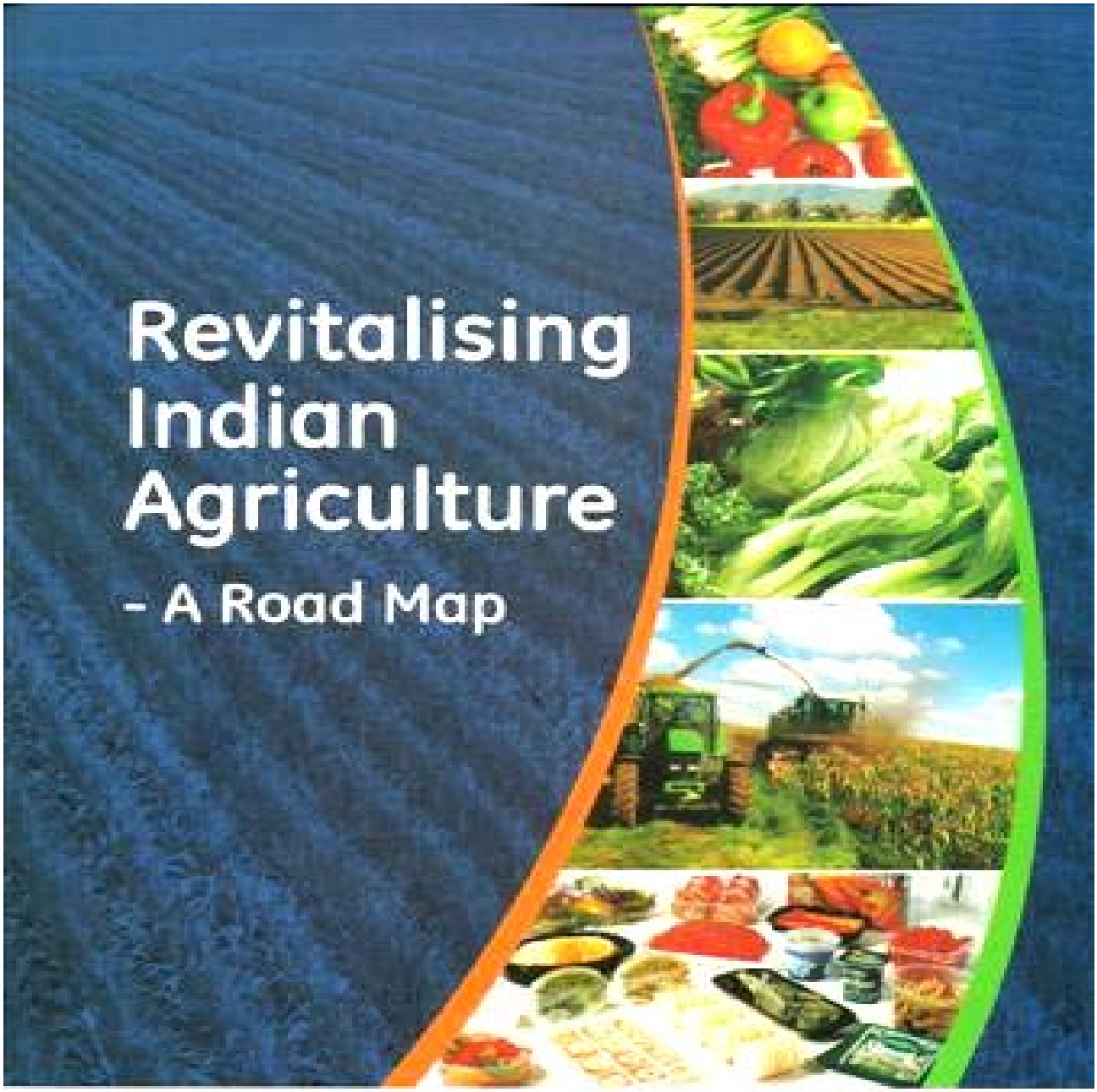

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Knowledge Partner

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Contents

EXECUTIVE SUMMARY

Rapid economic growth and increasing population is demanding more from agriculture than ever before, leading the country back to a situation of food scarcity. Projections indicate that the population of India would cross the 1.6 billion mark by 2050, resulting in a foodgrain demand of more than 450 million MT– about twice the current demand. Ironically, on the supply side, weakening agricultural performance marked by stagnant productivity growth and decreasing total food facto productivity is compounding the challenge.

These trends necessitate an urgent framework to bring back agriculture in the national policy so as to facilitate another paradigm shift in the progress of agricultural development in the country.

Domestic food demand trends clearly indicate that there is a need for a national campaign to grow more food in the country using environmentally sustainable and socially inclusive technologies. In order to achieve this, there is an urgent need to focus on key enablers of change and develop a time-bound, goal oriented and comprehensive blueprint & road map for revitalizing the farm sector on a pan-India basis so as to ensure food self sufficiency for our next generation.

The declining trend in public sector agricultural investment needs to be reversed by augmenting agricultural credit and increasing allocation for agriculture. Significant investments are needed by both the private and the public sector, to ensure a sustained agricultural growth of 4 percent per annum.

Public-private partnerships are vital to increase agricultural output and accelerate growth of the food processing sector. The industry needs to work with agricultural producers along with the state appointed agencies to minimize post-harvest losses and ensure that the quality of produce is not compromised.

This knowledge report produced by YES Bank emphasizes on the need to create a roadmap for agribusiness so that the country can be prepared to meet the rising food demand from within and outside.

INTRODUCTION

India has the second-highest population in the world, accounting for more than one-sixth of the world's population. A population of 1.2 billion people growing at about 1.5 percent a year in itself is a major driver for the food market. Moreover, strong macroeconomic fundamentals of India during the recent past have had a dramatic impact on the demographic and socio-economic environment resulting in higher demand for high value food products including processed food.

Agriculture accounts for 14.2 percent of the country's gross domestic product, compared to 51 percent in the 1950s. The sector supports an estimated 70 percent of the Indian population, but it is also the most sluggish sector in terms of growth. After a bout of negative growth period, from -0.1 percent in 2008-2009 to rise to an unspectacular 0.4 percent in 2009-2010, the sector has now turned around with around 5.4 percent growth expected for 2010-11.

India's economic growth has put into motion factors such as increasing private final consumption expenditure and disposable incomes. A large part of the increase is going towards increased expenditure on food.

India's growing population has to be fed, and that will need some drastic and dramatic changes in the way agriculture is being run. It needs to be borne in mind that with economic growth, the diet of large segment of India's population is changing: there is far greater demand for dairy and meat products, and this is an area that will demand special attention. It also means that the rate of increase in food consumption will be higher than the rate of population growth.

Though policy makers have initiated action to re-invigorate Indian agriculture, a lot more focus needs to be brought in to increase efficiency and innovation in agricultural development. Some key enablers for this progress include building structural efficiencies for service delivery in agriculture, facilitating private participation in building up knowledge and infrastructure creation.

Vast uncommon opportunities to harness agricultural potential still remain, which can be tapped to achieve future targets. There are serious gaps both in yield potential and technology transfer as the national average yields of most of the commodities are low, which could be harnessed if addressed properly now.

A. REVITALISING AGRICULTURAL PRODUCTION & AVAILABLE SURPLUS

- ✓ In the last few decades, India's agriculture sector has witnessed spectacular advances in terms of agricultural production and productivity.

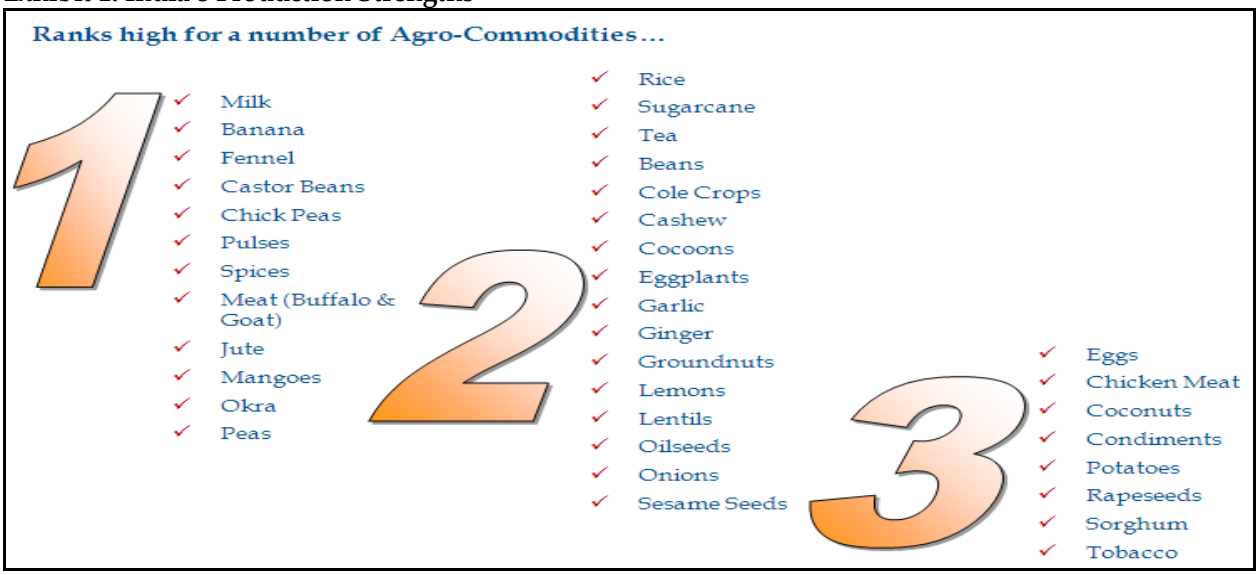
- ✓ India is the world's largest producer of milk and edible oils, and the second-largest producer of rice, wheat and sugar.

- ✓ A record foodgrain production of 241.56 million tonnes has been achieved in the crop year 2010-2011 due to sustained efforts to increase credit, active procurement by the government at minimum support price, better supply of seeds and fertilizers.

- ✓ India is the world's second-largest producer of fruits and vegetables. The country's output of fruits and vegetables increased by 3.7 percent to over 213 million tonnes in 2010-11 from 205.24 million tonnes a year ago.

- ✓ The increase in food grain production from 104.67 million tonnes in 1973–74 to 241.56 million tonnes in 2000–10, can be largely attributed to the usage of agri inputs, including fertilisers, high yielding varieties (HYVs) of seeds, pesticides, surface irrigation and mechanized farming.

Exhibit 1: India's Production Strengths

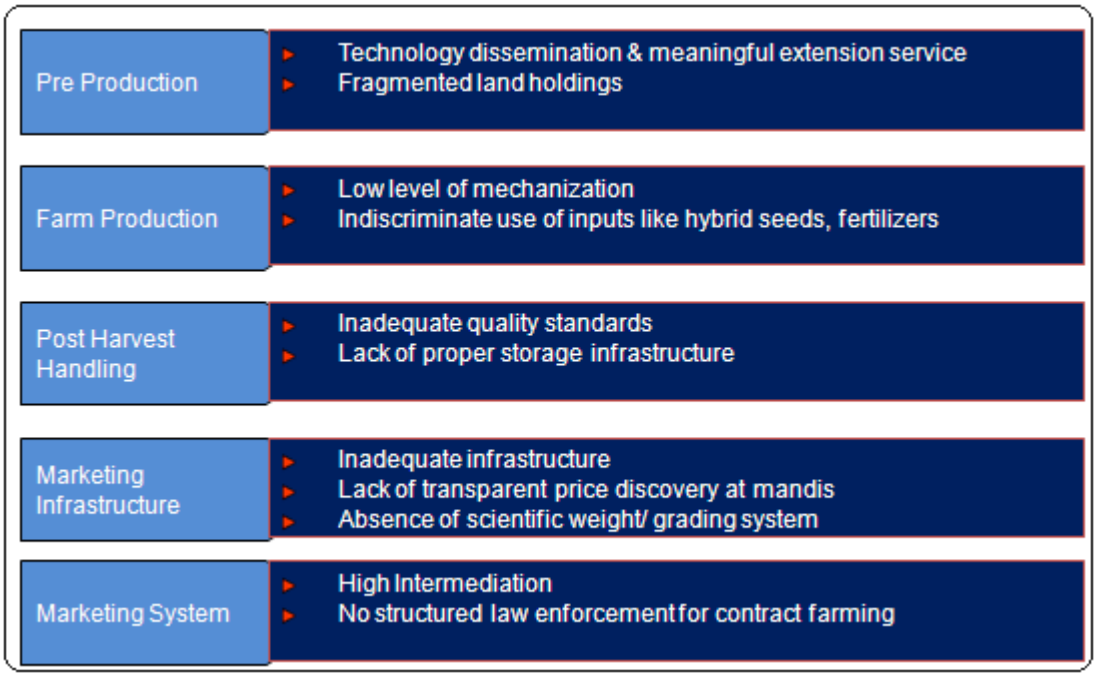


Source 1: Yes Bank Analysis

Food demand projections

- ✓ Credit Suisse in its report 'Asian Food and Rural Income' warns that India stands on the brink of losing its much cherished self-sufficiency in food.
- ✓ Demand for food is likely to grow at a rate of 3-3.5 percent p.a. over the coming years, driven by population growth.
- ✓ As per Indian Council of Agricultural Research estimates, India will need to produce 280 million tonnes of foodgrains by 2021. To meet this requirement, foodgrains output needs to grow by 2 percent annually.

Issues



Roadmap

Pre-production

- ✓ Greater attention must be given to the development of pre-harvest technologies that will facilitate agricultural diversification particularly towards intensive production of fruits, vegetables and other high value crops by methods such as preparing the seed bed, crop diversification, fumigation etc.

- ✓ At the same time, research and extension agendas should be determined by explicitly defined farmers' needs through an understanding of the existing farming systems rather than perceptions by research scientists or extension functionaries. Extension mechanisms will have to address diversification demands.

- ✓ The average per capita operational size of land holding in India is 1.33 ha, which is far below the world average of 3.7 ha per person. Further, land holdings have shown a marginal decrease from the holding size of that of a decade ago (1.41 ha). Contract farming and Co-operative farming initiatives can be a tool for farmers to collaborate for joint activities that could range from ploughing to harvesting operations and beyond. To ensure farmer-centric agricultural development, land consolidation efforts for good quality and efficient farming needs to be undertaken.

Farm production

- ✓ There is a strong need for mechanization of agricultural operations as various operations such as land leveling, irrigation, sowing and planting, use of fertilizers, plant protection, harvesting and threshing need a high degree of precision to increase the efficiency of the inputs and reduce the losses. Suitable policies such as liberalizing land lease market, encouraging cooperative management and custom hiring of machinery, imparting training to the farmers and encouraging standard service inputs. Technical know-how should be provided to the farmers with respect to appropriateness of farm machinery for the situation and for its proper use. A standardized and quality-marking centre of farm equipment should be established in potential areas of the country.

- ✓ Reliance on chemical fertilisers and pesticides has affected soil health. Besides, the gap in nutrient application and what is depleted by the crop has also increased. Use of farm compost and recycling of crop residues should be implemented for the soil to remain productive. Farmers are required to adopt a wider range of inputs and practices to develop their farming skills in more efficient use.

Post-harvest handling

- ✓ Lack of proper handling (cleaning, sorting, grading and packaging) at the village level is also leading to wastage and quality deterioration. High attention should be given to develop post-harvest handling not only to reduce the heavy post-harvest losses but to also improve quality through proper storage, packaging, handling and transport. The role of biotechnology in post-harvest management and value addition deserves to be enhanced.

Marketing Infrastructure

- ✓ Inadequate infrastructure has long been an issue of concern. Nearly 51 percent of the villages are still not connected by roads, while railway freight turnaround times are slow with limited availability of refrigerated freight vans. There is an urgent need to make long term investments in building rural roads, markets, water conservation facilities. The government needs to develop a new act, which should focus on strengthening and modernizing marketing infrastructure by attracting private investment.

- ✓ There is a need to reform 'mandis' not only in terms of transparent price discovery but also in terms of better remuneration for producers. Provision for grading and standarization of produce, standarisation of weight and measures needs to be incorporated. Professionally managed Wholesale Markets should be encouraged. This will attract private investment in creation of much needed marketing infrastructure, create competition and ensure better service to the farmers.

Marketing system

- ✓ Agricultural marketing system is the critical link between farm production sector on the one hand and non-farm sector, industry and urban economy on the other. However, the agricultural marketing system in India is dominated by intermediaries such commission agents, wholesalers etc. Integrated marketing chains with fewer intermediaries could offer farmers a higher share of the consumer rupee.

- ✓ Market reforms and investments which can reduce the transactions costs of small farmers in the supply chain will be beneficial not only for the farmer but also for agricultural growth. There is a need to work towards creating linkages with the private sector, helping the farmers to grow what the market wants and also get the appropriate prices by rationalizing the number of intermediaries (reducing the intermediation chain).

- ✓ In regards to contract farming, in case of any violation of contracts from the company's side, the Government should come to the rescue of the farmers. Also, the role of local NGOs in closely monitoring the companies and the farmers becomes important here to avoid small farmer exploitation. NABARD should evolve a policy for collateral security between the company and contractual farmers. Also, private insurance companies should insure the crop in the event of crop failure or natural calamities.

B. ENHANCING AGRI PRODUCTIVITY

- ✓ The period between 1950 and 2010 saw an unprecedented increase in foodgrain productivity from 522 kg/ha to as much as 1798 kg/ha.
- ✓ Agri inputs, including fertilisers, high yielding varieties (HYVs) of crops, pesticides, surface irrigation and mechanized farming has been primarily responsible for the growth in agricultural productivity. Since the green revolution technology involved use of modern farm inputs, its spread led to fast growth in agro input industry.

Exhibit 2: Foodgrain Yield For The Last 6 Decades (kg/ha)

1950-51	1960-61	1970-71	1980-81	1990-91	2000-2001	2009-2010
522	710	872	1023	1380	1626	1798

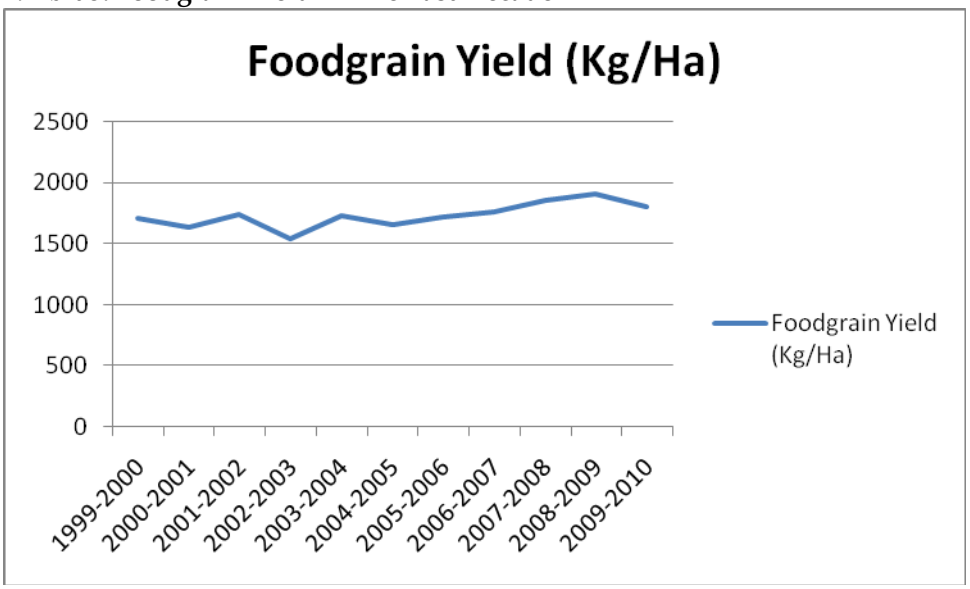
Source 2: Directorate of Economics & Statistics

- ✓ This period saw the beginning of agrarian reforms, institutional changes and development of major irrigation projects. Redistribution of land ownership in favour of the cultivating classes was implemented through measures like land ceiling act, providing security of tenure and regulation of rent. Cooperative credit institutions were strengthened to minimize exploitation of cultivators by private money lenders and traders.
- ✓ Research and development into new seed varieties, spread of technology, rural extension activities, strengthening of farm input supply, credit availability and price support to farmers were the prime focus areas of the policy makers, which led to improvement in agri productivity.

Stagnating Productivity

- ✓ However, the increase in foodgrain productivity in the last ten years has nearly stagnated as can be seen from the figure below. From 1626 kg/ha in 2000-2001, yield increase has only been marginally up at 1798 kg/ha during 2009-2010. The productivity of food grains has remained stagnant in the last decade growing at a CAGR of just about one percent in the last decade (FY 2001 to FY 2010) compared to a growth of 2.4 percent in the previous decade (FY 1991 to FY 2000).

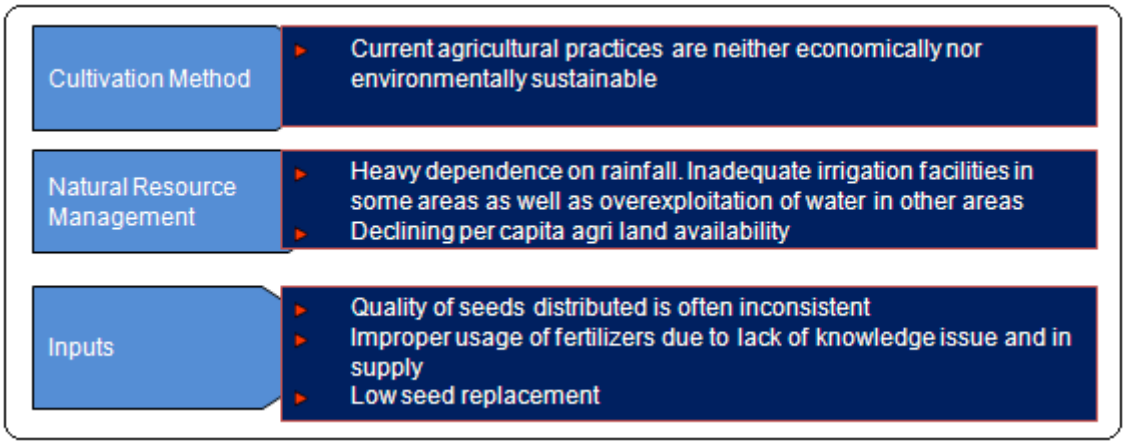
Exhibit 3: Foodgrain Yield In The Last Decade



Source 3: Directorate of Economics & Statistics

Issues

Agricultural productivity in India when compared to other countries is comparatively low due to the following factors:



Roadmap

Cultivation methods

- ✓ Farming practices in India need to shift from non-renewable chemical-based intensification to ones that draw on biodiversity and natural resources to increase the productivity of the crops.

- ✓ The incorporation of scientific principles of ecosystem management into farming practices, such as preparing the soil before seeding, soil conservation and integrated pest management has shown that intensified production can be enhanced through sustainable management of ecosystems.

- ✓ Conservation and enhancement of biodiversity in cropping systems are also part of the foundation of sustainable farming practices. Farmers need to be educated about the benefits of pre-cooling, fumigation, de-sapping, correct picking method, sorting and grading of the agri produce.

- ✓ Investment in advanced farm technologies such as drip irrigation systems, customized and appropriate farm machinery and specialty plant and animal health protection chemicals also holds immense potential.

Inputs

- ✓ India is one of the largest producers as well as consumers of fertilizer in the world. The country's total consumption of fertilizers for the year 2008-2009 is 249.09 lakh tonnes, which is an almost four fold rise from 60.64 million tonnes in 1981-1982. To meet the increasing fertiliser requirements of the country, a conducive and stable policy environment, availability of raw materials, capital resources, and price incentives will play a critical role.

- ✓ Also, solutions like organic fertilizers, vermi-composting technology, bio-fertilizers, farm compost should be adopted. Integrated soil-water-irrigation-nutrient management should be aggressively promoted to bridge the yield gaps in most field crops.

- ✓ Timely and adequate supply of quality seeds**,** pesticides**,** farm implements, plant protection equipments and technology programs need to be ensured by Agricultural Department and other extension agencies of State. There is also an urgent need for information programs on pest management, pesticide management and for hybrid seeds.

Natural resource management

- ✓ For agriculture to achieve a growth rate of 4 percent, irrigation sector should grow by at least 5 percent per annum (assuming 1 percent growth in rain-fed sector). This can be achieved by rainwater harvesting, groundwater recharging measures and controlling groundwater exploitation, watershed development, and treatment of waterlogged areas.

- ✓ What is also urgently required is formulation and implementation of an integrated water use policy. Several international initiatives on this aspect have been taken in recent years. India should critically examine these initiatives and develop a country - specific system for judicious and integrated use and management of water.

- ✓ A national institution should be established to assess the various issues, regulatory concerns, water laws and legislations, research and technology development and dissemination, social mobilization and participatory and community involvement.

- ✓ There is an urgent need for a perspective plan for the management and development of wastelands in the country.

- ✓ Land degradation monitoring is needed to formulate conservation strategies for the sustainable use of land resources. Integrated Water Shed Management is one of the ways through which this can be checked. It involves constructions such as check dams along the gullies, bench terracing, contour bunding, land leveling and planting of grasses along the contours etc.

- ✓ The existing land use policy failed to bring right results due to lack of integrated approach to different components of agriculture such as land, soil and water. There is a need for public and private initiative on several fronts - increased investment in resource management, research and extension, research to develop suitable and more sustainable cropping patterns and rotations and special incentives to invest in bio inputs like gypsum that helps reclamation of salt affected soil.

C. RE-ALIGNING AGRICULTURAL RESEARCH AND DEVELOPMENT

- ✓ India has invested considerably in its public agricultural research system during the past few decades. As a result India now ranks fourth in terms of total investments in public agricultural R&D in the world, following United States, Japan, and China.
- ✓ However, according to a UNDP 2008 report, India's allocation for R&D was just 0.8 percent of its GDP whereas that of China was 1.2 percent and that of the US was 2.7 percent. Japan spends more than 3 percent of its GDP on R&D.

Roadmap

- ✓ With Indian agriculture catering to the global market, there is a need to revisit agricultural research in terms of investments and research focus as agri production has now become intensive and commercial in nature with diversified crop offerings. Public extension system will need to be redefined with focus on knowledge-based technologies to upgrade and improve the skills of the farmers.
- ✓ The new technologies should be developed through a consultative process between agricultural scientists, extension workers and farmers so that R&D outputs will be tailor-made to the needs of the farm community. Agri R&D needs to bridge the gap between the lab and the farm and address farmer concerns in a more structured manner. There is a need to strengthen adaptive research and technology assessment and transfer capabilities of the country so that the existing technology transfer gaps are bridged.
- ✓ In view of high variability in agro-climatic conditions in such unfavorable areas, research has to become increasingly location-specific with greater interaction with farmers to generate cost reducing, high yielding and drought and pest resistant technologies. The yields of major crops must be improved through a well-designed and decentralized agricultural research and extension service.

D. ENABLING TECHNOLOGY TRANSFER

- ✓ Under the aegis of the ICAR there are 28 state agricultural universities, four deemed-to-be universities and one central agricultural university and 261 Krishi Vigyan Kendras in the rural districts of the country for transfer of technology.

- ✓ Monitoring of the adoption or adaptation of technologies is an integral part of the technology transfer system. Transfer of technology must therefore be preceded and succeeded by technology assessment.

Roadmap

- ✓ For effective technology transfer to take place, appropriate tools should be adopted and barriers to implementation should be removed to enable cost-minimizing technology (includes crop varieties, types of chemical) and farming practices.
- ✓ There is a need to transfer the next level of technology using the experience of other countries in areas like bio sciences, space science, water conservation, precision agriculture and biotechnology to the farmers and to establish market linkages.

E. ENCOURAGING PRIVATE INVESTMENT IN INFRASTRUCTURE

- ✓ Infrastructure is one of the most essential inputs in regards to the development of the country's agricultural sector. However, challenges with rural infrastructure coupled with poor communication and financing have been one of the major reasons for stagnation of agricultural productivity.
- ✓ Lack of basic infrastructure such as roads, communication, education and medical facilities have also hampered growth of the sector. Only about 48 percent of the villages in India and out of the total road length of 33 lakh km, only 58 thousand km is national highway. There is an urgent need to make long term investments in building rural roads, markets, water conservation facilities, education and healthcare facilities etc**.**
- ✓ Due to lack of adequate infrastructure such as lack of cold chain facilities, transportation and proper storage facilities, the processing levels and value addition across key perishable segments are extremely low. Loss of value is nearly 7 percent for grains and over 30 percent of fruit and vegetables each year without post-harvest facilities in India. Proper post-harvest infrastructure will reduce this wastage.
- ✓ The private players have been instrumental in building up services like farm-gate buying of commodities, linking the commodities to the wider market, executing contract farming and ensuring quality of the produce for satisfying their product needs.
- ✓ Many companies have invested in aggregation centers for procuring, storing and grading farm produce. These centres offer additional services and go under various names viz. Rural

Transformation Centers or simply Collection Centers. Such centers offer all the services that a typical AgriClinic Center offers, apart from a few innovative themes such as Training Centers, Libraries, and Tractor Booking Center etc.

Roadmap

- ✓ Addressing infrastructure requirements in the agriculture sector, especially storage, communication, roads and markets should be a priority.

- ✓ Public Private Partnership models can be of help in ensuring faster development of these requirements which are of vital importance for the growth of agriculture sector.

- ✓ Both the government and the corporate sector need to focus on streamlining and aligning these agri linkages to meet best practices.

- ✓ Apart from ensuring short-term measures such as remunerative support prices and cheap agricultural credit, there is a need to make substantial long term investments in irrigation, water conservation, building rural roads and markets, providing robust primary education and health facilities in the rural areas.

F. MAKING EXTENSION SERVICES MORE ROBUST

- ✓ The role of extension in improving farm productivity is increasingly being recognized by the government as the 10th and 11th five year plans have also stressed on agricultural extension as the means for agricultural growth.

- ✓ The 'AgriClinic and AgriBusiness Centre' scheme aims to promote the delivery of extension and other services in a self-employment mode. The scheme encourages unemployed agri graduates to open agriclinic centres in rural areas by giving financial backing to them.

- ✓ Through these clinics, educational programmes are organized for the farmers for improving crop productivity and production. At the same time, the scheme can give a leeway to the unemployed agriculture graduates in the country.

- ✓ A scheme called Support to State Extension Programmes for Extension Reforms was launched in 2005-06, with the aim of making the extension system farmer driven and farmer accountable.

- ✓ Agricultural extension has evolved with the changing nature of agribusiness in India and it has now become participatory in nature with public-private partnerships working in tandem with the farmers to successfully implement the new technologies and information system.

- ✓ A number of new initiatives have been undertaken by governments and NABARD on an experimental basis to improve the agricultural extension system. These include: Agricultural Technology Management Agency (ATMA), Agri-Clinics and Agri-Business, Farm School. These initiatives need to be evaluated and scaled up, incorporating crop and agro-climatic requirements. Krishi Vigyan Kendras (KVKs) must be reformed to strengthen links between farmers and research stations. Some initiatives have also been taken up by private companies such as ITC, Mahindra, Rallis and Tata.

- ✓ With the changing dynamics of agriculture-business and the needs of the production system the private players in this sector have taken-up interest in the extension services. Several players have started initiatives in this space in various formats *viz.* e-Choupal by ITC Ltd., Hariyali Kisaan Bazaar by DCM Shriram Consolidated Ltd. (DSCL), Tata Kisan Kendra (TKK) by Tata Chemicals Ltd., Godrej Aadhaar by Godrej Agrovet Ltd., Triveni Khushali Bazaar (TKB) by Triveni Engineering and Industries Ltd. and others.

Roadmap

- ✓ An appropriate network of extension service needs to be created to stimulate and encourage both top-down and bottom-up flows of information between farmers, extension workers, and research scientists to promote the generation, adoption, and evaluation of location specific farm technologies.

- ✓ Information dissemination through agri fairs/exhibitions is an excellent mechanism for showcasing latest technological advancements and dissemination of information to the farming community and also promoting agribusiness opportunities.

- ✓ Agricultural extension should go beyond the adoption of new seeds and cover marketing of agricultural products in the domestic and international markets, measures to mitigate production and marketing risks, environmental conservation and promotion of non-farm employment.

G. INTENSIFYING FARM MECHANIZATION

- ✓ The progress of farm mechanization in India has resulted in adoption of farm machinery such as tractors, power tillers, combine harvesters, irrigation equipment, plant protection equipment, threshers, improved implements and hand tools.

- ✓ Introduction and adoption of agricultural machinery in the recent past has mainly been confined to the northern States of India. However, with the increase in the irrigation facilities and modernisation of the cropping practices, the demand for agricultural machinery has shown an increasing trend in the southern and western parts of the country. The eastern and the north-eastern States have been less responsive to adoption of agricultural machinery.

- ✓ From 1986–87 to 1999–2000, there had been in general a rising trend in production and sale of different types of agricultural machinery especially tractors, power tillers, pump-sets, threshers, plant protection equipment, seed drills etc. After which, there has been a slightly decreasing trend of tractors and power tillers mainly due to unfavorable weather conditions.

Roadmap

- ✓ The distribution of tractors and other implements from area to area should be normalized so that the custom hiring is increased.

- ✓ Small farmers having operational holding of less than 4 hectares need to be discouraged to own the tractors unless they have substantial grounds to make economical use of it. However, to solve the problems of mechanization of smaller holdings, the possibilities can be:

(a) Cooperative management of farm machinery

(b) Financing of second hand tractors for small farmers

(c) Extension services to advise the suitability of various makes, models and horse powers for different size of operational holdings

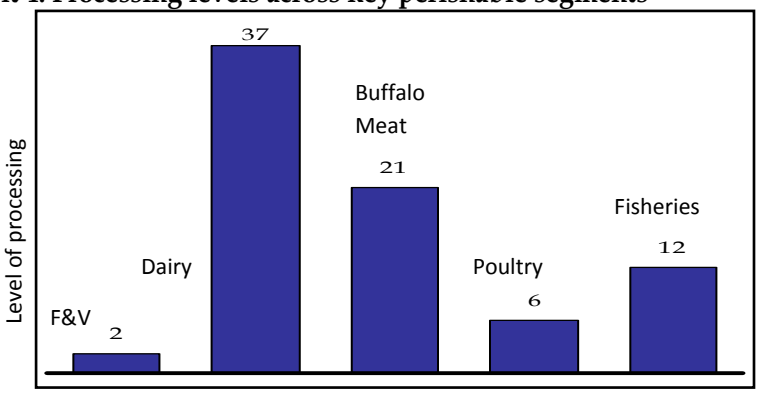
(d) Devising smaller machinery suitable for small farms which constitute the vast majority of farmers but the machinery has to be effective and less costly.

H. STIMULATING THE FOOD PROCESSING SECTOR

- ✓ As per Yes Bank estimates, the food processing industry in India is currently valued at about USD 70 billion and contributes to more than 35 percent of the total food market.
- ✓ The sector has witnessed a high growth rate of about 14 percent in the recent past and is poised to retain a high growth in the near future.

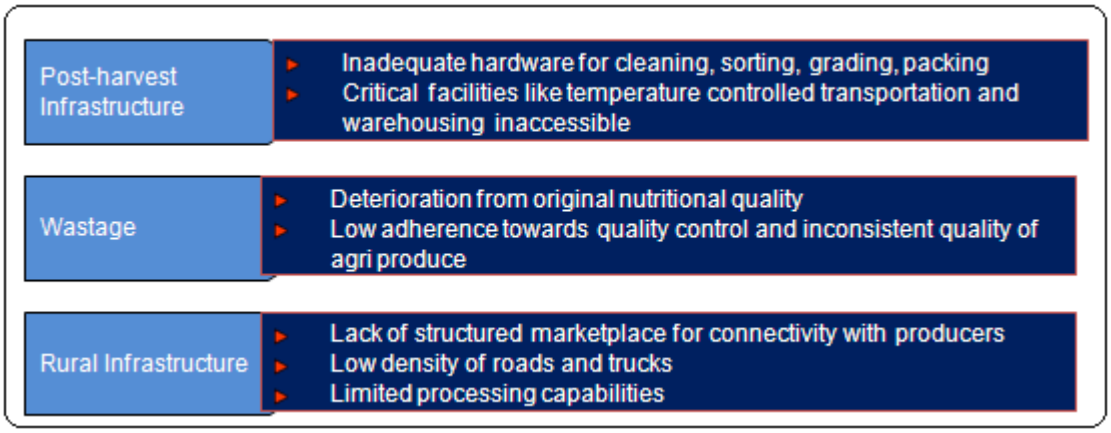
- ✓ The direct employment generation in the food processing sector was estimated to be about 14 million while indirect employment was estimated at 30 million in 2005-06.
- ✓ The Confederation of Indian Industry (CII) has estimated that the food-processing sector has the potential of attracting USD 33 billion of investment in the next 10 years.
- ✓ However, the processing levels in the country are very low. Although India is the second largest producer of fruits and vegetables, just over 2 percent of annual production is processed, an abysmally low figure when compared to countries such as Malaysia where it is around 83. Dairy is the largest processed segment in the country as can be seen from the figure below.

Exhibit 4: Processing levels across key perishable segments



Source 4: MoFPI annual reports, YES BANK Analysis

Issues



Roadmap

Post-harvest Infrastructure

- ✓ In order to build efficiencies for processing, creating a minimum level of infrastructure for maintaining quality – especially of perishable produce - is urgently required. This could include setting up facilities like pack house, ripening chamber, soil testing lab etc.

- ✓ Infrastructure development needs to take a systems-approach that addresses all round needs other than create skewed resources which are either under-utilized or wasted. Key infrastructure projects which have immense scope for private investment include Mega Food Parks, Terminal Markets and Cold Chain Development.

Wastage

- ✓ In order to build efficiencies for processing, creating a minimum level of infrastructure for maintaining quality – especially of perishable produce - is urgently required. Key infrastructure projects promoted by the government and which have immense scope for private investment include Mega Food Parks, Terminal Markets and Cold Chain Development. Another option for entrepreneurs to leverage in the agri-infrastructure space is the government's push to develop Modern Terminal Markets (MTM).

- ✓ Food processing is also hampered by the fact that various species of agri produce in India are not suitable for processing. There is an immense potential to introduce new breeding stock and planting material that have the propensity and traits required to produce raw material tailor-made for processing and value added produce.

- ✓ At the same time, following a quality control protocol will assist in getting the general acceptability that is required to market such produce over a longer duration distance or place.

Rural Infrastructure

- ✓ Some of the benefits of an improved road set-up would be improvement in transportation services leading to improved market access for the rural producers, better availability of farm inputs at reduced prices and shift in favor of cash crops and commercialization of agriculture.

- ✓ While many institutions such as IMD (India Meteorological Department), NCMRWF (National Centre For Medium Range Weather Forecasting**)**, IITM (Indian Institute of Tropical Meteorology), State Agricultural Universities, ICAR (Indian Council of Agriculture Research) and Indian Institute of Science (IISc) are engaged in research on agro-meteorology and weather forecasting, their efforts are rarely co-ordinated towards a common goal in the agriculture sector. Synchronized weather forecasting and real time communication is a very important infrastructure requirement for the farmers.

- ✓ There is also a need for a single specialized nodal agency in each State, which should be responsible for overall policy, planning and management of rural roads in the State.

I. INCREASING INDIA'S FARM EXPORTS

- ✓ India's farm exports have gone up in value terms from a paltry figure of Rs 582 crores in 1986 to Rs 89,000 crores in the year 2009-10.

- ✓ The major products exported from India are Basmati rice (2,016,775 million tonnes in 2009-10), Mango (74,460 million tonnes in 2009-10) and buffalo meat (375,528 MT in 2009-10). Total 2559526 million tonnes of fresh fruit and vegetable were exported in 2009-10, while 808920 million tonnes of processed fruits and vegetables were exported in the same year. Other major products exported are oilmeals, marine products, spices, Darjeeling tea, cashew, coffee, and vegetables.

- ✓ The Gulf region continues to be an important destination, with UAE and Saudi Arabia together accounting for close to 30 percent of the India's farm exports.

- ✓ Further, ethnic processed food products of Indian origin such as pickles, and branded ready to eat food products such as ITC's Kitchen of India, Bikanerwala, MTR Foods and others are finding increasing acceptance and shelf space in the international market.

- ✓ As can be seen from the table given below, during 1996-97, exports were 20.33 percent of the total national exports. The total share of export of all farm products in the country's total merchandise export during the turn of this century was around 15 percent, which declined to 10.22 percent in 2008-09. In absolute terms, however, the value of farm exports increased from 5.7 billion dollars in 1999-2000 to 15.9 billion dollars in 2009-10, a three-fold growth in the last one decade.

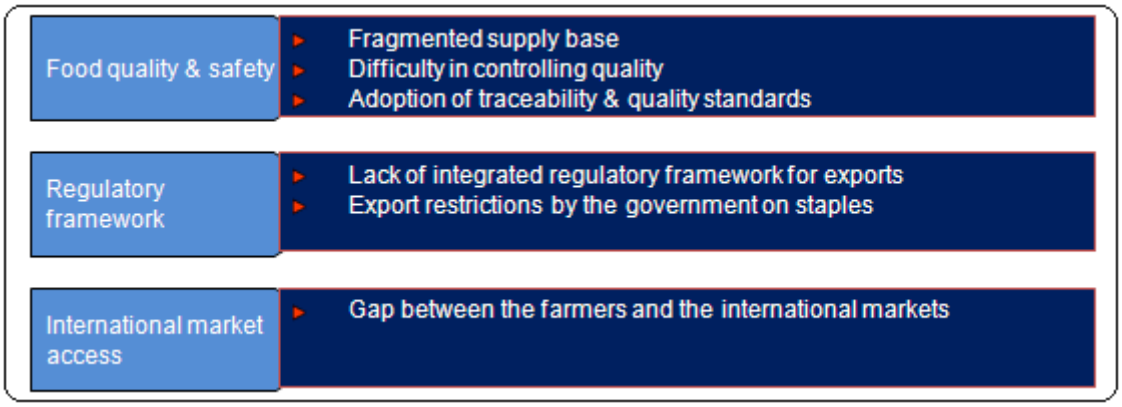
Exhibit 5: India's Imports and Exports of Agricultural Commodities (Rupees Crore)

Year	Agriculture Imports	Total National Imports	%age Agriculture Imports to Total National Imports	Agriculture Exports	Total National Exports	%age Agriculture Exports to Total National Exports
1	2	3	4	5	6	7
1990-91	1205.86	43170.82	2.79	6012.76	32527.28	18.49
1991-92	1478.27	47850.84	3.09	7838.04	44041.81	17.80
1992-93	2876.25	63374.52	4.54	9040.30	53688.26	16.84
1993-94	2327.33	73101.01	3.18	12586.55	69748.85	18.05
1994-95	5937.21	89970.70	6.60	13222.76	82673.40	15.99
1995-96	5890.10	122678.14	4.80	20397.74	106353.35	19.18
1996-97	6612.60	138919.88	4.76	24161.29	118817.32	20.33
1997-98	8784.19	154176.29	5.70	24832.45	130100.64	19.09
1998-99	14566.48	178331.69	8.17	25510.64	139751.77	18.25
1999-00	16066.73	215528.53	7.45	25313.66	159095.20	15.91
2000-01	12086.23	228306.64	5.29	28657.37	201356.45	14.23
2001-02	16256.61	245199.72	6.63	29728.61	209017.97	14.22
2002-03	17608.83	297205.87	5.92	34653.94	255137.28	13.58
2003-04	21972.68	359107.66	6.12	37266.52	293366.75	12.70
2004-05	22811.84	501064.54	4.55	41602.65	375339.53	11.08
2005-06	21499.22	660408.90	3.26	49216.96	456417.86	10.78
2006-07	29637.86	840506.31	3.53	62411.42	571779.28	10.92
2007-08	29906.24	1012311.70	2.95	79039.72	655863.52	12.05
2008-09	37183.03	1374435.55	2.71	85951.67	840755.06	10.22

2009-10 (P)	59367.62	1356468.65	4.38	89522.59	845125.21	10.59

Source 5: Director General of Commercial Intelligence & Statistics, Ministry of Commerce,Kolkata

Issues



Roadmap

Food quality & safety

- ✓ Introduction of best practices throughout the production value chain, covering farm production, processing, packaging, testing, inspection, transportation, storage and retail can improve the end product quality.
- ✓ For exports to take place in a systematic manner, quality assurance checks like certifications and adherence to international standards is something that needs to be inculcated in the processors and supply chain managers. Concerted efforts are needed to strengthen the quality and food safety management system based on international standards -- both for exports and the domestic market.

Regulatory Framework

- ✓ Lack of integrated regulatory framework is also a big hindrance as there are numerous laws coming under the jurisdiction of different ministries and departments which govern food safety and a plethora of food legislations and enforcement agencies operating in tandem.
- ✓ Concerted efforts are needed to strengthen the quality and food safety management system based on international standards. For exports to take place in a systematic manner, quality assurance checks like certifications and adhering to international standards is something that needs to be inculcated in the farmers for a consistent trade to take place.

- ✓ Modulating the duty structure aimed at encouraging export of agri commodities produced in surplus like tea, sugar wheat etc.

International Market Access

- ✓ Access to the international markets is another big stumbling block for the farmers in India and the government should create proper channels for the same.
- ✓ Vigorous steps to increase market access through bilateral negotiations and focused export promotion programs are needed.

J. GROWING FOOD CONSUMPTION

- ✓ India has the second-highest population in the world, accounting for more than one-sixth of the world's population.
- ✓ A population of 1.2 billion people growing at about 1.6 percent a year is a major driver for the food market.
- ✓ The dietary habits of a majority of India's young population in the age group of 20- 59 years is changing as there is far greater demand for processed food like juices, dairy and meat products
- ✓ An increase in per capita disposable income by 8 percent over last five years has led to an increase in per capita consumption expenditure on food by 20 percent over the same period.
- ✓ Food is the biggest consumption category in India with spending amounting to about 21 percent of the country's GDP.
- ✓ The overall consumer spending on food stands at USD181 billion currently and constitutes the largest portion of the Indian consumer's spending — more than a 31 percent share of the wallet.
- ✓ During the period between 1988 and 2007, the monthly per-capita expenditure on food in urban India grew at a CAGR of 7.17 percent while in rural India it grew 6.98 percent.

Changing Consumption Palate

Along with the changing eating habits and increased affordability of the growing Indian population, lifestyle changes and certain socio-economic factors are also expected to drive the growth of the industry and also result in a transition of the consumption patterns. Some of these are:

- Consumer consciousness about healthy eating
- Demand for processed food products
- Shift towards convenience food as home cooking declines
- Increased affordability for high value food products

This can be further collaborated from the table given below.

Exhibit 6: Evolving Food Consumption Habits

Annual Per Capita Food Consumption (kg)	Lower income group (30%)			Upper income group (30%)		
	1983	1999-2000	% change	1983	1999-2000	% change
Cereal	147.1	132.4	-10	194.3	154.6	-20.4
Pulses	7.6	6.9	-9.2	17.7	16.6	-6.2
Edible oil	2.6	4.6	76.9	7.3	13.7	87.7
Vegetables	36	53.9	49.7	65.2	90.8	39.3
Fruits	1.6	4.2	162.5	6.4	18.2	148.4
Milk	15.7	20.5	30.6	89.7	117.2	30.7
Meat, egg, fish	1.9	3.8	100	4.8	10.6	120.8

Source 6: NSSO

- ✓ Although cereal continues to be the important constituent of a household's food basket, its share in the total budget is declining. While cereal consumption has declined by 20 percent in the upper income group, it has declined by 10 percent among the lower income group.

- ✓ In the food consumption food basket, high-value foods such as fruits and vegetables (F&V), milk, meat, fish and eggs are receiving increasing importance. The consumption of meat, fish, egg has increased by 120 percent in 1999-2000 over 1983 among upper income class and by 100 percent in the lower income group.

K. BUILDING UP INVESTMENTS IN AGRICULTURE

- ✓ Public sector investment growth rates, which were quite high until 1980s, had declined by more than half by early 2000.
- ✓ Share of the public sector in gross capital formation in agriculture declined from 51.3 percent in 1980-81 to 24.3 percent in 2002-03, while at the same time, the share of private sector improved from around 50 percent in 1980-81 to 75.7 percent in 2002-3.
- ✓ As is evident from the table given below, the acquisition of new and fixed assets in the sector stagnated at 14 percent between 2004 and 2007. However, it increased slightly to 16 percent during 2007-08 and further to 19.67 percent in 2008-09 (P) and to nearly 20 percent in 2009-10.
- ✓ The gross capital formation (GCF) in agriculture & allied sectors has not changed (i.e. 2.5-3 percent) for the last 5-6 years.

Exhibit 7: GCF in Agriculture & Allied Activities (Rs crores at 2004-2005 prices)

	Agri & allied activities				
Year	GDP	GCF	GDP	GCF/GDP in agri & allied activities	GCF in agri as % of total
2004-5	2971464	76096	565426	13.46	2.56
2005-6	3254216	86611	594487	14.57	2.66
2006-7	3566011	90710	619190	14.65	2.54
2007-8	3898958	105034	655080	16.03	2.69
2008-9	4162509	128659	654118	19.67	3.09
2009-10	4493743	133377	656975	20.3	2.97

Source 7: Economic Survey 2010-2011

- ✓ As can be seen from the table given below, the share of the public sector investment in total GDP has stagnated at 0.5 percent in the last 6 years, while that of private sector has increased from 1.9 percent in 2004-05 to 2.6 percent in 2008-09. However, private investment in agriculture cannot compensate for the fall in public investment.

Exhibit 8: Public and Private Investment in Agriculture and Allied Sectors in Total GDP at Market Prices (2004-05 prices)

Year	Public Investment	Private Investment	Total	GDP at market price	Share (%) in Total		
					Public	Private	Total
1	2	3	4	5	6	7	8
2004-05	16182	62666	78848	3239224	0.5	1.9	2.4
2005-06	19909	73212	93121	3540559	0.6	2.1	2.6
2006-07	22978	71422	94400	3874632	0.6	1.8	2.4
2007-08	23040	86966	110006	4247918	0.5	2.0	2.6
2008-09	24452	114145	138597	4465360	0.5	2.6	3.1

Source 8: CSO

Roadmap

- ✓ The Central government has an important role to play through macro-economic policies that impact agriculture by provision of adequate resource transfer to States, and in ensuring that State finances and options are not affected adversely by the macro-economic consequences of decisions taken at the centre.

- ✓ Public as well as private investment should play a leading role in the form of infrastructure as well as necessary research and development in farm technologies. Power, transport, communication, storage and processing sectors are also important areas where investment is needed.

- ✓ The productive base of the farm sector also need to be enlarged through direct public and private investments in irrigation schemes, soil and water conservation works, land reclamation, construction of regulated market structures for farm produce etc.

- ✓ Public investments need to be stepped up in regions which although relatively backward have a high potential for agricultural growth like north-east.

- ✓ Focus should also be on seed research professional with expertise on HYV seeds.

- ✓ Both public and private investments should be directed towards dairy, veterinary, supply chain management, agri infrastructure.

L. CURRENT GOVERNMENT POLICY FOR AGRICULTURE

UNION BUDGET 2011-2012 – HIGHLIGHTS FOR AGRICULTURE

Some policy initiatives to increase the production and productivity of crops include:

- ✓ Rs. 300 crore expenditure to promote 60,000 pulses villages in rain fed areas to increase crop productivity and strengthen market linkages.
- ✓ Proposal to spend Rs. 300 crore to promote oil palm plantation in 60,000 hectares and another Rs. 300 crore earmarked for the initiative on vegetable cluster.
- ✓ Rs. 400 crore allotted to improve rice based cropping system in the Eastern Region.

A number of other initiatives already in place for the agriculture sector include:

- ✓ The National Food Security Mission which was launched in 2007-08 with an outlay of Rs. 4882.48 crores during the 11th Five Year Plan (2007–2012). It aims at enhancing the production of rice by ten million tonnes (MT), wheat by 8 MT and pulses by 2 MT by the year 2011-12.

- ✓ The Rashtriya Krishi Vikas Yojna (RKVY) was launched in August 2007 with an envisaged outlay of Rs.25,000 crore by the Union Government. RKVY is a State Plan scheme administered by the central government over and above its existing centrally sponsored schemes. The funds under the scheme are provided to the States as 100percent grant. RKVY aims to achieve the envisaged 4percent growth rate in agriculture and allied sectors during the Eleventh Five Year Plan. Allocation to agriculture and allied sectors was 5.11 percent of total State Plan Expenditure in 2006-07 and this has gone up to 6.29 percent in 2009-10.

- ✓ The Planning Commission is working on an ambitious action plan to boost secondary agriculture, which includes value-addition and value-extraction to and from farm products, in the 12th Five Year Plan (2012-17). According to Planning Commission estimates, the sector was worth over Rs. 60000 crores three years back and now it could be more than Rs 100000 crore.

- ✓ The government has budgeted Rs. 50000 crore in 2011-12 as subsidy to fertilizer. The decontrolled fertilizers under the nutrient-based subsidy policy came into effect from April 1, 2010. Under the new nutrient-based subsidy policy (NBS), the government provides subsidy on decontrolled (whose MRP is not decided by the government) nutrients such as Phosphorus (K) and Potash (S). From next year it is envisaged that government will provide direct cash subsidy.

- ✓ In April 2010, the Cabinet Committee on Economic Affairs (CCEA) approved Rs. 632 crore for the National Horticulture Board to implement its existing schemes and promote 25,000 integrated commercial horticulture projects in the 11th Plan period ending 2012.

However, budget 2011-12 is marked by decline in government expenditure on agriculture. Between 2010-11 and 2011-12, the total expenditure on "agriculture and allied activities" fell by Rs.5,422 crore, or by 4.3 percent. This overall decline was the result of a fall by Rs.5,568 crore of revenue expenditure between 2010-11 and 2011-12. In the same period, the capital expenditure on agriculture and allied activities increased by a meagre Rs.146 crore.

Crop husbandry saw the largest fall in revenue expenditure occurred. Here, while revenue expenditure fell by Rs.4,477 crore, capital expenditure increased by just Rs.6 crore. Food, storage and warehousing witnessed a decline of expenditure by Rs.1,453 crore between 2010-11 and 2011-12. Agricultural research and education" witnessed a fall in revenue expenditure by 5.8 percent between 2010-11 and 2011-12.

Some more tax breaks and incentives include:

- ✓ FDI of upto 100percent is permitted under the automatic route in the food infrastructure (food park, cold chain/warehousing)

- ✓ Automatic approval to FDI up to 100 percent equity in Food Processing Industry excluding alcoholic beverages and a few reserved items

- ✓ Up to a maximum of 24 percent foreign equity is allowed in SSI sector

- ✓ Income tax rebate allowed (100 percent of profits for five years and 25 percent of profits for the next five years) for setting up of new agro-processing industries to process and package fruits & vegetables

- ✓ Fruits & vegetables, and dairy machineries are completely exempt from excise duty. Central excise duty on preparation of meat, poultry and fish, pectin and yeast is also completely exempt

- ✓ Customs duty on refrigerated goods transport vehicles has been reduced from 20 percent to 10 percent.

- ✓ Excise Duty of 16 percent on dairy machinery has been fully waived and excise duty on meat, poultry and fish products has been reduced from 16 percent to 8 percent.

M.PRIORTISING AGRI - LENDING

- ✓ Institutional credit expanded rapidly in the post bank nationalisation period from Rs.1,865 crore in 1971-72 to Rs.1,80,486 crores in 2005-06. This rate of growth was even higher than the growth rate of Gross Domestic Product (GDP) originating in agriculture. Despite this growth, the credit needs of agriculture have not been met fully and overwhelming numbers of farm households have not been able to borrow from institutional sources.

- ✓ In 2007-08, co-operative banks had lent more than Rs 48,000 crores to agriculture, while in 2009-10, the number came down to Rs 34,363 crores. Lack of an efficient organized credit provision leads the farmer towards money lenders, mostly input suppliers or the trading middlemen. The government's INR 71,000 crore farm loan waiver scheme helped large and medium farmers more than the small and marginal farmers who are indebted to local moneylenders. Likewise, small scale food processors face tremendous challenges in raising funds especially when they are not in a position to offer collateral security.

Exhibit 9: Flow of Institutional Credit to Agriculture Sector Over Short & Long Term (Rs Cr)

Agency	1998-99	1999-2000	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10*
Cooperative Banks	15870	18260	20718	23524	23636	26875	31231	39403	42480	48258	46192	34363
RRBs	2460	3172	4219	4854	6070	7581	12404	15223	20435	25312	26765	22132
Commercial Banks	18443	24733	27807	33587	39774	52441	81481	125477	166485	181088	228951	139733
Other Agencies	87	103	83	80	80	84	193	382	0	0	0	0
Grand Total	**36860**	**46268**	**52827**	**62045**	**69560**	**86981**	**125309**	**180485**	**229400**	**254658**	**301908**	**196228**

Source 9: Department of Agriculture and Cooperation, Credit Division

Issues

- ✓ One of the major hurdles for growth of the sector is the low availability of finances and credit across the food value chain. Though there has been intense focus by both the central and state governments to extend credit to farmers and small scale processing units, financial institutions are generally not comfortable in extending credit primarily due to the high risk of defaults involved in lending to this sector.

Roadmap

- ✓ The situation calls for concerted efforts to augment the flow of credit to agriculture, alongside exploring new innovations in product design and methods of delivery, through better use of technology and related processes. Agency banking, in the form of business facilitators and business correspondents, are the new forms which would facilitate better farmer-bank linkages. Mobile banking would help make banking more accessible to smaller and remote settlements. These measures and institutions have to be promoted to improve the reach of institutional credit to farmers.

- ✓ Facilitating credit through processors, input dealers, NGOs, *etc.*, that are vertically integrated with the farmers, including through contract farming, for providing them critical inputs or processing their produce could increase their credit flow to agriculture significantly.

- ✓ There is large scope for institutional agencies to expand the credit base of farm households further. Institutional credit availability to agriculture should be increased, excluded sections of the farmer households be brought into its ambit and a qualitative improvement in the credit delivery arrangements be brought about. The debt burden of farmers to informal sources should be reduced by formalising it through transferring the informal debt to formal institutions.

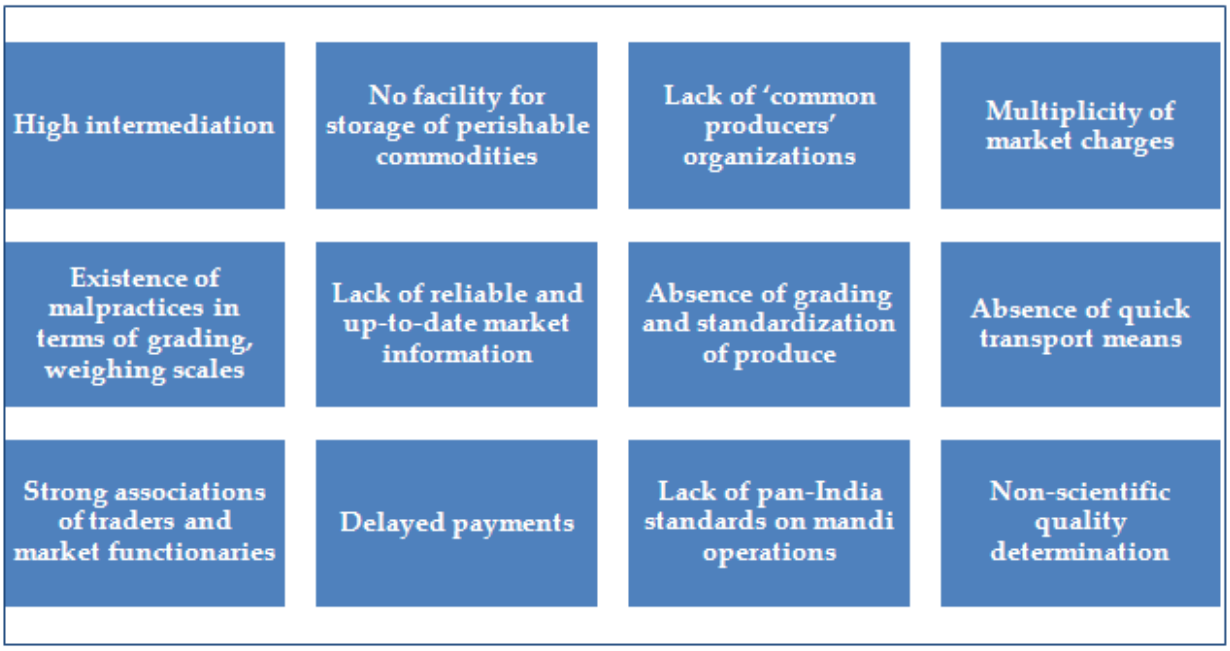
- ✓ In order to ensure an effective, inclusive and sustainable rural financial system, it is essential for the apex financial institutions like RBI and NABARD have to play a positive role. Further, the scheduled commercial banks, RRBs, the cooperatives and other credit institutions have to revitalise their rural operations.

N. INCREASING MARKET ACCESS

The agricultural market in India today is dominated by 7,500 Government Authorized marketplaces or mandis, which are governed by state specific APMC Acts. However the present marketing system is inundated with a layer of commission agents, traders, brokers, village level consolidators to market their produce. Each of these intermediaries works out a margin for himself, thus leaving very little for the farmers.

The present agricultural marketing system of the country leaves much to be desired. Some major issues plaguing the farmers are:

Exhibit 10: Marketing Issues Faced By Farmers



Roadmap

- ✓ The government needs to make the marketing system most effective, transparent and efficient so that, farmers may get better prices for their produce and the goods are made available to consumers at reasonable prices.

- ✓ Efforts are also needed to prevent the exploitation of farmers by overcoming the handicaps in the marketing of their products and to promote an orderly marketing of agricultural produce by improving the infrastructural facilities**.** Some reform measures by the government have already been initiated to address these problems.

- ✓ As agriculture is a state subject, the state governments must significantly upgrade and modernize their current mandis.

O. ROLE FOR THE PRIVATE SECTOR ACROSS VALUE CHAINS

- ✓ While both the public and the private sectors play a key role in India's agri sector reforms, the role of the private sector has much become very important in improving India's agricultural scenario in terms of development of agricultural infrastructure such as roads, irrigation, and electrical power.

- ✓ It is playing an increasingly important role in strengthening and supporting institutions that serve smallholder farmers, including agricultural extension, public education, technology dissemination etc.

- ✓ There is a need to make the sector more attractive for the private sector to encourage investments in facilities like irrigation, processing, storage, transportation and marketing activities.

- ✓ Farm inputs is another area that needs multi-pronged focus especially in regards to slow release of fertilizers, specialty agrochemicals, hybrid and GM seeds and micro-irrigation.

- ✓ Some of the large infrastructure projects where we have seen PPP are terminal markets, mega food parks, warehousing, agri economic zones.

- ✓ Development of agricultural infrastructure like modern terminal markets, food parks is also a critical factor ignored till now but in the last couple of years the food processing ministry has been proactively trying to involve the private sector in these projects through subsidy and other offers.

A few of the government supported large infrastructure schemes in PPP mode are:

1. **Mega Food Park Scheme**

Based on extensive feedback and consultations with various stakeholders the earlier Scheme of Food Parks under the 10th Five Year Plan has been revised and reformulated as Mega Food Parks Scheme (MFPS) for the 11th Five Year Plan period.

Objective

- ✓ The primary objective of the MFPS is to provide adequate / excellent infrastructure facilities for food processing along the value chain from the farm to market.
- ✓ It will include creation of infrastructure near the farm, transportation, logistics and centralized processing centers.
- ✓ The main feature of the scheme is a cluster based approach.
- ✓ The scheme will be demand driven, pre-marketed and would facilitate food processing units to meet environmental, safety and social standards.

Assistance

The scheme envisages a capital grant of 50 percent of the project cost (excluding land cost) subject to a maximum of Rs. 50 crores in general areas and 75 percent of the project cost (excluding land cost) subject to a ceiling of Rs. 50 crores in difficult and hilly areas i.e. North East Region including Sikkim, J&K, Himachal Pradesh, Uttarakhand and ITDP notified areas of the States.

Salient Features

- ✓ The scheme aims to facilitate the establishment of a strong food processing industry backed by an efficient supply chain, which would include collection centers, primary processing centers and cold chain infrastructure.
- ✓ The food processing units, under the scheme, would be located at a Central Processing Centre (CPC) with need based common infrastructure required for processing, packaging, environmental protection systems, quality control labs, trade facilitation centers, etc.
- ✓ It is expected that on an average, each project will have around 30-35 food processing units with a collective investment of Rs 250 crores that would eventually lead to annual turnover of about Rs 450-500 crores and creation of direct and indirect employment to the extent of about 30,000.

2. Integrated Cold Chain Infrastructure Scheme

The Integrated Cold Chain infrastructure scheme of 11th Plan consolidates the Scheme for Integrated Cold Chain, Value added Centers, Packaging Center and Irradiation Facilities of the Tenth Five Year Plan

Objective

- ✓ The objective of the scheme is to provide integrated and complete cold chain and preservation infrastructure facilities without any break, from the farm gate to the consumer.
- ✓ Pre-cooling facilities at production sites, reefer vans, and mobile cooling units also need to be assisted under the Integrated Cold Chain projects.
- ✓ Integrated cold chain and preservation infrastructure can be set up by individuals or groups of entrepreneurs with business interest in cold chain solutions and also by those who manage supply chain.
- ✓ They will enable linking groups of producers to the processors and market through well equipped supply chain and cold chain.

Salient Features

- ✓ The scope of components of Integrated Cold Chain, Value Added Centre, Packaging Centre and Irradiation Facilities has been broadened to allow flexibility in project planning.
- ✓ To provide integrated and complete cold chain facilities without any break from the farm gate to the consumer, Pre-cooling facilities at production sites, reefer vans, and mobile cooling units has been covered under the Integrated Cold Chain facilities projects. Stand alone facilities, except irradiation facility will not be considered for assistance.
- ✓ Horticulture produces has also been included for support under Integrated Cold Chain Facilities.
- ✓ Value addition Centres may also include infrastructural facilities including processing / multi-line processing / collection centres, etc. for horticulture including organic produce, marine, dairy, meat and poultry, etc.
- ✓ Irradiation facilities may also cover warehousing, cold storage facilities etc. for storage of raw material and finished products for efficient utilization of the facility.

Assistance

- ✓ Financial assistance (grant-in-aid) of 50 percent the total cost of plant and machinery and technical civil works in General areas and 75 percent for NE region and difficult areas (North East including Sikkim and J&K, Himachal Pradesh and Uttarakhand) subject to a maximum of Rs 10 Crore.

3. Modern Terminal Markets

Modern Terminal Markets endeavour to integrate farm production with buyers by offering multiple choices to farmers for sale of produce such as electronic auctioning and facility for direct sale to exporter, processor and retail chain network under a single roof. In addition, the market would provide storage infrastructure thus offering the choice to trade at a future date to the participants.

Objective

In order to harness the potential of the emerging consumer demand (domestic and international), a professionally managed competitive alternate marketing structure that provides multiple choices to farmers for sale of produce along with a comprehensive solution to meet key needs of the stakeholders is necessary. Such a system entails a high investment cost and efficient management skills, each of which can be infused by inviting private sector participation in the sector. Thus, the Modern Terminal Markets were conceptualized with the objective of fulfilling these goals.

Salient Features

- ✓ TM would operate on a Hub-and-Spoke Format wherein the Terminal Market (the hub) would be linked to a number of collection centres (the spokes).

- ✓ The spokes would be conveniently located at key production centres to allow easy farmer access and the catchment area of each spoke would be based on meeting the convenience needs of farmers, operational efficiency and effective capital utilisation of the investment.

- ✓ It is envisaged to offer a one-stop-solution that provides logistics support including transport services & cool chain support and facility for storage (including warehouse, cold storage, ripening chamber, storage shed), facility for cleaning, grading, sorting, packaging and palletisation of produce and extension support and advisory to farmers. Each of these services would be provided in lieu of a user charge.

Assistance

The Ministry of Agriculture supports the project through its Venture Capital Scheme for Agribusiness Development under SFAC (Small Farmers Agribusiness Consortium). The terms for financing would be as follows:

- ✓ Private Enterprise will bring a minimum 51 percent of the project equity for the establishment of the project.
- ✓ Up to 49 percent of the project equity would be contributed by SFAC, including contribution by the State Government, if any, which would be returnable at par on the successful operation of the project and the repayment of the Term Loan of the financing bank.

4. Dairy Entrepreneurship Development Scheme

Dairy and Poultry Venture capital fund launched in 2005-06 was segregated into Dairy and Poultry Venture Capital Funds during the year 2009-10. The mode of implementation of Dairy Venture Capital Fund is changed from interest free loan to capital subsidy and a revised scheme Dairy Entrepreneurship Development Scheme (DEDS) has come into effect from 1 September 2010.

Objectives

- ✓ To promote setting up of modern dairy farms for production of clean milk
- ✓ To encourage heifer calf rearing thereby conserve good breeding stock
- ✓ To bring structural changes in the unorganized sector so that initial processing of milk can be taken up at the village level itself.
- ✓ To bring about upgradation of quality and traditional technology to handle milk on a commercial scale
- ✓ To generate self employment and provide infrastructure mainly for unorganized sector

Assistance

- ✓ Small dairy farms - Cross bred cows, Indigenous descript breeds and Graded buffaloes (upto 10 animals) - Rs.5 lakh
- ✓ Vermicompost (with milch animals unit) - Rs 20,000/-
- ✓ Heifer calf rearing - upto 20 calves - Rs 4.80 lakh
- ✓ Purchase of milking machines / milk testers / bulk milk coolers (upto 2000 lr. capacity) - Rs.18 lakh

- ✓ Indigenous milk products manufacturing units - upto Rs.12 lakh
- ✓ Dairy product transport facilities and cold chain - Rs.24 lakh
- ✓ Cold storage for milk/milk products - Rs.30 lakh
- ✓ Private veterinary clinic - Rs.2.4 lakh - Mobile Units, Rs.1.80 lakh - Stationary Units
- ✓ Dairy parlour - Rs 56,000

5. Modernisation of Mandis

In 2008, NCDEX Spot Exchange Ltd had taken an initiative to modernise mandis (APMC) across the country as a key marketing infrastructure project with the prime objective to provide optimum realisation to farmers' produce at the agricultural produce market committee (APMC) and to increase the producers' arrivals in the markets. The project aims to provide ultra modern facilities and strengthening agriculture marketing infrastructure, grading and standardisation of marketing produce. Other important elements that would be included are modern auction platforms, electrification, electronic weighing machines, inner roads, cover sheds, public health facilities, cleaning machine and display boards.

CONCLUSION

Agriculture has come a long way since independence with two big achievements: Food Self Sufficiency& Diversification of food basket. However, demand on agriculture has increased enormously and with rising population, we need to double the agriculture production implying an increase in productivity.

The next wave of growth will come from institutional innovations in areas like research, extension, credit and infrastructure as the Central government plays a key role in agriculture policy directive.

Necessary changes in regards to laws relating to infrastructure development, technical expertise, credit policy and institutional framework will have to be implemented by the central government for the sector to grow vertically.

With the limited arable land resources, and burden of increasing population, development of new technologies and efficient use of available technologies and inputs will continue to play an important role in sustaining food security in India.

At the same time there is a need from the private sector to support the farmers at the ground level in improving the farming conditions for the farmers. Agriculture can only flourish when both the private and public agendas culminate together and work in tandem for the common good.

The Government should embark on public private partnership (PPP) along with agri-infrastructure and marketing. While a lot of government support in the form of subsidies, policy interventions, equity participation and risk sharing is already available, PPP will take forward the process of agriculture development.

List of Exhibits

List of Sources

Sr no	Acronyms	Abbreviation
1	IMD	India Meteorological Department
2	NCMRWF	National Centre For Medium Range Weather Forecasting
3	IITM	Indian Institute of Tropical Meteorology
4	ICAR	Indian Council of Agriculture Research
5	IISc	Indian Institute of Science
6	MTM	Modern Terminal Market
7	CII	Confederation of Indian Industry
8	ATMA	Agricultural Technology Management Agency
9	KVK	Krishi Vigyan Kendras
10	HYV	High Yielding Varieties
11	PPP	Public Private Partnership
12	APMC	Agricultural Produce Market Committee
13	SFAC	Small Farmers Agribusiness Consortium
14	MFPS	Mega Food Park Scheme
15	CCEA	Cabinet Committee on Economic Affairs
16	NBS	Nutrient-based Subsidy

17	RKVY	Rashtriya Krishi Vikas Yojna
18	GCF	Gross Capital Formation