



FOOD VALUE CHAIN PARTNERSHIPS – END TO END APPROACH





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January 2020



Message

Food value chains are complex systems which integrates different stakeholders such as farmer, food processor, exporter, retailer and eventually consumer which builds relationships that facilitates a win – win situation for all. The development of food value chains can offer important pathways for the households in developing countries.

As producers in food value chains typically have the opportunity to exert significant influence on buyers and retain a greater share of retail food spending, they also benefit from ongoing exposure to information about consumer purchasing habits and preferences from their downstream supply-chain partners. Meanwhile, aggregators and receivers in food value chains benefit from the provision of specialized products reduce their risk exposure through advance. The collaborative partnerships also provide opportunities to build on previous business successes by exploring marketing strategies and evaluating options for waste reduction and improvements in efficiency.

In recent times, a lot of programs and projects were focused on the development of agricultural and food value chains, in particular integrating smallholder farmers into value chains. Such activities are largely supported by the government, financial institutions and private firms of the food and agriculture industry.

India has the potential to become the World's food factory; however, there is a strong need to strengthen nexus between farmers, food processing industries & markets by the means of forward linkages of farmers through backward integration, quality farm production and enhancing customized production system.

ASSOCHAM jointly with Resurgent India has prepared a study on Food Value Chain Partnerships with the objective of outlining factors which would provide impetus to the food and agriculture industry for building a strong and efficient value chain.

I sincerely hope that this paper will be useful to all the industrial stakeholders, policy makes and academia and will help in fostering informed debate.

I extend my best wishes for the success of the conference.

Niranjana Hiranandani
President
ASSOCHAM



Message

Agriculture and food sector continues to be the right spot with strong underlying growth drivers such as young population, increasing urbanization, and the rise of the middle classes. A food value chain consists of all the stakeholders who participate in the coordinated production and value adding activities, linking producers, processors, marketers, food service companies, retailers and supporting groups. This system can be defined as a strategic partnership between inter-dependent businesses that comes together to progressively create value for final consumer, resulting in a collective competition advantage. For agricultural products value addition also take place through differentiation of product based on its functionality.

The goal of the agribusiness value chain, which spans input companies through to the final consumer, is to provide sustainable access to affordable food, feed, fibre and, more recently, fuel. However, this goal is getting difficult to achieve every year due to several prominent challenges.

While change in emerging markets is dramatic, the developing economies are also experiencing a shift in consumption patterns. Consumers are more health conscious than ever before. They are worried about the content of their food, its origin, freshness, and safety. Consumers are also increasingly concerned about the sustainability of food production and its impact on the environment. Hence, buying local and organic food movement are emerging trends that have gained traction with the modern consumer. The changing nature of the requirements of value chains, changes the extent and complexity of information transfer.

ASSOCHAM and Resurgent India have developed this knowledge report highlighting the ways to overcome the challenges as greater collaboration and cooperation both upstream and downstream will be required between various players in the value chain.

I hope that the stakeholders will find the report relevant and the contents in the study will help in improving the understating of the Indian Food Value Chain in a balanced and comprehensive perspective.

Deepak Sood
Secretary General
ASSOCHAM



Message

With its usage since the beginning of the millennium the concept of the “food value chain” has been used for agricultural development in many countries. The idea is to refer to a complete range of goods and services necessary for an agricultural produce to reach from farm to final consumer.

A major subset of value chain development work is concerned with ways of linking producers to companies, and hence into the value chains. While there are examples of fully integrated value chains that do not involve smallholders, the great bulk of agricultural value chains involve sales to companies from independent farmers. In the past two decades, global food production has significantly tilted towards Asia, particularly China, India and other parts of the developing world.

Today, the market structure of the Indian food sector is again in the spotlight by not only becoming a key connection between the agriculture and manufacturing sectors but also its emergence and acceptance as a giant e-commerce prospect for the final consumer. The online food ordering business in India is witnessing exponential growth. With online food delivery players who are building scale through partnerships, the organized food business has a huge potential and a promising future.

Considering the focus and contribution of the Agricultural sector towards economy the ASSOCHAM initiative towards the “Food value Chain - Partnerships – End to End Approach” accords this sector an essential segment towards development of the agricultural value chain & emergence of the sector.

Considering with the above highlights, this is an appropriate time for Resurgent India and ASSOCHAM to bring out this report, which aims to focus on the growth potential of the Food value chains in the Indian Food Processing and Agricultural Sector. The report also highlights the emerging trends, partnerships and challenges in the key segments of the sector.

We hope the report comes as a useful aspect and will provide comprehensive insights and inputs for taking informed decisions toward further growth for the sector.

Jyoti Prakash Gadia
Managing Director
Resurgent India Limited

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The image features a solid light blue background. A horizontal, irregular tear in the paper is located in the middle of the frame. The tear reveals a white surface underneath. On this white surface, the word "INTRODUCTION" is printed in a black, serif, all-caps font. The torn edges of the blue paper are visible on the left and right sides of the white area.

INTRODUCTION

Introduction - Food Value Chain

India has a developing mixed economy. India's gross domestic product (GDP) in 2018 was around USD 2.69 trillion. India's population is the second largest in the world, growing at 1.08 percent, per annum, and is projected to become the world's largest by 2024. The Indian food sector has emerged as a high growth and high-profit sector due to its immense potential for value addition, particularly within the food processing industry. Food processors, importers, wholesalers, retailers, and food service operators are all part of a developing agribusiness sector.

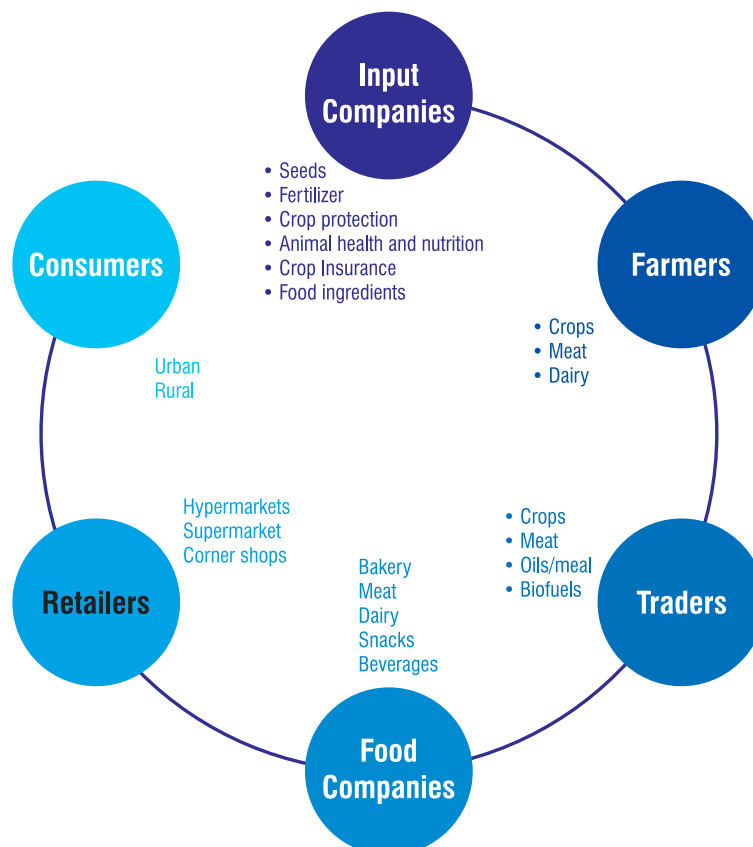
For the past 200 years, there has been a persistent concern that human population growth would not be met by sufficient increases in agricultural production. Yet the opposite has been true. The supply of food has increased dramatically, fueled by increasingly capital-intensive agriculture, continuing application of biological/genetic science to food production, greater ability to save crops from pests, and greater ability to preserve perishable products during transport. Yet the question arises as to whether this process of improvement can continue to meet the needs of a growing and more affluent global population. The answer is probably yes. There remains plenty of room for increases in land productivity

What is food value chain?

Food value chains are developed to increase competitive advantage through collaboration in a venture. A food value chain links producers, processors, marketers, food service companies, retailers and supporting groups.

This system can be defined as a strategic partnership between inter-dependent businesses that comes together to progressively create value for final consumer, resulting in a collective competition advantage

Characteristics of Food Value Chain



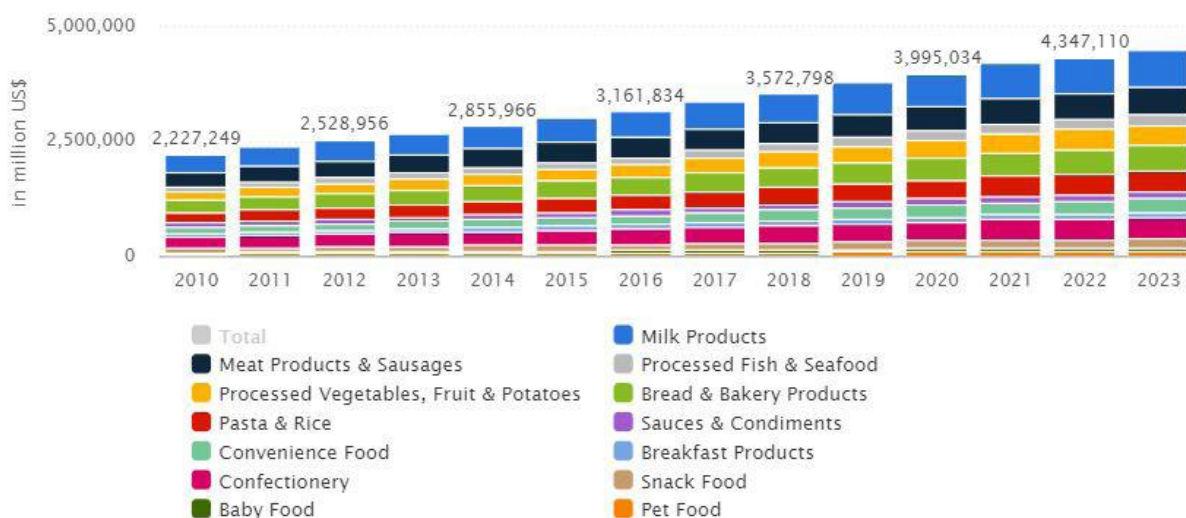
Food Value chains do have four unique characteristics that distinguish them from other Value chains in their specifics:

- All of us are part of the food VC; we are all consumers whose well-being is directly affected by the food we eat. How food, through its nutritional value and its ability to carry pathogens, affects our health is a societal concern that necessitates rigorous supervision by the public sector.
- In most developing countries, agriculture and food represent a large, if not the largest, part of the economy, especially in terms of the number of people deriving an income from it. Food VCs are particularly important for the poor and impact food security directly.
- Food production is closely tied to the natural environment (soils, water bodies, air, genetics) and the life cycle of plants and animals.
- Associated with the previous points, the quality of food products is difficult to control both in terms of uniformity (mostly at the farming stage) and in terms of preservation over time (perishability). This necessitates institutional, organizational and technological upgrading throughout the food VC.

Current Landscape of Indian Food Market

India houses 18% of the world's human and 15% of livestock population, while subsisting on just 2.2% of its geographical area, 4.2% of freshwater resources, 1% of forest and 0.5% of pasture land. On top of these are the challenges of climate change, shrinking holding size (more than 80% of the farmers are small and marginal) and nearly 52% of the agricultural land being un-irrigated. Even in the face of such adversities, our farmers — by marrying their traditional knowledge with adoption of technology, high-yielding and climate-resilient varieties/hybrids and modern inputs — have made India largely self-sufficient through record production of 285 million tonnes of foodgrains and 311 million tonnes of fruits and vegetables.

- Revenue in the Food market amounts to US\$3,995,034m in 2020. The market is expected to grow annually by 4.0% (CAGR 2020-2023).
- The market's largest segment is the segment Milk Products with a market volume of US\$716,088m in 2020.
- In global comparison, most revenue is generated in the United States (US\$702,061m in 2020).
- In relation to total population figures, per person revenues of US\$536.65 are generated in 2020.
- The average per capita consumption stands at 182.0 kg in 2020.



Source : Statistia.com

India's current overall level of food processing is just 10%, which needs to be rapidly increased to capture market opportunities and improve outcomes for farmers. In 2016, the Government of India permitted FDI up to 100% in the food processing industry via the automatic route. In addition, 100% FDI is also allowed under Government route for retail trading including e-commerce, for food products manufactured and/or produced in India. With the introduction of the policy, India immediately witnessed a strong jump in FDI for food processing by 43% year-on-year to reach US\$ 727.22 million in 2016-17 and further by 24% year-on-year to reach US\$ 905 million in 2017-18. The sector has received cumulative FDI inflows of US\$ 8.45 billion from April 2000 to March 2018. Among other investments, global e-commerce major Amazon secured approval for investment of US\$ 500 million for food retailing in the country in July 2017. World Food India, a platform to showcase opportunities across the food value chain in India, was organised by Ministry of Food Processing Industries during November 3-5, 2017. During the event, around US\$ 14 billion worth of MoUs were signed/exchanged/announced. Among the major countries that signed MoUs were USA, France, Germany, Netherlands and the UAE.

To give a strong push to the setting up of food processing infrastructure, the Pradhan Mantri Kisan Sampada Yojana was launched in May 2017, with a planned outlay of Rs 6,000 crore. Key focus areas include development of Mega Food Parks, integrated cold chain and value addition infrastructure, agro-processing clusters, food preservation and processing capacities, food testing laboratories and backward & forward linkages. Between 2014 and 2018, 13 Mega Food Parks have become operational, benefitting 20,725 farmers and generating employment for 334,854 people; and 27 more are under implementation. During the same period, 85 cold chain projects have been operationalised with capacity addition for cold storage recorded at 2.76 lakh.

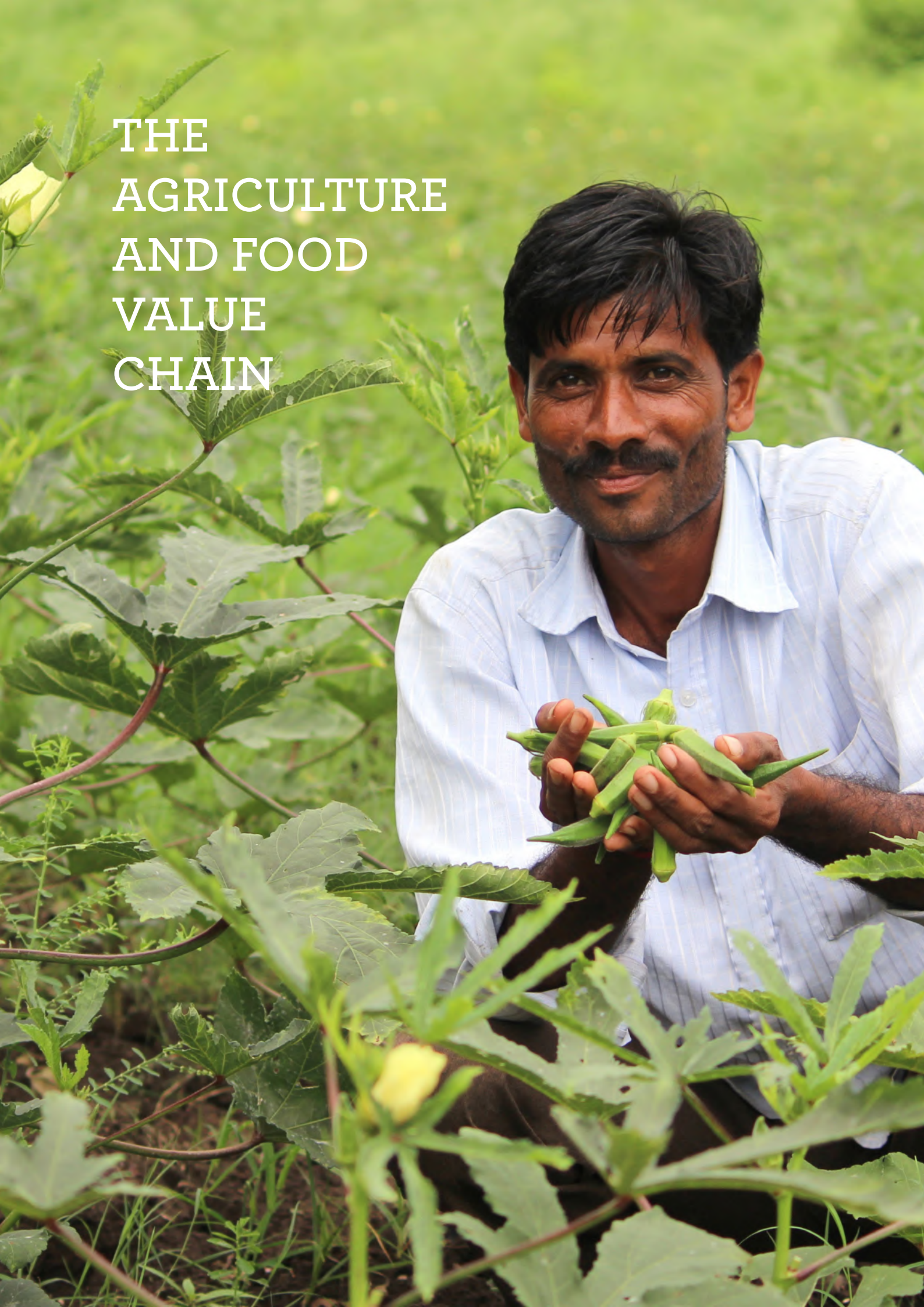
FOOD PROCESSING CAPACITY CREATION (2014-18)

Number of Mega Food Parks completed	13
Preservation and Processing Capacity in Mega Food Parks	14.07 lakh MT
Cold Storage Capacity	72,750
Number of Cold Chain Projects operationalised	85
Capacity addition for cold storage	2.76 lakh MT
Quantity of agro-produce processed and preserved	30,37,000 MT
Value of agri-produce handled	Rs 7,593 crore

Source: Ministry of Food Processing Industries

Even as the share of manufacturing and services in the Indian economy grows, agriculture still accounts for around 49% share in employment¹⁶. 'Promotion of value addition through food processing' is a major plank of the seven-point strategy outlined by the Hon'ble Prime Minister to double the income of farmers. Rapid advancements in food processing infrastructure will be of immense benefit to Indian farmers in the coming years – it will help them prevent wastage, promote value addition and ensure that they get remunerative prices for their produce and tide over the vagaries of demand and supply. Moreover improvements in food quality and value addition will open many more avenues for producers in domestic as well as in export markets.

THE AGRICULTURE AND FOOD VALUE CHAIN



THE AGRICULTURE AND FOOD VALUE CHAIN

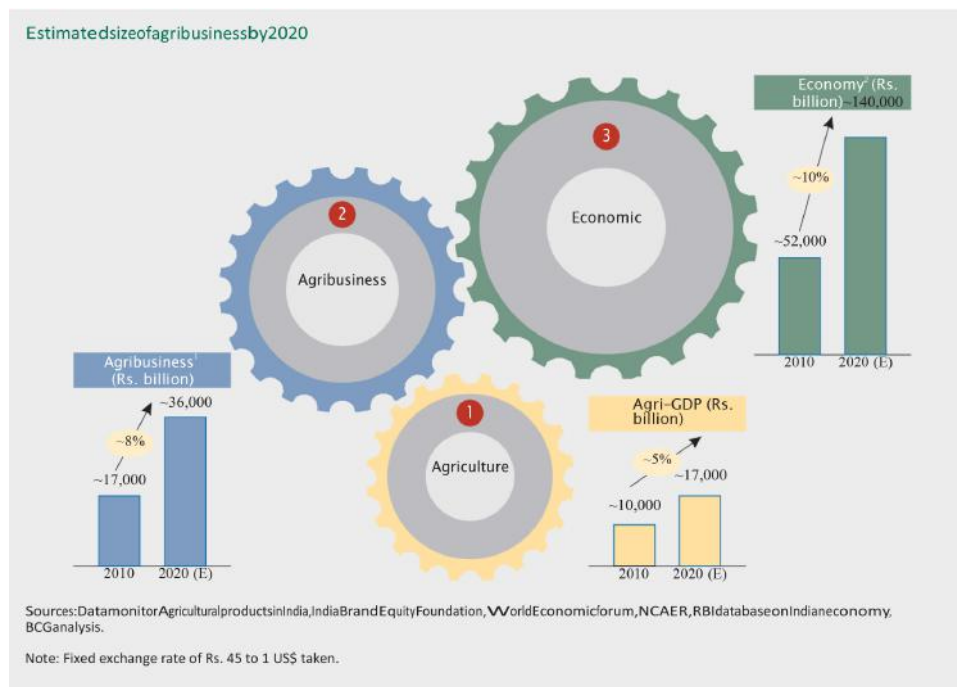
Agribusinesses are important to India for multiple reasons — such as, their contribution to the economy, the number of people they employ, strategic reasons of food security, providing raw material to other industries, generating demand for other industries, and in more recent times for inflation.

The agriculture sector in India has undergone significant structural changes indicating a shift from the traditional subsistence towards a market oriented one. The rural economy has moved from exclusive reliance on agriculture to a service dominated one that has a stabilizing influence on rural incomes. The decrease in agriculture's contribution to GDP has not been accompanied by a matching reduction in the share of agriculture in employment.

However, within the rural economy, the share of income from non-farm activities has increased. Since agriculture forms the resource base for a number of agro-based industries and agro-services, it would be more meaningful to view agriculture not as farming alone but as a holistic value chain, which includes farming, aggregating, processing, warehousing (including logistics) and retailing. The term “value chain” describes the full range of activities that are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use.

Why do we need Agri Value Chain?

The first on foremost thought that comes to my mind is to “Make the country free of hunger”. Capturing the value created along the Agriculture chain from pre sowing to food harvest or in other words capturing value created from “Farm to Fork”.



The Agri Value Chain is needed to-

- Prevent Colossal Wastage of Agriculture Produce “billions of dollars” loss to economy
- Ensure that share of Farmer in consumers wallet can increase, which is merely 25-30% as compared to western market where it goes as high as 50-75%
- Facilitate demand for MSP regime which will automatically go away and farmer can expect a

- rightful price for the produce
- Ensure optimal management of natural resources and mother earth which is being abused
- Make that India becomes “Global Hub for Food Industry”

Food Wastage

India is among the biggest food wasters in the world, reportedly wasting an estimated Rs. 900,000 million worth of fruits, vegetables and grains every year and year on year.

- India wastes wheat equivalent Australia grows in a year
- We waste more fruits & vegetables than that consumed by United Kingdom in a year

Key Challenges with Food Value chain



Key Challenges with Food Value chain

The food supply chain continues to grow rapidly, with consumers now expecting exotic foods, fresh on their plates, year round. This has extended the supply chain geographically and across many more parties, making the supply chain longer and more complicated than ever.

Producers, manufacturers, distributors, logistics providers and other parties are under pressure to get their products to the market quickly, safely, and in the best possible condition. That's a major challenge.

A typical food supply chain is made up of six stages:

- Sourcing of raw materials
- Production
- Processing and packaging
- Storage
- Wholesale distribution
- Retail redistribution to consumers

If any one of these stages is compromised, a variety of issues will arise and the whole supply chain will be in jeopardy. Let's look at some of the issues that food supply chain managers need to deal with, and how they can be fixed.

1. Lack of traceability



Traceability, or the ability to track the food product through all stages of the supply chain, is now more of a demand rather than a request among many consumers today. Many consumers now want to know where all products and their ingredients, even the trace ones, come from.

Lack of traceability and transparency, on the other hand, can create blindspots in your supply chain and expose you to unnecessary risk. It can weaken consumers' trust in your brand, which can translate into lower sales and profits. It can even give rise to certain legal issues that can stall new product launches.

Solution:

Although it is a type of technology that is still not being used widely in the food industry, blockchain is regarded by many as a promising technology for enabling traceability in the food supply chain. Blockchain technology is a shared, digital platform where users can store and share information across a network. This system enables users to look at all transactions simultaneously and in real-time.

2. Inability to maintain the safety and quality of your products



Today, the pressure on manufacturers to produce and distribute high-quality products that are safe is an increasing challenge. Some of the common causes we see that affect the quality and safety of food products which include:

- Poor storage and warehousing practices
- Delays in transportation
- Industrial sabotage
- Inclement weather

These are some of the reasons that the number of food product recall cases continues to grow. A product recall is extremely costly, and it can do irreversible damage to your brand reputation.

• Solution:

Manufacturing high quality and safe products begins with selecting the best raw materials, implementing the right production method according to international standards, and testing and proving them. This also includes choosing an accredited testing laboratory, Packaging and trustworthy logistics.

3. Inadequate communication between parties



Fragmented information and lack of communication can have a major impact on the food supply chain. This is because there are various parties involved in the chain which have little to no knowledge of one another's actions. Poor communication causes inefficiency, waste and can lead to mistrust among suppliers and their customers. This problem gets much worse when you are operating globally.

Solution:

Communication with your suppliers deserves special mention. Its impossible to maintain high quality food products if the produce and ingredients are of poor quality. This is one area where it pays to invest in quality to ensure you have the freshest, quality ingredients and produce, from reliable and responsive suppliers. This will make it easier to maintain quality throughout the rest of your supply chain, and minimize the chances of supply shortages Your customers will thank you for it.

4. Rising supply chain costs



Running a food supply chain comes with many costs, some of the more important ones include:

- Energy and fuel costs
- Logistics and freight
- Manpower
- Investment in new technology

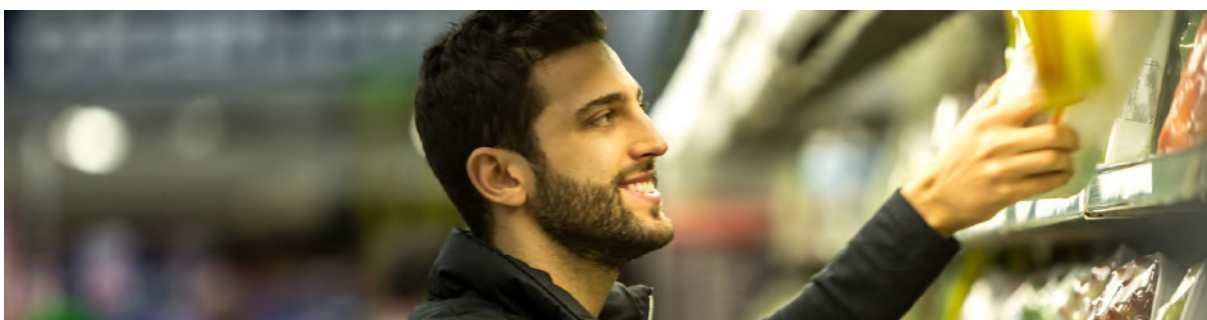
These costs are significant, as such, keeping a check on operating costs is a constant challenge.

Solution:

The first step to controlling costs is to know your costs. What gets measured, gets managed. In very simple supply chains, this can be done with spreadsheets. The more complex the supply chain, the more you will need a technology solution. Very complex supply chains are probably better served with a network solution, so that you only need to integrate to the network, not to each supplier. Using technology instead of emailing spreadsheets and playing phone tag.

A word of caution. Being too cost-conscious can inhibit your efficiency and growth. An “expensive” technology solution can save a lot over the long run, making your business more efficient, and more attractive to your customers. It can also modernize your business and make you less vulnerable to competitive forces. Rather than focus on cost, do a value-cost calculation, and over the long term.

5. Failure to track and control inventory in warehouses and stores



One area where we see a major problem is with inventory. In order to control costs and maintain quality, and satisfy your customers, inventory has to be carefully managed. Too much and it will spoil and go to waste. Too little and you disappoint your customers. There is a definite trade-off between keeping customers happy and keeping inventory and waste low.

Solution:

Modern inventory management solutions can help you manage your inventory.

Ideally, it should enable real-time visibility to your inventory, throughout your supply chain, on-site off-site and in-transit, and support RFID, IoT and other real-time and automated tracking technologies, so that your inventory data is accurate.

Another way to gain control and reduce inventory levels is to tie in the supply chain to sales at the store or restaurant. More sophisticated network solutions can “sense” demand and adjust or create orders on the fly, to keep inventory levels optimal. This can keep service levels high, and inventory and waste low.

The food supply chain is a challenging one. Whether you are running a global operation or working with local suppliers, you have to ensure a high level of quality and safety for your finished products at all times. In general, the more visibility you have to your supply chain, and the more you communicate, the more effectively you can manage it. Focusing on a few core areas will deliver big results. Invest in the best suppliers, experienced and reputable logistics partners, and the right technology, and you will have a more efficient supply chain, with quality products and more loyal customers.

Emerging Trends in value Chain

Sweet
hungarian



Emerging Trends in value Chain

As companies increasingly use their supply chain to compete and gain market share, spending and activity in this area are notably on the up-swing. Technology and process upgrades at forward-thinking companies clearly show that supply chain excellence is more widely accepted as an element of overall business strategy, and that increasing value to customers is not just management's, but everyone's, business.

The shift in how companies view their supply chain is taking hold. Examine how your company views its supply chain and consider your answers to these basic questions:

- Does leadership view your supply chain as a strategic competitive advantage? If not, are you considering outsourcing your supply chain?
- Are the capacity strengths of your supply chain commonly known and understood by company leadership? If so, how do they manage impact growth, profitability and customer service?

The following are six key trends causing significant impact and change to supply chain design and performance:

Trend 1 — Demand Planning Begins at the End of the Cycle

As sources and capacities for manufacturing have increased, more companies have moved away from focusing efforts on plant-level production planning and are adopting more of a demand-driven focus of trying to influence and manage demand more efficiently. Rationalizing what your company is best at selling, making and delivering, and aligning the sales force with that mindset, is critical to adopting a demand-driven model. The demand driven approach can help a company create a more customer-focused mindset, without sacrificing operational efficiency. Ultimately, a demand-focused approach to planning can significantly improve demand planning and management efforts and help overall costs and customer service efforts.

Trend 2 — Globalization

The business landscape is rapidly becoming more global. Largely due to improvements in communications, globalization is dramatically impacting the way business is managed and transacted, even on the most local levels. No area of a business is more affected by the trend to a global business environment than the supply chain. Manufacturing, distribution, sourcing of materials, invoicing and returns have all been significantly impacted by the increased integration of a global customer and supplier base, and many companies find that existing processes and technology are not flexible enough for this new business environment.

The right supply chain design is critical to managing the changes brought about by rapid globalization. A well thought-out supply chain network design can optimize the supply chain network and the flow of materials through the network. In doing so, network design captures the costs of the supply chain with a "total landed cost" perspective and applies advanced mathematical technology to determine optimal answers to both strategic and tactical questions.

The following are strategic questions answered by a well thought-out network design:

- Where should facilities be located?
- How many facilities should I have, and what capabilities should they have?
- What kind of capacity should they have?
- What products and services should they handle?
- Whose manufacturing and distribution orbit should they source?
- Which contract packers or contract manufacturers should I use?
- How can I achieve operations synergies through integrating acquisitions?

Trend 3 — Increased Competition and Price Pressures

Historically, price, product features and brand recognition were enough to differentiate many products in the marketplace. With the continued commoditization of many products, companies need better ways to distinguish themselves. In one case, a large global consumer goods manufacturer saw prices around some of its commodity products drop as much as 60 to 80 percent. Product innovation and brand equity no longer allowed them to command a higher price in the market. In order to continue to compete with that commoditized product the firm made significant cost improvements with supply chain redesign and technology.



Companies are looking to their supply chains in two ways to help offset this trend. First, they are looking at ways to reduce cost and are creating a more efficient value chain to remain cost competitive. Second, companies are looking at ways they can provide value-added services to meet the demands of more sophisticated customers.

Cost improvements around inventory management, logistics operations, material management and manufacturing costs, including raw material and component acquisition can be found with:

- sales and operations planning
- transportation/distribution management
- improved product lifecycle management
- improved strategic sourcing and procurement

Trend 4 — Outsourcing



As many companies step back and examine their core competencies some realize that outsourcing parts or all of a supply chain can be advantageous. With marketplace improvements around (1) information mediums and systems (2) cost and quality of global manufacturing and distribution and (3) product design capabilities companies are gaining additional synergies by outsourcing all or parts of their supply chain. The optimally outsourced supply chain, either in its entirety or just a

component, relies heavily on:

- superior supply chain network design
- inclusion of that outsource partner in the information chain
- establishment of control mechanisms to proactively monitor the various components of the supply chain
- information systems to connect and coordinate the supply chain as seamlessly as possible

Trend 5 — Shortened and More Complex Product Life Cycles

Today many companies are under pressure to develop innovative products and bring them to market more rapidly while minimizing cannibalization of existing products, which are still in high demand. In order to meet the needs of both customers and consumers, companies need more efficient product lifecycle management processes. This includes heavy emphasis on managing new product introduction, product discontinuation, design for manufacturability and leveraging across their entire product and infrastructure characteristics.

Trend 6 — Collaboration Between Stakeholders in the Extended Supply Chain

As supply chains continue to develop and mature there has been a move toward more intense collaboration between customers and suppliers. The level of collaboration goes beyond linking information systems to fully integrating business processes and organization structures across companies that comprise the full value chain. The ultimate goal of collaboration is to increase visibility throughout the value chain in an effort to make better management decisions and to ultimately decrease value chain costs. With the right tools, processes and organizational structure in place collaboration provides key people throughout the value chain with the information needed to make business-critical decisions with the best available information.

Recent estimates show that major retailers can lose 3 to 4 percent of revenue per year due to shelf stock-outs, while inventory is available somewhere in the value chain. Better coordination of store-level product availability would have a significant impact to the entire value chain for these retailers. Additionally, better visibility of retailer product availability can reduce overall logistics costs as products move through the value chain to fulfill safe stock levels and ultimately consumer demand.

The Role of Technology in Supporting these Trends

As supply chain networks have become more complex the need for greater and improved supply chain technology solutions has become critical. Enterprise resource planning (ERP) and best-of-breed supply chain management (SCM) solution providers have made significant investments in developing solutions to address the needs of manufacturing and distribution companies in areas, such as:

- Network and Inventory Optimization
- Product Lifecycle Management
- Sales and Operations Planning
- Manufacturing Optimization
- Logistics Optimization
- RFID
- Procurement
- Business Intelligence

These technologies have enabled the supply chain information worker to innovate, drive cost reductions, improve service and meet customer expectations better than ever. In order to have sustainable improvement in supply chain performance a business must have the right balance of investments in organization, processes and technology. Lack of investment and focus in any one of these areas will reduce a company's ability to achieve fundamental, sustainable improvement.

Maximum Residue Levels of Pesticide and Agro-Chemical



Maximum Residue Levels of Pesticide and Agro-Chemical

Regulation of Food Products for MRLs

The Food Safety Standards Authority of India (FSSAI) has proposed amending its regulations regarding the maximum residue levels (MRLs) for certain pesticides used in connection with food and food products.

Recently published in The Gazette of India, the draft “Food Safety and Standards (Contaminants, Toxins and Residues) Amendment Regulation related to MRL of pesticide” proposes to add 219 additional pesticides to its list of restricted substances. The draft Amendment also includes recommended MRLs for each of the newly listed pesticides.

Judicious use of agri inputs –

The farmers and even exporters are not aware about the insecticide/ pesticide/fumigation spray schedule for exports as common chemicals under different trade name with different active ingredients are used on a large scale. There is a need for generating awareness about the agri inputs including agro chemicals, their usage and MRL to avoid chances of residue detection and consignment rejection. It is recommended to strengthen the residue testing system through establishment of accredited laboratories within production clusters especially for fresh F&V for exports

Why are there different MRLs around the Globe?

- MRLs are set on regional/country GAPs
- Different residue definition in the regions
- Differences in crop grouping
- Not all commodities are grown everywhere
- Not all pesticide are registered everywhere
- Residues can be higher in one country than in the other
- Different dietary risk assessments

Practical Tips to Manage MRLs

- Know your customer: commodities, pests, export markets
- Get involved at the R&D phase – start early
- Get to know the commodity or trade organization
- Engage IR-4 and EPA Minor Use Officer at EPA
- Use technology to your advantage
- Educate growers

Current landscape for the Stake Holders



Current landscape for the Stake Holders

Food Value Chains represent a complex network of inputs and outputs that link farm production inputs to food consumers. They involve a wide range of stakeholders. At a macro-scale the chain's principal links include agricultural activities, food processing, distribution and consumption. At a micro-scale we can find a number of other players such as feedstock suppliers; agro-chemical manufacturers and suppliers; machinery and equipment manufacturers and suppliers; farmers; produce marketers and sellers; food processors; suppliers of food additives; packaging suppliers; transport companies; food retailers; consumers; and waste processors.

Another stakeholder is formed by private and public research centres in the different subsectors of the agri-food sector. It has also to be considered that legal and regulatory requirements exert an influence in every link of the agri-food chain.

Principal Stake holders in Various Sectors:

Stage	Agri-food chain link	Dairy Products	Cereal Products	Fruit & Vegetables	Meat Products
Raw material production	Farm suppliers inputs	livestock feed providers; fertilizer, pesticide, veterinary & agro-chemical manufacturers	seed providers; fertilizer, pesticide & agro-chemical manufacturers	seed providers; fertilizer, pesticide & agro-chemical manufacturers	livestock feed providers; fertilizer, pesticides, veterinary & agro-chemical manufacturers
	Farmers	livestock breeding	seed growers	horticultural production	animal husbandry
Processing stages	Processing stages	Dairy product manufacture: milk, yoghurt, ice-cream, powder milk, etc.	Grain millers, bakeries, pasta manufacturers, breakfast cereal manufacturers	Canned, dehydrated and frozen vegetable based packaged convenience foods manufacturers	abattoirs; butchers; canned, hydrated and frozen packaged meat based convenience foods manufacturers
Post processing stages	Logistic	Transport			
	Retailers	milkmen, super markets, grocery shops	bakeries, supermarkets, grocery shops	supermarkets, fresh fruit & vegetable markets, green grocers, grocery shops	butcheries, supermarkets
	Consumers	single to family households with various age groups lifestyles, cultures, preferences, incomes			

Research Centres and Legal requirements

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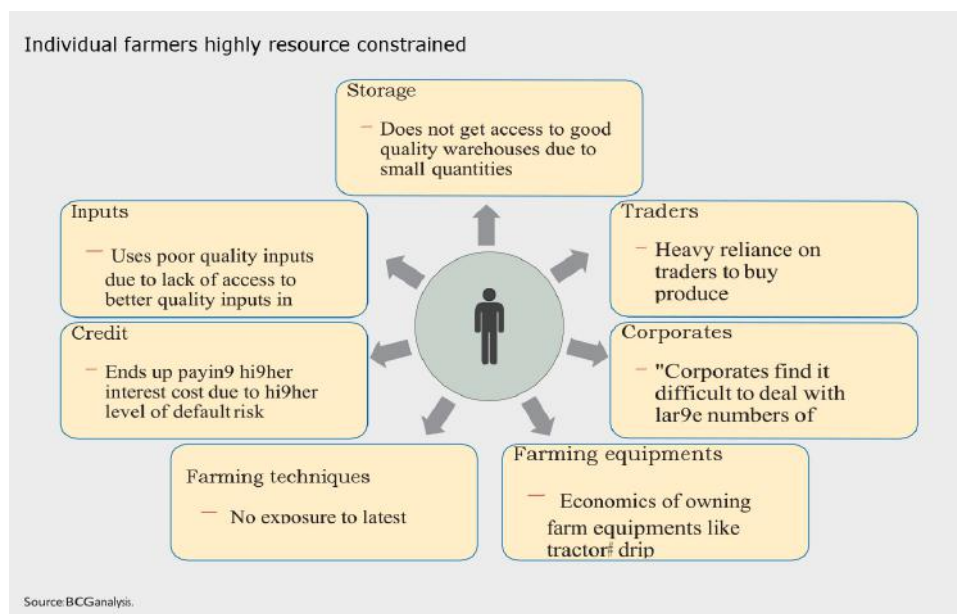
TRACEABILITY

a) Raw Material Production - Farmers

Farm suppliers, mainly represented by feedstock and agro-chemical manufacturers and suppliers, have at this moment the task of increasing the information about their products and adopting high quality standards. This is related to consumer concerns regarding the effects of some plant and animal selection and breeding programmes on the animal welfare, environmental sustainability and health keeping.

They are the first step in the food chain and they are the “starters” of the process.

Regarding to farmers, they have typically belonged to small-scale independent family operations or are members of a co-operative.



Increasingly, Indian farmers are feeling pressure from large food processors and retailers who require better agricultural practices in relation to food hygiene and safety, animal welfare, use of agri-chemicals and better management of natural resources.

The millions of small farming businesses, often third- or fourth-generation family farms, with few national and even fewer international corporate players. These farming business are small in scale compared with the global input suppliers (e.g., seed, fertilizer, machinery) and have concentrated sector-oriented customers. The consolidation in the supply chain that has occurred over the past 30 years has not played out at the producer level, and it is the weaker for it. This is why it is often said that farmers buy retail and sell wholesale!

Collaboration within the supply chain has only really happened during periods of agricultural crisis, as farmers are notoriously independent. However, the 20th century saw increasing collaborative behaviour, including the establishment of local buying/marketing groups; sharing of machinery and farming operations; and establishment of producer organizations and larger cooperatives

b) Storage & Warehousing

Most warehouses and logistics providers do not have adequate scientific and technical facilities to store and transport perishable commodities like seafood, fruits, vegetables, etc. Nearly 30 to 40 percent of horticulture produce is wasted annually because of inadequate storage and transportation facilities.

The post-harvest supply chain is one of the critical levers that can resolve some of the key issues plaguing agriculture in India. It also presents large opportunities for the private players to build a profitable business

India is faced with an acute shortage of warehousing capacity. The current capacity of dry storage is to the tune of approximately 85 million MT, built by both public and private players, and the shortage is 45 million to 55 million MT. With increasing demand for warehousing space, the shortfall is expected to rise to approximately 70 million to 80 million MT .

Therefore, the country currently requires 130 million to 140 million MT of dry storage for the annual produce of approximately 220 million MT of food grain, 27 million MT of oilseeds, and 35 million MT of other cash crops (cotton, jute). The cold storage infrastructure in the country is even scarcer. Current cold storage capacity is estimated to be about 25 million MT against the total demand of approximately 60 million MT, leading to a shortfall of about 30 million to 35 million MT. It is also highly concentrated toward one kind of agriculture produce, i.e., potatoes. Cold storage space for potatoes accounts for nearly 75 percent of the total cold storage space available in the country.

Examples of Global agri-warehouse companies

	Agri-inputs	Farming	Warehousing	Logistics	Processing	Retailing	Revenues (US\$ mn)	EBIT (US\$ mn)
GrainCorp			<ul style="list-style-type: none"> Built a large integrated play in Australia starting with bulk grain handling to processing of flour, malt etc. 				2,776	271
Viterra	<ul style="list-style-type: none"> A large grain handler in Canada and the largest grain exporter in Australia Retail products including agri-inputs, finance, crop protection, equipments etc. Involved in canola and oats processing and malt processing Also, provides animal feeds products and nutrient to dairy, beef etc. 						11,790	488
CBH Group			<ul style="list-style-type: none"> Manages a sophisticated network of ~20 million tonnes capacity Built an integrated play through partnerships with logistics suppliers and food processors like Interflour 				1,951	(31)
SGS Group			<ul style="list-style-type: none"> Built a strong play in storage and integrated logistics supply chain Provides additional support like testing, certification, analytical services etc. 				N.A.	N.A.

Source: BCG analysis.

c) Food Processing

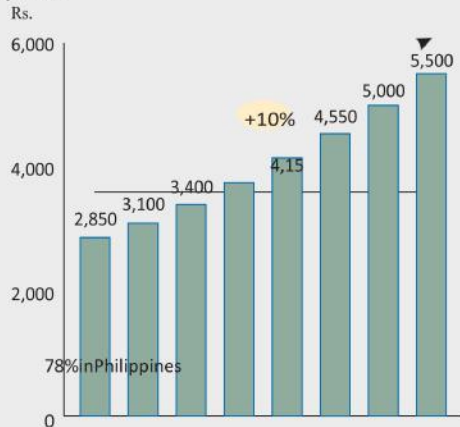
For an agrarian economy like India, food processing is an important sector as it provides a strong link between agriculture and the end-consumer. Food processing is a set of methods and techniques used to transform raw agricultural produce into a form that can be consumed directly. It involves any type of value addition to agriculture or horticulture produce that enhances shelf-life of the food product. The food processing industry is made up of two kinds of processing

Primary processing: It includes conversion of raw farm output to intermediate commodity consumables with activities like shelling, hulling, milling, polishing, crushing, packing etc. It is required for certain farm products only — cereals, pulses and oilseeds. Examples of primary processed food sold to the end-consumer include packaged fruits and vegetables,

Value-added processing: It includes conversion of raw or intermediate farm output to value-added products with activities like flour milling, baking, fortification, refining etc. Examples of value-added processed food sold to end-consumers include juices, jams, pickles, squashes, concentrate, ghee, paneer, cheese, butter, ethnic Indian products, branded edible oil, breads, biscuits, snack foods, pasta-based foods, processed meat, poultry, marine products confectionery and chocolates, beer, spirits, wine, aerated, and malted beverages.

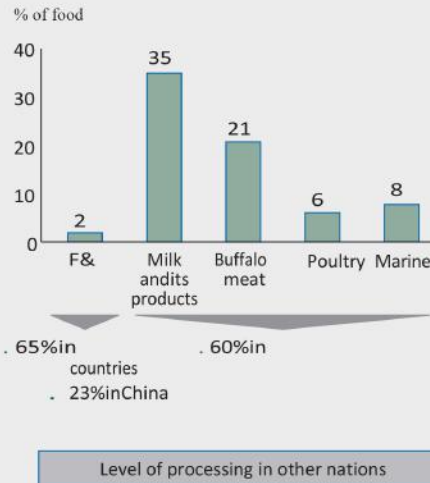
Food processing industry at a very nascent stage in India

Food processing is ~Rs. 5,500 billion industry and has been growing @ 10% for the last seven years



Sources: IndiaStat, MOFPI Annual report.

Level of processing significantly low as compared to developed nations



d) Retailers:

Retailers have a large role in promoting sustainable consumption and production, occupying a unique position in the lifecycle chain of products as a 'gatekeeper' between producers and consumers. They can potentially play a big role in furthering the sustainability of consumption and production

Retailers offer a huge range of products and are in direct contact with a large network of suppliers, giving them the opportunity to stimulate the manufacturing and development of more sustainable products. Through their interactions with consumers, retailers can influence the kind of products that are bought and how they are disposed of.

From the retailer's perspective, possible environmental initiatives can be divided into three categories:

1. What retailers choose to sell and how it is produced (upstream activities in the product chain).
2. How retailers sell (in-store activities).
3. How retailers communicate with consumers (downstream activities in the product chain).

Retailers in the food industry sell both agricultural produce and processed food products directly to consumers in local stores. As the final link in the supply chain from producer to consumer, retailers drive demand for different foods in different regions, based on consumer demand. Retailers' buying patterns affect inventory planning all the way the supply chain, ultimately affecting what farmers choose to produce.

Strengthening Partnerships in Food Value Chain



Food Supply chain partnerships, also known as channel partnerships, occur between buyers and sellers at every level of the supply chain. Participants in supply chain partnerships include farmers, distributors, retailers, raw goods suppliers and more.

Some value chain arrangements are rather loose arrangements while others involve intensive vertical coordination that come very close to complete ownership integration with subcontractors operating more as workers than as independent entrepreneurs. Some

contracts are initiated by downstream buyers such as processing companies, slaughterhouses, or supermarkets, while others are initiated by upstream suppliers such as feed milling companies, or by farmers themselves, perhaps organized in farmer groups or cooperatives.

Some contracting arrangements are rather basic, involving two contracting parties at successive stages in the chain, while other value chain structures are more complex, linking multiple stages in the chain and involving multi-stakeholder agreements and partnerships. Partnerships has the following advantages

- A forecast of decision among the supply chain
- Helps to take control over factors including cost, material , security & Finance
- Provides access to newer segments , opportunities and expansion
- Inculcate innovation & New resources

Strengthening partnership may include various open ended forms, including alliances, contractual, time bound alliance, traders contract, joint ventures and mergers etc . It may also include informal collaboration between various segments which is likely to develop a pool of possibilities along the value chain.

“Supply chain partnerships run into problems because, on the supplier’s side, the measures of success focus on time, cost, and quality, whereas your perspective likely focuses on sales and revenue. A supply chain partnership only works if each party involved can meet with end customers’ expectations for quality and price while remaining individually profitable.” - Dr. Andrew S. Humphries

Key Points to consider for a successful partnership

- Strategy Planning for the resources requirement
- Based on required resources – Identify an appropriate partner
- Based on type of partner & Resource requirement – Select the type of Partnership

Types of Strategic Partnerships

Type	Function
Horizontal	Businesses in the same area (i.e. competitors) agree to collaborate in a way that will improve their market position.
Vertical	A business collaborates with companies in its supply chain (its suppliers and/or distributors). Vertical partnerships often allow businesses to minimize risk in the supply chain and obtain lower prices in exchange for long-term commitment. Also known as channel partnerships or supply chain partnerships.
Intersectional	Businesses from different areas agree to share their special knowledge for the advancement of all partners.
Joint Venture	Two or more businesses form a new company. The new company is its own legal entity, and its profits are split according to terms spelled out in a formal contract.
Equity	A company acquires a minor equity stake in another business in exchange for a monetary investment. Such exchanges can accompany other types of collaboration and, to a certain extent, agreed-upon access to decision making.

Key Conditions for Successful Partnerships

Partnerships among various stakeholders is a complex modal, stakeholders with different business models, regional culture and ethics tends to develop business differences with time .To execute a successful and long run partnership some points are to be considered strongly.

1. Value addition for both parties
2. Formalized goal alignment
3. Stakeholder embeddedness
4. Stakeholder involvement
5. Risk- and resource sharing
6. Shared (decision making) processes
7. Formalized governance structures
8. Clear roles and contributions
9. Trust building
10. Transparency

Additionally, collaboration presents the highest strategic level of engagement and implies that the partners share risks, resources and rewards . This also entails a formalization of governance structures, including contractual arrangements to specify objectives, activities, roles and responsibilities.

Trust building between partners' representatives is essential in partnerships, next to better understanding and enhanced relationships On the contrary, distrust – “the perceived and behaviourally manifested assessment of great risks that result from interaction with others”- can disrupt interactions between partners as a result of covert behaviour, opportunism and communication.

Transparency, prosperity and control are breeders of trust and decrease risk . An institutional approach on value chain partnerships allows us to link their internal dynamics with external effects. The overall assumption underlying this relationship is that the more value chain partnerships meet the key conditions for fruitful collaboration, the higher the likelihood that they achieve institutional change, i.e. mitigate or remove a number of institutional barriers to upgrading for small-scale value chain ac.

Connecting Farmers with Technology



Connecting Farmers with Technology

Modern farms and agricultural operations work far differently than those a few decades ago, primarily because of advancements in technology, including sensors, devices, machines, and information technology. Today's agriculture routinely uses sophisticated technologies such as robots, temperature and moisture sensors, aerial images, and GPS technology. These advanced devices and precision agriculture and robotic systems allow businesses to be more profitable, efficient, safer, and more environmentally friendly.

According to a new market intelligence report by BIS Research, the global smart farming market is expected to reach \$23.14 billion by 2022, rising at a compound annual growth rate (CAGR) of 19.3% from 2017 to 2022.

Importance of Agricultural Technology

Farmers no longer have to apply water, fertilizers, and pesticides uniformly across entire fields. Instead, they can use the minimum quantities required and target very specific areas, or even treat individual plants differently. Benefits include:

- Higher crop productivity
- Decreased use of water, fertilizer, and pesticides, which in turn keeps food prices down
- Reduced impact on natural ecosystems
- Less runoff of chemicals into rivers and groundwater
- Increased worker safety

In addition, robotic technologies enable more reliable monitoring and management of natural resources, such as air and water quality. It also gives producers greater control over plant and animal production, processing, distribution, and storage, which results in:

- Greater efficiencies and lower prices
- Safer growing conditions and safer foods
- Reduced environmental and ecological impact

Here are some examples of how modern technology can be used to improve agriculture:

1. Monitoring and controlling crop irrigation systems via smartphone

Mobile technology is playing an important role in monitoring and controlling crop irrigation systems.

With this modern technology, a farmer can control his irrigation systems from a phone or computer instead of driving to each field.

Moisture sensors in the ground are able to communicate information about the level of moisture present at certain depths in the soil.

2. Ultrasounds for livestock

Ultrasound is not only for checking on baby animals in the womb. It also can be used to discover what quality of meat might be found in an animal before it goes to the market.

The testing of DNA helps producers to identify animals with good pedigrees and other desirable qualities. This information can also be used to help the farmer to improve the quality of his herds.

3. Usage of mobile technology and cameras

Some farmers and ranchers use apps like 'Foursquare' to keep tabs on employees. They also put up cameras around the farm.

Livestock managers are wiring up their barn feedlots and pastures with cameras that send images back to the central location like an office or home computer. They can keep a closer eye on the animals when they are away or home for the night.

4. Crop Sensors

Crop sensors help apply fertilisers in a very effective manner, maximising uptake. They sense how your crop is feeling and reduce the potential leaching and runoff into ground water.

Instead of making a prescription fertiliser map for a field before you go out to apply it, crop sensors tell application equipment how much to apply in real time.

Optical sensors are able to see how much fertiliser a plant may need, based on the amount of light reflected back to the sensor.

Case Study - Ruchinilo Kemp

In April 2015, Ruchinilo graduated from IIT Guwahati with a Masters in Development Studies: “I was on the lookout for a programme that would not only help me create an impact, but would also help me explore myself. That’s when I learnt of the SBI Youth for India Fellowship through a senior,” recalls Ruchinilo.

Ruchinilo joined the Fellowship in August 2015, and began working with Seva Mandir, an NGO that deals with a variety of issues related to rural and tribal development.

A simple app devised by Ruchinilo Kemp is helping farmers in the remote villages of Udaipur district reach out to agriculture experts across the country.



Farmers across the country are similar in many ways. They worry about the monsoons, they pray for a good harvest, they spend sleepless nights fretting about the health of their crops and despair about getting the right price for their efforts – all with little to no guidance from experts in the field of agricultural sciences.

Farmers in Kotra Tehsil, however, have been breathing easy for the last few months. They have all the information they need to deal with each of these situations right at their fingertips.

Today, a farmer from the small village of Cheekla can connect with professors in Udaipur’s Maharana Pratap Agriculture University and find a way to revive his dying crops. Experts from the Krishi Vigyan Kendra can help a farmer deal with his diseased crops by assessing the situation through photographs and videos. Farmers from Gura and Buriya can, through texts in their mother tongue, reach out to scholars at the Indian Council of Agricultural Research in Delhi. All thanks to Ruchinilo Kemp and his app.

“The objective is to connect farmers with individuals who are experts in the agriculture sciences in order to promote knowledge sharing and sharing of best farming practices,” Ruchinilo elaborates.

With the app, a farmer can reach out to five experts in different parts of the country. He can communicate using photographs, videos or even text messages in his mother tongue.

Government Initiatives

YEAR : 2014-15

1. Creation of a Special Fund of Rs. 2000 crore in NABARD

Availability of affordable credit to Mega Food Parks and food processing units set up therein Rs. 465 crore sanctioned to 12 number of Projects and Rs. 91 crore disbursed

2. Launched Investors Portal

Information on potential and opportunities for investment in the food processing sector and incentives provided by the Central and State Governments were made available to the prospective investors at a single point. The queries of the investors were received and answered through the portal guiding them and making it easier for them to take decision

3. Strengthened Grievance Redressal System

Under the infrastructure schemes of Mega Food Parks and cold chain, a committee of three Independent Monitors was constituted to address the grievances of the applicants whose proposal for Mega Food Parks and Cold Chains could not be selected. The committee also provides personal hearing to the applicants before disposing of their grievances

4. Food Map of India

The Food Map enables investor to take decision with regard to locating their projects as the food map showed mapping of the potential of food processing in surplus production areas

5. Streamlining Project Monitoring process

The close monitoring of the projects regularly led to completion of three Mega Food Parks in comparison to two projects in previous six years and completion of 14 cold chain projects as against 12 in last six years. This has also lead to significant improvement in utilization of plan fund allocation nearly 200% in all the schemes

6. Excise Duty on Machinery reduced from 10% to 6%

The reduction of duty resulted in reduction in cost of investment in the food processing projects and enhancing viability of the projects

Year 2015-16

1. Food and agro-based processing unit and cold chain infrastructure have been classified under agriculture activities for Priority Sector Lending

Availability of additional credit for food processing activities and infrastructure

2. Service Tax on pre-conditioning, pre-coding, ripening, waxing, retail packaging and labelling of fruits and vegetables exempted in cold chain projects This is a big relief in terms of tax exemption to the cold chain operators as this facility was only available to the farmers at farm gate but not to the cold chain operators

This enhanced the viability of cold chain projects, encouraging more investment in the sector.

Year 2016-17

1. Permitting 100% FDI in retail trade including E-Commerce of food products manufactured and or produced in India

This has enhanced investment opportunities in India globally and have generated interest among the leading world food retailers for making investment in India. Three companies M/s Super Market Groceries Supplies Pvt Ltd. M/s Grofers India Pvt Ltd and M/s Amazon Corporate Holdings Pvt. Ltd. have already submitted their proposals for seeking permission to make investment of US \$ 695 million over a period of time

2. To enhance the transparency and reduce human interface on-line software has been developed and put in use for filing of claims for the infrastructure development projects. This has also being expanded to other schemes.

On-line software has resulted in quicker disposal of the claims for grant by the projects and resulting in acceleration of the progress on the grant

3. Setting up of investment tracking and facilitation Desk of Invest India in the Ministry

The desk will identify new potential investors and approach them in a focussed and structured manner for investment and follow-up the investment cases by providing hand holding services.

The desk will also assist Ministry in organising road-shows both in India and abroad and organising investment meets.

4. The Schemes of the Ministry have been restructured and new schemes have been launched under proposed SAMPADA.

The SAMPADA Scheme will target creation of Infrastructure and increasing capacities of processing and preservation in entire supply chain of food processing sector right from farm gate to retail outlets.

The New Scheme will help in integrating food processing units and food trade with the farmers creating huge opportunities for employment of increasing income of the farmers.

5. Excise Duty reduced from 12.5% to 6% on refrigerated containers

The reduction of duty resulted in reduction in cost of investment in the food processing projects and enhance their viability.

YEAR 2017-18

1 . e-NAM to be expanded from 250 to 585 APMCs. e-NAM Market to have primary processing facilities. e-NAM will be provided assistance for creating primary processing to cleaning, grading, packaging

This will encourage and make easier direct procuring of raw-material by the processing units and retail traders resulting in increased income to farmers. Primary Processing will increase value addition of the farmers produce and fetch better price. This will also lead to quality consciousness

2. Model Law on Contract Farming to be prepared to integrate farmers

The Contract Farming Law will integrate backward integration of the food processors with the farmers and attracting investment in post harvest management activities leading to increased benefit to the farmers and reduction in wastages.

3. A Dairy Processing and Development Fund of Rs. 8000 core to be set up in NABARD

The Fund will be used to modernize old and obsolete milk processing units particularly in cooperative sector and will result in enhancing milk processing capacity thereby adding more value to the produce of the farmers and increasing their income

4. National Policy on Food Processing

The policy will provide a road map for holistic development for the food processing sector, the potential and opportunities for the growth of supply chain and promote food processing in the country to create employment opportunities and ensure wellness of the farmers.

5. World Food India, 2017

Ministry of Food Processing and Industries had organised World Food India 2017 from 3rd to 5th November, 2017 in Delhi to showcase investment potential of India in the food processing sector and attract investment in the entire supply chain for inclusive development.

Sustainable Food Value Chain – A new Paradigm



Sustainable Food Value Chain – A new Paradigm

A food value chain (FVC) consists of all the stakeholders who participate in the coordinated production and value-adding activities that are needed to make food products.

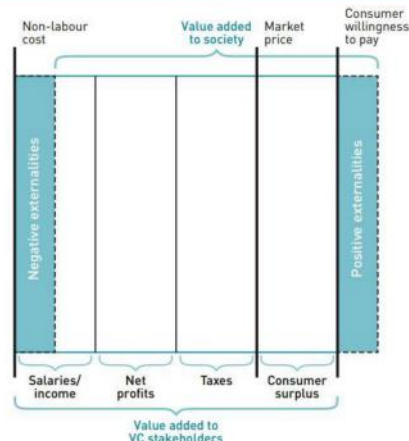
A sustainable food value chain is a food value chain that:

- is profitable throughout all of its stages (economic sustainability);
- has broad-based benefits for society (social sustainability);
- has a positive or neutral impact on the natural environment (environmental sustainability)

The SFVC concept recognizes that value chains are dynamic, market-driven systems in which vertical coordination (governance) is the central dimension and for which value added and sustainability are explicit, multidimensional performance measures, assessed at the aggregate level.

In the SFVC framework value-added refers to the difference between the non-labor cost of producing food and the consumer's willingness to pay for it, adjusted for externalities

A breakdown of the concept of value added



Source : fao.org

A central notion demonstrated in Figure 1 is that SFVC development is not merely about linking smallholder farmers to a particular value chain. Four other types of value added are created, some of which may be even more important than linking smallholders to the FVC, such as job creation and consumer benefits. Most rural poor people, including most subsistence farmers, can likely be expected to escape poverty sustainably only through securing decent jobs – most people derive their livelihoods from jobs, not from running a business (and farming is a form of business). Similarly, if an FVC develops in ways that enable it to deliver healthier, cheaper food in greater abundance, there will be a large developmental impact, even without any additional smallholder farmers being included in the chain, as everybody consumes food.

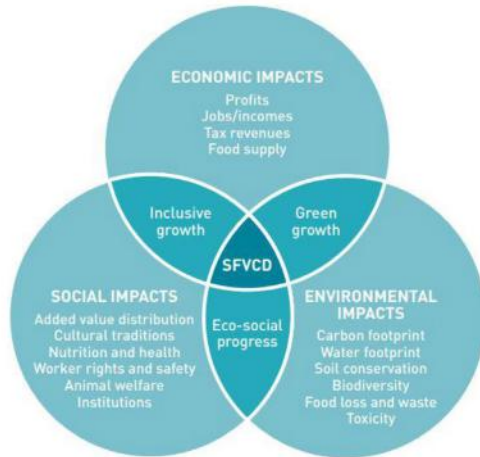
The Concept of Sustainability

In SFVC development, a holistic triple bottom line approach is followed, in which there are three main dimensions to sustainability: economic, social, and environmental.

The SFVC framework is also explicit on the meaning of sustainability, to avoid giving rise to misunderstandings. In SFVC development, a holistic “triple bottom line” approach is applied, which recognizes three main dimensions of sustainability: economic, social and environmental (Figure 2). In the economic dimension, a value chain is considered sustainable if the activities carried out by each stakeholder are commercially viable, or fiscally viable for public services. In the social dimension, sustainability refers to socially and culturally acceptable outcomes in terms of the distribution of benefits and costs associated with the increased value creation. In the environmental dimension, sustainability is determined by the ability of value chain actors to generate positive or neutral impacts on the natural environment from their activities. By definition, sustainability is a dynamic concept in that it is cyclical and path-dependent: the sustainability of a value chain's performance in one period strongly influences its performance in the next one.

SFVC development provides a flexible framework for addressing many of the challenges facing food system development.

Sustainability in food value chain development



Source:fao.org

Misunderstanding of its fundamental nature can easily result in limited or unsustainable impact. Even when practitioners understand and rigorously apply the principles of SFVC development, the approach cannot solve all the problems in the food system. FVCs cannot provide incomes for everyone, cannot incorporate trade-offs at the food system level, and cannot always avoid all the negative impacts for all stakeholders and all elements in the environment. Public programmes and national development strategies are needed to address these limitations. However, such programmes and strategies are largely financed through tax revenues generated in FVCs, thus placing value chain development in general, and SFVC development in particular, at the

heart of any strategy aimed at reducing poverty and hunger in the long run.

Road Ahead & Recommendations

Indian Agriculture is growing over time, there are a few implications that need to be considered for Indian nutritional security. As per estimation the population of India will reach 1.4 billion by the year 2020. This population blast, along with growing income is expected to catapult the demand for food grains and other allied grain crops. Considering these aspects, the agriculture of India has to touch a better growth rate of 4% each year. This acceleration will improve the GDP growth and also make it more inclusive.

Food value chains will require an approach to diagnostics that is more oriented to the private sector, as well as structured, inclusive public-private dialogue to help inform the design of a robust reform and investment program.

Current levels of investment in agricultural value chains are insufficient to achieve key development goals including ending poverty and hunger and boosting shared prosperity through more and better jobs. Crowding-in private investment in the agriculture sector can help achieve development goals and optimize the use of scarce public resources

Sources of finance for private sector investments in agricultural value chains are expanding. Sources include own-savings, local and international banks, value chains actors, impact investors, development financing institutions, private sector foundations, and agricultural investment funds. Factors that can help maximize finance for agricultural development include: Improving the enabling environment for the private sector, promoting responsible investment, improving the policy and regulatory environment; using public financing to improve private incentives and to reduce transaction costs and risks—including through blended finance.

There is still a critical need for public resources to finance essential public goods and services such as human capital, agricultural research, and complementary public infrastructure.

With a plethora of new models, the food marketplace is truly changed already. Expect the pace and number of changes to grow as companies experiment to find their place in the ecosystem and satisfy consumer demands. With a plethora of new models, the food marketplace is truly changed already. Expect the pace and number of changes to grow as companies experiment to find their place in the value chain and satisfy consumer demands.

- **Promotion of Bio-Fortified Crops:**

Integration of Bio-fortified crops into National nutrition policy and agriculture policy has a greater impact, the inclusion of fortified crops into mid-day meals can be another good option. In today's scenario it is very important to provide nutritious food to people. Promotion of Bio-fortified Crops will help in producing more nutritious crops.

- **Provision of Subsidy on Modern Agriculture Equipment:**

Locally Successful digital initiatives should be provided scale up capital by government/PE firms to ensure high quality services to maximum farmers and beneficiaries. There are innovative models for Corporate and donor agencies to fund such start ups which can be explored with governments.

- **Encouraging Private Sectors in Food Testing:**

Food testing services need to be streamlined by encouraging more private sector players and providing easy access to common public to these services. Food testing helps in quality control and the main objective of quality control is to identify contaminants in raw material, or contamination after a product is produced and before it is placed on the market.

- **Bringing Innovations in the Food Packaging Industry to ensure safe and healthy food:**

The quality of packaging and quality assurance is essential to ensure we ingest food items unaffected by the packaging material. The new technology packaging should ensure to have safe and healthy food.

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Today, ASSOCHAM has emerged as the fountainhead of Knowledge for Indian industry, which is all set to redefine the dynamics of growth and development in the technology driven cyber age of 'Knowledge Based Economy'.

ASSOCHAM is seen as a forceful, proactive, forward looking institution equipping itself to meet the aspirations of corporate India in the new world of business. ASSOCHAM is working towards creating a conducive environment of India business to compete globally.

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VISION

Empower Indian enterprise by inculcating knowledge that will be the catalyst of growth in the barrier less technology driven global market and help them upscale, align and emerge as formidable player in respective business segments.

MISSION

As a representative organ of Corporate India, ASSOCHAM articulates the genuine, legitimate needs and interests of its members. Its mission is to impact the policy and legislative environment so as to foster balanced economic, industrial and social development. We believe education, IT, BT, Health, Corporate Social responsibility and environment to be the critical success factors.

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ASSOCHAM represents the interests of more than 4,50,000 direct and indirect members across the country. Through its heterogeneous membership, ASSOCHAM combines the entrepreneurial spirit and business acumen of owners with management skills and expertise of professionals to set itself apart as a Chamber with a difference.

Currently, ASSOCHAM has more than 100 National Councils covering the entire gamut of economic activities in India. It has been especially acknowledged as a significant voice

of Indian industry in the field of Corporate Social Responsibility, Environment & Safety, HR & Labour Affairs, Corporate Governance, Information Technology, Biotechnology, Telecom, Banking & Finance, Company Law, Corporate Finance, Economic and International Affairs, Mergers & Acquisitions, Tourism, Civil Aviation, Infrastructure, Energy & Power, Education, Legal Reforms, Real Estate and Rural Development, Competency Building & Skill Development to mention a few.

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ASSOCHAM Contacts

assocham@nic.in

The Associated Chambers of Commerce and Industry of India (ASSOCHAM)

Corporate Office:

5, Sardar Patel Marg, Chanakyapuri, New Delhi - 110 021

Tel: 011 4655 0555 (Hunting Line) • Fax: 011 2301 7008, 2301 7009

Website: www.assocham.org

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5, Sardar Patel Marg, Chanakyapuri, New Delhi-110 021
Tel: 011-46550555 (Hunting Line) • Fax: 011-23017008, 23017009
Email: assochem@nic.in • Website: www.assochem.org

ASSOCHAM REGIONAL OFFICES

Ms. Uma Shashi Nair, Regional Director

#F1, First Floor, Richmond Plaza, No. 10 & 10/1,
Raja Ram Mohan Roy Road, Bangalore-560 025
Tel: 080-41132467/41131891/41134838; Mb: 9036333975
E-mail: umasnair@assochem.com

Mr. Vipul Gajingwar, Regional Head

608, 6th Floor, SAKAR III, Opposite Old High Court
Income Tax Cross Road, Ashram Road, Ahmedabad-380 014, Gujarat, India
Tel: 079-2754 1728-29/2754 1876; Mb : 9810825894
E-mail: Vipul.bg@assochem.com

Mrs. Perminder Jeet Kaur, Regional Director

18, Ballygunge Circular Road, Kolkata-700 019
Tel: 91-33-4005 3845/41; Fax: 91-33-4000 1149; Mb: 9674312234
E-mail: Perminder.kaur@assochem.com

Mr. Bharat Jaiswal, Regional Director

503/D, Mandir Marg-C, Ashok Nagar, Ranchi-834 002
Tel: 0651-6555601 /65555801/ 2242443; Mb: 9971047550
E-mail: bharat.jaiswal@assochem.com

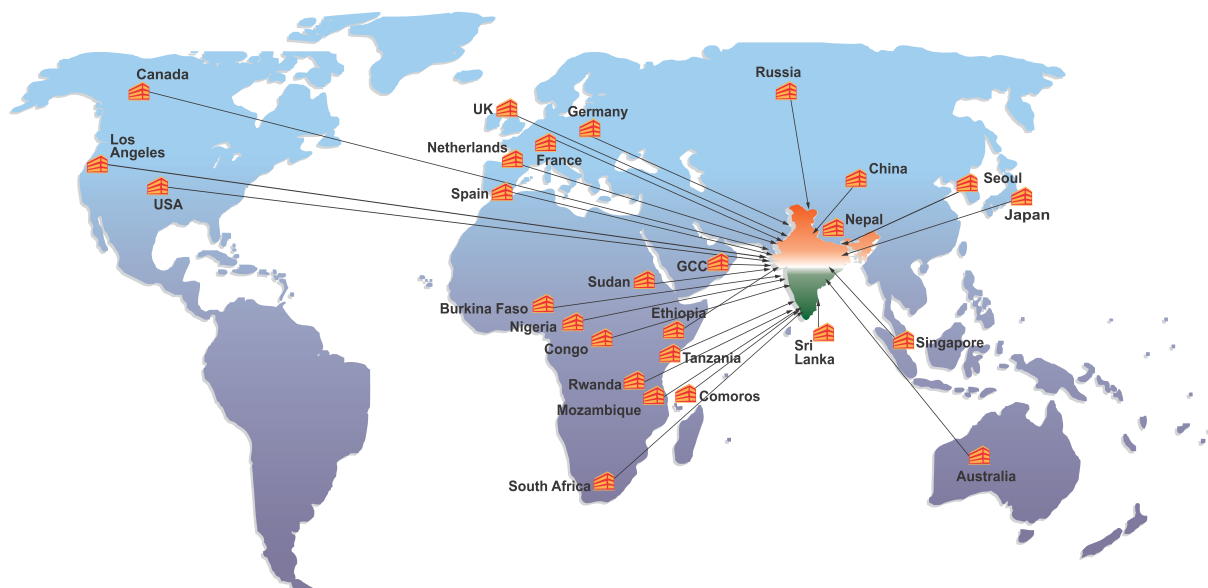
Mr. Gourav Mahajan, Regional Director

SCO: 55, 56, 57, II Floor
Sector- 8C, Madhya Marg, Chandigarh- 160008
Phone: 0172-4800855, 4800865, Mb : 9876438111
Email : gourav.mahajan@assochem.com

ASSOCHAM Jammu and Kashmir Chapter

SHREE TOYOTA, Batra Group Complex,
Milestone Zero, Narwal Bala,
Jammu - 180001, India.

ASSOCHAM OVERSEAS 28 OFFICES



The pictorial presentation of the world map does not purport to be the political and geographical maps of the world and India and is not drawn to scale. This is only indicative.

ASSOCHAM International Department

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Contact Details

Delhi NCR Office:

903-904, Tower C,
Unitech Business Zone, Nirvana Country,
Sector 50, Gurgaon – 122018
Tel No. : 0124-4754550
Fax No. 0124-4754584

Kolkata:

CFB F.1, 1st Floor, Paridhan Garment Park,
19 Canal South Road, Kolkata . 700015
Tel. No. : 033.64525594
Fax No. : 033.22902469

Mumbai

303, Central Plaza, 166 CST Road, Kalina,
Mumbai, Maharashtra 400098
Tel No. : 022-67080400/1/2/3

Jaipur

197, Laxminath Bhawan, Church Road,
M I Road, Jaipur, Rajasthan 302001

www.resurgentindia.com

info@resurgentindia.com

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ASSOCHAM Corporate office

The Associated Chambers of Commerce and Industry of India
5, Sardar Patel Marg, Chanakyapuri, New Delhi 110 021. India

Tel: 011 4655 0555 (Hunting line), 011 4655 0514 (Direct)

Fax: 011 2301 7008, 2301 7009

www.assochem.org

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