

Indian Agriculture Invest and Return – A Theoretical Research

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Abstract

The nation is striving to find ways and means to keep its burgeoning population adequately fed. On the one hand it is facing the problem of declining productivity and on the other, challenges posed by liberalization. In such a scenario, leveraging the available natural resources and existing infrastructure is the only way to make the ends meet. Management of the already built infrastructure in harmony with natural systems is the clarion call of the day. Knowledge of the extent of existing infrastructure and natural resources is one of the most basic prerequisites to utilize them effectively and in a sustainable manner. Through agricultural research and development welfare improvement has been realized. This paper highlights the research, confronts faced and the benefits that was taken place in Indian agriculture.

Over the next forty years, global population is expected to reach nine billion people. This increase, combined with expected economic growth, will cause an increase in nutritional demand and inevitably strain the resources used for food production. In order to meet expected worldwide nutritional demand while maintaining sustainable agricultural practices, industries within the agricultural supply chain seek foreknowledge of future nutritional demands. Their goal is develop and deliver resources in such a way that global food needs are met efficiently and in sufficient quantity.

Key Words: *Agriculture R&D, Challenges, Infrastructure, Economic Growth*

Introduction

Agricultural science has always played a critical role in economic progress in both developed and developing economies. Through agricultural R&D, welfare improvement has been realized in the form of lower food prices to domestic population, improved nutrition, expansion in rural employment, agricultural exports and enhanced level of foreign

exchange, competitiveness of agricultural commodities in the world markets and strong growth linkages with rest of the economy. During the green revolution period, adoption of new technologies has helped to improve the income distribution across income classes.

A global forecast of food demand through 2050 was developed by IHS Global Insight (IHS-GI) using their global agricultural partial equilibrium modeling system. This modeling system includes not only food demand for crop and livestock commodities, but also feed, seed, and industrial demand for crop commodities. More details on this model are included in the appendix. Projections are developed for each year from 2010 through 2050 based on IHS-GI macroeconomic projections for variables such as income growth, population growth, inflation, exchange rates and input costs.

Royal Agricultural Society of England, founded during 1790s in UK, paved the way for growth of experimental farming. Almost 150 years have passed since US public-sector agricultural research and development (R&D) began in earnest with the establishment of the US Department of Agriculture. Subsequently, in US agriculture, Public and Private agricultural R&D played a major role in bringing about changes.

India saw the beginning of scientific farming with the establishment of Department of Agriculture in each Indian province in 1880 under the British rule. Next step was to establish Imperial Agricultural Research Institute to foster agricultural research and education and decentralization of agricultural developmental activities to the Provincial

Governments in response to Montague–Chelmsford Reform (1919). When the country got independence, in the efforts to develop country's agriculture, promotion of agricultural R&D was considered as the most important one. The agricultural review team chaired by Dr M.W. Parker of USDA (1963) suggested far-reaching changes in organization and management of agricultural research in the country.

Constant policy assumptions are used through the forecast period. This includes meeting current U.S. ethanol and biodiesel mandates. EU biofuel targets are not reached despite the European Commissions insistence that penalties will be assessed on countries which do not reach the 10 percent target. The experience of the EU biofuel industry, current subsidies, and barriers to higher biodiesel and ethanol blends make reaching the target extremely difficult even if generation 2 feedstock technologies were economical.

All these efforts culminated in the development of agriculture as a modern sector along with rest of the economy and agriculture emerged as key sector. This paper highlights the research, confronts faced and the benefits that was taken place in Indian agriculture.

Indian Agriculture- A Brief

Agriculture plays a vital role in India's economy. Over 58 per cent of the rural households depend on agriculture as their principal means of livelihood. Agriculture, along with fisheries and forestry, is one of the largest contributors to the Gross Domestic Product (GDP). As per the 2nd advised estimates by the Central Statistics Office (CSO), the share of agriculture and allied sectors (including agriculture, livestock, forestry and fishery) is expected to be 17.3 per cent of the Gross Value Added (GVA) during 2016-17 at 2011-12 prices.

Indian policymakers have created one of the largest agricultural R&D systems in the world. The knowledge and technologies generated by investment in R&D was primarily responsible for the green revolution and achieving food security for the huge population. Despite success of green revolution, India still houses one-fourth of the world's hungry and poor and 40 per cent of the world's malnourished children and women [7]. The NSSO-2005 survey revealed that 40 per cent of the farmers would relinquish farming if provided alternate options. This is mainly because the economic viability of farming is threatened.

India is the largest producer, consumer and exporter of spices and spice products. India's fruit production has grown faster than vegetables, making it the second largest fruit producer in the world. India's horticulture output, is estimated to be 287.3 million tonnes (MT) in 2016-17 after the first advance

estimate. It ranks third in farm and agriculture outputs. Agricultural export constitutes 10 per cent of the country's exports and is the fourth-largest exported principal commodity. The agro industry in India is divided into several sub segments such as canned, dairy, processed, frozen food to fisheries, meat, poultry, and food grains.

The Department of Agriculture and Cooperation under the Ministry of Agriculture is responsible for the development of the agriculture sector in India. It manages several other bodies, such as the National Dairy Development Board (NDDB), to develop other allied agricultural sectors.

Market Size:

India's GDP is expected to grow at 7.1 per cent in FY 2016-17, led by growth in private consumption, while agriculture GDP is expected to grow above-trend at 4.1 per cent to Rs 1.11 trillion (US\$ 1,640 billion).\$ As per the 2nd Advance

Estimates, India's food grain production is expected to be 271.98 MT in 2016-17. Production of pulses is estimated at 22.14 MT.

India's exports of basmati rice may rise to Rs 22,000-22,500 crore (US\$ 3.42-3.49 billion), with volume to around 4.09 MT in 2017-18, backed by a rise in average realizations.

Wheat production in India is expected to touch an all-time high of 96.6 MT during 2016-17.!

Groundnut exports from India are expected to cross 700,000 tonnes during FY 2016-17 as compared to 537,888 tonnes during FY 2015-16, owing to the expected 70 per cent increase in the crop size due to good monsoons. India's groundnut exports rose to 653,240 MT during April 2016-February 2017.@ India's export of grapes to Europe and China are expected to increase by 10 to 20 per cent this year on back of higher production on account of good monsoon and higher demand due to competitors such as Chile shifting focus to US market.

Spices exports from India grew by 9 per cent in volume and 5 per cent in value year-on-year to 660,975 tonnes and US\$ 1.87 billion respectively, during April-December 2016.

Investment:

According to the Department of Industrial Policy and Promotion (DIPP), the Indian agricultural services

and agricultural machinery sectors have cumulatively attracted Foreign Direct Investment (FDI) equity inflow of about US\$ 2,315.33 million from April 2000 to December 2016.

Some major investments and developments in agriculture are as follows:

India and Brazil have signed a bilateral investment agreement, aimed at enhancing cooperation in areas of agriculture, cattle genomics, ship building, pharmaceuticals, defence production, ethanol production and oil and gas, between the countries.

Zephyr Peacock, the India-focused private equity fund of US-based Zephyr Management, has invested an undisclosed amount in Bengaluru-based potato seeds firm Utkal Tubers India Pvt Ltd, which will be used to produce high-quality mini-tubers in a tissue culture laboratory and multiply them in its own development farms and through supervised contract farming in different regions of the country.

Mahindra Agri Solutions Ltd (MASL), a unit of Mahindra & Mahindra Ltd, has agreed to purchase 60 per cent stake in OFD Holding BV, a Netherlands-based fruit distribution company, for Rs 36 crore (EUR 5 million), which will provide MASL access to European and Chinese markets for Indian grapes.

Government Initiatives

Given the importance of the agriculture sector, the Government of India, in its Budget 2017–18, planned several steps for the sustainable development of agriculture-

Total allocation for rural, agricultural and allied sectors for FY 2017-18 has been increased by 24 per cent year-on-year to Rs 1,87,223 crore (US\$ 28.1 billion). A dedicated micro-irrigation fund will be set up by National Bank for Agriculture and Rural Development (NABARD) with a corpus of Rs 5,000 crore (US\$ 750 million). The government plans to set up a dairy processing fund of Rs 8,000 crore (US\$ 1.2

billion) over three years with initial corpus of Rs 2,000 crore (US\$ 300 million).

The participation of women in Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) has increased to 55 per cent and allocation to the scheme has been increased to a record Rs 48,000 crore (US\$ 7.2 billion) for FY2017-18.

Short-term crop loans up to Rs 300,000 (US\$ 4,500) at subsidised interest rate of 7 per cent per annum would be provided to the farmers. An additional incentive of 3 per cent is provided to farmers for prompt repayment of loans within due date, making an effective interest rate for them at 4 per cent.

Some of the recent major government initiatives in the sector are as follows:

The NITI Aayog has proposed various reforms in India's agriculture sector, including liberal contract farming, direct purchase from farmers by private players, direct sale by farmers to consumers, and single trader license, among other measures, in order to double rural income in the next five years. The Ministry of Agriculture, Government of India, has been conducting various consultations and seeking suggestions from numerous stakeholders in the agriculture sector, in order to devise a strategy to double the income of farmers by 2022.

The Maharashtra State Agriculture Marketing Board (MSAMB) has operationalised 31 farmer-to-consumer markets in the state, and plans to open 100 more such markets in the future, which would facilitate better financial remunerations for the farmers by allowing them to directly sell their produce in open markets.

The Ministry of Labour and Employment plans to amend the Minimum Wage Act to raise the daily minimum wage of unskilled agricultural labour in C-class towns to Rs 350 (US\$ 5.2) in the central sphere, from the current wage of Rs 160 (US\$ 2.4) per day.

The Central Government plans to open at least one Krishi Vigyan Kendra in all districts of the country, which will provide advanced agriculture technical assistance to the farmers near their farms itself.

The Government of Karnataka plans to invest around Rs 1 trillion (US\$ 15.1 billion) for developing irrigation projects across the state to mitigate the impact of deficient rainfall and resulting drought on agriculture in recent years.

The Government of India and the Government of Israel have expressed their commitment to further strengthen bilateral relations in the field of agriculture and allied sectors, as well as enhance cooperation at the government-to-government and business-to-business levels between the two countries, in a bid to further enhance the relationship.

According to the Agriculture Ministry, 50,000 hectares of area is available for coconut cultivation in Bihar, the Coconut Development Board plans to equip the farmers thus making India the world leader in production, productivity, processing for value addition and export of coconut.

Conclusion

The future of Indian agriculture will be one of knowledge and technology intensive and wider dissemination of the same cannot be accomplished in isolation. All categories of players, viz. public and private, and large and small must be involved in promoting the technologies. The agro-input industry has to closely work with government to realize the objectives. Policy environment must ensure a

continuous encouragement to the private sector for attracting more investment. Mechanisms can be evolved for accreditation of private R&D, MOU for forging functional relationships and protocols for transferring/sharing technologies, materials and unique facilities. There is ample scope for intensifying human resource development through initiation of fellowships and professorial chairs by the private sector in focused areas of research. Private sector has a good amount of expertise which can be used in agricultural management process within NARS.

The agriculture sector in India is expected to generate better momentum in the next few years due to increased investments in agricultural infrastructure such as irrigation facilities, warehousing and cold storage. Factors such as reduced transaction costs and time, improved port gate management and better fiscal incentives would contribute to the sector's growth. Furthermore, the growing use of genetically modified crops will likely improve the yield for Indian farmers.

India is expected to be self-sufficient in pulses in the coming few years due to concerted efforts of scientists to get early-maturing varieties of pulses and the increase in minimum support price.

Exchange rate used: INR 1 = US\$ 0.0155 as of April 17, 2017.

References

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