



# Impact of Infrastructure Development on Indian Agricultural Growth (Prospects and Perspectives)

## KEYWORDS

Infrastructure, Development and Agriculture

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**ABSTRACT** *The infrastructure development of any economy includes development of both economic infrastructure and social infrastructure. The economic infrastructure can be achieved through developing various sectors like Energy, Power, Telecommunication, Transport (including railways, roadways, airways and seaways), Irrigation, Information Technology and finance etc. On the other hand, the social infrastructure development can be achieved through Education infrastructure development and Health infrastructure development. This paper attempts to provide a linkage between the infrastructure development and Agricultural Sector by means of portraying the transition of traditional agriculture sector into commercialised agriculture sector. This study establishes the relationship between infrastructure development and Growth in agricultural sector by answering three basic questions*

1. What is the current status of Economic infrastructure development in India?
2. What is the current status of Social infrastructure development in India?
3. What is the role of infrastructure development in Indian Agricultural Growth?

## Introduction

Different authors have defined the term Infrastructure in different ways. Depending on the field considered, the meaning of infrastructure may change. The meaning of the term infrastructure in literal sense means the basic physical and organisational structure needed for operation of a society or enterprise. In Keynesian economics, the term infrastructure has been used to describe the public assets that facilitate production, but not the private assets of the same sense. But, in post-Keynesian era, however the term has grown in popularity. It has been widely used to express the internal framework, degree of technology and immovable assets of the business organisation. The Keynesian economics served as the standard economic model in the developed nations during the later part of the Great Depression, World War II and the post-war economic expansion (1945-1973). But it lost some influence after the OIL SHOCK and impact of stagflation during 1970s.

As a matter of fact, that the advent of the global financial crisis in 2008 has caused a rebirth in Keynesian thought. Keynes argued that the solution to the Great Depression was to stimulate the economy through the combination of two approaches, viz., a reduction in interest rates (Monetary policy) and Government investment in infrastructure (Fiscal policy). The present study throws light on the second approach. According to Keynes, the investment by government in infrastructure injects income to the economy by creating business opportunity, employment and demand for the new products, which may reverse the effects of the aforementioned imbalance <sup>1</sup>.

The infrastructure development of any economy includes development of both economic infrastructure and social infrastructure. The economic infrastructure can be achieved through developing various sectors like Energy, Power, Telecommunication, Transport (including railways, roadways, airways and seaways), Irrigation, Information Technology and Finance etc. On the other hand, the social infrastructure development can be achieved through Education in-

rastructure development and Health infrastructure development. But the rapid growth of the society in recent years has placed increasing stress on economic infrastructure such as electricity, railways, roads, ports, airports, irrigation, urban and rural water supply and sanitation, all of which already suffer from a substantial deficit from the past in terms of capacities as well as efficiencies in delivery of critical infrastructure services. In order to emphasize the importance of infrastructure service to the agricultural productivity the present study deals with the role of infrastructure development in Indian agricultural growth.

## Objectives

- To understand the current status of Economic infrastructure development in India.
- To understand the current status of Social infrastructure development in India.
- To analyse the impact of infrastructure development on Indian Agricultural Growth.

## Chapterisation

The present study comprises five chapters. Chapter one provides brief introduction for the concept infrastructure development. Chapter two enlists the literature review. Chapter three enumerates the current status of economic infrastructure development in India. Chapter four envisages the issues on social infrastructure development and the final chapter visualises the linkages between infrastructure developments and growth of agricultural sector.

## Review of Literature

There are various research work were conducted by different economist in order to exhibit the linkage between infrastructure development and agricultural sector. While establishing the linkage between the infrastructure development and agricultural sector, the experts had revealed variety of operational definition for these two factors. However, most of them insisted that infrastructure was an inevitable criterion for the agricultural development.

Rajshri majumdar (2008), in her book, examined the infrastructure-development inter-linkage in India up to district level, preceded by a national overview of the developments over the last thirty five years, using multi-variable approach.

Pravakar and Ranjan Kumar Dash (2009), in their study, have investigated the role of infrastructure in economic growth in India for the period 1970-2006. This study was conducted in continuation of the earlier study by D.A. Aschauer who has developed an empirical framework 'Is Public expenditure is Productive?'

Further, Ranjan Ku Dash and Pravakar Sahoo (2010), in their research study has exhibited the significant positive impact of infrastructure on output apart from the gross domestic capital formation and international trade.

Another study by Shaleen Singhal, Graeme Newell and Thi kim Nguyen (2011), exposed that improved infrastructure is a critical factor in the continued economic growth and urbanisation in India.

Geethanjali Nataraj (2014), in her study has discussed many issues related with infrastructure fields, like electricity production, transport sector etc., under PPP mode.

### Economic Infrastructure Development in India

The origin of Indian agriculture started from 1100 BC. Today, India ranks second place in the world as far as farm output is concerned. Even though 60 percent of Indian workforce are engaged in this sector, it accounts for lesser percentage of contribution to Gross Domestic Product. In 2013, along with the forestry and fisheries the agriculture sector has contributed 13.7 percent of the GDP only. It is unfortunate that the economic contribution of agriculture to India's GDP is steadily dwindling with the country's broad-based economic growth.

However agriculture is the largest economic sector on demographic grounds which plays vital role in the overall socio-economic framework in India. Prior to the mid-1960s India relied on imports and food aid to meet domestic requirement. The progress of Economic Infrastructure Development in Indian agricultural sector starts from successful agricultural policy in the third five year plan 'Green Revolution Technology', which was applied to the period from 1965 to 1978, on irrigated areas, basically in parts of Punjab, western parts of Uttar Pradesh and Haryana. At that point of time, green revolution was applied for Wheat and Rice only. As the irrigation infrastructure was very poor, the new technology suggested usage of groundwater. Therefore Indian farmers started to use tube-wells for harvesting. The success of this technology spread in 1970s and 1980s to the eastern states of India like Bihar, Odisha and West Bengal. In 1980s India shifted its concentration of agricultural policy on production pattern in line with the demand pattern. This resulted in the production of other agricultural commodities like oilseeds, fruits and vegetables. Further Indian farmers began to adopt the new technology and other scientific methods in dair-

ying, fisheries and animal husbandry. During 2013, the third largest electricity producer of the world India has contributed 4.8 percent of global share in electricity generation surpassing Japan and Russia. The Electricity sector of India had an installed capacity of 255.012 GW at the end of November 2014 and generated around 703.1 GW for the period April-November 2014. According to the 17<sup>th</sup> electric power survey of India, the report exposed that over 2010-11, the Industrial demand of electricity in India is 35 percent, the use of electricity in household enjoyed 28 percent, the demand from agricultural sector amounted to 21 percent and 9 percent of electricity is used for commercial purpose and the rest shared by public lighting and other miscellaneous applications. There are four reasons that make India's demand more for electricity. This estimate derived by McKinsey<sup>2</sup>, states that there is a need of electricity generation over 300 GW. First of all, India's manufacturing sector is likely to grow faster than in the past. Secondly, domestic demand is rapidly increasing as the quality of life for more Indians are improving, thirdly, nearly 1,25,000 villages are likely to be electrified and finally blackouts and load shedding suppresses the demand side of electricity. It is the open fact that the Indian agricultural sector suffers with the inadequacy of Infrastructural facility. The main reason being the poor investment in this sector. Except few states like Punjab and Haryana the agricultural equipment and inception of technical knowhow are scarce. There are many reasons for poor productivity. The foremost and undeniable reason was that most of the farmers are not able to afford proper irrigation systems as their farm land is small. When we think about the big farms, it is unfortunate that most of the big farms are family owned with more number of legal heirs which are under litigation. They do not enjoy the benefit of economies of scale because of the land absenteeism in big farms. The present condition of agricultural production is that the owner of the land is leasing out to the tenant. The tenant who is involved in cultivation is providing the least bothertation for the land either in terms of maintenance, development or productivity. The share of agricultural sector in the Gross Domestic Product keeps on decreasing.

However it is the largest economic sector of India and it plays predominant role in socio economic development. The population of the country is growing faster than its ability to produce rice and wheat. Irrespective of more people depend on rural employment, the agriculture produce are not able to reach the expected level. The current agricultural policies are neither financially feasible nor economically embeddable. The Government of India provides huge agricultural subsidies and other monetary benefits to the agricultural sector, which are hindering the productivity enhancing investment such as Research and extension activities on agriculture and investment on agricultural infrastructure. Table 1.1 exposes the break-up of electricity consumption by different sectors. Out of which the industrial sector consumes more compared to other sectors. From 1970s, there is a constant increase of electricity consumption till end of 1990s. After that the share of consumption is reduced to 21.8 percent in 2002 from 26.5 during 1997. It declined further to 17.95 percent at

the end of March 2013. Figure 1.1 represents the share of electricity consumption by agricultural sector out of total generation.

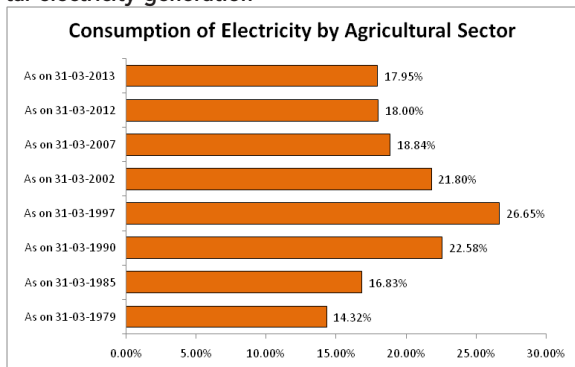
**Table 1.1 Breakup of Electricity Consumption**

Consumption as on	Total (in GWh)	Domes-ticSector	Commercial Sector	Indu-strial Sector	Traction Sector	Agriculture Sector	Other Misc.	Per Capita (in KWh)
31-Mar-1979	84,005	9.02%	5.15%	64.81%	2.60%	14.32%	4.10%	171.6
31-Mar-1985	124,569	12.45%	5.57%	59.02%	2.31%	16.83%	3.83%	228.7
31-Mar-1990	195,098	15.16%	4.89%	51.45%	2.09%	22.58%	3.83%	329.2
31-Mar-1997	315,294	17.53%	5.56%	44.17%	2.09%	26.65%	4.01%	464.6
31-Mar-2002	374,670	21.27%	6.44%	42.57%	2.16%	21.80%	5.75%	671.9
31-Mar-2007	525,672	21.12%	7.65%	45.89%	2.05%	18.84%	4.45%	559.2

31-Mar-2012	785,194	22.00%	8.00%	45.00%	2.00%	18.00%	5.00%	883.6
31-Mar-2013	852,902	21.79%	8.33%	44.87%	1.81%	17.95%	5.25%	917.2 Provisional

Source: Ministry of Agriculture

Fig 1.1 Electricity consumption of Agriculture out of total electricity generation



Source: Ministry of Agriculture.

**Social Infrastructure Development in India**

The Social infrastructure development in India relies on two major social indicators, the health service and the education service. India has a Universal Health Care System run by the constituent state and its territories. The current health issues are Malnutrition especially, child malnutrition, high infant mortality rate, poor sanitation, scarce of safe drinking water, female healthcare and other diseases like dengue fever, hepatitis, tuberculosis, malaria and pneumonia continue to plague. Further HIV/AIDS in India is ranked third highest among countries with the amount of HIV infected patients. Diarrheal diseases are the primary causes of early childhood mortality. These diseases can be attributed to poor sanitation and inadequate safe drinking water. India also has the world's highest incidence of Rabies. Conversely, in 2012 India was polio-free for the first time in its history. This was achieved due to successful implementation of Pulse Polio Programme started in 1995-96 by the Government of India. According to 2008 estimation, more than 100 million households had no toilets, and 33 percent had lack of access to latrines. Over 50 percent of the population (638 million) defecates in the open. Only 11 percent of Indian rural families dispose of stools safely where as 80 percent of the rural population leave their stools in the open. The open air defecation leads to the spread of disease and malnutrition through parasitic and bacterial infections.

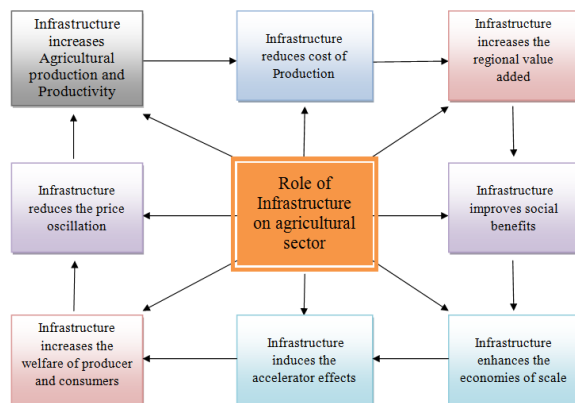
The third National Family Health Survey confirmed that the private medical sector remains the primary source of health care for 70 percent of households in urban areas and 63 percent of households in rural areas. The proportion of public and private health care sector varies significantly between states. Poor quality of care in public sector is the main reason for the growing preference of private health care. The other major reasons are distance of the public sector facility, long wait times and inconvenient hours of operation.

The study conducted by IMS Institute of Healthcare Informatics in 2013, across 12 states in over 14,000 households indicated a steady increase in the usage of private healthcare facilities over the last 25 years for both Outpatient and In Patient services, across rural and urban areas. The National Rural Health Mission (NRHM) was launched in April 2005 by the Government of India. The goal of the NRHM was to provide effective healthcare to rural people

with a focus on 18 states which have poor public health indicators and/or weak infrastructure.

**Impact of Infrastructure Development on Indian Agricultural Growth**

The food and nutritional security of the nation are in the hands of agriculture sector. Though the sector is the prime source of livelihood for more than 55 percent of population, its share to the national Gross Domestic Product has declined to 14.2 percent. This is mainly due to rapid growth of industrial and service sectors. But with the sustainable provision for the infrastructural facility, we can achieve the new peaks of agricultural production, in turn higher contribution to GDP. The following model estimates the possible growth of agricultural production and productivity through various linkages of economic indicators. The infrastructure facility reduces the cost of production which may help to reach the regional value addition. This in turn may improve the other social benefits. As a result, large scale of production will be proposed. The economies of scale of production may undergo both multiplier effect and accelerator effect for further production. This may ensure the welfare of both producer and consumer. The constancy of price indices is implemented with the economic achievement. Finally it results in not only in the production but also in the productivity. It is like a vicious cycle. The sustainable agricultural production and productivity may reduce the cost of production. Once again the cycle starts. Therefore invest on agricultural infrastructure will improve not only the agricultural production but also the agricultural productivity.



**Conclusion**

The agriculture growth rate in Indian GDP in spite of its decline in the contribution of the Country's GDP plays a vital role in the all round economic and social development of the country. The agricultural production in India has increased after independence but in the last few years it has decreased. This in turn has declined the growth rate of the agriculture sector in India GDP. The total food production of food grain was 259.29 million tons in 2011-12 and the next year it declined to 255.36 million tons. The agriculture growth rate in India GDP in this sector has reduced over the years. The agriculture sector has had low production due to a number of factors such as illiteracy, insufficient finance, and inadequate marketing of agricultural products. One of the main reasons for the decline in the agriculture growth rate in India GDP is that the average size of the farms is very small which in turn makes the sec-

tor it find difficult to adopt modern technology and agricultural practice. The most important reason for diminish of agricultural production and productivity is insufficient irrigation facilities. Due to this the Indian farmers are in the position to depend on the rainfall, but the monsoon cheats them most of the time.

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