per cent;

(e) Financial institutions do not fund HACCP activity;

(f) Main markets are Gulf countries and they are only interested in cheap prices not HACCP; and

(g) To get ISO costs money, it costs 1.5 lakhs for ISO audit. The surveillance audit is every six-month and it costs Rs. 10,000 a man-day.

Apart from HACCP, pesticide residue is one of the main quality issues. It applies the same way as it does in peanuts. The other quality issues are that Indian pulp is brown in colour, is supplied in punctured bags, poor quality of drums in which it is exported, feathering (peeling of the coat), rusting, metallic taste (tin taste) and damage to seam of the tin or drum. These are packaging issues and do not affect health. The reason for above packaging problem is the quality of packaging material available in domestic market. The imported tin is good in quality but adds to costs. According to exporters, they do not have the technology or the technology is costly and they do not have the economies of scale to meet the costs. They feel that packaging should not be considered a health hazard.

Testing is a major problem for these units. There are a number of institutions but spread all over the country and quite expensive. CFTRI charges Rs.3000/- per test and SGS charges 0.27 per cent of f.o.b. value of the consignment. Laboratories in India are not equipped with equipment based on new technology required for the complicated tests necessary to comply with HACCP. Foreign health authorities are moving from parts per million (ppm) to ppb. Indian laboratories are not equipped to do these tests. There are differences in test results in India and Europe, allegedly due to methods of testing, and not due to the objectives behind the tests. In Europe only natural food imports are encouraged i.e. no sugar should be added. However sugar is also a natural product but if sugar is added there is an increase of 13 per cent import duty. The duty is 6.5 per cent without sugar and 19.5 per cent with sugar. They add sugar themselves because they have surplus of beat sugar, which is also subsidised in Europe. The buyers are interested to buy pulp with sugar but dissuaded by higher duty levied. All the ex colonies of France, Portugal and Spain do not pay duty on food items. However, all ex-colonies of UK have to pay duty.

Successful exporters feel that quality of Indian food has to be monitored for exports, and APEDA should introduce licensing. It will be very difficult to monitor implementation of norms if everybody is allowed to export. Small Scale units should not be encouraged for exports because of their fly by night operations, according to them. FPO has issued 4700 licenses for food processing units, out of which large units are 21, medium 156 and the rest are small scale. 90 per cent of these units are making mango pulp.

Exporters have fixed buyer for years. So, their relationship is good. If there is any trouble with authorities due to quality or any other reason most of the buyers are helpful in sorting out the problems at their end. It is also due to their stake in the clearance of consignments. The quality issue becomes a major hurdle when buyers have excess stock or the prices of the goods have fallen in international market below the agreed/contracted price. In such cases, sometimes the exporters have to accept price discounts, especially because of the perishable nature of the goods.

The Ministry of Commerce takes interest in their operations as they are responsible for trade promotion. But the problems faced by the exporters are quality or health related where Health Ministry should be involved. Even in business negotiations, the foreigners want an assurance from Health Ministry, which is not easy to obtain. There is a need to create better policy coherence here. Health Ministry is responsible for the development of Codex standards. The exporters feel that that Ministry could consult producers to their benefit while attending Codex meetings and formulating domestic standards. Food laws emphasise on economic offences and not on safety. The basic thrust of food laws is thus misplaced so far as export promotion is concerned.

IV.5 ***Mushrooms***[*]

Quotas on mushrooms are an uncorrected vestige of the past when the agriculture sector was not covered by GATT disciplines. The tariffication process built into the Agreement on Agriculture of the WTO is yet to result in quota free access of mushrooms to EU. Multilateral efforts are required to expedite this process. In the meanwhile, India needs to submit a representation to EU to have an exclusive quota fixed. The quotas allocated to Poland and other countries have been regularly left under-utilised to the extent of 21000 to 22600 tonnes in the last couple of years. India should represent for being allowed to fill-up the under utilised quota through a separate allocation.

[*] See Kaushik, Atul and M. Saqib (2001), Ibid for greater details.

A severe restriction in productivity had been experienced initially by most of the growing units all over the country. Some of the bottlenecks identified during interaction with the industry are elaborated below:

IV.5.1 Technology Gap

Mushroom growing in India started with use of primitive technology for compost making/crop raising in late sixties/early seventies, which resulted in low yields per unit weight of compost. The compost was prepared from cereal straws and animal waste by a long outdoor fermentation process in a single phase without use of steam pasteurisation. An average mushroom yield 6-8kg/100 kg compost was harvested in 6-8 weeks of cropping and the crop was raised in make shift cropping rooms. This was followed by 2nd phase of activity by establishment of a modern mother composting unit with FAO assistance at Solan where compost was prepared by improved method in 2 phases and a rich substrate prepared from cereal straws/poultry manure. This compost produced doubled the productivity of mushroom per unit weight of compost, which is considered as a big leap for the growing mushroom industry in our country. With increased exposure of scientists/workers to modern growing methods and more and more people taking to this profession, mushroom industry started taking shape. Then came the establishment of National Research Centre for Mushroom (NCRM) by Indian Council of Agricultural Research (ICAR) at Solan, H.P. in 1983. This gave a fillip and encouragement to the industry. The government support for R&D in this sector and concerted efforts began for popularising the improved methods of cultivation, screening of improved strains for use by Indian seasonal growers and addition of more mushrooms to the list of cultivated mushrooms in India. The information on improved technology was still not available to a common grower or a coming-up entrepreneur in India. After composting was accomplished by the grower information on raising of a healthy crop or mushrooms was another bottleneck. The grower would collect spawn from some source and not know about the growing parameters, nor was the modern cropping room available to him. So, this method of growing in improved cropping rooms continued till late eighties by majority of the growers in India, resulting in poor yields. In late eighties and early nineties, modern cultivation units were established with help from various companies from Europe, who were more interested in selling the machinery and establishment of

the mushroom farms at their asking rate. This did help in building of modern mushroom units but the big question was who would manage/run them. That is where the Indian industry took a beating and unit after unit failed to produce mushrooms to the level of profitability. This is the period where sometime was taken to tune the production parameters till economic yields were obtainable by most of the units in India. By the time this was achieved, the international market came crashing down and the same impasse is still continuing.

Box 5: Mushroom Exports: A Background

India produced about 40,000 tons of all types of mushrooms in the year 1997 (estimates). These do not include the edible wild mushrooms harvested from nature. The marketing of mushrooms harvested from nature is handled by the traders/exporters in big cities who collect the mushrooms from the growing areas through local contacts.

There are fourteen large-scale white button mushroom units/export oriented units located at different places with approximate installed production capacity of 30,600 TPA.

All the units are currently in production and some are selling fresh mushrooms in markets in India while most of the EOU's are exporting. There are scores of other smaller units growing mushrooms in environment controlled cropping rooms in various parts of India. The seasonal growers also form a big chunk, which produce mostly for markets around their location.

Despite the fact that EU and USA are very large producers of mushrooms in the world, they are also the largest importers as well. The EU production of mushrooms is estimated at about 1 million tonnes and that of USA at about 375,000 tonnes equivalent to fresh form. The imports of mushrooms into USA and EU are estimated at about 84,000 tonnes and 14,3000 tonnes respectively in the year of 1996. The major exporting countries to EU have been Bulgaria, Poland, and China. EU has allocated quotas to the mushroom exporting countries to put quantity restrictions on exports to EU at reduced custom duties which range between 12 per cent to 23 per cent for mushrooms supplied in various forms. The export into EU outside the allocated quota attracts heavy duties to an extent that landed prices increase from an average of US$ 2.46/Kg to US$ 4.6/Kg. With that kind of duty structure outside the quota it is difficult to export mushrooms to EU. India does not enjoy at present a separate quota but it has been placed in the residual group with other countries and allocated 4.52 per cent of the total import value as against 31.25 per cent for China and 59.76 per cent for Poland.

IV.5.2 Role of Govt. Institutions

The R&D support available in the country is catering more to the needs of small/marginal mushroom growers, both for information and training. The average yield per unit weight of compost has been increased to 16-20 kg/100 kg compost in 6 weeks of cropping. But for becoming globally competitive, yield increase combined with reduction in cultivation costs is the goal.

IV.5.3 Exploitation by the Foreign Machinery Sellers and So-called Consultants

The foreign machinery sellers gave a rosy picture regarding the market. They applied the technology/machines, used in labour starved countries in Europe, at as-is-where-is basis, and the result was not very encouraging. The machinery sellers from industrialised nations besides selling the machinery, also offered the technical know-how for cultivation of white button mushroom in computer controlled environment cropping rooms. They failed to understand that the two situations are totally opposing, one prevailing in temperate Europe and the other prevailing in tropical India. While you need to raise the temperature under European growing conditions, the Indian requirement is opposite of this. The job becomes more complicated when you have also to manipulate other parameters, besides temperature, like R&D, air speed, heat removal, CO_2/O_2 content of the cropping room. All the above parameters are to be maintained at a certain level during various stages of crop raising and increase/decrease in these effects the other parameters. Then most of the raw materials that are used in Europe are not available in India. For instance, peat for casing is not available in India and we have to use alternative materials in its place. The European grower is used to watering peat casing heavily, which will not apply under Indian conditions. Post harvest handling of fresh mushroom in temperature areas is easier as compared to hot climates where you do not have mush time at your disposal for post harvest handling.

The foreign machinery sellers offered buy-back arrangement to most of the projects (EOU's) which in-fact ended in a fiasco. This was a false guarantee given to innocent entrepreneurs for roping in the project, which the entrepreneurs realised too late. It became a

fashion with financiers in India to ask for a buy-back guarantee from a foreign buyer, which in their opinion was nothing but a ploy to safeguard the interests of the financiers. The real guarantee should have been to obtain a clean picture of marketing/market place nationally and internationally. Every project entrepreneur should have been to obtain a clean picture of marketing/market place nationally and internationally. Every project entrepreneur should undertake the market survey on the realistic basis, and then give his projection of the market. Indian market itself is a big market for future mushroom growers, especially for fresh marketing of the produce.

IV.5.4 Raw Materials Available in India and Lack of Information on its Optimal Utilisation

The raw materials available in different parts of India for mushroom cultivation are varied. In most of northern and central parts of India, wheat straw is abundantly available, prices are high. In eastern and southern parts paddy straw is available in abundance and at lower prices. Poultry manure is available everywhere on very low price. Sugarcane bagasse is available in those areas where sugarcane is grown in abundance (Western parts of India, Central India, and some other places). The art of composting from wheat straw /paddy straw/sugarcane bagasse as a base material will have different requirements/applications and limited information to the grower is available on use of paddy straw/sugarcane bagasse as a base material for composting. Utilising the above materials for composting to its optimum utilisation with economic returns will require a specialised skill from the manager/entrepreneur. Use of FYM/spent compost/composted coir pith as casing in button mushroom cultivation in India, in place of peat will again require experience on part of the grower for optimal utilisation of these agro-wastes in mushroom growing. Casing is the second important input in button mushroom growing. Though not many casing materials are available for commercial growing in India, but choice has narrowed down to 2 or 3 materials mentioned above. These materials require to be processed (water leached/steam pasteurised) before use, unlike the peat sold in Europe which is harvested from underground bogs deep down. This material is devoid of harmful microorganisms and is thus used as such after adjustment of pH with lime.

Though NRCM has generated information on composting/casing material usage, one factor is important and that is the price factor and mushroom productivity from these materials on commercial scale.

IV.5.5 Absence of Organised Support to Mushroom Industry, for Processing and International Marketing

There is no organised help available in marketing of this produce from India. Every export oriented unit has its own arrangement for marketing and the mushrooms are preserved in brine and canned in large containers of 3-5 litres capacity or even bigger for export. The government support for marketing is not available in India, nor is any special/preferential quota available in European Union, as is available to other nations. Direct export to USA/Germany under some sort of arrangement is one alternative that could be given a thought. For this the growers will have to form a marketing co-operative There are no processing plants especially available as a support organisation for this industry in India, except for a limited support by NAFED to seasonal growers in North Western plains of India. This type of support is available to mushroom growers in China, and they are able to can the produce on a large scale at rail accessible points for export. Finance at lower interest rate and inputs for infrastructure at fair price should also help this industry to keep down the cost of cultivation. Reduced cost of production together with greater productivity per unit weight of compost will help the industry to become competitive globally. A long-term strategy has to be planned to help the industry. These include training of manpower, development of high yielding strains, better pest management program and efficient post harvest handling/processing of produce for value addition.

Clearly, in the case of mushrooms as of now, India faces unfriendly tariff structures in the world market and quota issues on the one hand and capacity and technology issues on the other rather than environmental barriers.

V. CONCLUDING REMARKS

In conclusion a series of issues can be flagged for our discussion and further investigation for more clarity:

- The share of agricultural and allied products' exports in the total exports from India in the recent past has declined, after significant increase during early nineties.
- Agro-food processing sector with special respect to exports in the post-1991 period has gained significance in India.
- SPS-relevant exports viewed in the either in the output-exports matrix or volume-value matrix, indicate at least four different broad groups of commodity classes for specific address/attention.
- The domestic inspection regime for the processed food exports is prominently evolving itself.
- The rigour of inspection within this evolving framework and the international food safety regulations is on a learning curve in India.
- The experience of Indian exports under various international initiatives on safety regulations indicates that scientific merit of the involved processes is dubious.
- Detentions by USFDA of shipments originating from India as a reference show diverse and yet ingenious mechanisms. The inventiveness comes out sharply in the cited causes of detention that again varies according to commodity category. For example, "Unapproved", "not listed" are just two causes of detention that seems highly subjective and devoid of any scientific scrutiny.
- The rejection of Indian consignments in the first instance (e.g., egg powder by EU) and then accepting them through other unfair means are a common experience.
- SPS measures and customs limits do not appear to be compatible with Codex standards, in some instances.
- Case studies have been carried out specifically to understand and highlight certain specific experiences. The case studies of Marine products, Poultry, Peanuts, Mango pulp and Mushrooms indicate the market access barriers faced by the Indian exports.
- They also indicate substantial increase in documentation and record keeping activities that may not necessarily be commensurate with the expected returns.

- The international food safety regulations against this backdrop give out following additional and yet substantive observations and suggestions.

V.1 ***Observations***

⇒ Solutions for capacity constraints may also involve subsidies or trade related investment measures (TRIMS). Multilateral effort, particularly in WTO would be required to render such subsidies non-actionable and such TRIMS compatible with WTO rules.

⇒ Capacity constraints requiring technical and technological solutions may not be overcome only by efforts of the Government. The reviews of TBT and SPS agreement should factor these constraints into the recommendations for changes or special and differential treatment.

⇒ Standard setting organisations in India need to be strengthened and brought under a common canopy for uniformity. The enquiry points for TBT and SPS Agreements need to create institutional support for dissemination of drafts standards notified in the WTO to exporters and get their feedback for sending comments to Governments abroad.

⇒ Where standards in India differ from standards in the buyers market, equivalence may be attempted, particularly where harmonisation is not possible because of domestic constraints or incapability of foreign standards to local conditions.

⇒ Testing equipment and procedures need greater attention at the national level and possibly, funding of laboratories. Mutual recognition Agreements with important buyers may be necessary and should be encouraged multilaterally also.

⇒ Appropriateness of standards in markets abroad to the local conditions need to be assessed at the national level before applying them, as was done in the case of the marine product sector. Social costs should also be factored into this assessment.

⇒ It is important to examine the legitimate objective behind standards applied on India's exports and analysis of the risk that non-fulfilment may create (e.g. marine products, peanuts, and spices). Such risks should commensurate with the effort involved to meet the standard as well as the compliance costs. If not, equivalence or MRAs may be the answer.

⇒ Quotas (mushrooms) and price preferences to competitors are issues relevant for the Government to take up with the concerned foreign governments for redressal particularly where environmentally friendly products are using their compatible advantage and denying India a 'win-win' on environmental gains and market access gains.

⇒ Voluntary process requirements and other measures like eco-labels can act as *de-facto* barriers to market access and therefore may have become a necessity in the market place. Wherever significant market access effects are discernible, the matter needs to be taken up multilaterally by the Government.

V.2 *Suggestions*

⇒ There has to be a close interaction between the Government, experts of SPS and trade on revision/updating of the standards.

⇒ A continuous flow of information from Codex and other standards making agencies should be available at single point so that this information reaches properly to those who require it the most.

⇒ The notification etc. of higher standards should be reviewed by a group of experts and accordingly they should consider updating our standards.

⇒ There should be an advisory group of experts which can consider advising the SPS committee to incorporate information relating to risk assessment, risk management and level of SPS protection in our country.

⇒ Development of scientific capability and capacities of human resource required to monitor and argue the SPS procedures.

⇒ Government should very seriously study the environmental and animal welfare issues which will be potentially used by the developed countries, particularly, EU in future.

⇒ We also need to closely monitor the new residue limits being introduced by the developed countries and also the new issues being added every time we fulfil the old obligations.

⇒ The moot question is that wherein there are hundreds and thousands of farmers in India and many of them are small in number, how they will comply with the SPS measures which will be enforced if we document and notify them. Of course, to implement HACCP, Corporate sector would require heavy investment, which has to be, sustained every day, every month and every year. Not only these expenses have to be sustained but they will go on increasing as the developed countries would introduce new and newer SPS measures every time (The shifting [goal]post syndrome). To keep oneself at an international level of food safety, health and hygiene, it would be possible for the larger units to implement SPS measures with a reasonable cost, however, it would be very difficult for the small and marginal stake-holders to implement the same for basically two reasons (a) Lack of knowledge and (b) Cost benefit ratio.

⇒ HACCP creates virtually insurmountable costs for the small and medium scale sector. Application of HACCP to SMEs would need to be preceded by capacity building measures, including national and international technical and technological assistance and non-actionable subsidies.

⇒ Idle capacity, lack of finance, nature and size of farms, land laws and family traditions, lack of trained staff and cutthroat competition are some of the hurdles in effective implementation of HACCP.

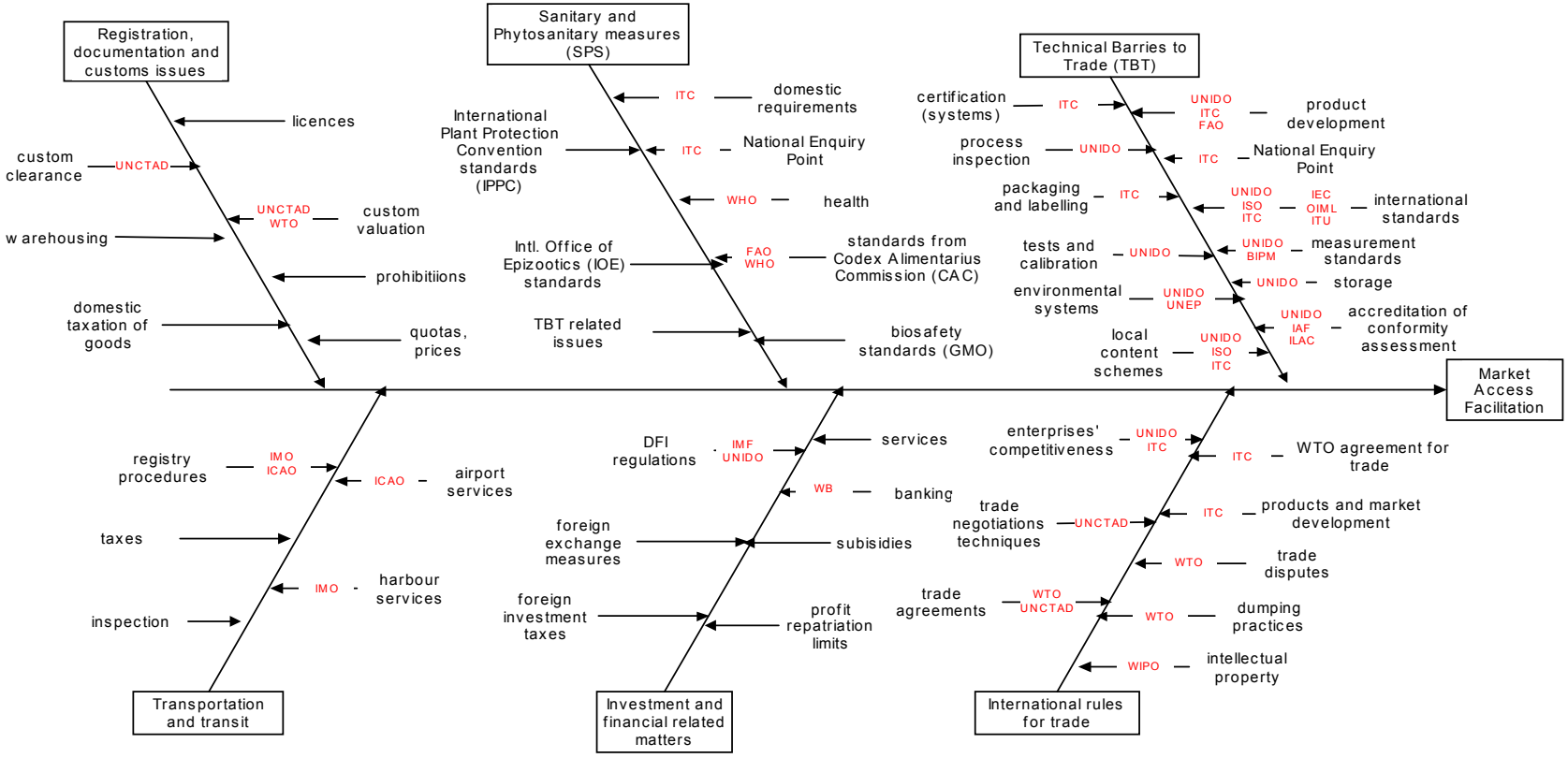
⇒ Government regulations are focused on economic offences rather than on food safety. This is a disincentive for adoption of HACCP and needs to be reversed.

⇒ A careful analysis is required at the national level on the norms of HACCP that exporters find difficult to adopt, and the Government needs to take these up in the Codex so that the Draft Standard under discussion there is suitably adjusted to India's needs. Application of HACCP by importing countries can be suitably discussed at the Government to Government level so that no measures are applied that go beyond the legitimate objectives built into the TBT/SPS Agreements.

⇒ The EC regulations on marine products need a closer look to identify their HACCP plus components, the compliance costs arising therefrom and the assistance that could be sought bilaterally and multilaterally to save the SME sector in India, which appears to be dying in the process of complying with the domestic standards based on EC regulations.

Annex 1

NON-TARIFF BARRIERS AFFECTING MARKET ACCESS



Graphic 1 - Means-End diagram for market access facilitation

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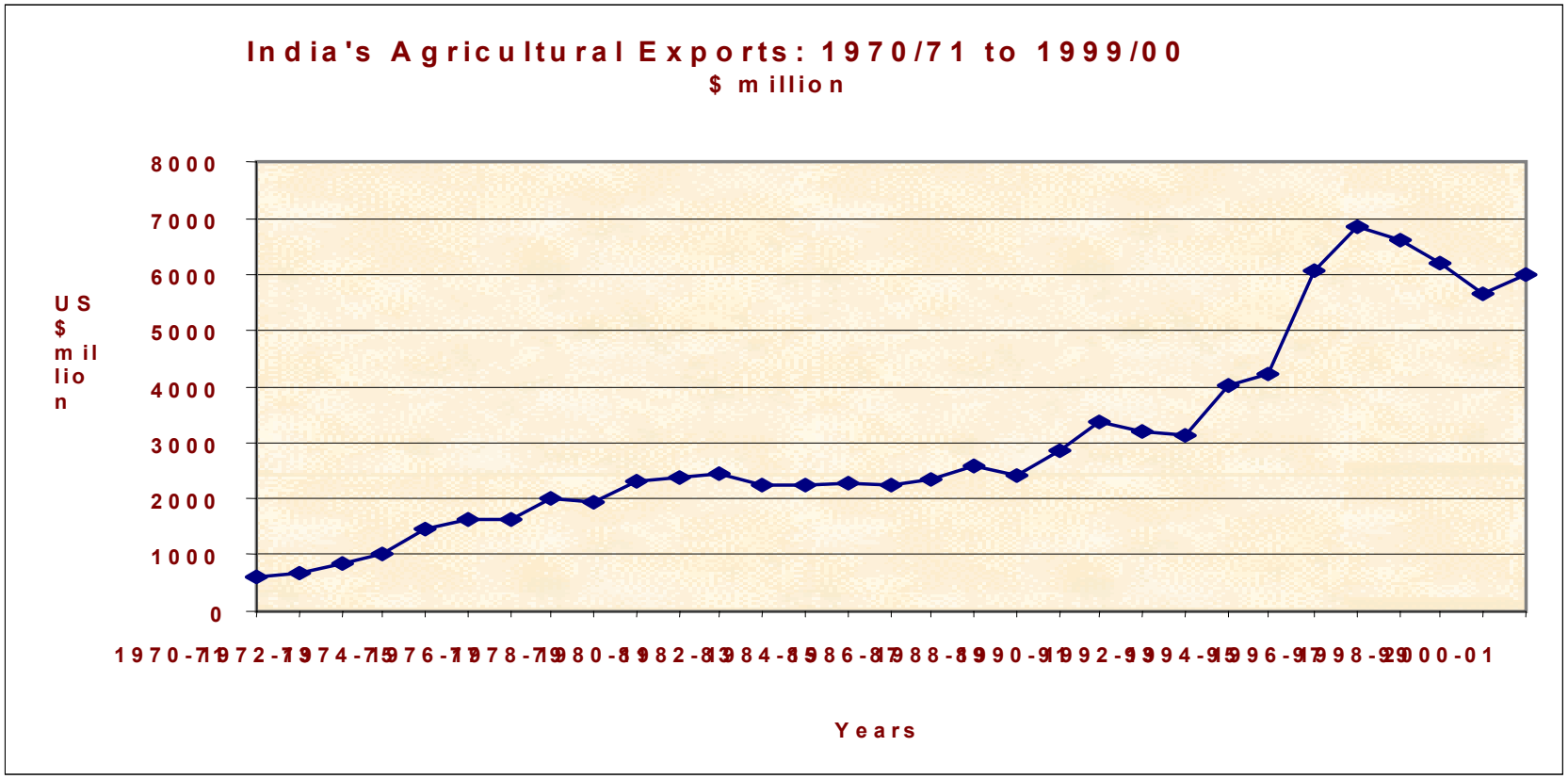
Annex 2


India's Agricultural Exports: 1970/71 to 1999/00
$ million
US $ million
8000
7000
6000
5000
4000
3000
2000
1000
0
1970-71
1972-73
1974-75
1976-77
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1998-99
2000-01
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