

Challenges faced by the Agriculture Sector in Developing Countries with special reference to India

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ABSTRACT

This is an attempt, through the review of literature, to understand the history and characteristics of the Indian agriculture sector, its transition from traditional to commercial agriculture and the problems it faces. Modern agricultural practices and the relationship with environmental depletion have also been assessed. The article discusses some of the developmental challenges faced by the Indian agriculture sector in particular and developing nations in general - illiteracy, poor socio-economic conditions, lack of technical knowledge and awareness, small land holdings, modernization leading to barren land and disasters leading to rural poverty, weather-dependent farming systems, low per capita income, underdeveloped physical infrastructures and inefficient bureaucratic procedures associated with the comparatively high cost of agricultural production. Natural disasters and human-induced environmental degradation are closely associated with improved farming systems.

History and Characteristics

Agriculture in India has a long history, dating back ten thousand years. It began by 9000 BC as a result of early cultivation of plants and domestication of crops and animals (Gupta, page 54). With the development of agricultural implements and techniques, settled life soon started (Harris & Gosden, Lal, R.). Double monsoons led to two harvests being reaped in one year (^a ^b agriculture). Until British Rule, the Indian economy had been known for centuries for its self-contained village communities, consisting of agriculturists, cottage industrialists, village craftsmen, artisan professions, unskilled workers and village officials. These communities played a major role in not only meeting the needs of the village economy but producing and exporting various products to foreign countries. During those times agriculture was a way of living and the farmer produced merely for self-consumption. Food crops like wheat and rice were the most important. Since plants and animals were considered essential to their survival, people started worshipping and respecting them (Gupta, page 57).

The middle ages saw irrigation channels reach a new level of sophistication in India and

Indian crops affecting the economies of other regions of the world under Islamic patronage (Iqtidar & Shaffer). Land and water management systems were developed to provide uniform growth (Palat & Kumar). However, during the British Period, when the industrial revolution was going on in England (1780-1820), the British forced farmers to switch over to commercial crops like cotton and indigo and started providing financial assistance to farmers through *zamindars* and British agents to export the surplus cash crops to England. There was continuous exploitation of natural resources and economic wealth from India till Independence was achieved. Due to this economic drain, there was permanent loss of India's national income and wealth. The result was that by the mid-nineteenth century, traditional handicrafts were completely wiped out and artisans lost their hereditary occupations. This led to their migration to agriculture for their livelihood and made this sector over crowded, a process called 'de-industrialisation', which led to stagnation in the Indian economy. Nevertheless, independent India was able to develop a comprehensive agricultural program (Roy & Kumar). The first agricultural census was started in 1970-71 (July-June) as part of the 1970 World Agricultural Census Program sponsored by FAO. It collects agricultural information such as number, area, tenancy, land utilization, cropping pattern and irrigation particulars of different sizes.

The Indian Agricultural Research Institute (IARI), established in 1905, was responsible for research leading to the Green Revolution of the 1970s. The Indian Council of Agricultural Research (ICAR) is the apex body in agriculture and allied fields, including research and education (Objectives). The Union Minister of Agriculture is the President of the ICAR. The Indian Agricultural Statistics Research Institute develops new techniques for the design of agricultural experiments, analyses data in agriculture, and specializes in statistical techniques for animal and plant breeding. Recently the Government has set up a Farmers' Commission to evaluate the agriculture program (Farmers Commission). However their recommendations have had a mixed reception.

Agriculture provides gainful employment to nearly two-thirds of the population and contributes about 30% to the national income. It supplies raw material to various agro-based industries and earns foreign exchange. Today, India ranks second worldwide in farm output and is the largest producer of fresh fruit, anise, fennel, badian, coriander, tropical fresh fruit, jute, pigeon peas, pulses, spices, millets, castor oil seed, sesame seeds, safflower seeds, lemons, limes, cow's milk, dry chillies and peppers, chick peas, cashew nuts, okra, ginger, turmeric guavas, mangoes, goat milk and buffalo milk and meat (^{a b c} [Agriculture sector](#)) Coffee(^{a b c} [Coorg, Coffee](#)). It also has the world's largest cattle population (281 million) (^{a b c} [Lester](#)). It is the second largest producer of cashews, cabbages, cotton seed and lint, fresh vegetables, garlic, eggplant, goat meat, silk, nutmeg, mace, cardamom, onions, wheat, rice, sugarcane, lentil, dry beans, groundnut, tea, green peas, cauliflowers, potatoes, pumpkins, squashes, gourds and inland fish. It is the third largest producer of tobacco, sorghum, rapeseed, coconuts, hen's eggs and tomatoes (^{a b c} [Indian agriculture](#)). India accounts for 10% of the world fruit production with first rank in the production of mangoes, papaya, banana and sapota (^{a b c} [Indian agriculture](#)).

Despite this, the share of agriculture in the GDP is declining although it is the largest economic sector and plays a significant role in the India's socio-economic development. India's population is growing faster than its ability to produce rice and wheat and as most of her population depend on rural employment for a living, this is a cause of concern for policy makers (^{a b c} [Sengupta](#)).

The rural sector in India, as in several other developing countries, is still evolving and poses a variety of challenges. Some of the common problems faced are discussed in this paper.

PROBLEMS FACED BY THE AGRICULTURE SECTOR - INDIA

Rudimentary infrastructure and policies leads to slow agricultural growth

Slow agricultural growth is a matter of concern as most of India's population is dependent on rural employment for a living. Current agricultural practices are neither economically nor environmentally sustainable and India's yields for many agricultural commodities are low. Poorly maintained irrigation systems and

lack of good extension services are among the factors responsible. Farmers' access to markets is hampered by poor roads, rudimentary market infrastructure, and excessive regulation. (^{a b c} ["India Country Overview 2008"](#)).

India has inadequate infrastructure and services because of low investment. Farming equipment and infrastructure are scarce outside the provinces of Punjab and Haryana. Because many of the farms are small, the farmers cannot afford irrigation systems that would increase productivity. Most big farms are family-owned and run and do not take advantage of economies of scale - the concept that the cost per unit falls as output quantities increase, because the problem of land absenteeism in big farms which hinders the development of land to increase productivity because the tenant who cultivates the land has little care for its development or productivity.

Low investment in big and small of farms leads to lower production, inefficiency and higher costs, one of the causes of food inflation in India.

According to the World Bank, India's large agricultural subsidies are hampering productivity-enhancing investment such as agricultural research and extension, as well as investments in rural infrastructure, and the health and education of the rural people. Though trade reforms in the 1990s helped to improve the incentive framework, overregulation of the agricultural domestic trade increased costs, price risks and uncertainty, undermining the sector's competitiveness. The government intervenes in labour, land, and credit markets.

The average size of land holdings is small

The average size of land holdings is less than 20,000 m² and subject to fragmentation due to land ceiling acts and, in some cases, family disputes. Such small holdings are often over-manned, resulting in disguised unemployment and low productivity of labour.

Poor socio-economic condition of farmers

Illiteracy, the root cause of farmers' poor socio-economic condition, should be tackled vigorously. Though the government is taking the initiative by adopting policies like universal education, a highly centralized bureaucracy with low accountability and inefficient use of public funds limits their impact on poverty.

Lack of technical knowledge and awareness are also responsible for low productivity, adding to the problem of poverty among farmers. Other causes are the slow progress in implementing land reforms, inadequate or inefficient finance and marketing services for farm produce and inconsistent government policy. Agricultural subsidies and taxes often change without notice for short-term political ends.

Use of technology is inadequate

Adoption of modern agricultural practices and use of technology is inadequate, hampered by ignorance, high costs and impracticality in the case of small land holdings. In India, farming practices are too haphazard and non-scientific and need some forethought before implementing any new technology. The screening of technology is important since all innovations are not relevant or attractive to all areas. It is important to screen them according to the geographical area and the local context of agriculture and let the local Kisan Vigyan Kendras (KVKs) promote it. Appropriate technologies need to be adopted.

No proper management of irrigation

Irrigation in India can be broadly classified into two parts, each having different issues.

There are a few major problems with **surface irrigation**. Irrigation facilities are inadequate and there is no effective **system management** for how much water is stored, how much is used for irrigation or what value can be added to this water. Consequently, farmers depend on rainfall, specifically the Monsoon season. A good monsoon results in robust growth for the economy as a whole, while a poor monsoon leads to sluggish growth.

With **groundwater**, the major **problem is of equity**. Those who are better able to extract water take away disproportionately from groundwater aquifers, causing various problems. One is that if groundwater is close to coastal areas, it may get mixed with salt. In other places, the groundwater level drops drastically and wells go dry, making it difficult to get drinking water. Over-pumping made possible by subsidized electric power is leading to an alarming drop in aquifer levels ([^ Satellites](#), [^ Columbia](#), [^ Keepers](#)). The World Bank says that the allocation of water is inefficient, unsustainable and inequitable. It creates dual problems related to

the availability of drinking water and access of groundwater to the poor.

The agriculture sector faces the disastrous consequences of hazards

Unique geo-climatic conditions make India vulnerable to hazards and disasters, both natural and human-induced. Common natural hazards are floods, cyclones, landslides, forest fires, avalanches, earthquakes, tsunamis and pest/disease outbreaks in plants and animals. Manmade disasters include fire, spurious seed, fertilizers and pesticides and price fluctuation. Natural hazards are events that occur within hours with disastrous consequences. Drought, which is characterized by lower than normal precipitation and slow onset, is a progressive phenomenon caused by soil conditions and atmospheric changes over a period of time. It impacts crops, livestock and human beings as well as non-agriculture sectors dependent on it. In such scenarios, with inadequate risk mitigation support and almost negligible non-farm employment, a farmer's life (especially small and marginal ones) is complex and difficult. One cannot have any control over natural disasters but with better preparedness, we can mitigate manmade disasters and the losses to farmers.

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About 60% of the landmass is prone to earthquakes of varying intensities, over 40 million hectares is prone to floods, about 8% to cyclones and 68% to drought. The super cyclone in Orissa in 1999, the Bhuj earthquake in Gujarat in 2001, the tsunami in the Bay of Bengal in 2004 and recent floods in Punjab and Haryana are examples of large scale disasters in recent times (Ghosh&Chowrasia,2010). The consequences are so disastrous that sometimes farmers compromise their willingness to take risks in farm entrepreneurship.

Dependence of agriculture on weather

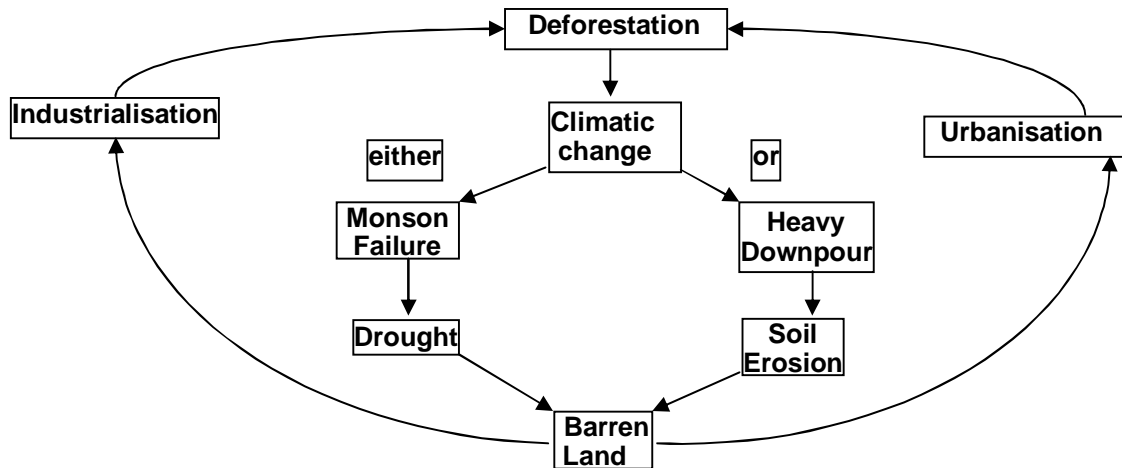
Agriculture in India and many other developing countries depends on the monsoon because irrigation facilities are not fully developed. If the monsoon fails or it rains heavily or untimely, it ruins agricultural production. Agriculture is also a gamble with temperature. Too high a temperature negatively affects the productivity of a crop. The present insurance system in India does not cater much for any loss of crop due to unfavourable and unavoidable climatic conditions or pest epidemics. Small farmers who have taken loans to raise crops fall into

heavy debt in such situations and if this continues, the poor farmer may starve and

sometimes even commits suicide as reported in Maharashtra and Andhra Pradesh.

The vicious circle of climatic change.

Flow Diagram of the vicious circle of climatic change



For the sake of industrialization and urbanization, more and more trees have been cut, leading to global warming, barren land and an imbalance in climatic conditions. Barren land is caused by soil erosion from heavy downpours with flash floods, due to deforestation and dry land and drought due to monsoon failure. Distressed farmers then have to sell it off to traders and builders who earn money by reselling it at exorbitant prices for commercial purpose like urbanization and industrialization. Global warming is further aggravated by such practices. The vicious circle starts again. The shrinking of farm land paves the way to food security problems. Dry land is not nature-made but manmade. Nature flourishes richly but when man goes on cutting trees, over a period of time the area becomes barren and unproductive due to the absence of surface water and ground water recharge. This view is supported by (Prabu M. J., 2010).

Disasters leading to rural poverty

Rural poverty has two characteristics: the poverty of rural human beings and the poverty of weather prone rural areas. The degradation of natural resource may be caused by drought or flood because of global warming or by modern farming methods which affect the land negatively, ultimately making rural people poor.

The first one leaves the land barren and the second one, though costly, leads to large scale economies. Because of high returns, farmers are tempted without giving thought to its ill effects. The poor who cannot afford it fall further into the trap of poverty because they cannot compete with rich farmers while casual labourers lose their jobs with the introduction of mechanization. To remove rural poverty, small farmers and women must be integrated into the development effort, so that they also contribute to the removal of poverty.

AFRICA

It is not only the Indian agriculture sector that is facing problems; other developing countries are too. Some of the problems faced in the African agriculture sector are:

Production incentives are lacking

In Nigeria, incentives are minimal or non-existent. Nigeria is still battling with primitive ways of handling farm produce. A visit to a loading point is a pitiable sight. A major obstacle to agricultural development is the parlous state of transport infrastructure. Despite their obvious importance, transport systems do not function as they should. Road and rail transport, the backbone for the development of any sector, are in a dilapidated condition and a significant proportion of investment made in road networks in the

1960s and 1970s has disappeared because of lack of maintenance (Oyewole BA *et al* 2006).

The World Bank estimates that a saving of one dollar on road maintenance increases the cost of operating vehicles on that route by two or three dollars. This results in loss of agricultural produce from the field to the end users (ARCN,1998). There is a need for production incentives in terms of favourable pricing linked with efficient marketing facilities, if losses are to be reduced. Okigbo, 1985 advocated good, efficient handling abilities to reduce the cost of perishables.

Poor state of rural infrastructure

Most Nigerian farmers are small-scale, producing about 85% of the total food production (Okuneye, 1995). This study analysed rural farmers' involvement in the identification and prioritization of infrastructure needs in Oju Local Government Area of Benue State. Ekong (2000) defined rural infrastructure as those basic physical, social and institutional forms of capital, which enhance rural dwellers' production, distribution and consumption activities and ultimately the quality of life. These infrastructures include transportation, storage facilities, power supply, communication facilities, water supply, health facilities and other community services. Resource-poor farmers are beset by long standing problems impeding their productivity and contributions to the national aggregate output. According to Abubakar (1999), the availability of rural infrastructures is critical to the optimum performance of small-scale farmers. Studies by Ajayi (1996) and Amechi (2005) have demonstrated the positive impact of rural infrastructures on the socio-economic lives of rural farmers. The study identified the infrastructure needs of farmers in order of priority. A road network is most needed (100%), followed by storage facilities (88.2%), power supply (61.9%) and health care (53.5%). Telephone services, schools and irrigation facilities were in low demand in the study area. This finding agrees with Umeh *et al* 2006 that a poor road network is the most critical infrastructural problem facing farmers in Nigeria. Okuneye 2000 also summarized the poor state of rural infrastructures in Nigeria.

Adverse Conditions Experienced by Sub-Saharan African Farmers

The majority of farmers in sub-Saharan African are small-scale entrepreneurs whose farm operations are performed with low input

agricultural technologies. Agrarian activities are affected by seasonal variation because most farmers practice rain-fed agriculture (Mkpado, *et al* 2008). The macro economic and political environments under which Sub-Saharan Africa rural communities exist often have little or no regard for the welfare of small-scale farmers, as reflected in erratic changes of agricultural policy such as placement and lifting of bans on agricultural products competing with local output, unnecessary delays in administration of agricultural credit and high interest rates with little or no moratorium. Other adverse conditions include high cost of inputs and technological know-how/farm mechanization leasing services and inefficient extension services. Idachaba (2006) holds the similar views. In spite of these problems, agriculture is a dominant industry in sub-Saharan Africa, which under employs the largest labour force. Over 80% of the inhabitants of sub-Saharan Africa engage in agriculture; the marginal productivity of labour is almost zero (Arene and Mkpado, 2004). They produce about 90% of the sum agricultural output in sub-Saharan African (UNDP, 1995). Agriculture has thrived on the use of indigenous knowledge as a source of low input technologies but lack of proper recognition or efficient use of low input technologies have reduced the yield of small-scale farmers in sub-Saharan Africa.

Correct understanding of the problem

Before finding the solution for rural deprivation, it is important to understand the problem. We should be very clear about the direction we want to proceed - the removal of rural poverty or fast tracking neo-liberal rural development? If we want to move ahead with the second one, then we are also part of a contemporary version of the ancient cult-ritual, i.e. human sacrifice (Narbali).

There are two ways of looking at the problem - glass half full or half empty. If we see half-full and understand that water is not a problem but a solution to our problem i.e. by innovative ways of farming which give good results with scanty water and innovative ways to conserve soil and water, then we can move forward on a sustainable path of development and remove rural deprivation.

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