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# Accelerating India's Agriculture Exports





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M. Visvesvaraya Industrial Research and Development Centre



## **Bharat Ratna Sir M. Visvesvaraya**

(15 September, 1860 - 14 April, 1962)

MVIRDC World Trade Center Mumbai is the realization of the vision of one man - Sir M. Visvesvaraya - engineer, scientist, and a great son of India. Named after him, M. Visvesvaraya Industrial Research & Development Centre (MVIRDC) is a company registered and licensed under Section 25 of the Companies Act, 1956 (currently Section 8 of the Companies Act, 2013). MVIRDC is the promoter of World Trade Center Mumbai, which stands tall as a symbol of excellence in industry and trade services.

I am pleased that the MVIRDC World Trade Center Mumbai has completed this comprehensive study to map the challenges to India's agricultural exports, and identify solutions to address these problems. The study comes at an opportune moment and is in sync with the reforms enacted by the Government of India to make the policy environment more conducive for Indian agriculture. In particular, this study is extremely useful to organizations such as the International Fund for Agricultural Development (IFAD), which are interested in supporting governments to develop smallholder and marginal farmers' participation in remunerative value chains. This study also offers a roadmap to the future of agriculture in India and has taken a long term and welcome view to develop agricultural exports while being mindful of the food and nutrition security needs of Indian consumers and the growing domestic demand.

The study reaffirms the resilience of the agriculture sector and its growth potential amid the new and unforeseen shocks arising from the spread of COVID-19. However, there is an opportunity in every crisis, and the Indian government has seized the chance to implement game-changing reforms to the country's agri-marketing policy. The government's decision to amend the Essential Commodities Act, 1955 (ECA), announced in May 2020 and enacted into law through an ordinance issued in June 2020, should boost agricultural exports. Together with amending the ECA, the government also introduced ordinances to boost contract farming and remove rules requiring farmers to only sell their crops to licenced middlemen in state-notified markets. These reforms present an opportunity to move from fragmented value chains to shorter and more integrated ones for both the domestic and export markets. It is also an opportunity to mainstream hygiene and safety measures that are critical for producer's and consumer's health as well as prevention of spread of Covid or other diseases through the agri-logistics. The study rightly underlines the importance of environmental and social governance standards, SPS and TBT.

I also appreciate that the study has taken into account the smallholder and marginal farmers and looked at successful institutional models, such as cooperatives, to integrate them in the export oriented value chains. This is also well aligned with the government's promotion of farmer producer organizations in a cluster approach, as well as developing new financing instruments to meet the investment and working capital requirements of these organizations. Building strong business relations between producer organizations and market players, supported by effective agri-logistics are a key feature of IFAD support to governments across the world and successful examples exist in the development of inclusive export value chains for commodities as diverse as coffee, cocoa, tea, high quality wool in Africa, Asia and Latin America. As smallholders go into higher value commodities, the risks also increase for them and well thought out risk mitigation measures, diversified financial products and market intelligence are required to help smallholders anticipate where possible these risks and adapt to evolving consumers' preferences, trade regimes and fluctuating prices.

I am confident that this study will stimulate debate among stakeholders and encourage further research on all aspects of the proposed value chains as well as galvanize stakeholder consultation to develop an investment plan for boosting India's agri-exports.

A handwritten signature in black ink, appearing to read 'Rasha Omar', is positioned above the typed name.

Rasha Omar  
Country Director, India  
International Fund for Agricultural Development (IFAD)

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# Preface

“Cultivators of the earth are the most valuable citizens. They are the most vigorous, the most independent, the most virtuous and they are tied to their country,” said Mr. Thomas Jefferson, the Founding Father of United States of America. While farmers are tied to their country, we can facilitate them to trade across borders and benefit from favourable price condition in foreign market. Accessing global market helps farmers benefit from better price and expand their scale of operation.

Thanks to Green Revolution, India has evolved from a food deficit country to a major exporter of food commodities in the global market. Agriculture is a key contributor to India’s foreign trade as it accounts for 12% of the country’s goods exports and India is the eighth largest agriculture exporter in the world (WTO, 2018). Still, there is tremendous scope to enhance

agriculture exports from the country by leveraging its diverse agro-ecological zones and dynamic farming community. The time has come to strengthen India’s position in the world agriculture export market and improve the lot of more than 12 crore farming households and 14 crore agricultural workers in the country.

On May 15, 2020, Government of India announced path breaking reforms in transforming farming into a market oriented sector by removing the strangulating regulations under APMC and Essential Commodities Act. We need to see this policy intention materialise on ground with the effective implementation of this reform by state governments.

Today, India exports USD 38 billion worth agriculture goods (including cotton) and the Committee on Doubling Farmers’ Income has set the target of raising this to USD 100 billion by 2022-23. Such an ambitious target is possible with the concerted efforts of policymakers, agriculture research institutions, financial institutions, export promotion agencies and the enterprising farmers.

I am happy to note that MVIRDC World Trade Center Mumbai has prepared this research study to identify challenges hindering India’s farm exports and laying out strategies to address these challenges and diversifying agricultural export basket. The study identified USD 97.02 billion worth export opportunity in 19 agro-commodities, based on data from FAO. Except for coir and onion, India does not have substantial share in the global market for these agro-commodities. The study has also identified top five export markets for 21 principal commodities exported by India. The report contains actionable policy recommendations based on the views of exporters, agro-technologists, academicians and policy analysts to tap this export opportunity.

This report is prepared at a time when Government of India is providing renewed thrust to the agriculture sector with an objective to double farmers’ income by 2022. India’s farm sector is witnessing massive transformation with path-breaking initiatives such as establishment of farmer producer organizations, food parks, unification of agriculture markets, institutionalizing contract farming and reforming APMC acts, to name a few.

The announcement of a comprehensive Agriculture Export Policy in December, 2018 is a watershed development in India’s evolving policy framework to transform agriculture into an export-oriented industry. The policy has laid down roadmap for a stable export regulatory framework by striking the right balance among competing policy objectives, viz. domestic price stability, consumers’ welfare and increasing farmers’ income. The policy has given rise to progressive initiatives such as state-specific action plans and the establishment of nodal agencies to promote agricultural exports across many states. The 15th Finance Commission has also set up an expert committee to suggest policy measures to promote export of agriculture commodities.

This study has been conducted at this time of remarkable progress in India’s policy environment governing agriculture exports. I am confident that the findings of this study will generate further public debate among policymakers, agriculture finance institutions, agriculture research institutions, export promotion agencies and other stakeholders and contribute to the evolving ecosystem for agriculture exports.



Mr. Y. R. Warerkar  
Director General  
MVIRDC World Trade  
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Y.R. Warerkar  
Director General

## Executive Summary

India's agriculture sector is at the crossroads of historic reforms that will change farming into a market-oriented activity, with freedom to sell the produce to any buyer and stock commodities without restriction. May 15, 2020 is a historic day that marks the announcement of path breaking reforms in India's agriculture sector. On that day, Union Finance Minister announced historic policy changes such as amendment to the Essential Commodities Act, which dates back to 1955, allowing farmers to sell their produce to entities outside their states and a legal framework for farmers to get assured returns while engaging with processors, aggregators, retailers and exporters.

These reforms have been recommended several times by economists, trade policy experts and even government committees set up in the past. The Government used the COVID crisis as an opportunity to announce these bold reforms that will address some of the structural issues plaguing India's agriculture sector. The country's agriculture sector has not seen much private investment in post-harvest infrastructure, market development, processing and exports because of the monopoly of the APMC traders, stock limits prescribed under the Essential Commodities Act, arbitrary restrictions imposed on export and import of farm commodities and other restrictive regulations.

The reforms announced on May 15, 2020, if effectively implemented, will address some of these restrictions and promote private investment in post harvest infrastructure in the farm sector. The government has also announced Rs. 1 lakh crore for upgrading post harvest infrastructure, Rs. 10,000 crore for formalising 2 lakh micro food enterprises, Rs. 20,000 crore for fisheries development, Rs. 15,000 crore for animal husbandry and others.

These measures will provide a major boost to India's agriculture exports. The country's agriculture exports have remained stagnant around USD 38 billion since 2011-12, despite India being the leading producer of foodgrains, fruits and vegetables, pulses and other crops.

This report is prepared on the background of these landmark policy changes and the analysis in this report puts spotlight on the export potential for various agriculture commodities in India. The report also features views of agriculture scientists, policy observers and academicians on enhancing India's agriculture exports.

### Objective of the Study

- 1. To assess India's position in world agriculture exports**
- 2. To understand issues affecting exports of agriculture goods**
- 3. To propose policy suggestions to overcome these issues**
- 4. To identify export potential for horticulture crops**
- 5. To identify export potential for dairy products**
- 6. To identify export potential for fruits and beverages**



## Key Findings and Recommendations

India has less than 1% share in world exports of beverages, floriculture, cereal preparations, flour and starch, processed fruits and vegetables.

India is the second largest producer of fruits and vegetables in the world and yet its share in world exports is 1.7-1.8%. Considering India's diverse agro ecological zones, India can enhance its shares in the above commodities through focused interventions.

India doubled its world market share in cereals and marine product exports between 2006 and 2018. This success should be replicated in other farm commodities as well.

India has also made remarkable progress in export of niche products such as capsicum chilly, castor oil, tobacco extracts, sweet biscuits, in the last decade.

Data from FAO suggests India has USD 97.02 billion worth untapped export potential across 19 agro-commodities.

India is the largest producer of papaya, lemons and limes; but meets hardly 3.2% of the world import demand for papaya, 0.5% of world import demand for lemons and limes India caters to a Minuscule 0.3% of world imports of orange and 0.2% of pineapple, despite being major producer of these fruits.

India can tap USD 1.46 billion worth import demand for non alcoholic beverages in South Asia and ASEAN countries.

Although ASEAN countries have strong demand for fruit juices, India is not a major exporter of these items to ASEAN. India's export of fruit juices is largely restricted to Nepal, Bhutan and Sri Lanka in South and South East Asia.

India is said to have the second largest resource of bamboo after China, with 136 species and around 13.96 million hectare of land under bamboo cultivation, the highest in the world. Despite this, India exports hardly USD 64 million worth of value added bamboo products, which caters to hardly 2.83% of world import (of USD 2.26 billion).

### Key Recommendations

Indian farmers should be trained to produce surplus crops that are suitable for processing and which can meet the demand of foreign consumers. For this, two things are essential, viz. exporters should be allowed to buy directly from farmers, so that exporters can communicate the needs of global consumers to farmers. Currently, Indian farmers are not aware of the tastes and preferences of global consumers as exporters and global food retailers do not procure directly from farmers. Under the current APMC regulation, farmers are not allowed to sell directly to exporters. This regulation needs to be abolished.

India's agriculture research system should be market-driven and should respond to the changing tastes of global consumers. India's agriculture scientists should develop seed varieties and planting materials for growing crops that conform to the global quality standards and preference of global consumers.

India's agriculture export basket has shown a trend of concentration since 2007, with top 10 commodities occupying 50.5% of share in 2019 compared to 41.7% in 2007. Our agriculture export basket is dominated by commodities such as cereals, marine products and spices. Now, we need to diversify the export basket by focusing on fruits & vegetables, processed food, seeds of fruits & vegetables, floriculture, medicinal herbs etc.

India should leverage its free trade agreement with South Asia and ASEAN countries to bargain greater market access for its value added food commodities. One of the major complaint of exporters is that they face high duty on food and beverages in South Asian countries. This is despite the fact that India has signed free trade agreements with these countries. Government of India should negotiate with these countries to reduce duty on fruits and value added food products.

To prevent rejection of our fruits and vegetables in foreign markets, Government of India should enter into an agreement on standard operating procedure (SOP) for testing and quality certification of these goods.

All state governments should create awareness about APEDA's online traceability systems, viz. HortiNet, Meat.Net, TraceNet etc. Traceability creates confidence among foreign consumers about safety of food products.

The government should effectively implement its Rs. 10,000 crore scheme of formalizing micro food clusters and its Rs. 1 lakh crore plan to set up farm gate infrastructure.

These schemes should enhance India's processing capacity of fresh fruits and vegetables. It is a cause of concern that India's export of mango pulp has declined from 154,820 tonne in 2014-15 to 105,873 tonne in 2018-19. There is a need to set up more mango clusters in the country to enhance production capacity and arrest this declining trend.

## Introduction<sup>i</sup>

India is the world's seventh largest country with diverse agro-climatic zones. Agriculture and allied activities contribute 17% to the country's economic activity and 70% of the rural population depends on this sector for their livelihood. Therefore, a vast section of the population can enhance its income by exploring lucrative export opportunities through innovative value addition and technology adoption. India is the world's largest producer of milk, pulses and jute and it is the second largest producer of foodgrain crops, viz. rice and wheat. In the production of fruits and vegetables, the country ranks second largest in the world and it can explore the vast export opportunity in this segment by adopting value addition. India can also benefit from export opportunity in the dairy sector as it is home to the second largest cattle population in the world.

### **Box 1: Promoting exports is a key tool to enhance farmers' income**

The long-run growth in India's agriculture sector is estimated around 2.9%, which is significantly lower than corresponding growth rate of 8.0% of the non-agriculture sector.

Agriculture employs around 44-49% of the total workforce (depending on the source of data we use).

Thus, the income growth of almost half of India's workforce is significantly lower than that of the non-farm workers.

In order to boost the income of the farm workers, we need to empower them to access global market

### **Challenges**

While India is the leading producer of foodgrains, it is also the leading consumer and thus, our export capability is limited by the surplus food available after meeting domestic consumption and buffer stock. Secondly, around 60% of the country's net sown area depends on rainfall as it does not have irrigation facility. Around 40% of the country's total food production comes from this rain-fed area. Therefore, the country's agriculture performance is vulnerable to erratic rainfall. The problem of unpredictable rainfall has been exacerbated by climate change. According to a study by India's premier agriculture research organisation ICAR, 151 districts (out of more than 700 districts) are vulnerable to drought in India.

Thirdly, India being a developing country, demand for fruits, vegetables, meat and milk increases as income level of the people rises. This leaves less quantity of these items for exports. However, some experts are of the view that the exportable surplus

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will likely grow in future as production of agriculture goods is growing at an annual average rate of 2.9%, which is higher than the 2.3% growth expected in domestic demand for these goods. Thus, the exportable surplus may grow, on an average, by 0.6% every year.

Fourthly, we need to upgrade our farm value chain by developing strong post-harvest farm infrastructure, processing facilities, cold storage and logistics systems. Sixthly, India's agriculture policy continues to remain archaic with restrictive policies on leasing agriculture land and other laws such as Agriculture Produce Marketing Act (APMC) and Essential Commodities Act. These policies prevent India from better utilisation of farm land and developing a viable agriculture value chain. Lastly, agriculture is a state subject and hence the role of the Central Government is restricted to implementation of various schemes and programmes. Therefore, the efficient implementation of structural reforms such as land and marketing depends on the capability and political will of the individual state governments.

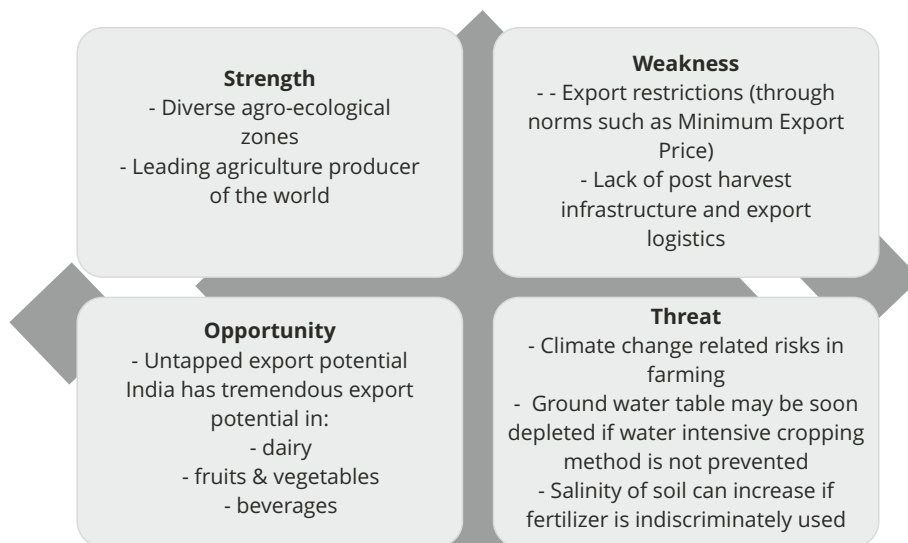
In this backdrop, the Ashok Dalwai-led Committee on Doubling Farmers' Income proposed a series of measures (in its comprehensive report submitted in 2018) to overcome the challenges facing agriculture sector and also to promote exports of agro commodities. The Committee's recommendations that are specific to promote agro commodity exports are as follows:

**Box 2: Recommendations of Ashok Dalwai Committee to promote agriculture goods exports**

- Harmonise product standards of BIS, APEDA, FSSAI, Agmark and other agencies in the field of agriculture commodities
- Adopt an aggressive agricultural trade policy to at least double the volume of commodities in agricultural exports and achieve a value target of USD 100 billion, by 2022-23
- Adopt cluster-based production and export marketing with track and trace system.
- Create a post of agri-trade advisor in Indian Embassies and High Commissions abroad
- Set up market research and analytical cell in Export promotion agencies dealing in agro commodities

## SWOT Analysis

**Diagram 1: SWOT Analysis for Agriculture Exports from India**



## Strength and Opportunity

India is among the top 10 global agriculture exporters in the world today. The country is blessed with 15 agro-climatic zones, depending on climate patterns, soil type and availability of water, that support diverse crops. The western Himalayan region is favourable for growing apple, peaches, almond, saffron and other horticultural crops, while the eastern Himalayan region supports cultivation of tea, maize and rice. The Southern Plateau, on the other hand, is favourable for coffee, cardamom and spices are grown. The other 13 agro-climatic zones support production of cereals, pulses, horticulture, floriculture, oilseeds, cotton, to name a few.

## Export-driven Extension services

India should leverage this agro-climatic diversity and develop diverse crops that have demand in the world markets. The 715 Krishi Vigyan Kendras (KVKs) in the country, which are responsible for dissemination of technologies to farmers, should train farmers on growing crops that are demanded in global market.

**Diagram 2: From Production-oriented to Export-oriented Extension Services**



## Weaknesses and Threats

### Supply chain – A missing Link

India's agriculture sector suffers from various weaknesses that hinders it from transforming into an export-oriented sector. Although India has transformed from a food deficit country to a food surplus country, the regulation on marketing, stockpiling and exports remains archaic. Restriction on direct selling of farm produce to exporters and food processors, under APMC Act, prevented private investment in marketing and distribution. As a result, marketing of farm produce has remained a monopoly of a clutch of traders. Even though productivity of agro commodities got a boost because of green revolution, white revolution, blue revolution etc, this enhance productivity did not translate into increase in private investment in processing and marketing infrastructure.

The frequent resort to export restrictions in the form of minimum export price and export bans for different crops prevented Indian exporters from developing a stable supply relationship with foreign buyers.

Similarly, corporate investment in food processing infrastructure did not pick up because of government regulation on stock limits under Essential Commodities Act. Private investment in processing and export-oriented activities is discouraged because of stockholding limit for various crops in different points of time. Although these limits on inventory holdings are announced to curb hoarding at times of shortage, genuine food processors are discouraged from holding inventories to avoid future supply shocks.

Apart from limits on stock holding, there are also restrictions on export of specific commodities. For instance, the government does not allow export of mustard oil/rapeseed oil in bulk, although it is allowed for all other oils. Mustard oil can be exported only in consumer packs upto 5 kgs and with a minimum export price of USD 900 per tonne. The government imposed this export restriction on mustard oil considering that it is an item of mass consumption. However, in 2019, the Solvent Extractors' Association of India (SEA) has been demanding the removal of this restriction on the back of record production of mustard seeds. Allowing bulk exports will benefit farmers by preventing sharp fall in local prices of mustard seeds.

The government needs to review these regulatory restrictions that impose undue stress on farmers and discourage private investment.

### Lack of Farmer-Exporter Linkages:

As a result of these regulations, there was no direct supplier relationship between farmers and exporters. Absence of direct contact between farmers and exporters led to a situation where farmers were producing crops which are not suitable for processing and exports. There was no direct interaction between farmers and exporters to enable the former understand the variety and quality of agro commodities demanded in the foreign market. As a result, most of the fruit and food commodities grown in the country are not suitable for the global market.

Another weakness in India is the attitude towards genetic engineering. World's leading agriculture exporters, viz. USA, Argentina and Brazil, owe their increase in exports to adoption of genetic engineering. India does not allow genetic engineering in food crops citing environmental and food safety reasons. As a result, India could not take advantage of the productivity and cost benefits of genetic engineering technology.

### Poor Quality Standards:

There is increasing cases of Indian food exports being rejected in foreign markets because of lack of adherence to the quality standards prescribed in the importing countries. Often, India's rice is rejected in European countries because we do not follow the minimum residual limit (MRL) for pesticides that is followed in these markets. Recently, Saudi Arabia Food & Drug Authority (SFDA) rejected Indian export consignment of cardamom as the commodity contained pesticide residue above the Maximum Residue Level (MRL) specified by the authority in April-May 2018.

Similarly, in 2017, Mexico suspended import of chilli from India citing the presence of a quarantine pest, *Trogoderma* larva. The following table provides the recent instances of bans imposed by foreign countries on India's food products because of quality and health safety reasons.

Table 1: Ban on India's food exports		
Country	Product banned/suspended	Reason for ban/suspension
Australia	Raw frozen shrimp / prawn	Suspended due to the stringent Bio security advice 2009/25 published by the Australian Government on final Import Risk Analysis Report for Prawns and Prawn Products.
Canada	Head-on shell – on shrimp	No zoo-sanitary export certificate negotiated with the competent authority for aquatic animal health in India.
Saudi Arabia & Kuwait	Fishes	Unclear health situation of the cultured fish originating from India.
Source: Mr. C.R. Chaudhary, former Minister of State, Ministry of Commerce and Industry in response to a question in Lok Sabha on January 7, 2019		



## Threats

India's agriculture sector, as in many other countries, faces the threat of soil erosion and uneven availability of water. Soil erosion has emerged as a major threat because of deforestation, imprudent use of agro-chemicals, improper cropping patterns and irrigation systems. While water is available aplenty in the gangetic plains, there is severe deficit of water in Deccan plateau and other agriculture areas. According to official estimate, around 68% of India is prone to drought in varying degrees. Of this, 33% is estimated to be chronically drought prone as they receive less than 750 mm rainfall. Punjab and Haryana, major producers of rice and wheat, are facing depletion of ground water because of intensive cropping of water-guzzling crops.

Within these limited resources of soil and water, India needs to produce more in the coming years to meet the growing food demand of the rising population, especially the growing middle class people. India's total food production, which currently stands at 726 million tonne (including plant-based food, dairy, meat, fish etc.), needs to grow 40% in the next 15 years to meet the growing domestic demand. This required growth will increase further if India aims to enhance its export of agro commodities.

### Box 3: Required Annual Growth in food production

India's food production needs to grow 2.3% per annum if it has to increase its food production by 40% in the next 15 years to meet rising domestic demand.

If India should increase its share of food commodities in overall exports to 20% from the current 12%, then the required growth in food production is 2.64%

Source: Prof. Ramesh Chand, Member, NITI Aayog, at a Presidential Address in December 2019

The emerging threat of climate change adds to the existing challenges of soil degradation and water availability. Climate change affects agriculture production through its manifestation in the form of erratic rainfall, frequent drought and flooding, unseasonal rainfall and other uncertain climatic patterns. Climate change also exacerbates spatial variation in rainfall, thereby causing excessive rainfall in some regions, and scanty rain in other.

Agriculture, by itself, is a risky venture as it depends on nature. Global warming and the resultant climate change have increased the weather-related risks in agriculture and exposed the farming community to unprecedented uncertainty. Often, weather predictions, even with the most sophisticated technologies, go wrong because of unpredictable climate patterns and as a result farmers face the risk of taking wrong cropping decisions.

Climate change is a major threat in realising the ambition of promoting India's agriculture exports. There is an urgent need to adopt climate smart agriculture to insulate farming from erratic climate patterns.

## Solutions

All state governments need to adopt the Model Agriculture Produce and Livestock Marketing Act (2017) and notify rules regarding the Act to encourage private investment in creation of alternative marketing system, creation of efficient supply chain and distribution system. Similarly, state governments should ensure that genuine exporters are not affected by the stockpiling limit under Essential Commodities Act.

The central and state governments should take coordinated efforts to address the issues of soil erosion and scarcity of water. Farmers need to be sensitized about these issues and encouraged to adopt conservation agriculture technologies; the role of KVVKs and state agricultural departments is of paramount importance.

Agriculture research institutions, including ICAR, State Agriculture Universities, Central Agriculture Universities and deemed universities should coordinate efforts in developing seeds that can tolerate biotic and abiotic stress (drought, flood, pest attack etc.).

In order to combat global warming, state governments should encourage agroforestry, where trees and shrubs are planted alongside crops. Agroforestry helps in absorbing atmospheric carbon, preventing soil erosion and in maintaining biodiversity.

<b>Table 2: Addressing weaknesses/Threats in the system</b>	
<b>Key Weakness/Threat</b>	<b>Possible Solutions</b>
Goods exported from India do not meet the quality standards of the importing countries.	Harmonize the quality standards of all the local agencies, viz. BIS, AGMARK, FSSAI and APEDA, with the standards required in importing countries.
Depletion of Groundwater. Agriculture accounts for 80-90% of water consumed in the country.	Increase water use efficiency by shifting from flood irrigation to micro irrigation
Investment in agriculture sector as a share of total investment in the economy, has been falling from 8.2% in 2014-15 to 7.3% in 2018-19*	Need to relax regulation in agriculture marketing to promote corporate investment in agriculture. Private corporate sector contribute hardly 2.4% of total investment in agriculture sector.
	<b>Key action areas:</b>
	1. Proposed amendment in Essential Commodities Act should be implemented effectively
	2. Ensure that all states adopt Model contract farming Act (2018) and notify rules thereof
	3. Ensure that all states adopt model Agriculture Produce and Livestock Marketing Act (2017) and notify rules thereof
	4. Ensure that all states adopt Model Agricultural Land Leasing Act (2016) and notify rules thereof
<b>*Data sourced from Presidential Address by Prof. Ramesh Chand on 'Transforming Agriculture for Challenges of 21st Century'</b>	

## India's position in world market:

India 8<sup>th</sup> largest agri exporter: India, which has the seventh largest land area in the world, is the eighth largest exporter of agricultural commodities and ninth biggest exporter of food commodities. Other countries in the top ten list of agriculture commodity exporters are: European Union, USA, Brazil, China, Canada, Indonesia, Thailand, Argentina, Australia and Mexico. Farm exports of most of these countries are driven predominantly by a few categories of agriculture commodities. For instance, farm exports of European Union are driven by beverages, including wine, which contributes almost a fourth of their overall agricultural exports. Milk products account for another 8% of their farm exports. In China and Mexico, fruits & vegetables contribute 41% and 48% of overall farm exports. In Indonesia, vegetable oil contributes 54% to the total farm exports. In Brazil, soybean and sugar account for 46% of total farm exports, while in Argentina, fodder and feeding stuff contribute 30% of overall

agricultural exports. In India, agriculture export is led by rice (23%), bovine meat (13%), coffee, tea, cocoa (13%) and marine products.

#### India's share in world market:

India accounts for more than 5% of world exports in certain agro commodities, viz. lacs & gums (share of 13.4%), coffee, tea, mate, spices (8%), cereals (3.3%), marine products (5.9%) and vegetable plaiting materials (5.4%). Whereas, India's share in world exports of beverages, floriculture (HS code 6 – live trees and plants), preparations of cereals, flour and starch, processed fruits and vegetables are less than 1%. The detailed HS-code wise share of India in world exports of agro commodities is given in the following table.

**Table 3: Share of India in world exports of agricultural products**

HS Code 2002	Row Labels	Sum of 2006 in million USD			Sum of 2010 in million USD			Sum of 2018 in million USD		
		All countries All -- All	India	Share	All countries All -- All	India	Share	All countries All -- All	India	Share
13	Lac, gums, resins & other vegetable	3536.59	401.04	11.3%	5080.49	657.57	12.9%	7946.67	1061.60	13.4%
9	Coffee, tea, mati and spices.	20714.21	1124.59	5.4%	35904.23	2003.31	5.6%	39107.43	3120.27	8.0%
10	Cereals	47769.32	1588.58	3.3%	83241.44	2923.68	3.5%	108000.09	7715.34	7.1%
3	Fish & crustacean, mollusc & other	58905.36	1478.41	2.5%	79314.61	2163.68	2.7%	105969.34	6249.25	5.9%
14	Vegetable plaiting materials; veget	449.99	24.38	5.4%	855.98	66.61	7.8%	881.05	47.55	5.4%
17	Sugars and sugar confectionery.	28323.17	680.05	2.4%	42325.60	1039.86	2.5%	39319.17	1173.83	3.0%
2	Meat and edible meat offal	66924.35	693.47	1.0%	94491.93	1775.12	1.9%	127354.46	3734.53	2.9%
24	Tobacco and manufactured tobacco su	25262.01	364.55	1.4%	33846.50	878.69	2.6%	40129.03	983.35	2.5%
23	Residues & waste from the food indu	31689.08	1265.60	4.0%	55614.84	2066.62	3.7%	77600.89	1675.28	2.2%
7	Edible vegetables and certain roots	36793.73	609.29	1.7%	55053.83	962.30	1.7%	67112.47	1226.74	1.8%
11	Prod.mill.indust; malt; starches;	8939.69	32.00	0.4%	13605.72	76.35	0.6%	18415.71	312.65	1.7%
12	Oil seed, oleag fruits; miscell gr	30839.35	481.72	1.6%	67263.30	1084.43	1.6%	98223.12	1619.04	1.6%
8	Edible fruit and nuts; peel of citr	49712.74	855.43	1.7%	72558.76	1088.70	1.5%	110653.00	1532.69	1.4%
15	Animal/veg fats & oils & their clea	36256.01	314.85	0.9%	79613.63	716.26	0.9%	89552.02	1117.97	1.2%
5	Products of animal origin, nes or	5192.36	40.88	0.8%	6950.28	73.01	1.1%	11164.39	133.98	1.2%
21	Miscellaneous edible preparations.	32553.75	189.58	0.6%	46336.38	315.48	0.7%	75455.14	759.49	1.0%
16	Prep of meat, fish or crustaceans,	28101.95	208.99	0.7%	36803.51	285.51	0.8%	55939.13	559.53	1.0%
20	Prep of vegetable, fruit, nuts or o	35031.03	193.78	0.6%	47057.55	274.52	0.6%	63292.10	593.82	0.9%
19	Prep.of cereal, flour, starch/milk;	32457.27	127.45	0.4%	47369.10	247.80	0.5%	75491.22	520.74	0.7%
4	Dairy prod; birds' eggs; natural ho	46542.91	191.47	0.4%	69645.50	238.22	0.3%	88554.69	481.29	0.5%
18	Cocoa and cocoa preparations.	21585.89	8.47	0.0%	37590.44	27.67	0.1%	48164.55	193.93	0.4%
6	Live tree & other plant; bulb, root	15367.13	88.57	0.6%	17817.80	62.71	0.4%	21795.93	80.66	0.4%
22	Beverages, spirits and vinegar.	66889.76	63.77	0.1%	84856.75	167.09	0.2%	121060.60	330.11	0.3%
1	Live animals	14145.90	9.80	0.1%	17954.88	12.26	0.1%	21411.41	31.23	0.1%
	<b>Grand Total</b>	<b>743983.56</b>	<b>11036.73</b>	<b>1.5%</b>	<b>1131153.07</b>	<b>19207.46</b>	<b>1.7%</b>	<b>1512593.60</b>	<b>35254.89</b>	<b>2.3%</b>

Source: WITS, Compiled by MVIRDC WTC Mumbai

#### Box 4: Share of cereals and marine products double since 2006

As can be seen from the above table, India doubled its share in world exports of marine products and cereals between 2006 and 2018. India's share in world exports of cereals grew from 3.3% to 7.1% during this period largely because of growth in shipments of basmati rice and ordinary rice.

Similarly, India managed to double its share in world exports of marine products (from 2.5% to 5.9%) largely by focusing on export opportunities in shrimp and prawn exports.

**Box 5: Maintains high market share in vegetable extracts, lacs and gums**

Since 2006, India has more than 11% market share in world exports of lacs, gums and vegetable extracts. The major products exports by India in this segment are treated guar gum and extracts of vegetables and herbs such as neem. They also include oleoresins, which are extracts of flowers, leaves, roots and other plant materials and they are used as food colouring, flavouring, medicinal and cosmetics purposes.

**Box 6: Vegetable plaiting materials**

India maintained more than 5% market share since 2006 in vegetable plaiting materials, which mainly includes cotton linters, betel leaves and other vegetable materials. Cotton linters is the leftover fibre stuck in cottonseed after ginning. Linters are used as raw material in paper industry, cosmetics, medicines and other industries.

**Box 7: Decline in shares in food waste and fodder**

India's share in world exports of food wastes, residues and animal fodder almost halved to 2.2% in 2018 from 4.0% in 2006. India's exports of food wastes and residues grew marginally from USD 1.26 billion to USD 1.67 billion between 2006 and 2018.

This segment largely includes soyabean oil cake and other residues from soyabean oil extraction. It also includes oil cake of mustard oil, rapeseed and other oilseeds. The segment also includes fish meal (not for human consumption) and other preparations of animal feed.

**Box 8: Maintains low market share in fruits, vegetables and pulses**

India maintains around 1.7-1.8% market share, each in vegetables and fruits segments. In the vegetables and roots segment, majority of India's exports include onions, (fresh and dried), cucumbers & gherkins, mixed vegetables, potatoes and tomatoes. This segment also includes pulses such as chana (gram), which is one of the principal exports of India in the pulses category.

In the fruits segment, India largely exports, cashew, fresh grapes, mangoes, pomegranates, bananas, coconuts.

India is the second largest producer of fruits and vegetables in the world and yet its share in world exports is 1.7-1.8%. We need to guide our farmers to grow the varieties fruits and vegetables consumed abroad so that they can enhance their revenue through exports.

**Export share in processed food items:**

India managed to grow marginally its global exports share in processed food items, whether it is processed fruits, vegetables, cereals, meat or milled products.

### **Box 9: Processed fruits and vegetables**

This is the largest segment within the processed food industry. India's share in world exports in this segment grew marginally from 0.6% to 0.9% from 2006 to 2018. India exports preserved cucumber & gherkins, jams & jellies of mangoes, processed groundnut and other items. India can enhance its share in world exports by exploring market opportunities in other processed fruits such as guava, pineapple, squash and cocktails.

#### **Processed meat**

India largely exports preserved shrimps, prawns, crabs, lobsters and other marine products. India's share in world exports in this segment grew from 0.7% to 1.0% between 2006 and 2018.

#### **Products of milling industry**

This is one segment where India's share has grown four times from 0.4% to 1.7% between 2006 and 2018. India largely exports wheat flour and starch of maize, in this segment.

#### **Processed cereals**

India's share in this category grew marginally from 0.4% to 0.7%. This category mostly includes sweet biscuits, toasted rusks, infant food, pasta and other food prepared from cereals, starch etc.

#### **Cocoa and Cocoa Preparations**

This segment largely includes cocoa butter, cocoa bars and other preparations of cocoa. India managed to increase its share marginally to 0.4% in 2018 from nil in 2006.

#### **Miscellaneous processed food**

This is one of the growing segments, where India's share grew from 0.6% to 1.0% between 2006 and 2018. This category includes instant coffee, instant tea, food condiments, flavouring and seasoning materials, pan masala, among others.

This is the potential segment where India can enhance its market share, especially in products such as tomato ketchup, curry paste, soya sauce, chilli sauce, bakers yeast, food flavouring materials, condiments etc.

### **Sugar and sugar confectionery:**

India is the second largest producer of sugar in the world after Brazil. Last year, the country overtook Brazil to become the largest manufacturer of sugar. This is one of the regulated sector in India, where cane prices paid by sugar mills to farmers and export quotas are prescribed by the government. India has become a net exporter of sugar in recent years and the sector is transforming into an export-oriented activity, with exports of byproduct, viz. molasses. India's share in world exports of sugar and sugar confectioneries grew from 2.4% to 3.0% between 2006 and 2018. In this segment, India exports refined sugar, molasses, glucose, boiled sweets, toffees and other confectioneries.

### **Animal and vegetable fats, oils and waxes:**

India's share in world exports in this category grew marginally from 0.9% to 1.2% (between 2006 and 2018) and there is huge scope to enhance this share. This is one of the labour-intensive industries where India can explore global market opportunities. There are two sub-segments in this category, viz. vegetable oil, animal fats and waxes.



Castor oil and its derivatives (non-edible) account for more than 80% of India's exports in this category, while the remaining products in this basket include groundnut oil, coconut oil, sesame oil, soyabean oil, sunflower oil, mustard oil etc. In the animal fat sub-segment, India exports tallow of mutton & other meat and fish oil.

The wax sub-segment includes vegetable wax, bees wax and wax of other insects. Currently, India's export of these products is miniscule and we can enhance our exports through focused efforts on skill development, quality certification, branding and matchmaking services.

**Fruit and Vegetable seeds:** India is the 11th largest exporter of fruits and vegetable seeds in the world, with a share of 2.8% in global exports in 2018 and this has grown marginally from 2.3% in 2016. India exports seeds of tomato, potatoes, onion, cabbage, cauliflower and other vegetables and fruits. India's share in world exports is far less than the 10% share envisaged by the National Seed Policy 2002 by 2020.

**Table 4: Top 11 exporters of fruit and vegetable seeds (value in USD million, quantity in metric tonne)**

Exporting Country	2016		2017		2018	
	Qty	Value	Qty	Value	Qty	Value
NETHERLAND	80,184.07	1,038.62	84,921.89	1,087.12	70,462.52	1,184.87
U S A	1,45,463.06	851.36	1,43,016.77	935.53	1,34,269.71	888.36
FRANCE	46,744.88	654.77	51,621.76	691.53	43,643.82	681.52
GERMANY	58,602.99	471.74	77,638.57	506.42	60,290.79	543.47
DENMARK	1,03,607.63	313.91	1,24,030.07	337.68	1,12,484.63	403.56
CHINA P RP	21,208.79	419	18,099.39	392.64	15,395.47	376.23
CHILE	4,813.50	287.49	5,737.84	332.72	5,016.70	357.64
ITALY	55,427.80	307.23	3,39,340.18	321.43	53,430.86	348.89
THAILAND	2,908.19	244.35	4,016.65	286.25	3,901.50	295.68
AUSTRALIA	2,32,805.51	217.02	3,49,583.34	233.18	3,93,910.11	245.03
INDIA	19,877.48	155.97	20,368.61	170.93	37,603.08	212.7
<b>Total World Exports</b>	<b>10,66,800.76</b>	<b>6,902.53</b>	<b>15,81,323.68</b>	<b>7,412.74</b>	<b>12,43,781.10</b>	<b>7,586.47</b>

Source: APEDA AgriExchange

#### Box 10: Boosting exports of fruits and vegetable seeds

Presently, the global market for seeds is largely controlled by the four multinational companies, viz. Bayer-Monsanto, Corteva Agriscience, Syngenta and BASF. In order to compete with these global giants, India needs to encourage private and public investment on research and development of hybrid, pest-resistant, drought and flood-resistant seeds that are in high demand in Africa, Latin America and other regions.

India should also control the distribution of spurious seeds by introducing tracing technologies such as bar code, which can effectively trace the suppliers of seeds. Also, India needs to create a robust seed certification and standards system to address the challenge of bogus seeds. Focus should also be given to preserve the traits of seeds used by the hilly or tribal population and also export of organic seeds.

## Exports Composition – key trends

India's agriculture exports witnessed sharp growth and also diversification of the export basket since the era of liberalisation in 1990s. Between 1996-2006, India's agriculture exports (excluding cotton) grew 75% to USD 11.5 billion from USD 6.5 billion. This rate of growth more than doubled to 178% in the following decade. Total value of farm exports expanded to USD 33.38 billion in 2016-17 from USD 11.5 billion in 2006-07 and further to USD 38.79 billion in 2018-19. Considering the substantial growth in exports since 2006, this section examines the key trends and drivers of this growth. The period taken for this study is 2006-2019.

**Drivers of export growth:** Since 2006, India's growth in agriculture exports has been driven largely by five product categories, viz. cereals (basmati and non-basmati rice), fish & other marine products, meat, spices and oilseeds.

**Increase in concentration of export basket:** India's agriculture exports basket has shown a trend of concentration as the share of top 10 commodities in overall exports grew to 50.5% in 2019 from 41.7% in 2007.

The share of basmati & non-basmati rice, shrimps & prawns and bovine meat rose considerably during this period. Commercial production, use of geographical indication and other focused measures to promote exports are the major reasons for growth in these segments. The share of castor oil and its products grew from 1% to more than 2% during this period. Gujarat, Rajasthan, Andhra Pradesh and Telangana are the major growing states of castor seeds; India exports castor oil and its derivatives to China, Netherlands, USA, France and Thailand, among other countries.

**Table 5: Top 10 agro exports - 2007 and 2019**

HS Code 8-digit	Top 10 agro commodities in 2019	Share in total agro exports
10063020	BASMATI RICE	12.9%
3061790	OTHER SHRIMPS AND PRAWNS	11.3%
2023000	BONELESS MEAT OF BOVINE ANIMALS , FROZEN	9.1%
10063010	RICE PARBOILED	4.1%
17019990	OTHR REFND SUGAR INCLUDNG CENTRIFUGAL SUGR	3.0%
10063090	RICE EXCPTG PARBOILED (EXCL BASMATI RICE)	2.9%
15153090	CASTOR OILANDITS FRCTNS OTHR THN EDBLE GRADE	2.2%
23040030	MEAL OF SOYABEAN,SOLVENT EXTRACTED (DEFATTED) VARIETY	1.8%
8013220	CASHEW KARNEL, WHOLE	1.7%
9042110	OF GENUS CAPSICUM	1.6%
	<b>Total</b>	<b>50.5%</b>

HS Code 8-digit	Top 10 agro commodities in 2007	Share in total agro exports
23040030	MEAL OF SOYABEAN,SOLVENT EXTRACTED (DEFATTED) VARIETY	7%
10063010	RICE PARBOILED	6%
2023000	BONELESS MEAT OF BOVINE ANIMALS , FROZEN	6%
10063020	BASMATI RICE	5%
8013220	CASHEW KARNEL, WHOLE	4%
3061311	*AFD SHRIMP FROZEN	4%
17019990	OTHR REFND SUGAR INCLUDNG CENTRIFUGAL SUGR	3%
7031010	ONIONS FRESH OR CHILLED	2%
3061320	*PRAWNS FROZEN	2%
9024020	TEA BLACK,LEAF IN BULK	2%
	<b>Total</b>	<b>41.7%</b>

**Source: Ministry of Commerce, Government of India; \* HS codes changed or merged with other codes from April 2019.**

**Growth in share of processed goods:** The share of 14 processed or value added farm goods has increased in overall agriculture exports of India between 2006-07 and 2018-19. This shows that these value added commodities are playing important role in enhancing the overall farm exports of the country. These goods include castor oil, instant coffee, tobacco extracts, sweet biscuits, natural honey, wheat flour, turmeric, alcoholic beverages, cereal preparations, raisins, chocolate, ice creams and wine. The share of these products in India's agriculture exports grew to 5.9% in 2018-19 from 1.8% in 2006-07. The following table provides exports of these products in these two years.

Table 6: Share of processed goods in overall agriculture exports (value in USD million, share in %)						
Sr. No	HS Code 8-digit	Commodity name	2006-07		2018-19	
			Value	Share	Value	share
1	15153090	CASTOR OIL AND ITS FRICTNS OTHR THN EDBLE GRADE	98.22	0.85%	810.1	2.21%
2	21011120	INSTANT COFFEE NOT FLAVOURED	13.83	0.12%	257.64	0.70%
3	21069099	OTHER FOOD PREPARATION NES	11.62	0.10%	244.11	0.67%
4	24039990	OTHER MNFRD TOBACCO EXTRACTS AND ESSNCS NES	18.78	0.16%	189.31	0.52%
5	19053100	SWEET BISCUITS	25.43	0.22%	171.04	0.47%
6	4090000	NATURAL HONEY	13.39	0.12%	105.34	0.29%
7	11010000	WHEAT OR MESLIN FLOUR	12.08	0.10%	103.1	0.28%
8	9103090	OTHER TURMERIC	1.42	0.01%	79.46	0.22%
9	22071090	ALCHL	6.25	0.05%	73.58	0.20%
10	19019090	ALL OTHR PRPN OF FLR MEAL STRCH/MLT EXTRACT	7.41	0.06%	65.01	0.18%
11	8062010	RAISINS	0.14	0.00%	37.77	0.10%
12	18069010	CHOCOLATE AND CHOCOLATE PRDCTS	1.51	0.01%	9.23	0.03%
13	21050000	ICE CREAM AND OTHR EDBL ICE W/N CONTNG COCOA	0.38	0.00%	7.45	0.02%
14	20079910	JAMS JELLIES MRMLDS ETC. OF MANGOE	20.59	0.18%	128.62	0.35%
15	18069090	MISCELLANEOUS FOOD PREPARATIONS CONTAINING COCOA	3.56	0.03%	96.74	0.26%
	22041000	SPARKLING WINE	0.55	0.00%	7.36	0.02%
<b>Total</b>			<b>235.16</b>	<b>2.04%</b>	<b>2385.86</b>	<b>6.52%</b>

Source: Ministry of Commerce, Government of India

**Growth in preserved crabs:** The share of preserved or prepared crabs in overall agriculture exports has grown marginally from 0.00% to 0.07%; but there is huge scope for enhancing this share by encouraging crab farming in mangroves across all coastal states. India exports preserved crabs to USA, Canada and many Asian countries, including Hong Kong and Indonesia etc. However, exports of frozen crabs have fallen sharply in recent years, as can be seen from the following table. Frozen crabs are exported to Malaysia, Thailand, South Korea, Singapore, UK, USA etc.

Table 7: Share of crabs in overall agriculture exports (value in USD million, share in %)						
Sr. No	HS Code 8-digit	Commodity name	2006-07		2018-19	
			Value	Share	Value	share
1	16051000	CRAB PREPARED OR PRESERVED	0.44	0.00%	26.94	0.07%
3	3061400	CRABS FROZEN	22.17	0.19%	3.72	0.01%
<b>Total</b>			<b>22.61</b>	<b>0.20%</b>	<b>30.66</b>	<b>0.08%</b>

Source: Ministry of Commerce, Government of India

Exports of live crabs grew 59% from USD 38 million in 2017-18 to USD 61 million by 2018-19. Data on exports of live crabs is not available for earlier years. There is a need to increase the number of crab hatchery, especially in coastal areas with dense mangrove forest, which are suitable for crab farming. Crab farming has a long gestation period as it takes several months to rear crabs upto a particular size. Also, many crab farmers operate on a small scale, which makes their business uneconomical owing to high freight cost for exporting through air. Therefore, there is a need to set up a farmer producer company to increase the scale of farming and thereby volume of exports.

### Box 11: Encouraging crab farming in mangroves

Government of Maharashtra has been promoting crab farming under its Mangrove Protection and Employment Generation Scheme, which was introduced in 2017 in the state. Under the scheme, the government aims to encourage farming activities, especially crab farming and fishing, in mangrove cover across 75 coastal villages in Maharashtra. Other coastal states should also promote crab farming in mangrove areas, as it will not will generate income for coastal communities, but also encourage them to preserve mangroves.

**Growth in animal feed:** The share of animal and pet food in the agriculture exports has grown marginally from 0.14% to 0.78% between 2006-07 and 2018-19. This category includes cattle feed, aqua feed, poultry feed and food for pet animals such as dogs and cat. India's total exports of these feed grew from USD 16 million in 2006-07 to USD 284 million by 2018-19. Export of these goods depend on the availability and price of key raw materials such as mustard oil meal, soybean oil meal, maize oil meal, guar meal, rice bran etc. Several home grown companies in India are meeting the increasing demand for animal feed, especially nutritious fodder, that in turn increases yields from livestock and poultry farming. Commercialisation of dairy, poultry and aquaculture sectors has increased demand for nutritious feed. This, in turn led to the growth of animal feed companies in the country. Over the years, these animal feed companies have started catering to the global market.

**Table 8: Share of pet food and animal feed in overall agriculture exports (value in USD million, share in %)**

Sr. No	HS Code 8-digit	Commodity name OTHER PREPARATIONS OF ANIMAL	2006-07		2018-19	
			Value	Share	Value	share
1	23099090	FEEDING	5.84	0.05%	152.53	0.42%
2	23099020	CONCENTRATED FOR COMPOUND ANIMAL FEED	0.62	0.01%	44.16	0.12%
3	23091000	DOG OR CAT FOOD PUT UP FOR RETAIL SALE	4.28	0.04%	36.14	0.10%
4	23099031	PRAWN AND SHRIMPS FEED	1.21	0.01%	27.06	0.07%
5	23099010	COMPOUNDED ANIMAL FEED	4.72	0.04%	24.54	0.07%
<b>Total</b>			<b>16.67</b>	<b>0.14%</b>	<b>284.43</b>	<b>0.78%</b>

**Source: Ministry of Commerce, Government of India**



**Box 12: Products witnessing growth in exports share:****Spices:**

India's exports of capsicum chilly (HS Code 9042110) more than doubled from USD 236 million in 2013-14 to USD 577 million in 2018-19. Export data for this commodity is not available for period before 2013-14. The share of capsicum chilly in India's overall spices exports has doubled from 9% to 18% during this period.

**Dairy and animal products: (Diversification and new growth commodities)**

In 2006, eggs and skimmed milk accounted for 71% of overall exports of goods under dairy and animal products category (chapter 04 HS Code). Today, the basket of goods exported under this category has diversified and the share of these two commodities declined to 30%.

In this category, India's exports of butter, melted butter and natural honey grew considerably since 2006. The share of these three products in this category grew from 13% in 2006-07 to 53% in 2018-19. Specifically, the share of butter grew from 1% to 21%, that of natural honey almost tripled from 7% to 20%. The share of melted butter grew from 5% to 13% during this period. On the other hand, the share of skimmed milk declined from 33% to 14%. Similarly, the share of eggs and products derived from eggs declined from 38% to 16%.

**Diversification of fruit exports**

In 2006-07, cashewnut and walnuts accounted for 62% of India's fresh and dry fruit exports (Chapter 08, HS Code) to the world. By 2018-19, the share of these two commodities declined to 41% and the share of other fruits such as fresh grapes, bananas, pomegranates, oranges grew in the overall fruit exports.

The share of fresh grapes grew from 8% to 21%, while the share of pomegranates grew from 2% to 6%, bananas from 0% to 4%, coconut grew from 0% to 4%.

There is also marginal growth in exports of apple, watermelon, dried tamarind, papayas, and pineapples, although there is scope to enhance the shipments, given that India is a leading producer of these fruits.

**Box 13: Growth in wheat flour and starch of maize**

Under the category of the milling industry, wheat flour and starch of maize continue to be the dominant products of exports since 2006. The share of these two products grew from 41% in 2006-07 to 64% of total exports under this category in 2018-19.

**Tobacco largely maintains share:** Tobacco products largely maintain their share in India's total exports of agriculture commodities at around 2.56% since 2006-07. Of this, fine cured and burley varieties (unmanufactured) account for 1.3%. Thus, India exports broadly two varieties of tobacco products, viz. flue cured tobacco and burley tobacco. Apart from this, the country exports small quantities of tobacco for manufacturing bidis, hookah and chewing tobacco.

Tobacco is cultivated in semi-arid and rain-fed land that is unfit for cultivation of other crops. India is the second largest producer of tobacco in the world after China. However, India's share in world exports of tobacco and its products is hardly 2.5% in 2018, which grew from 1.4% in 2006. The country exports tobacco, mostly in unmanufactured form and the share of cigarettes and



other value added products is miniscule in total tobacco exports. In recent years, the share of tobacco extracts, which is a value added product, grew in the total agriculture exports from 0.16% in 2006-07 to 0.52% in 2018-19.

Table 9: Share of major tobacco products in overall agriculture exports (value in USD million, share in %)						
Sr. No	HS Code 8-digit	Commodity name	2006-07		2018-19	
			Value	Share	Value	share
1	24012010	FLUE CURED VIRGINIA TOBACCO PARTLY / WHOLLYSTMD/STRIPPED	153.98	1.33%	396.39	1.08%
2	24039990	OTHER MNFRD TOBACCO EXTRACTS AND ESSENCS NES	18.78	0.16%	189.31	0.52%
3	24022090	OTHER CIGARETTES CONTNG TOBACCO	24.19	0.21%	78.98	0.22%
4	24012040	BURLEY TOBACCO, PARTLY/WHOLLY STMD/STRIPPED	21.44	0.19%	76.05	0.21%
5	24012090	OTHR TOBACCO PRTLY OR WHOLLY STEM/STRIPPED	10.23	0.09%	32.53	0.09%
6	24039930	JARDA SCENTED TOBACCO	1.56	0.01%	20.81	0.06%
7	24039970	CUT TOBACCO	0.16	0.00%	10.73	0.03%
8	24039920	PREPARATIONSS CONTNG CHEWING TOBACCO	0.39	0.00%	2.19	0.02%
9	24011010	FLUE CURED VIRGINIA TOBACCO, NPT STMD/ STRIPPED	43.83	0.38%	4.59	0.01%
10	24011020	SUNCURED COUNTRY (NATU) TOBACCO,NOT STMD /STRIPPED	1.48	0.01%	4.12	0.01%
11	24011030	SUN CURED VIRGINIA TOBACCO , NOT STMD / STRIPPED	2.42	0.02%	3.84	0.01%
12	24029090	OTHER CIGARETTES, CIGARILLOS OF TOBACCO SUBSTITUTES	0.2	0.00%	2.15	0.01%
13	24011040	BURLEY TOBACCO,NOT STEMMED/STRIPPED	1.49	0.01%	1.74	0.00%
14	24012060	TOBACCO FOR MNFR OF CHWNG TOBACCO, PARTLY/WHOLLY STMD/STRIPPED	0.34	0.00%	0.29	0.00%
<b>Total</b>			<b>280.49</b>	<b>2.43%</b>	<b>823.72</b>	<b>2.26%</b>

Source: Ministry of Commerce, Government of India

**Decline in export shares:** While the share of the above mentioned commodities grew or broadly remained same in overall agricultural exports, the share of some other commodities declined during this period. These commodities include soyabean meal, groundnut meal, skimmed milk, mango pulp and cashew kernel, among others.

**Oil meal:** The share of oil meal in India's overall agriculture exports declined from 10.4% to 4.1% during 2006-07 and 2018-19. Oil meal is a major source of foreign exchange revenue for India as it exports oil cake extracted from soyabean, groundnut, castor seeds, mustard, colza seeds and other oil seeds. Oil cake is used as animal feed, both in India and in foreign countries. The share of soyabean oil cake is the largest in this category, constituting more than 70% of oil meal exports. The share of soya oil cake

exports in total agriculture exports declined from 8.7% to 3.0% during 2006-07 and 2018-19, although the value of exports remained same during this period. Export of soya oil meal depends on the domestic price of this product vis a vis its global market price. Domestic price of soyabean oil cake is affected by the minimum support price for soyabean announced by Government of India every year.

However, the value and share of groundnut oil cake exports declined sharply during this period, as can be seen from the following table. Ground nut oil meal extractors are demanding incentives from government for export of this commodity.

Government of India incentivises oil cake exporters by providing Merchandise Exports from India Scheme (MEIS) at the rate of 10%-5%, depending on the type of the oil meal. However, MEIS benefit is not available for groundnut oilmeal exporters.

Table 10: Share of oil cake in overall agriculture exports (value in USD million, share in %)						
Sr. No	HS Code 4-digit	Commodity name	2006-07		2018-19	
			Value	Share	Value	share
1	2304	SOYA OIL CAKE	1,012.44	8.77%	1,108.57	3.03%
2	2306*	CAKE OF OTHER OIL SEEDS	167.60	1.45%	395.29	1.08%
3	2305	GROUNDNUT OIL CAKE	20.9	0.18%	4.78	0.01%
<b>Total</b>			<b>1,200.94</b>	<b>10.40%</b>	<b>1,508.64</b>	<b>4.12%</b>

**Source: Ministry of Commerce, Government of India, \* includes oil cake of rapeseed, or colza, mustard, castor and other oil cake**

**Mango pulp:** India's export of mango pulp has remained stagnant in the range of USD 110- USD 130 million since 2006-07 and in 2018-19 it declined below USD 100 million after many years. In 2006-07, India exported 156,835 tonne of mango pulp, which declined to 105,873 tonne in 2018-19. It may be noted that the export of mango pulp has declined, while the export of fresh mangoes has also declined since 2007-08 from 54,350 metric tonne to 46,510 metric tonne in 2018-19.

Export of mango pulp depends on availability and yield of certain varieties of mangoes used for extracting pulp. Mango pulp is produced from Alphonso, Totapuri and Kesar varieties of mangoes.

There are two major mango pulp clusters in India, one in Krishnagiri, Tamil Nadu and the other in Chittor district of Andhra Pradesh, although there are small processing units in Maharashtra and Gujarat. Mango pulp is used for making fruit juices, jams, ice creams and other value added products.

Table 11: Share of commodities in overall agriculture exports (value in USD million, share in %)						
Sr. No	HS Code 8-digit	Commodity name	2006-07		2018-19	
			Value	Share	Value	share
1	8045040	MANGO PULP	111.48	0.97%	93.68	0.26%
2	21011110	INSTANT COFFEE FLAVOURED	103.27	0.89%	1.52	0.00%
3	8023200	SHELLED WALNUTS FRSH OR DRIED	25.7	0.22%	9.07	0.02%
<b>Total</b>			<b>240.45</b>	<b>2.08%</b>	<b>104.27</b>	<b>0.28%</b>

**Source: Ministry of Commerce, Government of India**

Other products that witnessed decline in export share are instant coffee (flavoured) and walnuts. The share of tea (including black tea and green tea) declined from 3.6% to 2.2%, even though the absolute volume and value of its exports grew during this period.

**Box 14: Export of the following goods remained stagnant or witnessed tepid growth since 2006**

**Tamarind powder:** Export of tamarind powder or flour declined sharply during this period from USD 5.92 million in 2006-07 to USD 0.35 million in 2018-19.

**Maize flour and Rye flour:** Export of rye flour and maize flour remained stagnant around USD 0.4 million and USD 3.72 million respectively since 2006.

**Seeds:** Share of seeds in overall agriculture exports grew marginally from 0.32% to 0.38% between 2006-07 and 2018-19. Fruits and vegetable seeds account for more than 75% of the total seeds exports of India. Especially, the share of tomato seeds is greater than 17% in total seeds shipment. Other vegetable seeds exported by the country are onion seeds, potatoe seeds, cauliflower seeds, cabbage seeds, radish seeds etc. The following table provides the list of seeds exported by the country.

Table 12: Share of major seeds in overall agriculture exports (value in USD million, share in %)						
Sr. No	HS Code 8-digit	Commodity name	2006-07		2018-19	
			Value	Share	Value	share
1	12099190	VEGETABLE SEEDS FOR PLANTING N.E.S.	14.88	0.13%	66.12	0.18%
2	12099160	TOMATO SEEDS	2.5	0.02%	25.12	0.07%
3	12099990	OTHER SEEDS ETC FOR PLANTING N.E.S	5.39	0.05%	7.64	0.02%
4	12099910	FRUIT SEEDS FOR PLANTING OR SOWINGS	1.82	0.02%	7.36	0.02%
5	12092990	OTHER SEED OF FORAGE PLANTS	0.35	0.00%	6.13	0.02%
6	12119019	OTHER SEEDS FRSH/DRID W/N CUT CRSHD/ PWDRDUSD IN PERFMRY,PHARM ETC/	2.2	0.02%	5.71	0.02%
7	12119013	PSYLLIUM SEED (ISOBGUL)	1.34	0.01%	5.54	0.02%
8	12092100	LUCERNE (ALFALFA) SEED OF FORAGE PLANTS	0.45	0.00%	2.81	0.01%
9	12079990	OTHER OIL SEEDS AND OLEGINOUS FRUITS W/N BROKEN	1.19	0.01%	2.71	0.01%
10	12099130	ONION SEEDS USED FOR SOWING	0.98	0.01%	2.27	0.01%
11	12093000	SEEDS OF HERBACEUS PLNTS CULTVTD FOR FLWRS	0.25	0.00%	1.78	0.00%
12	12060010	SUNFLOWER SEEDS W/N BROKEN OF SEED QLTY	0.76	0.01%	1.25	0.00%
13	12099120	CAULIFLOWER SEEDS USED FOR SOWING	0.08	0.00%	1.1	0.00%
14	12099110	CABBAGE SEEDS USED FOR SOWING	0.09	0.00%	1.06	0.00%
15	7011000	POTATO SEEDS FRESH OR CHILLED	0.74	0.01%	0.92	0.00%
16	12099150	RADISH SEEDS USED FOR SOWING	0.07	0.00%	0.7	0.00%
17	12060090	OTHER SUNFLOWER SEEDS W/N BROKEN	1.86	0.02%	0.41	0.00%
18	12099140	PEA SEEDS USED FOR SOWING	0.04	0.00%	0.31	0.00%
19	12051000	LOW ERVUCACID RAPE OR COLZA SEEDS	0.02	0.00%	0.24	0.00%
20	12091000	SUGAR BEET SEED OF A KIND USED FOR SOWING	0	0.00%	0.05	0.00%
21	12076010	OF SEED QUALITY	1.42	0.01%	0.04	0.00%
22	12119012	NUX VOMICA DRIED RIPE SEEDS	0.04	0.00%	0.04	0.00%
23	12092200	CLOVR (TRIFLIUM SPP) SEED OF FORAGE PLANTS	0	0.00%	0.02	0.00%
24	12119014	NEEM SEED	0.18	0.00%	0.02	0.00%
25	12119011	AMBRETTE SEEDS(MUST GRAINS OF VGTBL KNGDM)	0.14	0.00%	0.01	0.00%
<b>Total</b>			<b>36.79</b>	<b>0.32%</b>	<b>139.36</b>	<b>0.38%</b>

Source: Ministry of Commerce, Government of India

## Trade balance analysis

In 1960s, India's major agriculture exports were confined to tea, coffee, oil cake and tobacco, sugar, cashew and a few other commodities. Since 1970s, India started exporting rice, fish and from 1980s, exports of fruits, meat, and processed food started gaining momentum. However, major boost to India's agriculture exports, in terms of volume and value was seen after 1990s. India has been having minor trade surplus in agro exports since 1970s and this surplus grew gradually in the subsequent decades.

This section analyses the trade balance in India's external trade in agriculture sector, based on an analysis of trade in 44 principal commodities in rupee terms and quantity terms. The section compares trade balance in these 44 principal commodities between 2009-10 and 2018-19.

India's exports of these 44 agro commodities grew 3.4 times in rupee terms during this 10-year period, while imports grew 2.4 times. As a result, India's trade surplus from agricultural trade grew from Rs. 30,670 crore in 2009-10 to Rs. 147771 crore in 2018-19, which is a growth of 4.8 times.

### Surplus commodities:

Marine products, rice (basmati and non-basmati), buffalo meat, spices and cotton are the major contributors to India's surplus in agricultural trade. Cotton, oil meals, sugar, castor oil, tea, coffee are other major contributors to India's trade surplus.

Oil meal is the sixth largest contributor to India's agriculture trade surplus, even though export of this commodity declined marginally in volume terms. India's exports of oil meals stood at 4671 thousand tonne in 2009-10 and grew upto 9830 thousand tonne till 2013-14 before falling gradually to 4493 thousand tonne in 2018-19. India's exports of oil meals vary year after year and our imports are miniscule in this commodity. India exports meal or oil cake of soyabean oil, mustard seed oil, groundnut oil and other oil seed extracts, which are used as animal feed. Vietnam, South Korea, Bangladesh, USA, Thailand are the major importers of Indian oil meal. The recent restriction imposed on trade with Iran, another major importer of India's oil meal, may affect our overall exports of this commodity. Oil meal exports are also affected by the government's pricing policy (minimum support price – MSP) in the domestic market. If the government hikes MSP, it would incentivise oil meal producers to dispose stock in the local market, instead of exporting the same.

### Box 15: Emerging contributors to agriculture trade surplus

India's exports of molasses, dairy products, seeds of fruits and vegetable are gaining momentum in recent years and hence, they are the emerging contributors to the country's trade surplus in farm commodities.

Since 2009, India's exports as well as imports of seeds of fruits and vegetables have grown remarkably. However, exports have grown faster than imports; as a result, India has a minor trade surplus of Rs. 31 crore in this segment.

### Box 16: Processed meat exports

India's surplus in processed meat grew marginally in recent years largely because of decline in imports since 2013-14. India's import declined from Rs. 9.02 crore in 2012-13 to Rs. 2.75 crore in 2015-16; since then it grew slightly to Rs. 4.14 crore.

India's exports of processed meat grew from Rs. 8.79 crore in 2009-10 to Rs. 14.2 crore in 2014-15. Exports declined after 2014-15 and recovered subsequently to Rs. 13.92 crore in 2018-19.

India's trade surplus from other cereals (other than rice and wheat) has been falling in recent years. Trade surplus declined from Rs. 2897 crore in 2009-10 to Rs. 1955 crore in 2018-19. India can enhance export of other cereals such as jowar, bajra, maize etc. or alternatively export processed food from these millets, which can generate considerable foreign exchange revenue. Similarly, India's trade surplus from cashew nut shell liquid declined since 2009-10 because of fall in exports. This liquid, which is a by-product of cashew nut, is used as ingredient in manufacture of paints, insecticide, fungicide and other products.

#### **Box 17: Volatile balance from wheat**

Although India is a major producer of wheat, the country's export and import of this commodity varies widely across years depending on domestic availability and global prices.

India exported 0.03 thousand tonne of wheat in 2009-10, which grew considerably to 749 thousand tonne in 2011-12 and 6514 thousand tonne in the following year. Subsequently, our exports declined to 666 thousand tonne in 2015-16 and further to 226 thousand tonne by 2018-19.

One of the reasons for decline in exports could be the increase in domestic processing of wheat by flour mills. It may be recalled that India's exports of wheat flour has increased since 2009-10 from 34 tonne to 185 tonne in 2018-19.

In some years, when global price of wheat declines sharply, domestic flour mills decide to buy wheat from global market to take advantage of the fall in prices and this leads to trade deficit in this commodity. India imports wheat from Australia, Ukraine, Russia and other countries.

#### **Trade deficit:**

#### **Box 18: Commodities causing trade deficit**

India runs trade deficit in seven key categories of farm commodities, viz. vegetable oils, fresh fruits, cashew, pulses, natural rubber, alcoholic beverages and cocoa products.

India's excess imports of these goods stood at Rs. 92,376 crore as of 2018-19 compared to Rs. 25,994 crore in 2009-10. Around 70% of this trade deficit is caused by import of vegetable oil, followed by fresh fruits, cashew and natural rubber.

#### **Box 19: Trade deficit in pulses declines**

In recent years, India increased domestic production of pulses and hence our dependence on import of this commodity declined. India's import of lentils has declined in recent years. However, the country continues to import large quantities of peas (*pisum sativum*), pigeon pea (*tur dal*) and moong bean (green gram).

On the other hand, chick pea (*kabuli chana*) is the dominant export item in this segment. On a net basis, India is an importer of pulses, although the trade deficit has declined from Rs. 10,221 crore to Rs. 6234 crore between 2009-10 and 2018-19.

The government's trade policy intervention also played a role in reducing trade deficit in pulses. In response to growth in domestic production, the government restricted imports in 2017 and allowed exports. This led to reduction in trade deficit in the pulses segment.

Table 13: Trade balance of principal agro commodities

Trade balance of principal agro commodities (2009-10 vs 2018-19)													
Principal Products	Exports (2009-10)			Share (%) in total exports			Imports (2009-10)			Share (%) in total imports			
	Units	Qty	Value	Share (%)	Value	QTY	Share (%)	Value	QTY	Share (%)	Value		
MARINE PRODUCTS	KGS	69848.12	9900	12%	1672386	47665	27346	303	1088	67102	9597	1615453	46577
RICE -BASMOTI	TON	2016.87	10890	13%	4415	32804	0	0	0	2017	10890	4415	32804
BUFFALO MEAT	TON	490.4	5481	6%	1233	25091	0	0	0	490	5481	1233	25091
RICE(OTHER THAN BASMOTI)	TON	139.55	365	0%	7648	21171	0	0	32	139	365	7641	21139
SPICES	KGS	601402.12	5949	7%	1133889	23218	161782	1476	7933	439620	4473	893334	15285
COTTON RAW INCLD. WASTE	TON	0	9537	11%	1143	14628	0	1241	299	0	8296	844	10244
OIL MEALS	TON	4671.14	7832	9%	4493	10557	128	105	870	4543	7727	3989	9688
SUGAR	TON	44.74	110	0%	3990	9523	4%	2551	1491	3175	2499	5856	6348
CASITOR OIL	TON	397990.27	2179	3%	619377	6170	57	0	224	397933	2179	619153	6165
FRESH VEGETABLES	TON	2032.4	3014	4%	3192	5679	2%	8	15	2027	3006	3178	5655
TEA	KGS	207839.07	2944	3%	270306	5828	2%	34459	277	173380	2667	241455	5410
COFFEE	KGS	157138.32	2032	2%	282840	5722	2%	40884	297	116254	1735	200068	4763
GUERAM MEAL	TON	17.41	1133	1%	513	4707	2%	2	6	217	1131	513	4701
TOBACCO UNMANUFACTURED	KGS	230804.37	3621	4%	189554	3985	1%	1075	38	229730	3584	186958	3882
PROCESSED FRUITS & JUICES	KGS	0	1904	2%	594487	4481	2%	191	909	0	1713	535363	3572
GROUNDNUT	TON	340.26	1426	2%	489	3297	1%	0	2	340	1424	488	3289
DAIRY PRODUCTS	KGS	0	797	1%	180688	3376	1%	334	254	0	463	167045	3122
CEREAL PREPARATIONS	TON	172.2	1030	1%	348	3959	1%	39	180	133	841	257	2888
SESAME SEEDS	KGS	215693.18	1494	2%	312003	3762	1%	9229	53	206465	1441	224465	2886
TOBACCO MANUFACTURED	0	0	723	1%	0	2874	1%	0	79	0	644	0	2617
MISC PROCESSED ITEMS	0	0	838	1%	0	4613	2%	0	552	0	286	0	2053
OTHER CEREALS	TON	2881.22	2973	4%	287	2426	1%	34	76	2848	2897	43	1955
PROCESSED VEGETABLES	KGS	0	743	1%	228967	2055	1%	0	78	0	665	210869	1894
MILLED PRODUCTS	KGS	72740.53	154	0%	307419	1063	0%	2490	10	70251	144	303234	1047
SHEEP/GOAT MEAT	TON	53.07	746	1%	22	868	0%	0	1	53	745	22	857
POULTRY PRODUCTS	0	0	373	0%	0	687	0%	0	27	0	346	0	645
MOLLUSES	TON	31.1	20	0%	846	587	0%	46	32	0	42	0	585
ANIMAL CASINGS	KGS	1716.9	33	0%	14883	481	0%	0	0	14	13	841	585
WHEAT	TON	0.03	0	0%	227	424	0%	164	232	1717	33	14883	481
FLORICLTR PRODUCTS	KGS	0	294	0%	19695	571	0%	46	174	0	249	13320	397
SHELLAC	KGS	4044.41	71	0%	6996	305	0%	3552	34	492	37	6355	285
OTHER OIL SEEDS	TON	4979	139	0%	214	927	0%	57	745	7	21	7	181
NIGER SEEDS	KGS	6004.09	24	0%	13371	96	0%	3505	13	0	2499	11	55
FRUITS/VEGETABLE SEEDS	KGS	8434	145	0%	17532	866	0%	284	836	4234	139	2193	31
PROCESSED MEAT	TON	0.67	9	0%	0	14	0%	1	4	0	1	0	10
CASHEW NUT SHELL LIQUID	KGS	11226.86	28	0%	5301	27	0%	0	21	11227	28	1311	6
OTHER MEAT	TON	1.17	11	0%	1	14	0%	0	31	0	4	0	17
COCOA PRODUCTS	KGS	5863.88	97	0%	27607	1351	1%	25228	376	19364	279	15988	495
ALCOHOLIC BEVERAGES	LTR	0	585	1%	231602	2104	1%	1244	2%	0	659	356357	2575
NATURAL RUBBER	TON	25.6	245	0%	7	77	0%	177	1602	152	1357	576	6050
PULSES	TON	100.13	408	0%	287	1802	1%	3750	10629	3650	10221	2241	4234
CASHEW	TON	107.47	2802	3%	78	4579	6%	840	11162	648	246	761	6583
FRESH FRUITS	TON	475.76	1524	2%	823	5538	2%	562	86	86	4319	301	8394
VEGETABLE OILS	TON	14.75	183	0%	50	745	0%	6734	22374	6720	22134	14969	48279
<b>Total</b>		<b>2633211.85</b>	<b>84807</b>	<b>100%</b>	<b>6159210</b>	<b>270618</b>	<b>100%</b>	<b>337281</b>	<b>54141</b>	<b>2295931</b>	<b>30666</b>	<b>4824145</b>	<b>128401</b>

Source: Ministry of Commerce, Government of India



**Trade deficit in fresh fruits:** India has an overall trade surplus in the fruits and vegetable sector, with a surplus of USD 394 million. A large part of the surplus is contributed by fresh vegetables, export of which stood at USD 810 million, compared to USD 3 million imports. Similarly, India has trade surplus of USD 510 million and USD 271 million, respectively in the processed fruits and processed vegetable sectors. However, in the fresh fruits category, India's import is 2.5 times its exports, resulting in a trade deficit of USD 1.19 billion.

<b>Table 14: India's trade balance in fruits and vegetables ((USD million) 2018-19</b>			
<b>Items</b>	<b>Import</b>	<b>Export</b>	<b>Trade balance</b>
Fresh fruits	1988	794	-1194
Fresh vegetables	3	810	807
Processed fruits	130	640	510
Processed vegetables	23	294	271
<b>Total</b>	<b>2144</b>	<b>2538</b>	<b>394</b>
<b>Source: Ministry of Commerce and Industry</b>			

India, being an emerging economy, cannot contain imports of fresh fruits, as it reflects the aspiration of the growing middle class to consume exotic fruits from abroad. However, we can reduce the trade deficit in this category by promoting exports of fresh fruits such as papayas, mangoes, bananas, lemon etc. India has 17% of the world population; however, it produces 45% of papayas, 39% of mangoes, mangosteens & guavas, 27% of bananas and 16% of lemons & limes. Therefore, India can leverage its considerable share in world production in these crops and explore export opportunities. The agriculture marketing department of every state should build the export capability of growers by handholding them in processing, labelling, packaging and identifying potential markets.

#### **Share of agriculture in exports can be improved:**

Agriculture, forestry and fishing contribute around 17% to India's GDP and yet their contribution to our overall goods exports is 11%. Food commodities (excluding cotton and rubber) contribute 10% to India's overall goods exports, similar to the global average of 8%. However, India can enhance this share by leveraging its diverse agro-climatic zones and land resources. Through concerted efforts, India can enhance this share to the level of Thailand, where food commodities contribute 13% to overall exports. Thailand has a well developed processed food industry, and its major food exports are fruits & vegetables, sugar & honey and beverages.

Countries such as Argentina, Brazil, Australia and New Zealand have high share of food commodities in their overall exports because agriculture is an export-oriented sector in these countries. In Argentina and Brazil, food commodities contribute respectively, 54% and 34% to their overall goods exports. Even in countries such as Sri Lanka and Indonesia, agriculture is an export-oriented sector, with the former exporting tea and spices, while the latter exporting palm oil. Food commodities contribute 25% to the overall exports in Sri Lanka and 20% in Indonesia.

## **Untapped export potential:**

As mentioned above, India became one of the top 10 agri exporters in the world largely led by its exports of rice, bovine meat, coffee, tea, marine products and traditional items such as spices. There is scope to enhance India's ranking in the world agriculture exports by diversifying our export basket into other commodities such as dairy products (India is the world's largest producer of milk), fruits, maize and other food products.

India's low share of dairy products, pulses, maize, fresh fruits in overall agriculture exports reflects that we can realise the untapped export potential in these goods by setting up export infrastructure and training farmers on quality standards in these goods.

India can explore export opportunities in 19 agro-based commodities that together have a global market of USD 97.6 billion, recent data from the Food and Agriculture Organisation of the United Nations shows. India's share in the global market for these products currently stands at a miniscule 1.5%, with India exporting USD 1.49 billion worth of these commodities in 2017. Except for coir and coir products, India does not have significant market share in most of these identified 19 commodities (see the table below). Despite being a major producer, India's share in exports of bananas, oranges, chicken meat and milk products such as cheese and butter milk is minuscule.

Thus, there is huge unrealized export market for India's farm commodities, which can be explored by food processing companies and mega food parks that are envisaged under the central government scheme. Government of India is offering financial support to around 40 mega food parks across various parts of the country.

<b>Sr. No</b>	<b>Agro-Commodities</b>	<b>World export</b>	<b>India export</b>	<b>Share of India</b>
1	Coir	256.22	252.05	98.40%
2	Onions, dry	3016.27	423.22	14.00%
3	Eggs, dried	327.51	31.96	9.80%
4	Mangoes, guavas, mangosteens	2785.69	182.1	6.50%
5	Vegetables, dehydrated	2366.08	140.91	6.00%
6	Honey, natural	2361.19	104.05	4.40%
7	Grapes	8602.2	275.8	3.20%
8	Sorghum	1433.3	10.82	0.80%
9	Cheese, processed	2534.05	8.94	0.40%
10	Bananas	14926.35	48.89	0.30%
11	Bran, maize	247.11	0.41	0.20%
12	Oranges	5662.53	8.22	0.10%
13	Buttermilk, curdled, acidified milk	1751.95	1.4	0.10%
14	Juice, pineapple	288.92	0.15	0.10%
15	Meat, chicken	20659.3	4.04	0.00%
16	Cucumbers and gherkins	2610.88	0.41	0.00%
17	Meat, chicken, canned	8202.12	0.03	0.00%
18	Butter, cow milk	8005.28	0	0.00%
19	Food wastes	10983.3	0	0.00%
	<b>Total</b>	<b>97020.25</b>	<b>1493.41</b>	<b>1.50%</b>

**Source: FAO, 2017**

India can enhance exports of these goods through a coordinated action plan with the participation of government, trade support institutions, including quality standards authorities, export promotion councils and entrepreneurs.

## Result of Primary Survey:

MVIRDC World Trade Center Mumbai conducted a primary survey with exporters, agriculture scientists and officials from the state marketing agriculture marketing boards to understand the challenges faced by the sector in enhancing exports. For the purpose of the survey, we used the exporters directory available with agriculture export promotion body APEDA. Our research team spoke to more than 70 exporters dealing in a wide range of agro products, viz. Food grains, fruits and vegetables, floriculture, honey, wine, processed food etc. A sample of exporters based out of diverse states, viz. Maharashtra, Gujarat, Karnataka, Andhra Pradesh, Uttar Pradesh, Delhi and others were identified for the survey.

Many of these exporters said in the beginning of their export operation, they faced several challenges, viz. compliance with global quality standards, food labelling and packaging norms, changes in import policy of the destination countries etc. However, over a period of time, these exporters got used to these challenges and started adopting the quality and packaging norms prescribed by the destination countries.

Many exporters also expressed satisfaction that they are able to benefit from the support services of APEDA, in terms of financial assistance, handholding on standards, packaging norms and marketing. Exporters also benefit from the electronic testing and certification service provided by APEDA for horticulture, meat, groundnut, basmati rice and other crops.

On the other hand, some enterprises flagged the following issues or challenges faced by them while engaging in exports.

**1. Lack of post-harvest infrastructure:** Exporters in hinterland face lack of cold storage infrastructure, non-availability of uninterrupted power supply and pack houses for processing fruits and other food commodities. Considering the perishable nature of these commodities, there is a need to provide cold storage and pack houses to growers or food processors in hinterland. This will increase the shelf-life of the products and ensure that the products do not get spoilt till they reach the point of consumption in the destination countries.

**2. Simplification of customs procedures:** Some exporters complain that even though the customs procedure has been automated by introducing e-sanchit, these exporters still have to engage in several manual operations. This increases the time taken for customs clearance.

Even though the government introduced Direct Port Delivery (DPD) facility to reduce the waiting time for clearance of import cargo, industry is not able to take full benefit of this facility. For example, in case of CIF shipments, the port authority does not allow insurance survey within the port premises because of restricted entry permissions. Therefore, the cargo has to be moved to the nearby Container Freight Station for insurance survey. This leads to more expenses and increased timelines.

Some exporters feel that the government should simplify the procedures for securing health certificates, GSP certification, SAFTA certifications etc from the Export Inspection Agencies (EIA).

Also, the EIA should provide regular update to exporters on new regulations or notifications through its website and other online channels.

**3. Adherence to timeline by FSSAI:** On many occasions, FSSAI fails to provide no objection certificate (NOC) for import cargoes within the notified timeline of seven days from the date of sampling by respective department. There are occasions when the timelines have crossed more than 20 days, which causes undue delay and expenses for importers of food ingredients used in ultimate export products.

**4. Incentives to enhance global competitiveness:** Some exporters raised concern about the abolition of the MEIS scheme and its replacement with the proposed Remission of Duties or Taxes on Export Product (RoDTEP). Exporters suggest that the RoDTEP should enhance the global competitiveness of India's agro product exporters.

Exporters of fruit pulp and fruit juice based drinks complain that they are unable to compete in South Asian countries and African countries because of high import duty in these jurisdictions. Countries such as Sri Lanka and Bangladesh impose customs duty

and taxes to the extent of 90%, despite India having FTA with the South Asia. Similarly, exporters of these goods face 25% duty in COMESA" (Common East African Region) Countries. As a result, they are unable to compete in these markets.

Under this circumstance, these exporters suggest that the new scheme RoDTEP should be as beneficial or in fact more beneficial than the MEIS scheme so that they can compete in these high duty jurisdictions.

**5. Organise interactive meetings:** Export promotion councils such as APEDA and FIEO should organise periodic meetings with the industry and regulatory agencies to flag grievances and seek redressal from these government agencies.

**6. Market driven R&D agenda:** We spoke to some senior officials of India's food processing companies. These officials are of the view that the research and development (R&D) system in the agriculture sector should be more market oriented.

The purpose of India's agriculture R&D system during the times of Green Revolution was increasing farm productivity and achieving self sufficiency. In the current times, however, the R&D efforts should focus on increasing the income of farmers by enabling them to produce those crops that are demanded in the local and foreign markets.

As the income level of the country increases, so does the aspiration of the people to consume exotic varieties of fruits and vegetables. We are living in a time where consumer demand and eating habits are fast changing. There is increasing demand for ready to eat food items. In order to make these food items, farmers need to produce crops that are suitable for high end processing.

This strategy will not only increase India's food exports, but also reduce our dependence on import for value added food commodities. India can reduce its import of juice concentrate, if we produce fruit varieties that are suitable for value addition and processing.

Therefore, scientists in the state and central agriculture universities should interact with global food retailers operating in India to understand the kind of farm commodities demanded by the food processing industry. Based on this understanding, these scientists should develop seeds and planting materials for growing these crops in the agro-climatic conditions prevalent in India.

India's agriculture research institutions should collaborate with leading food retailers and work out a list of exotic crops that can be grown in the Indian agro-climatic conditions and which are economically viable. The research institutions should decide whether it is economically viable to conduct research on these crops, by understanding the cost of research, the cost of cultivation and potential market returns from these crops. This exercise will enable them to create a research agenda that focuses on developing seeds and planting materials for a shortlisted exotic food crops.

**7. Enforceability of the contract:** A senior policy expert on agriculture pointed out that enforceability of contract is a major issue in contract farming. Many a times, contracting parties default on their obligations and this leads to dispute. In order to address this issue, he suggests the district administration to become a party to such contract farming agreement and ensure that the terms of the contracts are honoured by both the parties, viz. the farmers and corporate buyers. Thus, there has to be a tripartite agreement involving the District Administration (Say District Collector), the corporate buyer and the farmer groups.

## Key Recommendations:

This section offers policy recommendations to enhance exports by increasing productivity, strengthening logistics infrastructure and empowering farmers through grassroot intervention. The recommendations offered in this section are based on the rigorous data analysis in the preceding section. Some of the recommendations have also been drawn from subject matter experts in the field of cotton, fisheries, horticulture, and other areas of agriculture & allied sectors.

**Recommendations:**

**1. Enhancing yield of fruit crops:** India needs to enhance productivity to boost exports of fresh fruits. Data from FAO reveals that India's productivity in oranges, lemons, pineapples, apples, watermelons and peaches is less than the world average. India's productivity in lemons and limes is 72% of the global average, while its productivity in oranges is 81% of the global average. Thus, there is scope for enhancing yield in these crops through technological intervention and efficient extension services. Government needs to promote research on high yield variety seeds in these crops and distribute such high yield variety seeds to farmers.

Table 16: Production and yield of key fruits in India compared to world		
Item	Share in world production	Yield in India compared to world average yield
Papayas	45%	332%
Mangoes, mangosteens, guavas	39%	100%
Bananas	27%	173%
Lemons and limes	16%	72%
Fruit Primary	11%	107%
Oranges	11%	81%
Citrus Fruit, Total	8%	94%
Pineapples	6%	66%
Apples	3%	44%
Watermelons	2%	78%
Plums and sloes	2%	176%
Peaches and nectarines	1%	51%

**Source: FAOStats, 2018; Yield comparison is arrived at by dividing India's yield by the average yield for the world**

**2. Cotton exports:** India's export of cotton grew 39% from USD 2.8 billion in 1996-97 to USD 3.9 billion in 2006-07. In the following decade, exports growth accelerated further led by breakthrough in productivity as a result of the introduction of genetically modified seed variety. Export of cotton grew 68% from USD 3.9 billion in 2006-07 to USD 6.6 billion in 2016-17 and further to USD 7.7 billion in 2018-19.

However despite this breakthrough in productivity, India's average cotton yield of 565.72 kg lint per ha. is lower than the world average yield of 940 kg per ha. and far lower than the yield of 1500 to 2600 kg lint per ha in a few select advanced countries. India's leading biotechnologists Dr. C.D. Mayee and Mr. Bhagirath Choudhary feel that the country can further increase productivity and exports of cotton by following appropriate cultivation methods. Following are their brief observation and policy suggestions to enhance cotton yield in India.



**Box 20: PROBLEMS AND PROSPECTS OF PRODUCTION AND EXPORT OF INDIAN COTTON\***

**By Dr. C D. Mayee**  
**President, Board of Directors, South Asia Biotechnology Centre (SABC), New Delhi**  
**and**  
**Dr. Bhagirath Choudhary**  
**Founder – Director, South Asia Biotechnology Centre, New Delhi**  
**and Member APEDA New Delhi**

**INDIAN COTTON**

Cotton rules the textile world despite serious inroads by synthetic fibres. The economy of nearly 82 countries is influenced by cotton and India is no exception. Cotton crop is very important commercially in India. It occupies almost 12.3 m ha or just 8.0 % of the cultivated area of the country but it is considered backbone of Indian economy as large number of people is dependent on its production, processing and trade. It is also the first crop in India, where genetically engineered technology (GE) or commonly referred as biotech crop status has been commercialized in the form of insect-resistant Bt cotton. In the last decade cotton production scenario has undergone dramatic changes and Indian cotton has not only dominated the International production but attracted the attention of all global players in the commodity for its persistent growth. In 2015, India has emerged as the world's largest producer of cotton outpacing the mighty China. With 4000 and odd G & P factories, Indian textile sector has scope to expand. Technology Mission on Cotton introduced in 2002 has further boosted the cotton production, quality marketing and ginning. The cotton progress in India is dotted with technology support whenever the yield has remained stagnant. The situation became worrisome when the cotton yields remained at 280-300 kg lint per ha for nearly 20 years and the textile industry had to depend on imports.

With introduction of Bt cotton the scenario changed after 2002 when the technology was permitted for commercial use in India. Within 5 years the cotton cultivation was a sea change as farmers adopted the new technology wholeheartedly, area increased, yields doubled, pesticide use reduced and country became a net exporter of cotton.

Despite substantial gains in production over the last 16 years, the yield got stagnant (around 600 kg lint per ha.) since 2012-13, a typical Indian cotton yield syndrome. This has almost become characteristics for the Indian cotton if one looks back to the history of productivity stagnation periods after independence. In 2013-14, India's best national average yield was 565.72 kg lint per ha. Compare this to the world's average yield of 940 kg per ha. The yield in few select advanced countries even ranged between 1500 to 2600 kg lint per ha which is more than 3 times of Indian yield. Five of the total cotton cultivating countries, the national average has been more than 1500 kg lint per ha. They are Australia (2619 kg/ha), Brazil (1601 kg/ha), Turkey, Mexico and China all between 1500-1600 kg/ha. Can the yield barrier of 600 kg lint per ha be broken now? Yes it is possible if a few technical suggestions are followed.

**PRODUCTIVITY IMPROVEMENT STEPS**

**1. NEW SEED TECHNOLOGY:** Up gradation of seed technology is the first priority. Several new molecular tools are available for creating resistance to pests and diseases incl. white flies, pink bollworm, sucking pests and nematodes. The extensively permitted GM cotton called HT-Bt (Herbicide tolerant Bt) cotton is yet to be given go ahead in spite of the fact that large number of farmers are growing it unofficially. Such seed technologies will save the routine losses to the tune of 20-25% due to pests and diseases. In USA the technology of gossypol-free cotton for commercial use has been approved and the scientists have added drought and salinity tolerant traits



in cotton. If such technologies are permitted in India, seed alone shall be able to enhance productivity. Unfortunately the planners are not yet clear on the utility of using the new biotechnological tools to improve the cotton crop through seed. Such novel technologies within the biotechnology and beyond for breaking the current yield stagnation of cotton in India are possible but for the reservations imposed by planners on the use of GM technology in India.

**2. DRIP IRRIGATION:** Recently it has been clearly demonstrated in the farmer's field in Maharashtra that use of drip irrigation with fertigation increases the yield of cotton by 75% in rain fed farming of the state. Thus irrigation through drip is one of the classical inputs to enhance the cotton yield.

**3. HIGH DENSITY PLANTING SYSTEM (HDPS):** Studies in India have indicated that HDPS could be another system of planting that could give higher productivity. What is of course required is development of short duration (130-140 days) hybrids and varieties that have compact canopy which could fit well in the new system of planting. HDPS with compact cultivars shall also allow the use of mechanical pickers and avoid the current constraint of labour for hand picking.

**4. COMMUNITY APPROACH:** Plethora of hybrid seeds in market has created a huge problem to farmers for selection of right material. Efforts to use one cultivar one village have given boost to improve not only yield but also the quality of cotton required for export and mill consumption. This facilitates the use of drone technologies for management of pests, diseases and weeds and also helps implementation of precision farming.

#### EXPORT IMPROVEMENT STEPS

For achieving the special status for Indian cotton in International arena and ensure production of assured quality bales, steps need to be taken at both production and processing ends. Cotton in India is referred as WHITE GOLD. Unfortunately, it is sold as iron, as no precise care is taken from field to ginning, at ginning, baling, packing uniformity, labelling, and even removing the trash and contaminants. Along with ginning the method of storage of cotton is equally important. There are no adequate storages and warehousing facilities and often open spaces storing attracts maximum contamination. The system of raw cotton sale needs lot of improvement. In fact, by this time traceability should have been improved to a large extent if the Indian cotton has to compete in the world market. It has come to such a state of affairs that Indian cotton sometimes fetches less price than even African cotton.

Three factors that need attention in production system are ,growing cultivars only of short duration particularly in rain fed areas, better harvest index and high ginning out turn . It is essential to group the cultivars on the basis of quality and then regulate their growing all over the states. Once leader in extra long staple (ELS) cotton being grown in Tamil Nadu, parts of Karnataka and A.P., today these areas are choked with only medium to long staple cultivars resulting in the import of ELS cotton. Serious efforts to restrict the choice of cultivars based on agro-ecological zones are needed to improve the yields as well as the quality supply.

To develop Brand India in cotton, uniformity of bales, identification marks, minimum trash and contaminants, and all such issues that will introduce traceability can establish the brand. Two categories of cotton varieties can make a difference in the rain fed areas which is around 60% in India. One is the short fibre variety, which is suitable for absorbent cotton, surgical, denims, mattresses, technical textile etc. whose demand is growing worldwide. The other is spin- able fibre types with a wide range which can be grown in different regions. Some of the new Desi cotton varieties (arboretum and herbaceum) have potential to be Brand India cotton as they possess special qualities. Since they can be grown with low inputs, they stand chance to be BRAND ORGANIC COTTON of India. Realizing the need for such a special status for Indian cotton recent efforts by Government of India through Cotton Corporation of India (CCI) are laudable. Recently CCI has launched its best quality cotton

under brand name HIRA (High in Recognition Attributes) in the Hirsutum cottons. This will fulfil the long felt need of branding Indian cotton assuring the customer of reliable quality of spinning and value addition. Better quality assurance in terms of strength (29g/tex), less moisture (<8%), low trash content (<1.7%), better grade (Rd 78+), and optimal mice (3.8-4.2) of HIRA will certainly attract the international players and improve our export benefiting the farmers and the nation.

Indian cotton has potential to regain the edge and the status that it had globally. Some simple steps would lead to double the production and export with doubling of the farmers' income. The Government must treat this as a true commercial crop and regulate the entire inputs, zoning of cultivars, better picking practises and transport to market yards. Total freedom of cultivar and cultivation practices may not be suitable if the country's production has to double. Proper care in processing particularly at ginning, packing, labelling, bringing uniformity, traceability etc., can make a sea change in the dominance of Indian cotton in International market. What is needed is a will and passion to do it by integrating the entire chain of cotton production, processing, marketing and trade. Beyond marketing bales with traceability with all identification marks for global market, the textile industry can develop India-specific brands through innovation and continuous R&D. Hope the 'HIRA' will bring back the glory of Indian cotton in future.

**3. Promote Export of beehive products:** India is one of the top 10 largest exporter of natural honey in the world after European Union, China, Australia & New Zealand, Argentina, Ukraine, Brazil, Spain and Mexico. India contributes around 4-5% of the world exports of natural honey, as can be seen from the following data. However, the share of beeswax, which is a product of beehive, is miniscule at 0.2%. Major importers of beeswax are USA, Germany, France, Japan, Belgium, Italy etc.

<b>Table 17: Share of India in world export of honey, beeswax</b>			
	2015	2016	2017
Natural Honey	5.30%	3.40%	4.40%
Beeswax	0.30%	0.20%	0.20%
<b>Source: FAO</b>			

Government should also promote export of other beehive products, viz. propolis, royal jelly, bee-venom, bee-collected pollen etc. The government has already launched National Honey Mission in 2017 to promote production and marketing of these products. On May 15, 2020, Government of India announced a scheme to upgrade infrastructure, implement standards, traceability system at a cost of Rs. 500 crore, thereby benefitting 2 lakh beekeepers. The scheme should be implemented effectively to realise the objective of enhancing income for these beekeepers.

In future, concerted efforts need to be taken to create awareness about global market opportunities for beehive products among beekeepers, especially from rural and tribal areas. Propolis and bee venorm are used in pharmaceutical industries, while royal jelly and pollen are dietary supplements and food ingredients.

**4. Support farmers cultivating psyllium seeds:** Government of India should support farmers producing seeds such as psyllium seed (isobgul), which are largely grown in Gujarat, Rajasthan and Madhya Pradesh. A large share of domestic production of isobgul is exported to USA, Germany, Pakistan, Sweden, Egypt, Iran etc. Isobgul is used in drugs & pharmaceuticals, confectionery and bakery sectors. Most of the companies exporting this seed are small companies, that require handholding, in terms of identifying potential markets, branding and quality certification.

**5. Facilitate local producers' B2B Meetings with global food retailers:** Indian farmers and food processors can be a strategic supplier of cereals, pulses, fruits and vegetables and processed food to global retail giants such as Walmart, Carrefour, 7-Eleven, Aldi, SPAR, Tesco etc.

Government of India needs to take a delegation of Indian food processing companies (especially MSMEs) and set up a buyer-seller meeting with these top retail giants. The meeting will serve as an effective platform for Indian food processing firms to understand the procurement needs of these retailers. Indian food processors can also learn the quality standards expected by these retailers.

Indian farmers growing fruits, vegetables, poultry and other meat should also be part of this delegation. The delegation should also include research scientists and extension workers from state agriculture universities and Krishi Vigyan Kendras. This will help these extension workers understand the demand and quality standards followed by these retailers. Consequently, the extension workers can guide Indian farmers in choosing the right farm inputs needed to grow those varieties of crops demanded by these food retailers. Currently, Indian farmers do not grow those varieties of crops that are consumed in foreign markets and hence India is not able to meet the demand of global food retailers.

**6. Organise awareness programmes on food labelling norms:** Incorrect labelling is cited by exporters as one of the major reasons for rejection of agro-product consignments by the authorities in the importing countries. Labelling regulations in international trade of food products is stringent as it involves mentioning the product details in local language. The exporter should also disclose information about ingredients, manufacturing and expiry date, name and address of the manufacturer, distributors, nutritional information, country of origin, among others. Exporters should also mention irradiation, usage of preservatives and other special treatment given to the food products to enhance shelf life. The export promotion agencies of the respective state governments should organise workshops on food labelling requirements among aspiring exporters in every district. Such events will help aspiring exporters connect with export consultants for guidance on food labelling standards. Awareness should also be created about the Good Agricultural Practices (GAP) and GAP certification, which increases the credibility and acceptability of the local products in international markets.

**7. Enter into bilateral agreements with focus countries:** Government of India should enter into bilateral agreements on harmonizing phytosanitary standards for farm commodities with countries that hold market potential for India's agriculture goods. For instance, China, USA, France, UK and the Netherlands are the top five importers of dairy products. These five countries together import USD 46.47 billion worth of dairy products annually. Similarly, India can explore USD 11 billion export opportunities for cocoa beans and related products in Netherlands, USA, Germany, Belgium and Malaysia, that are the top five importers of these products.

The list of top five importers of 21 principal agricultural commodities is given in Appendix I of this report. China is the leading importer of 10 of these 21 commodities, which include meat, cereal preparation, castor oil, groundnut, sesame seeds, tobacco, dairy products and sheep/goat meat. Our neighbouring country Vietnam is a major importer of fresh fruits, while Indonesia is one of the top five importers of wheat products, fresh fruits and groundnut. India needs to enter into MoUs with these countries and develop a standard operating procedure for certification of quality standards for these goods. Government of India should facilitate exchange of trade delegation in these commodities with the top five importing countries. India should also facilitate the registration of Indian exporters with the relevant authorities in these signatory countries.

**8. Increase number of APEDA approved packhouses:** Every state government should engage with the Agricultural & Processed Food Products Export Development Authority (APEDA) to increase the number of approved pack houses in every district in the state. APEDA grants recognition certification to pack houses that adopt globally accepted quality standards for fruits and vegetables. This recognition certificate is valid for a certain period, after which it should be renewed by paying the applicable fees. APEDA along with the agriculture marketing board of every state government should handhold the local farmer producer companies in setting up pack houses with state-of-the-art storage, grading and processing facilities.

**9. Promote bilateral exchange of agriculture know-how:** Indian embassy in foreign countries should promote bilateral exchange of agriculture know-how for the mutual benefit of farmers in both the countries. India should work with the world's leading agriculture exporting nations such as Brazil, Argentina, New Zealand, USA in training farmers, conducting joint research

programmes, exchanging advanced farming technologies and other areas. The Central and Southeast European country of Serbia has a strong horticulture sector; especially apple cultivation is an export oriented sector in the country.

#### **Box 21: Serbia donates apple saplings**

In 2019, as a goodwill gesture, Government of Serbia decided to help India develop apple orchards. As part of this initiative, Serbia will donate apple saplings and guide farmers of Himachal Pradesh and Kashmir through its instructors.

**10. Handhold farmers on export regulations and marketing:** Indian farmers and food processors should be educated about the global norms of food labelling food safety and food packaging. Mr. Govind Hande, who is a State Level Technical Advisor at the Export Commissionerate of Agriculture, Pune lists out the several challenges faced by farmers in meeting the export procedures.

#### **Box 22: Challenges faced by Exporters of agro commodities** **By Mr. Govind Hande, Krushi Seva Ratna** **State Level Technical Advisor, Export Commissionerate of Agriculture, Pune**

##### **Issues relating to Marketing and Export**

1. Quarantine regulation (Pest Free Area)
2. Pesticide Residues (Label Claim)
3. Food safety (GAP and HACCP, GMP)
4. Traceability (Farm Registration)
5. Non Tariff Barriers (Additional Declaration)

In order to address these issues, Mr. Hande offers various suggestions such as developing uniform packaging and quality standards, branding and geographical indications of regional and local products etc. He also suggests policymakers to upgrade logistics infrastructure, enhance backward linkages and adopt cluster development approaches. Mr. Hande also offers several suggestions, including digitization of farm records, registration of farmers in an online portal for enabling traceability of the origin of goods etc. Following are some of the suggestions offered by Dr. Hande.

#### **Box 23: Recommendations to promote farm exports** **By Mr. Govind Hande, Krushi Seva Ratna** **State Level Technical Advisor, Export Commissionerate of Agriculture, Pune**

##### **Ensuring Export Quality Assurance**

- Marketing and branding of organic products
- Develop uniform quality and packaging standards for organic and ethnic products
- Promotion of R&D activities for new product Development for the upcoming markets
- Marketing and promotion of "Produce of Maharashtra"
- Promotion of GI Registered Products in India and Export
- PGI certification for GI registered Products

### Ease of Doing Business (EODB) & Digitization

In 2019, as a goodwill gesture, Government of Serbia decided to help India develop apple orchards. As part of this initiative, Serbia will donate apple saplings and guide farmers of Himachal Pradesh and Kashmir through its instructors.

- Farm level – digitization of farmer land records ( Traceability system )
- Market Intelligence cell at State level and Portal for Information Dissemination
- Trade procedures and facilitation
- Developing Sea Protocol for long distance market
- Coordination between Export Promotion Councils and Concern stakeholder

Promote use of Advance packaging technologies developed by the Indian Institute of Packaging (IIP) for domestic marketing and export

Government should encourage private sector to set up testing labs near farms or food processing units. Also, these testing labs should be accredited by the authority of the importing country. We should also educate our farmers on the quality standards required in foreign countries.

**11. Adoption of genetic engineering:** It may be observed some of the leading farm exporters in the world, viz. USA, Brazil and Argentina have adopted genetically modified seeds in soyabean, corn and other crops. Genetically engineered seeds deliver better productivity and reduce cost of cultivation. However, India does not allow genetic engineering in food crops because of ideological reasons. Lack of adoption of genetic engineering will place India at an unfavourable position, in terms of cost, vis a vis countries that have adopted these technologies. Therefore, Government of India should revisit its stance on allowing genetic engineering in food crops.

**12. Effective Implementation of Rainfed Area Development:** India cannot increase its agriculture exports unless it overcomes its vulnerability to drought. Around 60% of the country's farmland is dependent on rainfall. Therefore, there is a need to build water conservation infrastructure in rain fed areas. The central government is implementing Rainfed Area Development programme under National Mission for Sustainable Agriculture. However, the implementation of this programme can be made more effective as it has not been able to achieve its annual targets under water harvesting and management projects. For instance, in the year 2018-19, the government covered hardly 929 hectare under water harvesting structures for communities, as against the target of 3012 hectare. The amount of funds spent on this programme also fell short of the target amount by Rs. 1.8 crore during the year. Similarly, the government could restore small tanks in only 118 hectare of land, as against the target of 5,078 hectare.

Table 18: Implementation of Water Harvesting and Management		
Activity	Target [Command Area (Ha)]	Achievement [Command Area (Ha)]
Water harvesting structure for communities	3,012.21	929.65
Water harvesting structure for individuals	11,296.30	303.2
Restoration/Renovation of small tank	5,078.00	118
<b>Source: National Mission for Sustainable Agriculture, Government of India</b>		

**13. Export Opportunities in Bamboo:** India can explore USD 2.26 billion worth export opportunities for value added products made of bamboo. These products include pulps of bamboo materials, plywood of bamboo, flooring materials, furniture made of bamboo and other articles. Globally, China is the leading exporter of these goods, while the top importers are Japan, USA, Netherlands etc. India can also compete with China in exporting these goods. India is said to have the second largest resource of bamboo after China, with 136 species and around 13.96 million hectare of land is under bamboo cultivation, the highest in the world. Despite this, India exports hardly USD 64 million worth of value added bamboo products, compared to the total world import of USD 2.26 billion.

**Table 19: Trade in Bamboo products**

India's trade in bamboo and products made of bamboo in 2018-19 (USD Million)				World Import (USD Million)	Top 5 Importers					Top Exporters	
HS Code	Commodities	Import	Export								
140110	Bamboos	30.48	0.69								
200591	Bamboo Shoots	0.11	0.01								
440210	Bamboo charcoal	0.37	0.02	52.82	Japan	Saudi Arabia	Netherlands	USA	JAE	China	Indonesia
440921	Bamboo, incl. strips and friezes for parquet flooring...	0.86	0.34	35.20	Malaysia	New Zealand	France	Australia	UK	China	Ghana
441210	Plywood of Bamboo	0.31	0.11	204.73	USA	Netherlands	Singapore	Saudi Arabia	JAE	China	USA
442191	Other articles of bamboo (excluding cloth hangers)	4.51	63.07	709.03	USA	Netherlands	Belgium	Japan	France	China	Canada
460121	Mats, matting and screens of bamboo	0.39	0.08	58.03	Japan	South Korea	Vietnam	Italy	Germany	China	Netherlands
470630	Pulps of fibrous celluloic bamboo materials	0.94	0.04	1013.59	China	Germany	Japan	UK	Netherlands	China	Germany
940151	Seats of bamboo	0.00	0.02	3.33	Mexico	Qatar	Ukraine	Philippines	Georgia	Philippines	Mexico
940382	Furniture of bamboo	0.17	0.07	123.47	USA	Germany	France	Spain	UK	China	Germany
	<b>Total</b>	<b>38.31</b>	<b>64.45</b>	<b>2260.20</b>							

Source: ITC, Geneva

The National Bamboo Mission, which Government of India introduced in 2006, provided thrust on bamboo plantation. In the days to come, the mission should focus on skill development in bamboo processing and support clusters in production of bamboo based articles.

**14. Establish Custom Hiring Centers:** Farm mechanisation improves productivity and reduces time and labour. Machines also help farmers tide over shortage of manpower during harvest or peak seasons. However, most of the farmers in the country are small and marginal farmers who cannot afford to buy costly machines, farm implements and equipments. Therefore, state governments should make farm machines available for hiring by these small farmers by setting up Custom Hiring Centers. Custom Hiring Centers should be set up at the village or block level and these centers should offer farm machines on hire to small and marginal farmers at a nominal cost.

**15. Exporting fresh fruits:** India is the leading producer of guavas, papayas, pineapples and other fruits. Being a major producer of these fruits, the country can explore export opportunities for these commodities in potential markets. Despite being the leading producer, India meets hardly 3.2% of the world import demand for papaya, 0.5% of world import demand for lemons and limes, 0.3% of world imports of orange and 0.2% of pineapple imports. India's ranking in world production of these fruits and their major importers are mentioned below:

**Table 20: Major importers of fruits**

Fruits	India's rank and (share in world production)	Major Importers	Total world import in tonne	India's Export in tonne (2017)
Papayas	First (43.7%)	USA, Singapore, El Salvador, Canada, Netherlands, Germany	359295	11508
Lemon and lime	First (17.2%)	Netherlands, Russian Federation, Germany, France, UK, UAE	3333708	16369
Orange	Third after Brazil and China (10%)	China, Netherlands, France, Germany, Russian Federation, Saudi Arabia	7120208	22776
Pineapples	Fifth after Costa Rica, Brazil, Philippines, China (7.6%)	USA, Netherlands, Spain, UK, Italy, China, Japan	3435542	5176

Source: Horticultural Statistics at a Glance, 2018, Ministry of Agriculture, Government of India; MVIRDC WTC Mumbai calculation



The state horticulture departments of state governments should identify growers of these fruits and build their capacity to meet the demands in these target markets. There is a need to create awareness about the existing export opportunities for these fruits and also the sanitary and phytosanitary standards that are in force in these target countries. For instance, state governments should handhold farmers growing china variety of bananas in Bihar, mandarin orange in Arunachal Pradesh and pineapple from Tripura.

Government of India needs to enter into agreements with the food regulatory authorities in the target markets for allowing import of these fruits from India. Following steps need to be taken to promote exports of these fruits from India

#### **Box 24: Steps to be taken to promote export of fruits from India**

1. Enter into agreements with food authorities in target countries to allow import of fruits from India. The agreement should specify the standard operating procedure (SOP) for testing and quality certification of these fruits in India

2. Educate growers about the quality standards, permissible pesticide residue, colour, shape, grade and other features of the fruits consumed in the target countries

3. Increase the number of packhouses, with world class infrastructure such as pre-cooling, ripening, hot water treatment, vapour treatment, refrigeration, grading, sorting etc. These packhouses should be set up in districts where these fruits are grown for immediate post-harvest treatment. These packhouses should be accredited by the food regulators in the target markets.

**16. Tap market for fruit juices in neighbouring countries:** India has an untapped market potential for non alcoholic beverages, including fruit juices in 15 neighbouring countries. These countries, include five South Asian nations and the 10 ASEAN countries. India's export of non alcoholic beverages to the world stood at USD 17 million in 2017 and the annual import of these 15 countries itself was USD 1.46 billion during that year. This indicates the extent of unexplored export potential for India in these countries.



Table 21: India's exports of fruit juices to world and market potential in neighbouring countries

Processed fruits	India's exports	Imports (USD 1000s) by neighbouring countries														Total imports from neighbouring countries	
		Afghanistan	Bangladesh	Bhutan	Cambodia	Indonesia	Lao People's Democratic Republic	Malaysia	Mauritius	Myanmar	Nepal	Philippines	Singapore	Sri Lanka	Thailand		Viet Nam
Beverages	233189	25168	12110	3905	552551	113528	129159	606451	47255	472249	47075	273802	2536812	45861	335166	1416032	6617124
Beverages, non alcoholic	17546	22877	1484	727	430741	83809	96573	64400	14062	253443	25986	120880	228572	4033	22172	88067	1457826
Other prepared fruits	221181	25231	2133	213	10550	43279	1554	82954	5503	5042	6147	26844	59284	3095	81549	23279	376657
Fructose and syrup, other	27	617	91	0	76	52190	0	4448	16	566	10	122986	1244	16	2287	35307	219854
Other fruit juices	8901	23160	932	841	17391	4009	12961	33290	1467	14500	13591	12215	48241	3396	24809	6921	217724
Juice, orange, concentrated	169	2948	891	15	5809	15172	3558	10024	805	2278	23	9804	6372	0	698	763	59160
Juice, grape	54	50	91	0	479	1209	184	2640	965	420	30	5333	962	297	20982	1029	34671
Juice, orange, single strength	318	260	163	152	277	310	1858	492	296	261	22	349	3517	3632	13048	5841	30478
Juice, citrus, concentrated	1117	1217	125	1	243	623	2725	1607	273	200	0	880	2296	0	1559	767	12516
Juice, pineapple, concentrated	1226	67	14	0	174	144	333	255	215	194	4	614	1601	0	1648	666	5929
Juice, grapefruit, concentrated	1	90	3	0	39	636	782	161	96	72	7	2068	463	8	342	476	5243
Juice, citrus, single strength	657	690	5	0	488	174	0	673	0	25	0	178	861	864	133	91	4182
Juice, pineapple	153	0	10	0	49	79	6	19	7	26	1	199	1080	497	24	158	2155
Juice, grapefruit	0	0	2	0	10	24	6	139	6	85	0	6	154	9	143	5	589

Source: FAOStats for year 2017

For instance, the total import of orange juices (both concentrated and single strength) in these 15 countries was USD 89 million, while import of pineapple juice stood at USD 8 million and import of grape and grapefruit juices was almost USD 40 million. Currently, except for Nepal, Bhutan and Sri Lanka, none of these neighbouring countries are major destinations for our fruit juice exports. List of major markets for India's key fruit juices is given in Appendix II. For instance, the top markets for India's pineapple juice are Qatar, UAE, Bahrain, Nepal and Saudi Arabia. India's major destinations for grapefruit juice and squash are Australia, Qatar, Nepal and USA. Major destinations for India's orange juice and squash are Nepal, Bhutan and South Korea, Afghanistan. Therefore, India has not tapped the market potential for these fruit juices in Bangladesh and ASEAN countries.

**17. Diversifying sea food exports:** India's export of marine products has almost doubled in US dollar terms since 2011-12 to USD 6.8 billion as of 2018-19 and it accounts for 17% of the country's total agro exports. There is still untapped potential to diversify the marine product export basket through skill development, promotion of sea weed based products, setting up seafood processing hubs and encouraging organic farming.

On May 15, 2020, Government of India announced Pradhan Mantri Matsya Sampada Yojana (PMMSY) with an outlay of Rs. 20,000 crore to double exports of marine products to Rs. 1 lakh crore in the coming years.

Dr. B. Sundaramoorthi, Dean and Mr. M. Muruganatham, Asst. Professor, Fisheries College and Research Institute, Tamil Nadu share some of the suggestions to diversify India's marine product exports:

**Box 25: MEASURES TO DIVERSIFY SEAFOOD EXPORT BASKET OF INDIA**

**Dr. B. Sundaramoorthi, Dean**

**And**

**Mr. M. Muruganatham, Asst. Professor**

**Fisheries College and Research Institute,**

**TNJFU**

**Thoothukudi-628008, Tamilnadu**

Fish is one of the most traded food items in the world. An estimated 35% of all fish produced in the world, about 60 million tonnes worth about USD 143 billion, entered international trade in 2016 (FAO, 2018). The marine product export from India touched USD 6728.50 million during 2019. Fish and fish products have presently emerged as the largest group in agricultural exports from India, with 1.37 million tonnes in terms of quantity and Rs. 45,106.89 crore in value which accounts for around 10% of the total exports and 5.23% to the Ag - GVA of the country. (MPEDA, 2019).

The main point in the global market is the growing importance of international agreements that involve fish safety aspects. The important one regarding food safety is the Agreement on the application of Sanitary and Phytosanitary Measures (SPS), which introduces safety concepts for adoption.

Technological advances have also brought new species and higher productivity to the aquaculture sector, which has developed to become important contributor in the international markets.

Under the circumstances, the following measures may be adapted to further boost Indian marine products export.

1. Continuous improvement in value addition to diversify fish products
2. Popularising deep sea fishing of Tuna to obtain sashimi grade meat
3. Encouraging production and development of sea weed based products
4. Stakeholders and unskilled workers in the primary production units must be trained to overcome the break in cold chain and traceability of products

5. Sea food processing hubs may be developed at the important fish producing as well as fish landing centres with world class cold storage and logistics infrastructure facilities across the country.
6. Suitable measures may be taken to produce chitin / chitosan from shell fish discards
7. Encouraging organic farming to tackle antibiotic residue issue and to fetch increased value

#### **Thrust on Value Addition:**

Value addition is the most talked about word in food-processing industry, particularly in export oriented fish processing industry because of the increased realisation of valuable foreign exchange. Value can be added to fish and fishery products according to the requirements of the different markets. These products range from live fish and shellfish to ready-to-serve convenience products.

In general, value additions means any additional activity that in one way or another changes nature of the product thus adding to its value at the time of sale. As far as the fish-processing industry is concerned value addition is one of the possible approaches to raise profitability since this industry is becoming highly competitive and increasingly expensive.

There is a great demand for seafood/seafood based products in ready to eat convenience form. A number of such diverse products have already invaded western markets. Marketing of value added products is completely different from traditional seafood trade. It is dynamic, sensitive, complex and very expensive. Market surveys, packaging and advertising are a few of the very important areas, which ultimately determine successful movement of a new product.

#### **Packaging:**

Appearance, packaging and display are all important factors leading to successful marketing of any new value-added product. The retail pack must be clean, crisp and clear and make contents appear attractive to consumer. The consumer must be given confidence to experiment with a new product from, target group, market area, species used and so on.

The latest packaging must also keep abreast with latest technology. A large number of value-added and diversified marine products both for export and internal market based on shrimp, lobster, squid cuttlefish, bivalves, certain species of fish and minced meat from low priced fish have been identified.

The technology for their production is readily available. However, despite the availability of technology, many projects in value-addition for export have not materialised to the expected level. Careful consideration was not given to the various facets of their feasibility, including quality assurance, marketing, distribution and trade barriers, before embarking on a value-added fish process.

In developed countries, value-added innovation is mainly focused on increased convenience foods and a wider variety of high value-added products, mainly in fresh, frozen, breaded, smoked or canned form. These necessitate sophisticated production equipment and methods and, hence, access to capital. India needs a drastic look at the export trade and try to mitigate burning issues. Value added production is just one of many possible strategies that must be considered by the industry and government.

The international trade scenario is changing fast and importers are insisting on stringent quality standards and novel value added and ready to eat/serve products. Introduction of diversified seafood products in the export sector has improved product acceptance and better unit value realization for our sea food products.

The sea food processing and marketing has become competitive all over the world and exporters shall switch to value addition to increase profit. The market for value added fish and shrimp is growing in the greater space. Rise in purchasing power of the people, fast life-style, growing of nuclear families, more house-wives opting for job etc. are the main factors responsible for increase in demand for these products in India. A variety of value added products such as fish balls, soup powder, fish cutlet, fish finger, fish flakes, fillet and fillet blocks, fish steaks, ready to serve fish curry, minced meat, surimi and extruded products, fish sauce and fish salad, Individual Quick Freeze (IQF) and Accelerated Freeze Dried (AFD) products and coated seafood products are now exported from our country. There is need for new innovative products catering to the demands of the overseas consumers to boost our seafood trade and enhance earnings. Value added products (VAP) are a great source of increasing income for the fish processing units. In India, about 80 per cent of the catch is now utilized as fresh chilled, 6 per cent as dried or cured, 4.7 per cent for fish meal preparation and 5.3 per cent for freezing and export. There is hope for further developments.

In the Indian context, the estimated harvestable potential of tuna and tuna-like species for the Indian EEZ is about 278 000 metric tonnes. After declaration of the Exclusive Economic Zone (EEZ) in 1977, the area available to India is estimated at 2.02 million sq. km, comprising 0.86 million sq. km on the west coast, 0.56 million sq. km on the east coast and 0.60 million sq. km. around the Andaman and Nicobar Islands. Both the Arabian Sea and the Bay of Bengal abound in tuna and tuna-like species. Of the many seafood resources available in the Indian EEZ, the tuna and tuna-like species are the least exploited.

Even on a very conservative basis, about 70 – 80 000 metric tonnes of tuna and tuna-like species can be harvested annually from the EEZ in the next 3-5 years. This translates into an increase of almost two-times more than what is being presently exploited. While there may be a limited domestic market for these species, there is an insatiable demand for premium quality tuna in countries such as Japan.

With the growing market for sashimi-grade tuna and tuna loins/ steaks, the Indian tunas have considerable prospects. The sashimi is no longer a Japanese preferred food item. With the growing economy in China, more and more Chinese are now switching to sashimi, which is considered a health food par excellence. In fact, the growing Chinese demand for sashimi-grade tuna has already started impacting the Japanese requirements of quality tuna.

A sizeable infrastructure already exists in the coastal states for processing of fin and shellfishes for exports. Some of the existing processing units could be identified for adding facilities for processing of tunas for steaks and loins. There may not be a need for setting up of exclusive units for this purpose as tuna processing (for loins and steaks) does not require extensive paraphernalia. The other requirements for increasing the availability of quality tuna would be ice, as adequate quantity of ice is critical for maintaining the quality of tuna that is caught by the small fishing boats. There is also need for better packaging material, especially the PUF boxes, which can carry individual tunas to markets abroad. (As reported by NFDB).

#### **Seaweed Production:**

In India, seaweeds are used as raw materials for the production of agar, alginate and liquid seaweed fertilizer (LSF). There are about 20 agar industries, 10 algin industries and a few LSF industries situated at different places in the maritime states of Tamil Nadu, Karnataka, Andhra Pradesh and Gujarat. The red algae *Gelidiella acerosa*, *Gracilaria edulis*, *G. crassa*, *G. foliifera* and *G. verrucosa* are used for agar manufacture and brown algae *Sargassum* spp., *Turbinaria* spp. and *Cystoseira* spp. for the production of alginates and liquid seaweed fertilizer.

The quantity of seaweeds exploited is inadequate to meet the raw material requirement of Indian seaweed

industries. The wastage levels in perishables in India are significantly high 4.6 - 15.9 % in fruits, 5.2% in inland fish, 10.5% in marine fish, 2.7% in meat and 6.7% in poultry, the estimated annual value of losses of agro produce currently stands at 92,651 crores.

Annual value of losses in fruits and vegetables, meat, fish and milk is estimated at 50,473 crores. Adequate and efficient cold chain infrastructure from farm gate to consumers is required to arrest the high losses in supply chain of perishables.

### **Adopting Traceability**

On account of the involvement of many stake holders and handling of material by unskilled workers especially at primary production area, the concept of traceability is challenging. Several small scale operators are engaged in capture and culture fisheries. Also, lack of uniformity in the requirements of various countries on traceability is a constraint, that needs to be addressed.

Designed schemes may be implemented to adopt eco labelling in fish produce. As with eco-labelling, traceability can also be associated with higher costs of the products. This raises the question as to whether such schemes are cost effective and whether less developed countries will be able to afford to comply with such initiatives. The majority of stakeholders in the fisheries sector are unaware of this measure until now and are therefore not prepared to deal with this emerging issue which needs to be addressed.

### **Organic labelling**

Shrimps are the mainstay of Indian exports. With the growing concern of pesticides and antibiotics in food products, organic products have received huge attention in the global market. For India, if the marine shrimp exporter can get their products labelled as organic, it will fetch an additional profit. Thus, the real future development lies in shrimp farming, especially produced the organic way.

**18. Reforms in Agriculture finance:** Agriculture finance plays an important role in developing post-harvest farm infrastructure, including cold chain projects, pack houses, food testing labs and facilities for value addition. Mr. Ramesh Deshpande, former senior staff, Reserve Bank of India and the World Bank, suggests an integrated approach for financing agriculture infrastructure. Mr. Deshpande worked on agriculture development and finance projects at World Bank and other international agencies in some 20 countries.

Mr. Deshpande calls for the adoption of an effective public private partnership (PPP) framework to design and execute large agriculture infrastructure projects. Mr. Deshpande highlights the importance of developing an alternative price support mechanism for farmers and also adopting an environmentally sustainable agriculture supply chain. Excerpt of his suggestions is presented below:

#### **Box 26: Reforms in pricing and finance**

**Mr. Ramesh Deshpande,  
Former Senior Staff  
World Bank**

Reforms in MSP: Government of India should review the current minimum support price (MSP), which is highly distortionary and which has failed to protect small farmers from market risks. One innovative approach could be



to introduce what is called "Price or Revenue Insurance" practiced by some countries including USA -- with such modifications as may be needed to make it suitable for Indian markets and, in turn, reduce the scope and coverage of MSP system such that farmers receive competitively discovered prices for their produce and earn gross revenue that is adequate to cover production costs and leave some surplus for livelihood. This is important to make India's external trade in agri-products economically efficient and profitable.

Linking term lending to integrated area development approach: NABARD annually prepares Potential Linked Credit Plans for every district/state in India taking into account various factors such as national/state level strategies and budgets; availability of local infrastructure and inputs; status of research, extension, storage, processing and marketing, and above all, institutional capabilities of the local banking system to deliver credit using its own resources and/or NABARD refinance.

While this exercise provides an excellent forum for concerned banks to come together and develop their respective credit plans, explore and address constraints at the state/district levels in conjunction with relevant government agencies, and plan actual delivery of credit to multitude of farmers, rural entrepreneurs and rural enterprises in respective districts/states, it is unclear how far these plans result in concrete projects -- financing integrated production, infrastructure and marketing systems or integrated supply chain development.

Currently only commercial banks are undertaking term lending in agriculture and other priority sectors on a limited scale. Even commercial banks' ability and willingness to lend for agriculture seems to be constrained due to high level of NPAs they carry across all sectors. Cooperative banks do not seem to have adequate financial or technical capabilities to undertake such lending on a scale desired -- except perhaps to cooperative sugar factories.

Not infrequently, commercial banks' term lending tends to be "ad hoc" and on a scattered basis -- rather than as a part of an integrated, area development strategy. Such lending may or in fact does potentially lead to problems such as creating excess capacities or use of outdated/inappropriate technologies in different sub-sectors across states -- this is beginning to happen in grain warehousing and cold chains.

Linking term lending to integrated area development approach, based on analytical sector studies, using the Cluster approach proposed by 2018 AEP, could perhaps be the appropriate way to address this issue (of scattered, ad hoc, lending) and accelerate value chain development in agriculture through private sector investments.

**Using RIDF fund for PPP projects:** Government of India (GOI) provides to NABARD scheme-specific budgetary funding to enable it to provide direct finance to entrepreneurs or refinance to retail banks for promoting investments in value chain development in agriculture, serving both domestic and international markets. GOI and state governments have from time to time funded several schemes in value chain development in dairy and livestock, poultry, marketing, farm mechanization, supply of inputs, agri-clinics and agri-business centers. Unless already done, it would be useful to take stock of the progress of and impact made by these schemes and explore if such schemes can be dealt with more effectively using an area-based, integrated, development approach (or a Cluster approach), leading to more effective use of government subsidies using PPP modes where feasible.

The preparation of feasibility studies and formulation of financing packages for mega projects need highly professional and experienced individuals or agencies, exploring diverse options for funding such projects using PPPs including equity, bond issues, bank borrowings, and FDI through PPP or joint venture models. Existing institutional arrangements and staffing for development of mega projects using PPP approaches, scattered as these are in different departments and state-owned enterprises, seem to be unacceptably weak.

NABARD, NABCONS<sup>1</sup> and GOI's concerned agencies could explore how existing institutional arrangements could be strengthened or new institutional arrangements developed, using public and/or private sector mechanisms to serve as catalysts, coordinating or consulting agencies to help project developers -- whether small, medium or large -- to prepare techno-economically sound projects for financing by local banks, NABARD/RIDF, FDI and PPP type arrangements.

NABARD, GOI's concerned ministries and departments and state governments need to closely work together on these important issues -- especially to mobilize "project finance" at an accelerated pace across the country, in support of massive investments that are needed to expand and upgrade India's infrastructure for value addition in agriculture. In this context, NABARD-managed Rural Infrastructure Development Fund (RIDF) which is currently used mainly by state governments to finance incomplete public sector infrastructure projects or projects involving traditional technologies, could be used for funding PPPs in agriculture, duly backed by state government guarantees.

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<sup>1</sup> NABARD Consultancy Services (NABCONS), a subsidiary of NABARD, is engaged in providing consultancy services in all spheres of agriculture, rural development and allied activities including multi-disciplinary projects, banking, institutional development, infrastructure, training etc. for more than two decades.

#### **Integrated, ESG compliant, Supply Chain Development:**

Major corporations around the World are gradually moving toward ESG compliant, integrated supply chain development, for both domestic and international trade. "ESG involves applying Environmental, Social and Governance criteria to development and management of integrated supply chains as these relate to specific commodities or groups of commodities (or services) in terms of their production, harvesting, storage, procurement, processing or value addition, marketing in domestic and/or international markets and delivery".

"While specifics will vary by industry, geography or entrepreneur or a company, the ESG concept uses a range of factors, outlined below, when evaluating opportunities, making decisions, managing investments and engaging with partners, suppliers, clients etc. to seek improvement in business practices and disclosures".

Briefly, the ESG factors normally used include the following:

**Environmental Factors:** Climate impact and Green House Gas (GHG) emissions; energy efficiency, air and water pollution, water scarcity, biodiversity and site restoration.

**Social Factors:** Human rights, local community impact and employment, child labor, working conditions, health and safety, and anti-corruption.

**Governance Factors:** Alignment of interests, Executive compensation, Board independence and composition, and other shareholder rights". (Source: Kodiak Rating Community, October 11, 2017).

"ESG is a new market dynamic. The potential power of this new dynamic is rooted in corporate responsibility and accountability. For many companies across the World, embracing ESG meant adopting the 17 Sustainable Development Goals established by the United Nations in 2015 as the strategy for investing in the future of the planet and its inhabitants." About USD 23 trillion of investments under management globally are broadly oriented toward ESG policies. In US about USD 9 trillion (1/5 of all investments under professional management) are broadly oriented toward ESG policies.

PIMCO, the world's biggest bond fund, has developed a "sustainability initiative" to support ESG-focused

investment solutions. Other large investors, such as UBS and BNP Paribas, have undertaken similar efforts. The Portfolio Decarbonization Coalition, a United Nations–sponsored group of 27 mostly European institutional investors and asset managers controlling USD 3.2 trillion in assets, has committed USD 600 billion to fund green projects and investments. A 2016 study of institutional investors by ShareAction found that 95% of those who responded plan to engage with the companies in which they invest about the issues covered by the SDGs. In 2017, the Global Impact Investing Network (GIIN) reported that about 60 percent of 208 “impact investing organizations” taking part in their survey actively track the financial performance of their investments with respect to SDGs—or plan to do so soon”<sup>2</sup>.

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<sup>2</sup>Source: SPGlobal.com/en/research-insights

“The European Union has issued a directive that mandates a non-financial disclosure from certain entities including around 6000 large companies to provide information on ESG issues. The next critical step expected at the global level is the establishment of Internationally Accepted Principles and Key Performance Indicators for transparency, governance and environmental impact.”<sup>3</sup>

In India, the awareness among public and private sector corporations and individual entrepreneurs about applying ESG concepts per se to existing and new investments is still limited. One private company in Andhra Pradesh has recently developed an innovative project proposal that explicitly aims at operating within an ESG-compliant framework, by creating integrated supply chains to produce, process and market certain agricultural and marine/inland fishery products with a focus on accessing high value domestic and international markets.

Increasingly, importing countries of the World are expected to demand from exporting counties, a full compliance with ESG factors in meeting their obligations under relative purchase orders. India's public and private sector business enterprises must therefore begin to introduce appropriate systems, standards and processes to ensure that they comply with ESG frameworks, which is critical to sustain and boost exports to existing and new destinations, and facilitate increased profitability and incomes to farmers and other participants in supply chains. It is expected that India's central and state governments will strengthen the prevailing framework for “corporate responsibility and accountability” to include SHG concepts and create an enabling environment for India's export trade to become increasingly SHG-compliant.

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<sup>3</sup>IPE Magazine, March 2020.

**Miscellaneous Suggestions:** Promoting agriculture exports require multi-pronged approach with coordination from various central and state government agencies, financial institutions, export promotion councils, agriculture universities, food standards and certification authorities etc. These agencies need to work with farmers and food processors in setting up post harvest infrastructure, technology transfer, training & capacity building activities. Dr. Srinivasa Rao, Director, ICAR-National Academy of Agricultural Research Management (NAARM), Hyderabad and Dr Tawva Srinivas, Principal Scientist, NAARM propose key suggestions to enhance India's agriculture exports. Excerpt of their suggestions is given below:

### **Box 27: Perspectives on Transforming Agriculture into an Export-Oriented Sector: Policy Recommendations**

Dr. Tawva Srinivas and Dr. Srinivasa Rao  
ICAR-National Academy of Agricultural Research Management

Continuous innovation and efforts towards increasing productivity, pre & post-harvest management, processing and value-addition, use of technology and infrastructure creation backed up by suitable policy

support is an imperative for Indian agriculture to improve farmers income through crucial export opportunities.

#### **a. Diversify agricultural export basket**

- Country has to make concerted efforts to boost exports of high margin, value added and branded processed products with a paradigm shift from residual export after meeting domestic demand to targeted export according to preferences of overseas market. Export basket should expand by including commodities with very high export potential like Shrimps, Meat, Basmati & non-Basmati Rice, Grapes, Bananas, Pomegranate, vegetables including Potatoes, Processed / Value added products, Cashew, Plant parts/medicinal herbs in value added forms including herbal medicines, food based nutraceuticals, aromatics, spices (cumin, turmeric, pepper), Ethnic & Organic Food.
- Special Economic Zones (SEZs) are seen as engines of economic growth in India playing vital role in the country's export strategy. Exports from Indian SEZs have experienced a phenomenal growth of 50.5% from a meagre USD 2.5 billion in 2003–2004 to about USD 65 billion in 2011–2012 (accounting for 23% of India's total exports). Using the lessons learned from past experiences in establishing and managing Agriculture-related SEZs (ASEZ) in India like Falta food processing unit at West Bengal and Hassan, new ASEZs may be established for promoting commodities with high export potential. Land acquisition for establishing ASEZs must prove beneficial for the local people by ensuring enforcement of high environmental standards in line with the United Nations Industrial Development Organization's Guidelines for Green Industry Parks.
- Create export hubs—The government could consider setting up mega hubs that will allow companies to procure, store, process and export from a single location. These could either be set up near production centres of major crops or near a port to facilitate exports. Such hubs will help developing the necessary forward and backward linkages, along with the storage infrastructure and provide for end-to-end facilities across the value chain. For example, Mega food parks scheme of the Ministry of Food Processing Industries (MoFPI) could be enhanced and scaled up significantly
- Developing product specific export clusters- Promoting right product in the right cluster for the right market approach in association with private players help in attracting Foreign Direct Investments for the creation of infrastructure and export promotion. India should learn from countries who have successfully marketed their products worldwide through such approaches, e.g., Florida oranges
- Promotion of Brand India Marketing of our best products as "Make of India", by stepping up of advertising and investing in GI of our unique products would sharply increase our exports. Exporters are to be encouraged to do product registration in target markets.

#### **b. Propose policy measures to enhance farm productivity**

- Many potential technologies confined to limited areas need to be expanded to wider areas through successful extension approaches experienced in the country and further making use of digital technologies. Strengthening agriculture R&D system with research and extension prioritization with judicious financial resources is the need of the hour. Links among sister institutions have to be strengthened. Some measures such as quality and judicious use of inputs such as water, seeds, fertilizer and pesticides; judicious and safe exploitation of modern technology including genetically modified (GM) seeds; and shift into high value commodities such as fruits, vegetables, flowers, fisheries, animal husbandry and poultry help in overcoming the productivity related concerns.

**c. Build capacity of local farmers to meet the sanitary and phytosanitary conditions of foreign markets**

- Lack of awareness amongst Indian farmers regarding the judicious and timely use of chemicals has been a major impediment for exports. In the process of integrating farmers with global value chains, it is obligatory to build the capacity of farmer stakeholders in the value chain on the SPS requirements for global destinations. If Indian rice exporters were to implement a farmer awareness and agri input switch program, it would best be done in conjunction with DACFW and DoC. APEDA and MPEDA can also play an important role in building the capacity of farmers on SPS measures.
- Creation of dynamic and functional information-sharing mechanism between the State and Centre on SPS and TBT issues would help increased awareness, capacity building and supporting
- Capacity building is warranted in the areas such as in Implementing Product Traceability; Implementing Good Agriculture Practices (GAP); Testing Procedures; necessity for taking proactive measures based on available data and data generation; existing Scientific Research; Equivalence Agreements/MoUs; Knowledge Sharing and Collaboration with the EU; about available SPS response mechanism, etc.
- KrishiVigyanKendras are to be involved to take export oriented technology to farmers and create awareness among farmers about export prospects and SPS barriers.

**d. Enhance the cost competitiveness of local farm producers in the global market**

- Savings on account of improved logistics can make Indian agricultural exports significantly competitive in the global market place.
- For bringing cost competitiveness to the farmers, the greatest challenge lies in reducing the transaction costs through better logistics and good physical infrastructure. This required increased public investment. However, investment in infrastructure has been declining mainly on account of increase in subsidies on fertilisers, irrigation and power. Thus, there is a greater need to address these issues on priority in order to safeguard the interest of the farmers and to strengthen potential of this sector to compete in international market.
- Policy measures should assure farmers to respond to market signals with confidence and redirect resources towards products that will earn higher returns.
- State Governments would need to be urged to standardize/ rationalize mandi taxes for largely exported agricultural products.
- Each state should develop and implement State Specific Export policy with focus on identified commodities with export potential considering agro-climatic conditions and commodity advantage similar to Maharashtra. If more integrated efforts are put into, Maharashtra will become the export hub of agro produce from the country with its location advantage and being major producer of many agricultural products.

**e. Build world class post-harvest farm infrastructure**

- Presence of robust infrastructure is critical component of a strong agricultural value chain. Mega Food Parks,

state-of-the-art testing laboratories and Integrated Cold Chains are the fundamentals on which India can increase its agricultural exports. Given the perishable nature and stringent import standards for most of the food products, efficient and time-sensitive handling is extremely vital to agricultural commodities.

- A comprehensive need-gap analysis of existing export oriented infrastructure across the value chain at strategic ports need to be undertaken. Identifying strategically important clusters, creating inland transportation links alongside dedicated agri. infrastructure at ports with 24x7 customs clearance for perishables will therefore go a long way in boosting trade exponentially.
- A clear action plan on the infrastructure gap would enable State and Central Government to identify sectors which are amenable to private investment/FDI and sectors where Government has to invest.

## Literature for Further Reading:

### Agriculture beyond borders

Since the turn of the century, global agriculture trade has undergone significant changes. Some of these were cyclical but most of them were structural i.e. they originated from a strategically executed distribution of resources, gains and losses. If one were to sift through these, a few key characteristics of global agriculture trade emerge.

**The first is the fact that global agricultural trade has a disproportionate impact on rural incomes.** This means that a 1% increase in global agriculture trade is likely to produce a gain of more than 1% for rural incomes. In low and middle income countries, this figure becomes a crucial blueprint for growth since on average, 49.6% of the population resides in rural areas. This is true in the case of India as well, where 68% of the total population derives their incomes from rural areas (World Bank 2018), facilitating economic growth through agriculture trade in these regions is therefore of strategic importance.

**Second, trade in agricultural requires pareto-optimal solutions which are rare to find.** Pareto optimality occurs when a change in status quo makes 'X' better off without making 'Y' worse off. Agriculture trade produces a set of high - impact trade-offs. This is because the agricultural supply chain is composed of various components: input suppliers, farmers, cooperatives, traders, logistics companies, quality assessment institutions, food processing companies, retail companies and consumers among others. Each component has a unique set of interests that in many cases may conflict with those of another component. Take for instance, the example of SPS (Sanitary and Phyto-sanitary) regulations. These regulations are vital in advancing consumer interests but create additional costs for suppliers of commodities. Hence, managing agriculture trade requires the successful mitigation of these conflicting interests.

**The gains from trade in the case of agriculture have been unevenly distributed.** Since the 1990s, developing countries' share of trade in manufactured goods gathered momentum and so did their share in services trade. However, this expansion has been much slower in the case of agriculture. Some MIC and LIC countries performed well owing to their agriculture trade policy regimes such as Argentina, Brazil and Thailand who became net exporters of agriculture commodities. However, the proportion of output that is sold across borders remains higher in industrial economies than emerging markets. Over the past 8 years, rising per-capita incomes in emerging markets has led to an increase in food consumption and therefore agriculture imports while greater agricultural productivity has led to greater agriculture exports. The countries that delivered the latter in greater proportions than the formers emerged as net exporters. However, it must also be noted that both developed and developing provide in the form of subsidies, tariffs and NTBs, high levels of protection to their domestic agriculture markets therefore, rising productivity does not imply greater exports. This is also why intra-trade bloc trade in agriculture has risen faster than global averages. It is then clear, that some countries benefitted while some did not. (FAO, 2018)



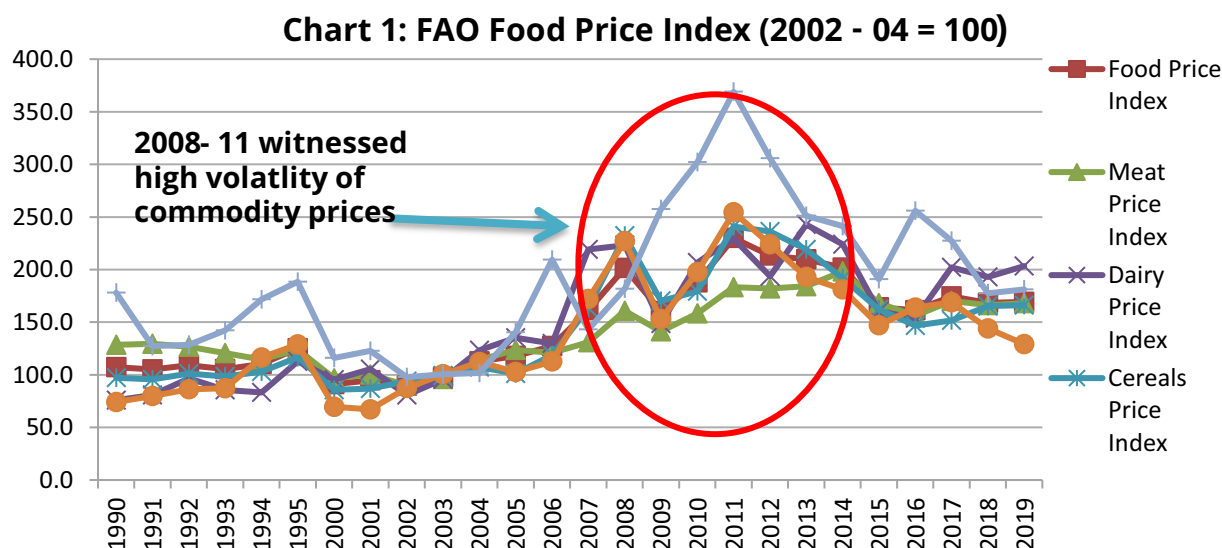
**Table 22: Top 10 importers and exporters for agriculture commodities 2016 (Source: FAO 2019)**

Importer Rank	2000	2016
1	EU	EU
2	USA	USA
3	Japan	China
4	Canada	Japan
5	Mexico	Canada

Exporter Rank	2000	2016
1	EU	EU
2	USA	USA
3	Canada	Brazil
4	Australia	China
5	Brazil	Canada

The figure above shows that demand growth for agricultural imports has remained concentrated in a few key markets, majority of which are industrialized economies. The same applies for exports where with the exception of Brazil, all leading suppliers are high income countries. Thus, the share of developing market exports and imports in agricultural trade has scope for a significant correction. What is interesting to observe is that this data indicates that going forward, import growth from developed markets can be expected to slow since the propensity to spend additional income on food imports is lower. Therefore, expansion in global agriculture trade would rely on South – South trade; trade between middle and low income countries.

Lastly, **global agriculture commodity prices have recovered from a period of volatility**. Prices reflect a key set of incentives that shape export and import decisions in global markets.



Source: FAO 2019

The figure above shows that agriculture commodity prices entered a period of high volatility between 2008 – 2011 owing to low stock-to-use ratios and higher production of bio-fuels (FAO 2019). Since then, the prices have lowered, however, this trend is likely to be cyclical and if volatility remains low, prices can be expected to rise secularly. Some prices such as cereals and dairy are already on a recovery path. For markets such as India where supply has shown steady growth, global prices can reflect the ability of export markets to absorb excess output.

## India's Participation in Global Agriculture Markets

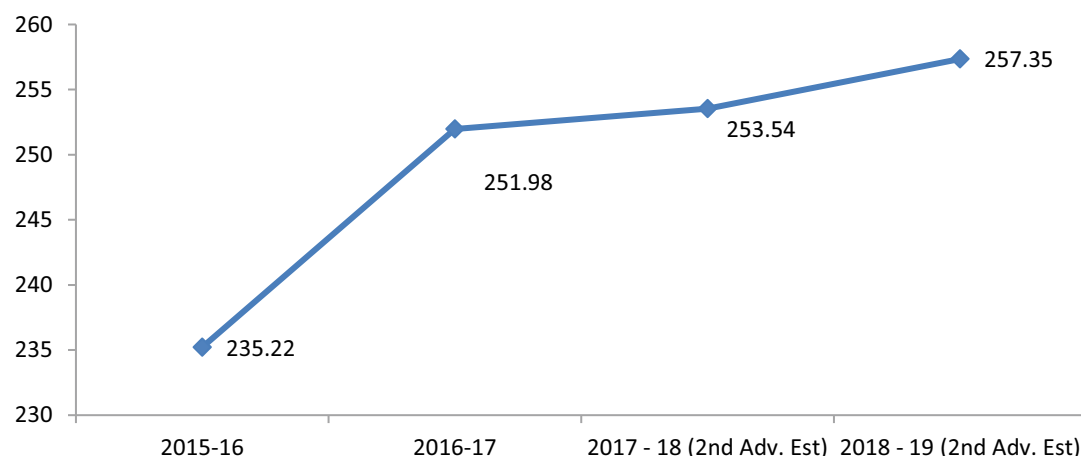
In the year 2000, India was the 12th largest exporter of agricultural commodities in the world with a market share of 1.2%. By 2017, it had become the world's 8th largest exporter and its market share had risen to 2.2 percent (WTO, 2018). While these figures exhibit a rising trend, they must be viewed relatively. Countries such as Indonesia, Argentina, Mexico, China and Vietnam have gained market shares by rates much higher than India's. This indicates that while India's exports have risen, they have risen lower than trend i.e. there is space to facilitate greater exports and gain market share.

At the same time, India's import growth has also accelerated. In 2000, India imported 0.7% of the world's exports of agricultural commodities, in 2017 that figure rose to 1.7%. As mentioned earlier, such growth in agriculture imports is a function of rising per capita incomes and an expanding population. However, successful integration with global agriculture trade would entail a commensurate increase in agriculture exports, which in itself would reflect greater agricultural productivity and create a sound base for long term economic growth.

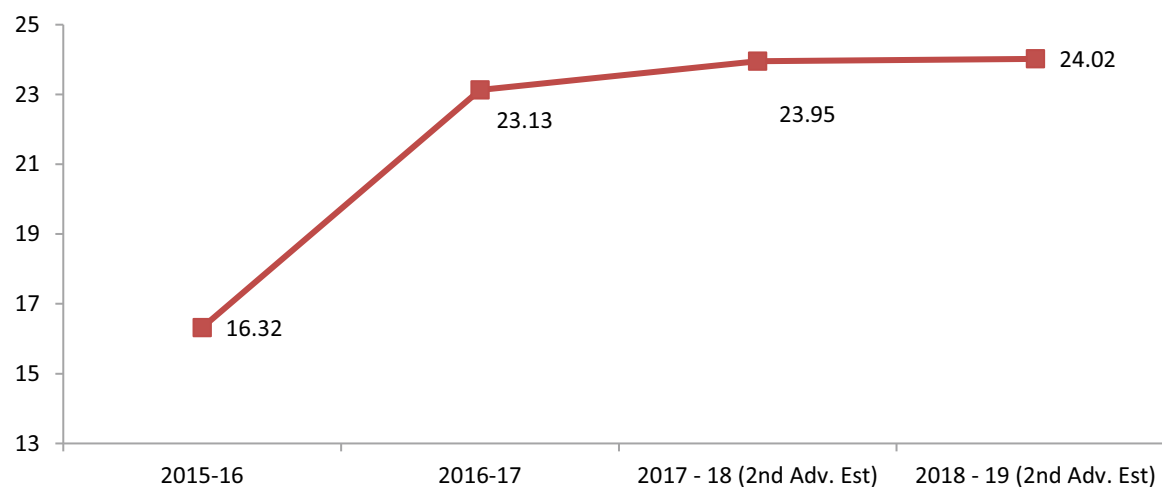
## How would India benefit from greater exports?

The discourse over Indian agriculture has often revolved around a misplaced perception of decreasing yields. In fact, data shows that over the past 3 years, yields have shown steady growth. The data below shows yields for major crops, many of which feed into the Indian export basket.

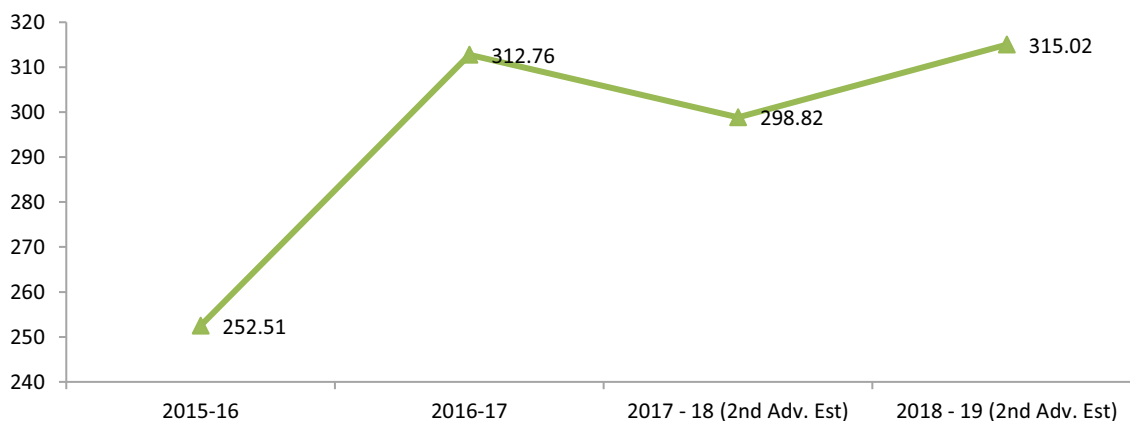
**Chart 2: Production in MT: cereals**



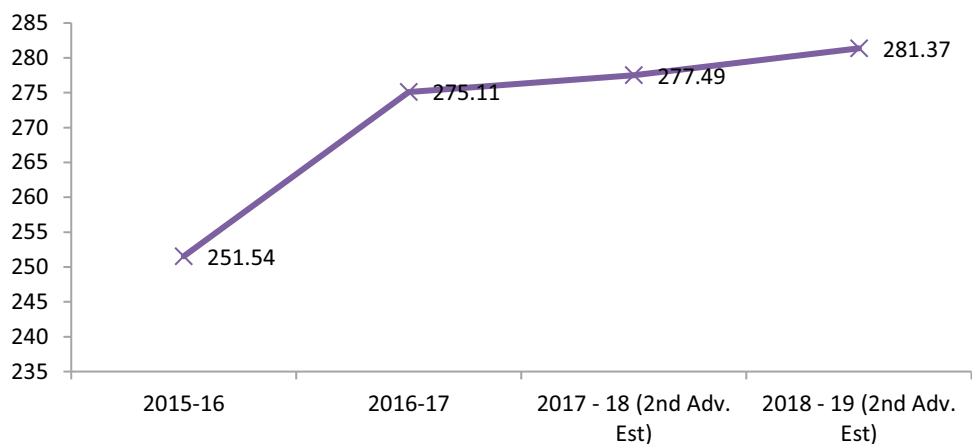
**Chart 3: Production in MT: pulses**



**Chart 4: Production in MT: oilseeds**

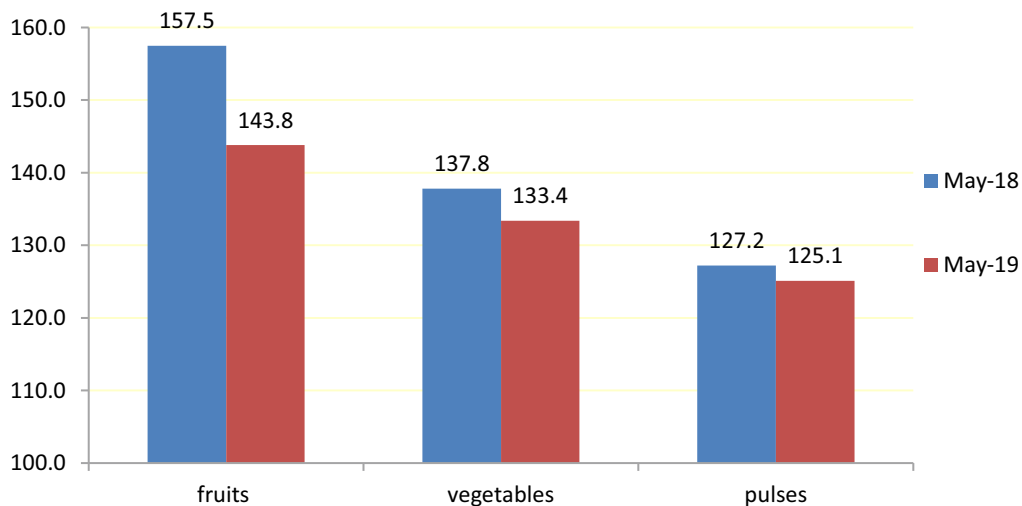


**Chart 5: Production in MT: foodgrains**



However, while these yields indicate that marketable output has risen, there is a vital parallel trend that has emerged that can offset any gains that the former has to offer: food price deflation.

**Chart 6: Rural Consumer Price Index (Base: 2012 = 100)**



Source: RBI

The figure above shows data for rural consumer price index of fruits, vegetables and pulses. Rural price data has been chosen since it most closely represents the value that the farmer is given. Urban price data reflects value added portions such as packaging and retail. The data shows that since May 2018, there has been a reduction in price levels. This is a trend that continues into 2017 and 2016. Food price deflation, while beneficial for consumers, is detrimental to rural and more specifically, farm incomes. When combined with the insight that yields for major crops have been rising, it resembles an agricultural market where **aggregate supply has put a bearish pressure on prices**. Under such conditions, raising the level of aggregate demand in the market would help prices recover to equilibrium. It had been mentioned earlier that prices in the international market are likely to recover and are less likely to be volatile. This creates a favourable environment for India to accelerate its agriculture exports and benefit from stable prices, rising demand and higher farm incomes.

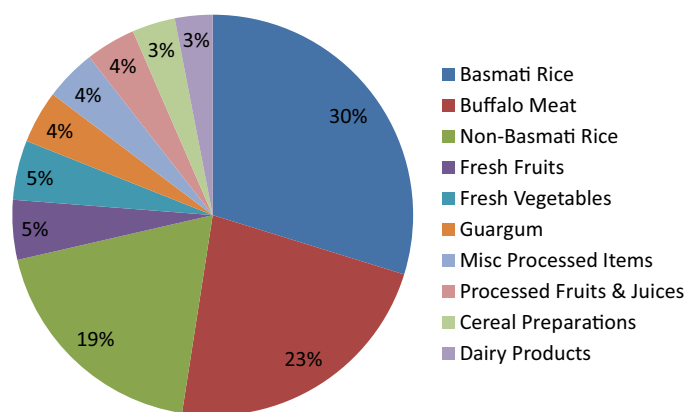
### What does India export?

The most crucial trend in the context of Indian agriculture exports is that **a significant portion of export earnings come from a select few commodities**.

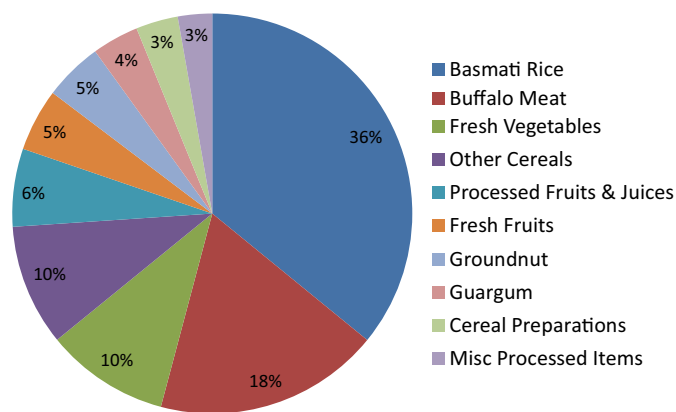
Consider the Indian agricultural export basket in 2009 – 2010. The top 10 commodities accounted for 86.4% of total export earnings. In 2018 – 2019, the share of the top 10 commodities had not budged. In fact, ten commodities accounted for 86.1 % of total export earnings (APEDA). This means that over a period of 10 years, the diversification of the components of the export basket expanded by just 30 basis points.

The figures below show how the composition of the top 10 commodities evolved over the past decade. By comparing the two compositions, the following high growth products can be identified: non- basmati rice, buffalo meat, fresh fruits, dairy products and guar gum.

**Chart 7: Share of top 10 basket 18-19**



**Chart 8: Share of top 10 basket 2009-10**



While some new entrants in the top ten list have been observed, two commodities namely basmati rice and buffalo meat still account for more than 50% of top 10 earnings which translates into approximately 43% of total export earnings.

Yet another crucial insight is the low levels of processed or value added exports relative to raw commodities. Over the past decade, the earnings from processed fruits and juices for instance declined relative to other products. One explanation for this trend is a rapidly expanding domestic market for processed goods. In FY 2017 – 18, the processing sector attracted USD 263

million FDI, indicating a firm market confidence in the domestic market. The partial liberalization of the retail market is also a key driver of this confidence. For instance, FDI caps have been raised to 51% under the approval route for multi-brand retail which is an industry which was hitherto protected by FDI controls (EY, 2018). The food processing industry is also a gateway to value-added exports. If successfully nudged towards a balanced business model (domestic and foreign focus), the industry could propel value addition in the Indian agricultural export basket.

### Which countries does India export to?

Another method for assessing the level of diversification in the agriculture export basket is by analysing data based on destinations. For 2018 – 2019, the top 10 destinations are shown below based on APEDA data:

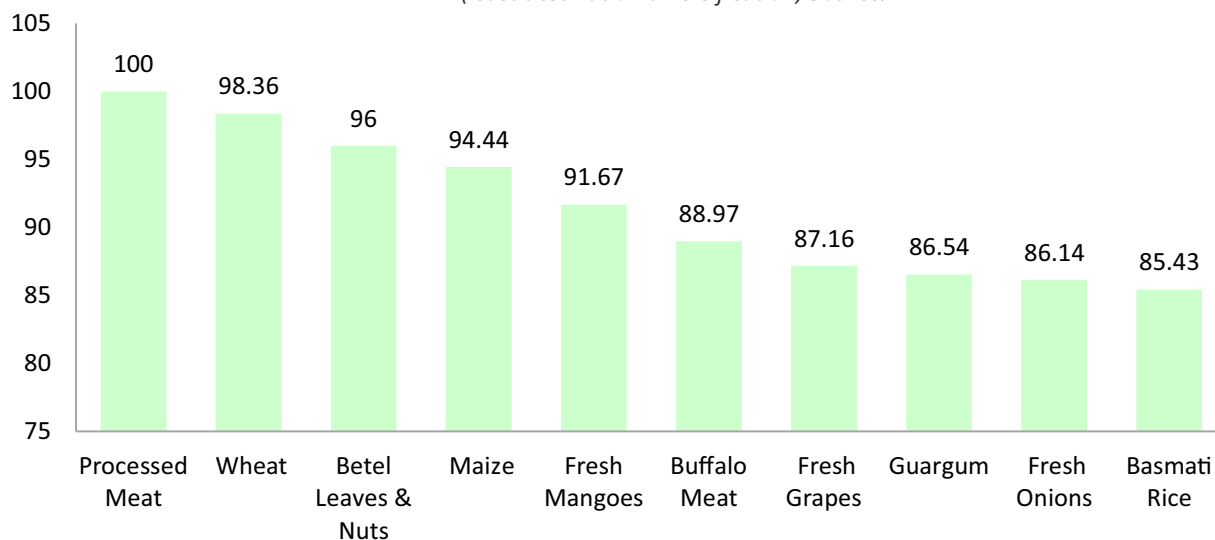
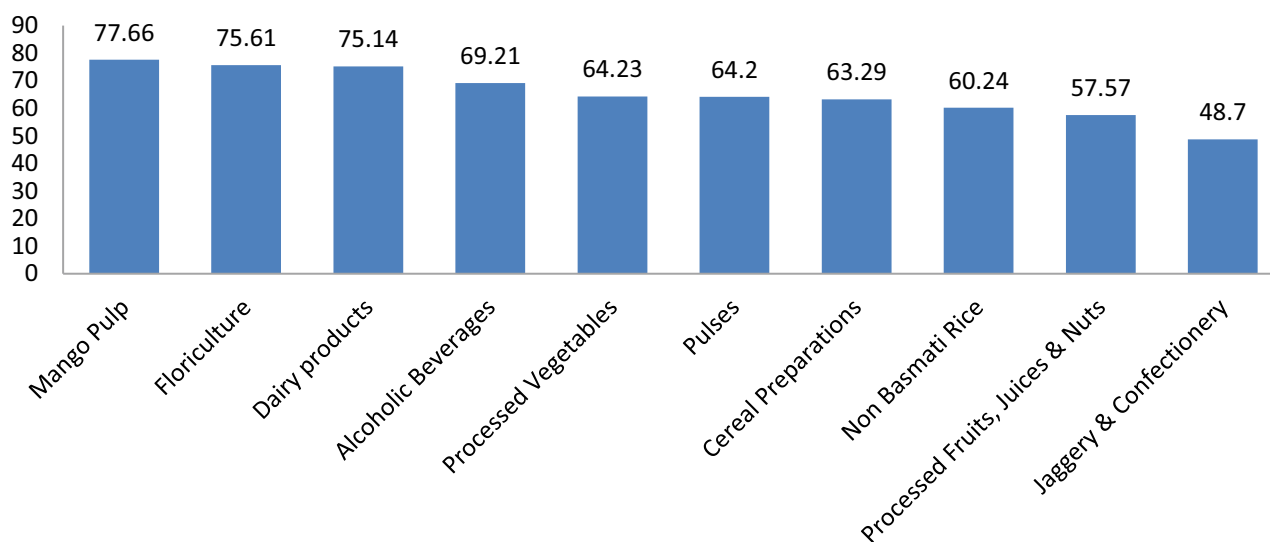
**Table 23: Top destinations of exports**

Rank	Country (Developing)	Value (million USD)
1	Vietnam Social Republic	1890.52
2	Iran	1647.46
3	Saudi Arabia	1384.92
4	UAE	1216.88
5	Indonesia	752.05
6	Malaysia	650.06
7	Iraq	640.68
8	Oman	327.37
9	Kuwait	314.89
10	Yemen Republic	292.93

Rank	Country (Developed)	Value (Million USD)
1	USA	1167.34
2	Netherlands	369.75
3	UK	363.06
4	Canada	173.52
5	Australia	159.44
6	Germany	156.1
7	Singapore	155.88
8	France	65.95
9	Belgium	65.74
10	Israel	65.37

As the tables above indicate, India's agriculture trade with developing countries exceeds its trade with developed countries. While some of these lie in the middle-east such as Iran, UAE, Kuwait, Yemen Republic, Oman, Iraq and Saudi Arabia, some of these are Asian economies such as Vietnam Republic, Indonesia and Malaysia.

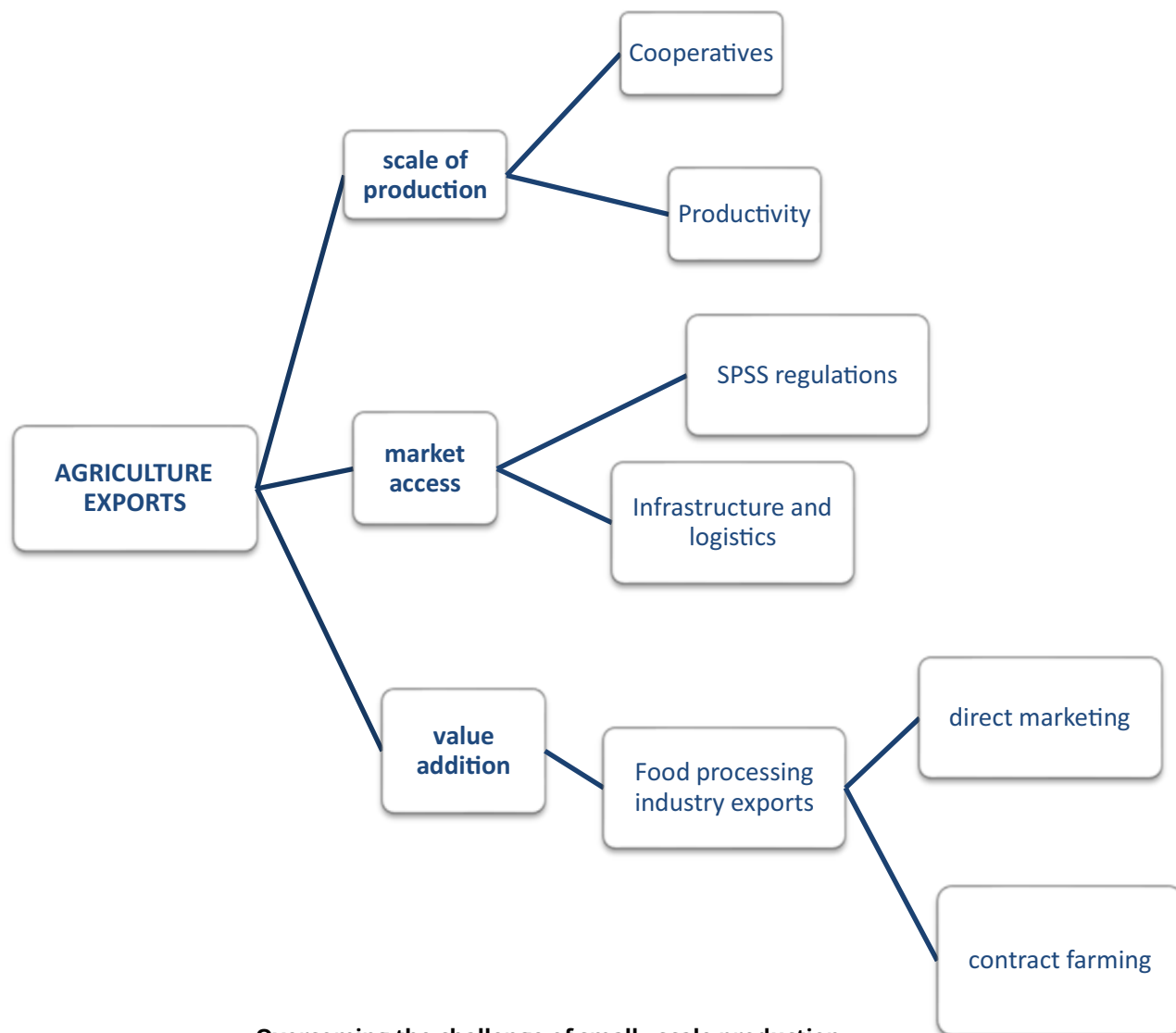
It is also of value to analyse destination data by commodity. While different commodities have different top destinations, comparing commodities based on what percent of export earnings come from the top 10 destinations could indicate the level of destination diversification witnessed in trade in a particular commodity.

**Chart 9: Top 10 destination's share of total export earnings by commodities***(least destination diversification) Source: APEDA***Chart 10: Top 10 destination's share of total export earnings by commodity***(Highest destination diversification) Source: APEDA*

Based on the data above, it can be stated that Indian agricultural exports have scope to diversify their destinations. The highest diversification is in jaggery and confectionery where top 10 destinations account for 48.7% of all export earnings. On the other hand, high export earning products such as basmati rice, processed meat, mango (pulp and fresh) and dairy products all display a **high level of destination concentration of above 75%**. In order to sustain growth rates for export earnings from these products and to accelerate export earnings for other commodities, destination diversification is vital. It is in this context that expanding market access for agricultural products must be identified as a policy objective.



Diagram 3: Accelerating India's Agriculture Exports: Key Drivers

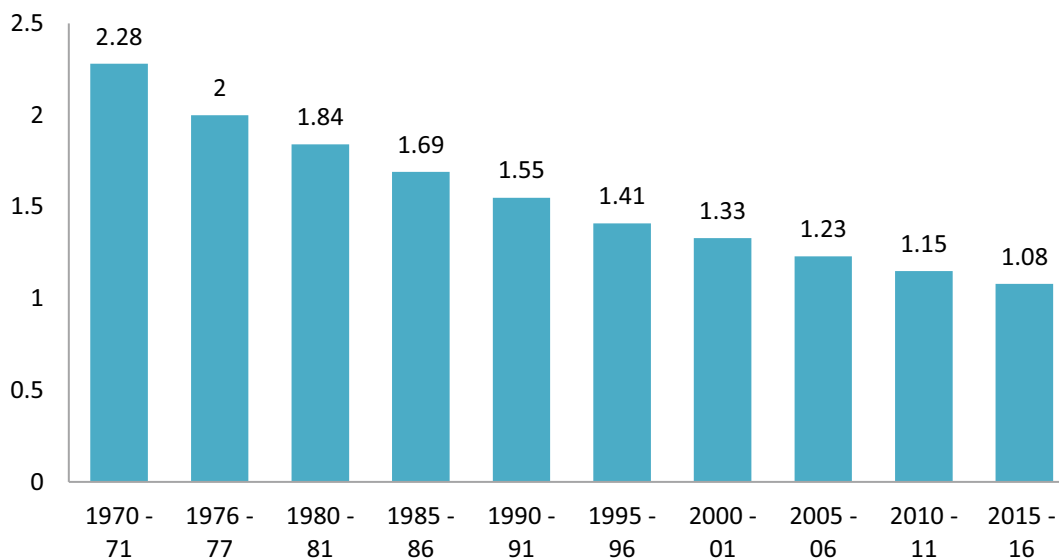


**Overcoming the challenge of small - scale production.**

Any strategy to augment India's agriculture exports must take into account the structure of the production base. The structural reality of Indian agriculture is that the most recent agriculture census states that average size of operational land holding in India is at a historical low of 1.08 hectares

**Chart 11: Average size of operational holding in 'ha**

Source: Agriculture Census 2015



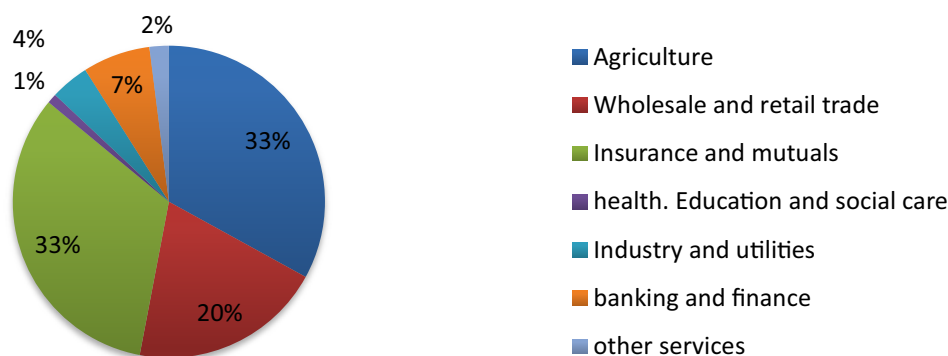
The data above shows that there has been a rising trend in the portion of small-holder farmers relative to other groups. This increased fragmentation of production brings with it a set of unique challenges. First it places a bearish pressure on rural income since the scale of production and profitability is highly correlated. Second, it induces new depths into the challenge of increasing agricultural productivity (World Bank, 2016). Finally, it creates a burden of rural development by hindering the diversification of rural incomes (farm and non-farm). Therefore, addressing this structural constraint is a vital step in facilitating agriculture exports.

One solution to the challenge of scale is the pooling of resources through vehicles such as cooperatives. Cooperatives are 'people-centred' enterprises that display joint-ownership and operation of pooled resources<sup>1</sup>. The objective of the enterprise is multi-fold. However, these objectives often involve the achievement of economies of scale. These enterprises are also guided by a set of principles that have been internationally agreed upon such as fairness, equity ownership, equality and social justice.

<sup>1</sup>Based on the definition adopted by the International Co-operative Alliance.

**Chart 12: Sectoral Share of Top 300 Cooperatives by Turnover**

Source: World Cooperative Monitor 2018



The figure above shows the share of top 300 cooperatives measured by their turnover (which is taken as a measure of their scale of operations and profitability). The data shows that 33% of the world's top 300 cooperatives operate in the agriculture sector. This indicates that the agriculture sector is well suited for the cooperative model and success cases are ubiquitous. However, even within the cooperative business model, not all are relevant when strategising agricultural exports.

In the case of agriculture, cooperatives can be classified based on their function. They are either input based (involved with the procurement and distribution of seeds, fertilizer etc) or output based (marketing, packaging etc). In the context of this report, it is the latter that is of most relevance. Consider the following case study for output based cooperatives:

### **Box 28: Sunkist: An American Agriculture Marketing Cooperative**

Sunkist was formed in 1893 to help growers/members to collectively market citrus grown on the American west coast. It is the longest standing agricultural cooperative in the US.

Sunkist has enabled farmers to access a worldwide market using a collectively developed brand that is known for its quality and stability of supply of over 40 varieties. The cooperative runs packing houses in California and Arizona, operates processing centres and runs an expansive set of programs aimed at better market performance for their citrus products.

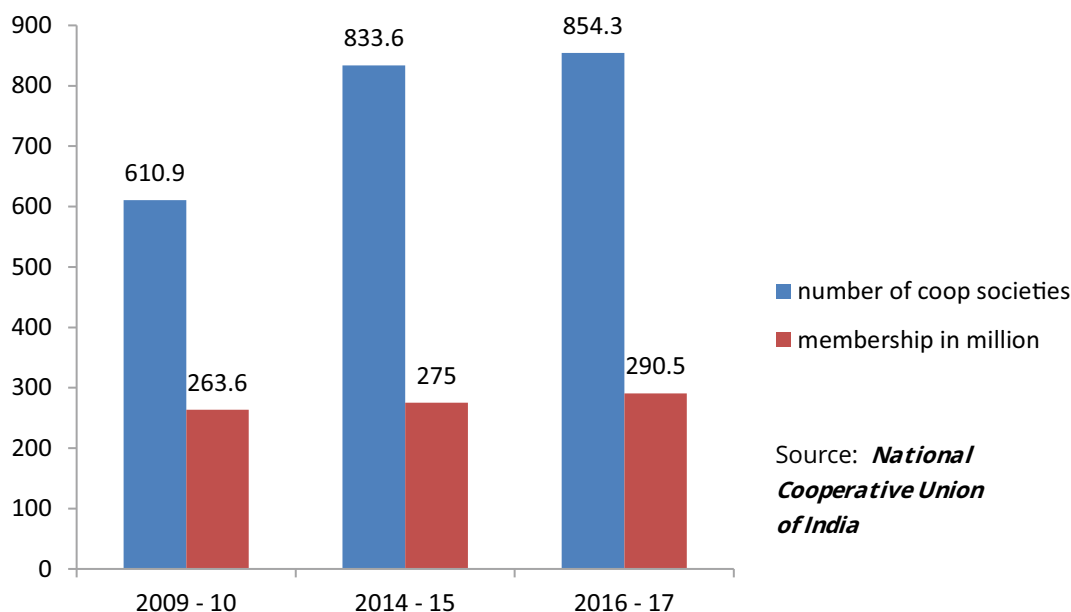
Sunkist has also adopted sustainability as a key value. It encourages and empowers its growers to adapt to environmentally sound growing techniques using solar power, low emission vehicles and sustainable irrigation systems. Sunkist has identified the 'Sustainable Forestry Initiative' (SFI) certification as a target with business value.

Source: <https://www.sunkist.com/>

In the context of the Indian agriculture sector, cooperatives have played a leading role and have been recipients of policy focus. In fact, in 1963, The 'National Cooperative Development Corporation' was established with a mandate of planning and promoting cooperatives in the economy by investing in storage and processing units and other long term infrastructure assets. The NCDC also represents a major conduit for the flow of public funds into cooperative development. Yet another feature of the Indian cooperative movement is the striking growth of the Indian Farmers Fertiliser Co-operative Limited (IFFCO). Registered in 1967, IFFCO was ranked as the world's top cooperative measured by turnover/GDP per capita in the World Cooperative Monitor 2018. IFFCO's growth has leverages both international and domestic growth trajectories with numerous JVs around the world and a distribution network encompassing more than 39000 cooperative societies. IFFCO represents a successful model of an input distribution cooperative. However, for the growth of agricultural exports, it is vital for India to develop a successful model for agricultural marketing.



**Chart 13: India: The World's Largest Cooperative Movement**



This subject of agricultural marketing through cooperatives has been addressed earlier through the establishment of the 'National Agricultural Cooperative Marketing Federation of India' (NAFED) in 1958. NAFED has emerged as an implementation institution for the MSP policies rolled out by the government from time to time. Over the years, NAFED has invested in assets such as packing units, fertiliser plants, cold storages etc. In addition, NAFED is also a government recognised export house. Notably, NAFED has the legal mandate to undertake the export of agriculture commodities under G2G arrangements. Since 2016, NAFED has reported a positive PnL meaning that it has turned profitable. However, after foreign trade earnings for NAFED reached a historical high in 2013 – 14, its export earnings have shown a downward trend.

While this state-led model of developing an agricultural cooperative has recently shown signs of success, it is vital to note that around the world, market-led cooperatives in the field of agricultural cooperatives have grown exponentially. In addition, market led marketing cooperatives in India remain free from the political costs of higher procurement volumes when prices are depressed and have greater incentives to respond to market signals in export markets. Therefore, the development of a market-led marketing cooperative movement would be beneficial for agriculture exports.

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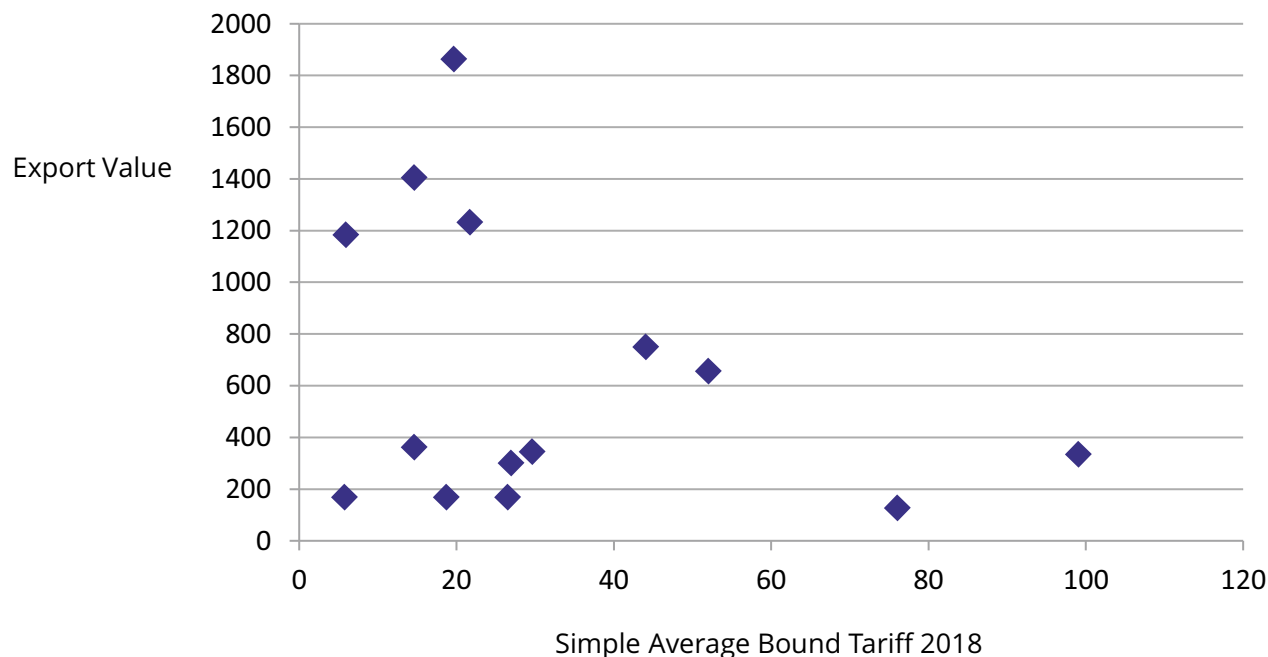
### Expanding market access

The accessibility of global agriculture markets is a function of trade barriers both at the border and beyond it. Higher tariffs for agricultural trade have hindered the development of global agricultural supply chains particularly when contrasted with the development of manufacturing value chains since the 1990s. Since the development of the WTO, trade liberalization has not been a ubiquitously pursued policy agenda and agriculture is a stark reminder of this trend. The average global tariff on agricultural products is 62% and the implantation of agricultural tariffs is highly uneven across countries and commodities (USDA, 2018).

Tariffs feature prominently as a variable in India's export decisions. The scatter plot below shows data for average bound tariffs and export values for India's top agriculture export markets (14 of the top 20 had reliable data sets). One clear finding is that India tends to export more to markets that have lower tariffs

**Chart 14: Scatter plot for India's top agriculture trade partners**

Source: WTO, APEDA, in - house analysis



Additionally, in the case of agricultural markets, NTBs play a vital role in determining trade flows. This is most evident in the fact that in the aftermath of the Uruguay round (where agriculture trade policy reforms such as 'tariffication' were agreed upon), a third of the expansion in agriculture trade happened within trade blocs, most notably the EU and erstwhile NAFTA member countries. Given that average bound tariffs are relatively high in agriculture when compared to other sectors, a majority of the concessions are made through institutionalised mechanisms in the form of free trade agreements. However, it is vital to note that a number of free trade agreements list agricultural commodities under the excluded list (negative lists)

NTBs in agriculture include SPS (Sanitary and Phytosanitary) and TBT (Technical Barriers to Trade) policies which in turn represent the balance between a country's sovereign right to protect animal, plant and human life on one hand and create competitive and liberalized agricultural markets on the other. How such policies are framed and internationally negotiated significantly impacts trade costs in agriculture.

For this purpose, the development of standards is subject to a set of international norms developed by organizations such as FAO, World Organization for Animal Health, International Plant Protection Convention and WHO. A country's obligation to conform to these norms is codified in its ratification of treaties and agreements as the WTO Agreement on Agriculture and the SPS Agreement. In the TBT agreement, this mechanism is identified as one intended to reduce the 'unnecessary obstacles to international trade'. For this reason, the WTO emphasises the development of SPS measures on grounds that are scientifically justifiable.

Even though the development of norms has gathered momentum, the fact remains that NTBs in agriculture have the potential to significantly deter trade in agriculture by raising trade costs.

One such mechanism to address SPS issues and enhance market access is through trade agreements where procedures for conformity assessments and mechanisms to promote convergence of standards can be negotiated.

### Box 29: Addressing SPS Measures through FTAs: The Case of the India – Singapore CECA

The India – Singapore CECA which entered into force in 2005, includes tariff concessions on 82% of Singapore's imports including agricultural products. The agreement has been cited as an example of a trade agreement wherein SPS issues have been provided for even though follow up action for their efficient resolution has not yet materialized.

Article 5.7 of the agreement lays out a blueprint for 'determining and implementing' equivalence through an Annex that specifies the procedures for accepting results of a conformity assessment, seeking approvals and assigning regulatory authorities in each party.

Annex 5-B of the agreement deals specifically with certain products such as egg products, milk powder, whey protein concentrate and cheese (natural and processed). The agreement also established a 'joint committee' on mutual recognition in addition to creating vehicles for the exchange of vital information in the development of SPS regulations.

Source: SPS Barriers to India's Agriculture Export, ICRIER, March 2019.

### Infrastructure as a component of market access and export competitiveness

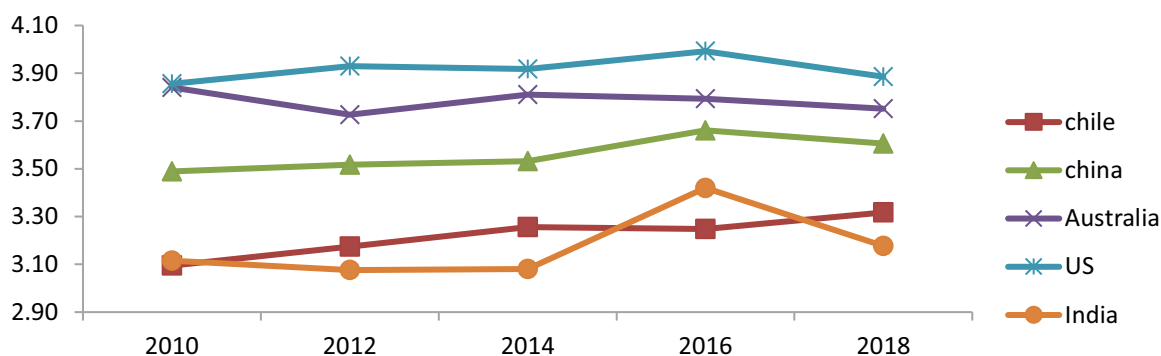
In its advocacy for free and competitive agricultural markets, the FAO has frequently attracted focus on rural infrastructure development. In fact, the organisation hosts a 'Rural Infrastructure and Agro-industries' (AGS) division whose mandate looks into the development of 'physical structures that aid the competitiveness and productivity of the agriculture sector'.

Indeed, the development, planning and financing of infrastructure assets is a vital component of export promotion strategies for agriculture. FAO findings suggest that the infrastructure investment required to keep up with projected growth in emerging markets on average is 5.5 percent of GDP. A bulk of this estimated investment need arise from agro and export related infrastructure.

For India's case, the World Bank's 'Logistics Performance Index' is a leading indicator of trends in trade costs. The data from the index is shown below:

**Chart 15: Logistics Performance Index of Select Countries**

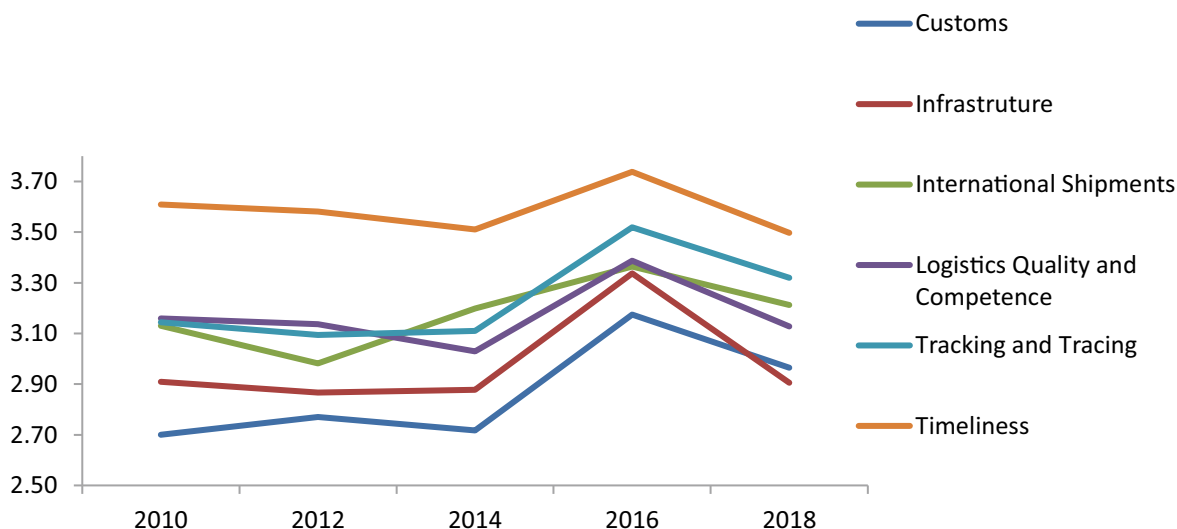
Source: World Bank





**Chart 16: Logistics Performance Parameters for India**

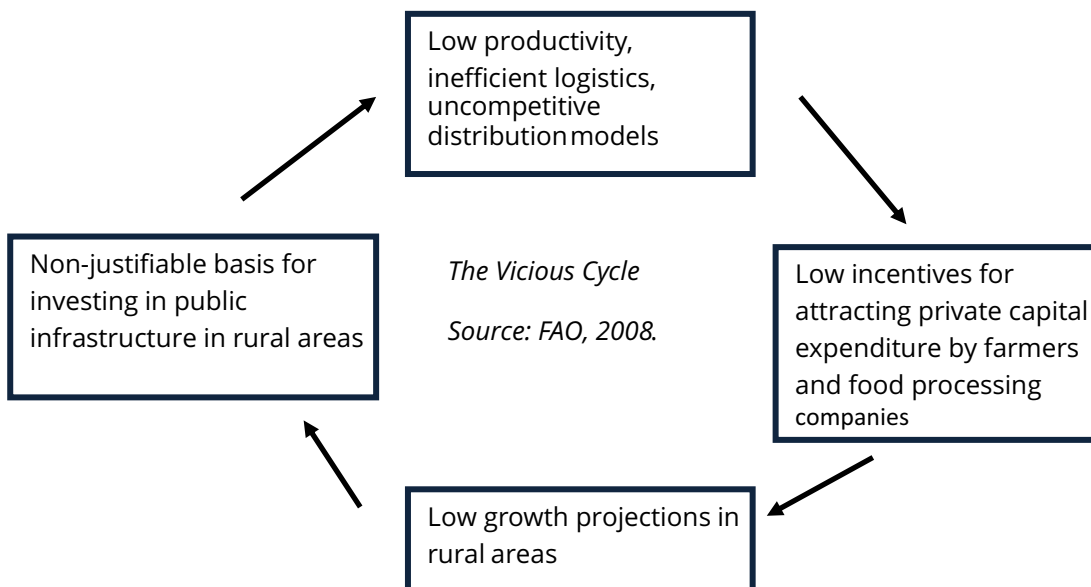
Source: World Bank



As the LPI data shows, India has marginally improved its performance in absolute terms. However, the relative strength of this improvement shows a lag. This means that India's logistics costs can derail or offset any gains for exports that arise from agricultural productivity.

FAO research suggests that delivery of infrastructure projects is a vital component of export development strategies. Identifying the sources of post-harvest losses and the need for cold storage in the value chain for instance, must be followed up with implantable models of plugging infrastructure deficits. This means that the 'vicious cycle' shown below (FAO, 2008) needs to be broken:

**Diagram 4: Vicious cycle in agriculture**



**Box 30: Case study: Infrastructure Deficits for Agri-Exports from Maharashtra and Gujarat**

In 2015, PWC embarked upon a research project to identify agriculture export related infrastructure deficits for Maharashtra and Gujarat based on major export crops and their needs. The rationale behind the research was that India's high production trends (discussed earlier in the report) were not leading to broad based exponential export earnings growth and India's global market share was a mere 1.5%. Leading causes of this anomaly was inadequate backward linkages, dominance of unorganized units, high transportation costs and inefficient post-harvest management.

It was felt that a bulk of these challenges and risks could be mitigated through successful implementation of PPP models for the provision of physical transport and infrastructure assets. Thus, the research identified infrastructure as a key enabler of agriculture exports from the two states.

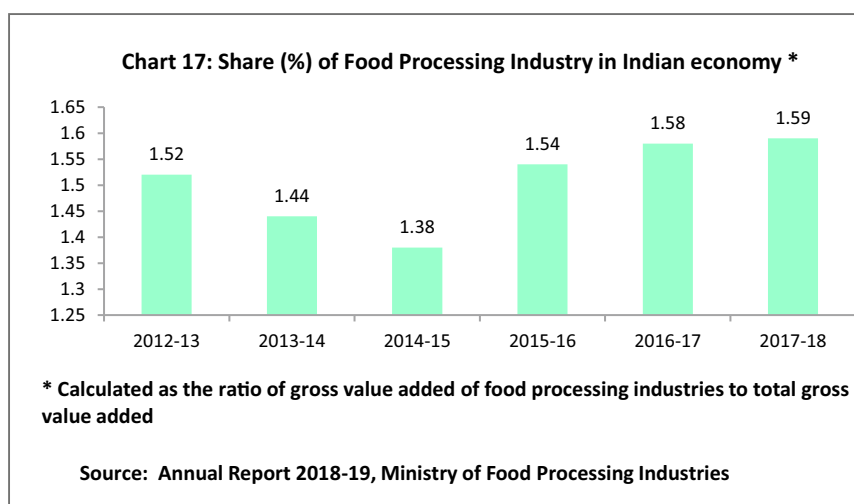
For Maharashtra, the project recommended investing in a 2 MT/hour IQF facility and a 60 MT multi-commodity pack-house for a combined investment of INR 2500 lakhs. In Gujarat, the recommended investment included 3 X 60 MT pack-houses in addition to a 2 MT/hour IQF facility amounting a combined investment amount of INR 4600 lakhs.

Source: Study on identification of export oriented integrated infrastructure for agri products from Maharashtra & Gujarat - APEDA (Agriculture Produce Export Development Authority), PWC 2015

**Value- Addition: The Role of Food Processing in India**

In order to develop the upper end of the agricultural value chain, it is vital to identify opportunities for growth in the food processing industry. The upper end of the agricultural value chain is composed of goods that yield better returns for farmers in addition to providing a relatively stable source of demand for quality compliant commodities. In India's case, the high production base, as shown in prior sections of this report, provide a strategic foundation upon which India's food processing industries can depend on for their growth. However, apart from supply oriented factors, there are also demand-driven determinants of growth for this industry.

Demand for processed food is a function of rising per-capita income and favourable demographics (a young median age). Both these factors are characteristics of the Indian economy.

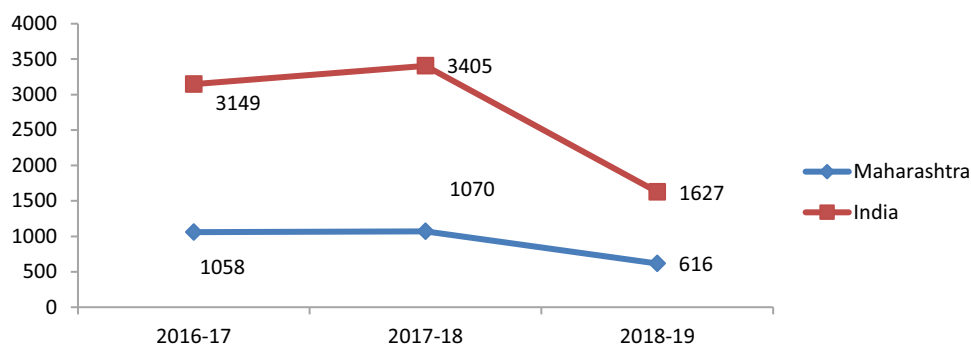


The graph above shows the share of GVA attributed to the food processing industry. The rising trend since 2014 is indicative of an industry that is rapidly rising in market size and growth. In fact, over the past four years, the food processing industry grew at an average annual growth rate of 2.8% compared to 1.8% in agriculture. In the years ahead, its importance for India's growth, investment and employment is expected to rise (MoFPI, 2018).

At the same time, it is also vital to note that as nascent industry, the food processing units of India are faced with unprecedented opportunities for growth in the domestic market. This is clear in the FDI trends into the sector. Around INR 10000 crores of foreign capital has come into the sector. The chart below shows the export value of processed food products for Maharashtra and India.

**Chart 18: Export value: processed fruits and vegetables.(INR crore)**

Source: Maharashtra Economic Survey 2018-19



These trends suggest that the market has developed a marginal domestic orientation owing partly to growth opportunities arising from rising incomes, rapid urbanisation and an expanding young middle class of consumers.

However, India's geographical position gives it a strategic leverage for expanding exports to Asian and middle-eastern markets. Countries with globally competitive retail markets (77% of food sales happen through retail channels) and low cost, efficient transportation networks are lucrative entry and expansion points for Indian food processing exports.

The food processing industry and their exports resemble a key variable in determining the demand and price stability of key agricultural commodities. However, a number of regulations impact the ease of doing business in the sector. One such regulation is the contract farming law

### **Box 31: Enabling the Food Processing Industry: the Role of Contract Farming**

In late 2017, India introduced a 'model contract farming' law. In its rationale behind introducing the legislation, the government has opined that 'marketable surplus ratios' (MSRs) have risen for almost all major commodities. If this trend is viewed in conjunction with the rising consumption expenditure of a large population, it points toward a need to integrate agriculture with the industrial and manufacturing capacities of the country.

Contract farming, according to the legislation, is a 'pre-production season agreement between farmers and sponsors wherein the risk of post-harvest market unpredictability is transferred from the former to the latter'. Therefore, mitigating market risk is the identified foundation of contract farming. It is believed that operational efficiency will seep into marginal land parcels through such arrangement. In fact, contract farming was part of a set of suggested reforms in the agriculture sector put forth in the vision to double farmer's incomes by 2022.

The law is framed as a model because most agriculture markets are governed by State APMC Acts (Agriculture Product Marketing Acts). If implemented effectively, the contract farming practices could not only provide sources of demand for small holder farmers but also provide a productivity boost to India's food processing industry.

## Summary

- Trends in Indian agriculture suggest an increase in aggregate supply of major commodities which in turn, has placed a bearish pressure on prices. As a source of raising aggregate demand and returning prices to their point of equilibrium, external markets can prove to be a powerful tool.
- Data from the FAO Food Price Index suggests that global food commodity prices have recovered from a period of volatility. This creates an attractive entry point to seize growth opportunities.
- Since the 1990s, growth in agriculture trade has been concentrated: a few countries have performed exceedingly well while others most notably emerging markets have accrued minimal gains. This is largely due to the fact that compared to manufacturing and services, attempts at liberalizing agriculture markets faces greater political uncertainty.
- India's agriculture export basket has a high level of concentration i.e. the top 10 commodities account for 80% of total export earnings. This trend has remained stagnant over the past decade, even though the top 10 list has undergone certain changes.
- India's agriculture exports also show high destination concentration. The highest diversification is in jaggery and confectionary where top 10 destinations account for 48.7% of all export earnings. On the other hand, high export earning products such as basmati rice, processed meat, mango (pulp and fresh) and dairy products all display a high level of destination concentration of above 75%.
- Any strategy to augment India's agriculture exports must take into account the structure of the production base: average operational land holding is at a historical low of 1.08 hectares. One solution to the challenge of scale is the pooling of resources through vehicles such as cooperatives. 33% of the world's top 300 cooperatives operate in the agriculture sector. This indicates that the agriculture sector is well suited for the cooperative model and success cases are ubiquitous. In particular, agriculture marketing cooperatives (market driven) could expedite the growth of exports through better price realization and market growth channels.
- The accessibility of global agriculture markets is a function of trade barriers both at the border and beyond it. Data shows that tariffs are vital determinants of export decisions. In addition, NTBs account for a majority of trade costs in agriculture. One such mechanism to address SPS issues and enhance market access is through trade agreements where procedures for conformity assessments and mechanisms to promote convergence of standards can be negotiated. The India- Singapore CECA is an epitome in this regard.
- The development, planning and financing of infrastructure assets is a vital component of export promotion strategies for agriculture. Identifying the sources of post-harvest losses and the need for cold storage in the value chain for instance, must be followed up with implantable models of plugging infrastructure deficits
- In order to develop the upper end of the agricultural value chain, it is vital to identify opportunities for growth in the food processing industry. The upper end of the agricultural value chain is composed of goods that yield better returns for farmers in addition to providing a relatively stable source of demand for quality compliant commodities.
- Data suggests that the food processing industry has developed a marginal domestic orientation owing partly to growth opportunities arising from rising incomes, rapid urbanisation and an expanding young middle class of consumers. However, India's geographical position gives it a strategic leverage for expanding exports to Asian and middle-eastern markets. Countries with globally competitive retail markets (77% of food sales happen through retail channels) and low cost, efficient transportation networks are lucrative entry and expansion points for Indian food processing exports.
- The food processing industry can also be supported through contract farming laws which provide for the successful mitigation of market risk whilst maintaining a steady stream of demand for commodities with high 'marketable surplus ratios' (MSRs).

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## Appendix I

Top five importers of principal agro commodities (in value)

Sr. No	Principal Commodity	Top five importers of principal agro commodities (in value)				
		Pakistan	Russian Federation	United States of America	United Kingdom	China
1	Tea	550	549	662	420	399
2	Coffee Green+Roast; Coffee, extracts; Coffee, green; Coffee, husks and skins; Coffee, roasted; Coffee, substitutes containing coffee	United States of America	Germany	France	Italy	Japan
3	Wheat; Wheat+Flour; Wheat Equivalent	13025	8166	5738	3671	3064
4	Pulses	Indonesia	Egypt	Algeria	Italy	China
5	Tobacco unmanufactured	7273	5257	3449	3033	3033
6	Spices, nes	Pakistan	China	Bangladesh	United Arab Emirates	Turkey
7	Cashew nuts, shelled; Cashew nuts, with shell	921	563	467	452	439
8	Sesame seeds	China	Belgium	Germany	Russian Federation	United States of America
9	Groundnuts Total Shelled; Groundnuts, shelled	1361	1138	1023	721	662
10	Vegetable oils	United States of America	United Arab Emirates	Germany	Spain	Netherlands
11	Castor oil	170	159	109	80	80
12	Fresh fruits	United States of America	India	Viet Nam	Germany	Netherlands
13	Fresh vegetables	1583	1492	2574	545	528
14	Cereal preparations	China	Turkey	Japan	Iran (Islamic Republic of)	Republic of Korea
15	Cocoa, beans; Cocoa, butter; Cocoa, paste; Cocoa, powder & cake	791	244	190	116	109
16	Sheep/goat meat	China	Netherlands	Indonesia	Turkey	Germany
17	Dairy products	355	1091	576	42	384
18	Meat Poultry Fresh; Meat, chicken; Meat, chicken, canned	United States of America	France	Netherlands	Germany	Sweden
19	Alcoholic beverages	227	169	133	117	78
20	Jute, raw	China	United States of America	France	Germany	Netherlands
21	Cotton raw/incl. Waste	China	97	93	91	74
		China	Netherlands	Viet Nam	United States of America	Indonesia
		1063	269	239	193	155
		United States of America	United Arab Emirates	Canada	Germany	France
		374	237	226	215	188
		China	United States of America	Japan	Germany	Netherlands
		15138	10430	6884	6802	5870
		Netherlands	United States of America	Germany	Belgium	Malaysia
		3559	2389	2425	1776	865
		China	United States of America	France	United Kingdom	Germany
		2093	1957	1081	916	824
		China	United States of America	France	United Kingdom	Netherlands
		23237	2874	6883	5296	8179
		China	Japan	Germany	United Kingdom	Saudi Arabia
		5466	5015	3435	3880	2687
		United States of America	China	United Kingdom	Germany	Canada
		31068	14006	10033	8604	5669
		Pakistan	India	Nepal	China	Nigeria
		49	45	22	19	8
		China	Viet Nam	Bangladesh	Turkey	Indonesia
		2718	2363	1943	1699	1270

Source: FAO, 2017



## Appendix I

Principal Commodity	Top five importers (in terms of quantity)				
	Pakistan	Russian Federation	United States of America	United Kingdom	China
Tea	183615	170421	192151	129634	84116
Coffee Green+Roast; Coffee, extracts;Coffee, green; Coffee, green; Coffee, husks and skins; Coffee, roasted; Coffee, substitutes containing coffee	United States of America 3493317	Germany 2483298	France 753620	Italy 1182377	Japan 853930
Wheat+Wheat+Flour;Wheat Equivalent	Indonesia 20972368	Egypt 20354961	Algeria 16158340	Italy 14893079	China 11915865
Pulses	Pakistan 1137768	China 1434646	Bangladesh 847658	United Arab Emirates 556194	Turkey 570621
Tobacco unmanufactured	China 171978	Belgium 233557	Germany 181922	Russian Federation 154313	United States of America 134908
Spices, nes	United States of America 44237	United Arab Emirates 21919	Germany 24245	Spain 8061	Netherlands 23297
Cashew nuts, shelled;Cashew nuts, with shell	United States of America 153776	India 705985	Viet Nam 1296234	Germany 53935	Netherlands 52424
Sesame seeds	China 757676	Turkey 145812	Japan 148696	Iran (Islamic Republic of) 85697	Republic of Korea 74993
Groundnuts Total Shelled;Groundnuts, shelled	China 416381	Netherlands 709160	Indonesia 544075	Turkey 15384	Germany 231193
Vegetable oils	United States of America 61606	France 61217	Netherlands 53465	Germany 21218	Sweden 41972
Castor oil	China 268688	United States of America 60789	France 60954	Germany 58233	Netherlands 48799
Fresh fruits	China 1314985	Netherlands 81410	Viet Nam 68445	United States of America 185272	Indonesia 112417
Fresh vegetables	United States of America	United Arab Emirates	Canada	Germany	France
Cereal preparations	China 11001	United States of America 37500	Japan 44027	Germany 92249	Netherlands 254604
Cocoa, beans;Cocoa, butter; Cocoa, paste; Cocoa, powder & cake	Netherlands 1280622	United States of America 794897	Germany 728203	Belgium 531059	Malaysia 389559
Sheep/goat meat	China 558003	United States of America 244156	France 179462	United Kingdom 151048	Germany 85738
Dairy products	China 17200695	United States of America 1133938	France 6385811	United Kingdom 4799111	Netherlands 11282312
Meat,Poultry Fresh; Meat, chicken; Meat, chicken, canned	China 2905705	Japan 1638200	Germany 1301278	United Kingdom 1146225	Saudi Arabia 1429280
Alcoholic beverages	United States of America 11234602	China 4001178	United Kingdom 5034936	Germany 4744621	Canada 1677327
Jute, raw	Pakistan 60481	India 65914	Nepal 37608	China 31208	Nigeria 4191
Cotton raw incl. Waste	China 1806040	Viet Nam 1217947	Bangladesh 978532	Turkey 938832	Indonesia 789883

Source: FAO, 2017

## Appendix II

### Major markets for India's key fruit juices

Orange Squash		
Country	Qty	US\$ Mill
Nepal	5.11	0.04
Bhutan	0.85	0.00
U Arab Emts	3.08	0.00
U S A	0.65	0.00
U K	0.37	0.00
South Africa	0.40	0.00
Australia	0.05	0.00
Sri Lanka Dsr	0.10	0.00
Cameroon	0.02	0.00
Cote D Ivoire	0.03	0.00
Angola	0.01	0.00
Congo D. Rep.	0.03	0.00
<b>Total</b>	<b>10.7</b>	<b>0.04</b>

Other Orange Juice, Not Frozen / Excluding Frozen		
Country	Qty	US\$ Mill
Bhutan	33.58	0.09
Nepal	23.52	0.05
U S A	4.40	0.01
Qatar	1.00	0.00
Korea Rp	0.20	0.00
Congo D. Rep.	0.64	0.00
Seychelles	0.40	0.00
Philippines	0.23	0.00
Singapore	0.32	0.00
U Arab Emts	0.23	0.00
South Africa	0.17	0.00
Maldives	0.10	0.00
Vietnam Soc Rep	0.02	0.00
Zambia	0.01	0.00
France	0.00	0.00
Netherland	0.01	0.00
Tanzania Rep	0.02	0.00
Japan	0.00	0.00
Egypt A Rp	0.01	0.00
Germany	0.01	0.00
<b>Total</b>	<b>64.87</b>	<b>0.15</b>

Pineapple Squash		
Country	Qty	US\$ Mill
Qatar	29.49	0.05
U Arab Emts	3.03	0.01
Baharain Is	5.57	0.01
Nepal	2.28	0.00
Saudi Arabia	1.70	0.00
<b>Total</b>	<b>44.75</b>	<b>0.07</b>

Other Pineapple juice		
Country	Qty	US\$ Mill
Netherland	243.62	0.30
Germany	84.43	0.12
Sri Lanka Dsr	35.63	0.05
Vietnam Soc Rep	1.86	0.00
Belarus	0.12	0.00
U K	0.10	0.00
Malaysia	0.05	0.00
Saudi Arab	0.07	0.00
U Arab Emts	0.07	0.00
South Africa	0.05	0.00
Nepal	0.01	0.00
Egypt A Rp	0.00	0.00
<b>Total</b>	<b>366.01</b>	<b>0.47</b>

Pineapple Juice, Of A Brix Value Not Exceeding 20		
Country	Qty	US\$ Mill
Spain	117.60	0.08
New Zealand	0.10	0.00
Oman	0.07	0.00
U Arab Emts	0.00	0.00
<b>Total</b>	<b>117.77</b>	<b>0.08</b>

## Appendix II

Brix Value		
Country	Qty	US\$ Mill
Korea Rp	17.3	0.03
Afghanistan Tis	15.7	0.02
Nepal	0.1	0
<b>Total</b>	<b>33.1</b>	<b>0.05</b>

Orange Juice, Frozen		
Country	Qty	US\$ Mill
Bhutan	13.5	0.04
Sri Lanka Dsr	5	0.02
Kuwait	2	0.00
South Africa	0.17	0.00
Bangladesh Pr	0.35	0.00
U S A	0.01	0.00
Sweden	0	0.00
<b>Total</b>	<b>21.03</b>	<b>0.06</b>

Grape squash prepared or preserved		
Country	Qty	US\$ Mill
Australia	12.00	0.36
Nepal	112.65	0.06
Bhutan	18.00	0.02
Maldives	2.04	0.00
Singapore	0.25	0.00
Sri Lanka Dsr	0.06	0.00
Hong Kong	0.00	0.00
<b>Total</b>	<b>145.00</b>	<b>0.44</b>

Grapefruit Juice, Of A Brix Value Not Exceeding 2		
Country	Qty	US\$ Mill
Qatar	95.71	0.15
U S A	34.66	0.05
Kuwait	14.58	0.03
U Arab Emts	20.16	0.02
Canada	18.67	0.02
Australia	2.92	0.00
Oman	1.10	0.00
Mauritius	0.50	0.00
Netherland	1.27	0.00
Czech Republic	0.86	0.00
U K	0.69	0.00
Congo D. Rep.	0.21	0.00
South Africa	0.02	0.00
<b>Total</b>	<b>191.35</b>	<b>0.27</b>

Other Grapefruit Juice		
Country	Qty	US\$ Mill
U K	1.00	0.01
<b>Total</b>	<b>1.00</b>	<b>0.01</b>

## Appendix II

Exceeding		
Country	Qty	US\$ Mill
U K	530.42	0.63
Korea Rp	111.90	0.19
Sweden	105.69	0.16
U S A	53.13	0.06
Netherland	72.00	0.06
U Arab Emts	27.20	0.05
Germany	5.89	0.04
Australia	12.65	0.03
Malaysia	10.06	0.02
Bahamas	28.76	0.02
Qatar	2.35	0.02
Singapore	9.80	0.02
Canada	5.64	0.02
Baharain Is	3.75	0.01
Nepal	10.61	0.01
Bhutan	2.00	0.01
Bangladesh Pr	0.12	0.00
Norway	0.10	0.00
Kuwait	0.43	0.00
Congo D. Rep.	0.20	0.00
Pakistan Ir	0.11	0.00
Thailand	0.25	0.00
<b>Total</b>	<b>993.06</b>	<b>1.35</b>

Other Single Citrus Fruit Juice Value Not Exc.20		
Country	Qty	US\$ Mill
Japan	478.85	0.79
Bangladesh Pr	0.38	0.01
U S A	0.02	0.00
<b>Total</b>	<b>479.25</b>	<b>0.8</b>

<sup>i</sup>Data in this section are sourced from Food and Agriculture Organization of the United Nations

<sup>ii</sup>Transforming Agriculture for Challenges of 21st Century, By Prof. Dr. Ramesh Chand

<sup>iii</sup>Prof. Ramesh Chand, Member, NITI Aayog at a Presidential Address in December 2019

<sup>iv</sup>Data in this section are sourced from FAOStats

<sup>v</sup>The Tobacco Institute of India

<sup>vi</sup>Data from World Integrated Trade Solutions

<sup>vii</sup>APEDA

<sup>viii</sup>Ministry of Commerce, Government of India

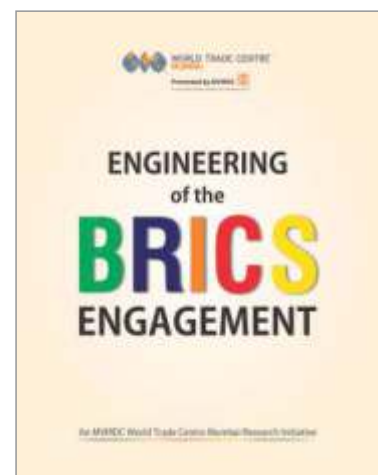
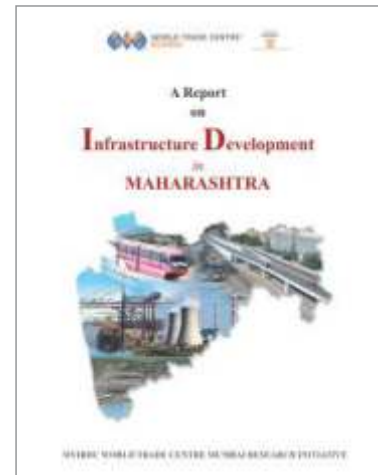
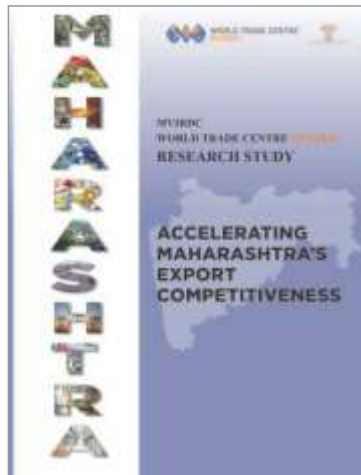
<sup>ix</sup>WTO Database

<sup>x</sup>Data on export share for all countries is derived from WTO Database

<sup>xi</sup>FAO statistics 2017

<sup>xii</sup>FAO statistics 2017

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