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Agriculture Sector Impediments of 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 socioeconomic 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 'deindustrialisation', 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{^ Coorg, Coffee}. It also has the world's largest cattle population (281 million) {^ 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 ^ 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 {^ 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.

CHALLENGES OF THE AGRICULTURE SECTOR- INDIA

In order to understand the challenges faced by agriculture sector in developing nations, some of the common problems faced have been discussed here.

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{^ "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 both types of farms (big and small) 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 m^2 and subject to fragmentation due to land ceiling acts and, in some cases, family disputes. Such small holdings are often overmanned, resulting in disguised unemployment and low productivity of labour.

Poor socio-economic condition of farmers

Illiteracy, the root cause of farmers' poor socioeconomic 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.

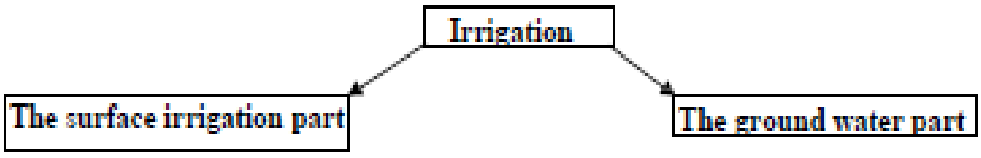
Accompanied by this, lack of technical knowledge and awareness are some of the problems responsible for low productivity of the farmers, adding to the problem of poverty of the farmers. In addition to this, slow progress in implementing land reforms and inadequate or inefficient finance and marketing services for farm produce, inconsistent government policy are the others which add fuel to the fire. Agricultural subsidies and taxes often changed 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.

Lack of Proper Management of Irrigation

Irrigation in India can be broadly classified into two parts



The issues related to each of these are completely different. As far as surface irrigation is concerned, there are a few major problems. Irrigation facilities are not only inadequate but the problem of system management also is there. We do not effectively manage water bodies, in terms of how much water is stored, how much is being used for irrigation, or what value we can add to this water. The result of which is that the farmers still have to depend on rainfall, specifically, the monsoon season. A good monsoon results in a robust growth for the economy as a whole, while a poor monsoon leads to a sluggish growth. The other is groundwater; the major problem is of equity. Those who have better abilities to extract water take away disproportionately from groundwater aquifers. This gives rise to various problems. One is that if groundwater is closer to the coastal area, groundwater may get mixed with salt which affects everybody and is a negative externality. In many other places, groundwater level goes down drastically and often the wells go dry, making it difficult to get even drinking water. At the same time over pumping made possible by subsidized electric power is leading to an alarming drop in aquifer {^ Satellites, ^ Columbia, ^ Keepers Wikipedia}. World Bank also says that the allocation of water is inefficient, unsustainable and inequitable. It creates dual problems - related to availability of drinking water as well as access of ground water to the poor.

The agriculture sector faces the disastrous consequences of hazards

Indian agriculture is prone to all possible hazards which often end up in disasters. Unique geoclimatic conditions make the country vulnerable to hazards and disasters, which are both natural and human, induced. The common natural hazards in India are floods, cyclones, landslides, forest fires, avalanches and pest/disease out brakes in plants and animals, besides earthquakes (experienced while conducting this study in Sikkim on 18 September, 2011measuring 6.9 on richter scale) and Tsunami. Besides, the manmade disasters are fire, incidence of spurious seed, fertilizers and pesticides and price fluctuations. While natural hazards are instant events that occur within hours due to nature's fury with disastrous consequences; drought, which is characterized by lower than normal precipitation and slow in onset is a progressive phenomenon caused by soil conditions and atmospheric changes over a period of time which impact not only crops but also livestock and human beings as well as non-agriculture sector which are dependent upon it. In such scenario, with inadequate risk mitigation support and almost negligible non-farm employment, farmer's life (especially of small and marginal ones) has become very complex and difficult. One cannot have any control over natural disasters. But with better preparedness, we can help in mitigating manmade disasters and the losses of the farmers.

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 Jan. 2001, Sikkim earthquake on 18 September, the Tsunami in Bay of Bengal in Dec. 2004 and recent floods in Punjab and Haryana are the examples of large scale disasters in recent times {Ghosh and Chowrasia, 2010}. The consequences of them are even more disastrous that sometimes farmers compromise the willingness to take risk in farm entrepreneurship.

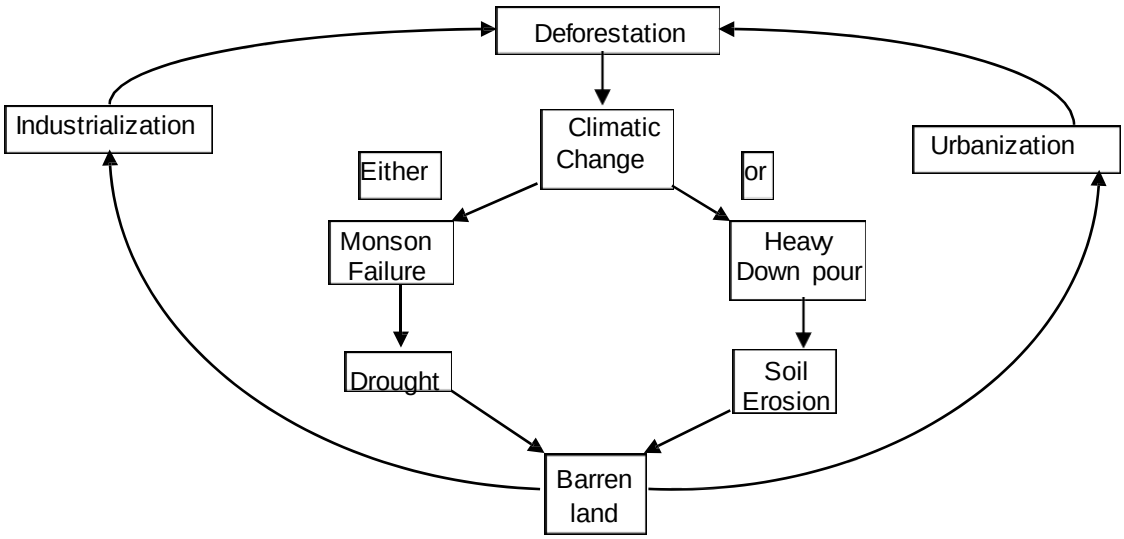
Dependence of agriculture on weather

Agriculture not only in India, but world over especially in developing countries, depends on monsoon, because in these countries irrigation facilities are not fully developed. In case monsoon fails or it rains heavily untimely, it ruins the agricultural production. Agriculture has become a gamble not only for monsoon but also for temperature now- a- days. With increase in temperature than what a particular crop requires, it affects negatively the productivity of that crop. The present insurance system in India also does not cater much for any loss of crop failure due to any unfavourable and unavoidable climatic conditions or pest epidemics. Small farmers who have taken loans to raise the crops come under heavy

debts in such situations and if this situation prolongs for many years it further forces the poor farmers to starve and sometimes this leads to suicides by aggrieved farmers as reported in Maharashtra and Andhra Pradesh.

The vicious circle of climatic change

The Flow Diagram of Vicious circle of climatic change is depicted at Fig below.



For the sake of industrialization and urbanization, more and more trees have been cut, leading to global warming and causing imbalance in climatic conditions thereby making farming occupation even harder. It also makes the land barren. The barren land is caused by

either

a) Soil erosion due to deforestation activities causing imbalance in climatic conditions leading to heavy downpour or flash floods.

or

b) Dry land and drought due to monsoon failure.

The barren land forces the farmers in distress selling of it to traders and builders, who earn money by reselling it at exorbitant prices for commercial purpose like urbanization and industrialization. The world which is already facing the problem of global warming, it further gets aggravated by such practices. From this, again the vicious circle starts. The shrinking of farm land paves the way to food security problems. There is no denying the fact that a dry land is not nature made but manmade. When one goes on cutting trees, over a period of time the area becomes barren and unproductive due to absence of surface water and ground water recharge {Prabu M. J.,2010}.

Disasters leading to rural poverty

There has been continuous increase in rural poverty. It has twin characteristics-

(a) Poverty of rural human beings
(b) Poverty of weather prone rural area

Reason for degradation of natural resources and poverty can be any –

a) It can be a drought/flood because of global warming
or
b) Modern farming methods

It affects the land negatively and ultimately making the rural people poor.
The first one leaves the land barren and the second one, which though is costly but leads to large scale economies. Because of high returns, farmers get tempted towards it without giving a second thought to its ill effects. The poor who cannot afford it further fall into the trap of poverty because, they cannot compete with the rich farmers and casual labours even lose their jobs with introduction of mechanization. So, to remove rural poverty there is a need that small farmers and women to be integrated in the development effort, so that they also contribute in the removal of poverty.

Climate change will lead to increased hardship for India's poorest women

Himalayan glaciers are also receding at the fastest rates due to global warming, threatening water shortage for millions of people particularly in India, China and Nepal. Climate change will lead to increased hardship for India's poorest women. Women in India, especially in rural areas, are often responsible for providing daily essentials such as food and water. When climate change related disasters strike, researches have shown that the workload of women and girls increases, thus leading to their exclusion from opportunities like education and a diminishment in their equal participation in development. For example, deforestation increases the time women need to spend looking for fuel. Research has further shown that women have fewer means to adapt and prepare for extreme weather conditions. Many poor women are also actively engaged in agricultural activities, including paddy cultivation and fishing, that will be affected by changing weather patterns in India; loss of livelihood will increase their vulnerability and marginalization {UNDP 2007/8}.

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 SubSaharan Africa rural communities exist often have little or no regard for the welfare of smallscale 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 knowhow/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 smallscale farmers in sub-Saharan Africa.

Understanding of the Problem in the Right Perspective

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

There are 2 ways of looking at the problem. A glass half full or half empty. If we look from half full side and understand that water is not a problem but a solution of our problem i.e. by innovating the ways of farming which give good result with scanty water and innovating the ways to conserve soil and water, then only we can move forward on the sustainable path of development to remove rural deprivation.

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