



An Analysis of The Agricultural Development and Sustainable Development in India – A Critical Review

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Abstract:

This paper concentrated on the sustainable development of agriculture sector in India. it has a vital place in the economic development of India. India's commitment to environmental protection and sustainable development, has gained significant attention, especially following the Stockholm conference, a milestone event, the pioneering nation in articulating a comprehensive framework for survival in the 21st century widely recognized as the minimum requirements for progress, continuing this charge, India towards sustainable development but also played a pivotal role in shaping global environmental discourse in recent years, consequently, seamlessly integrated these objectives into India's national policies, further reinforcing the nation's dedication to environmental preservation and sustainable progress, the goals of economic and development have to be determined in terms of sustainability in the long run. The SDGs comprise a set of 17 global objectives established by the United Nations to tackle urgent worldwide challenges, including poverty, inequality, climate change, and environmental degradation, numerous SDGs are directly linked to the realms of food and agriculture, the SDG 2, named zero hunger, focuses on ending hunger, achieving food security, enhancing nutrition, and promoting sustainable agriculture, SDG 13, climate action, underscores the connection between agriculture and efforts for climate change mitigation and adaptation, the SDG 15, life on land, emphasizes the significance of safeguarding terrestrial ecosystems and biodiversity, often impacted by agricultural practices, the multifaceted challenges encountered by the Indian economy key areas such as poverty alleviation, food security, sustainable land use, water management, and rural livelihoods, among others, where concerted efforts are required to achieve the SDGs, modern agriculture to sustainable agriculture is the need of the hour for the conservation of natural resources, environment, lack of understanding of the need for sustainability in the poor farming community has made things worse, water usage is also unplanned with some arid areas misusing the irrigation facilities provided by planting water intensive crops, it is a process of change in which exploitation of resources, the direction of interests, orientation of technological development and the institution change are in harmony and enhanced both current and future potential to meet human needs and aspirations, utilization of resources with better efficiency with out disturbing, or polluting the environment.

Keywords: *The Sustainable Development, Agriculture Growth, Resources, Technological Development, Agricultural Investment, Irrigation, And Problems, Trends in Economy.*

Introduction:

This paper main objective is the sustainable agriculture is also essential to provide sufficient food and also act as an engine of poor growth despite resource constraints. The national policy on agriculture gives special emphasis for sustainability of agriculture as utilization of vast and untapped growth potential of agriculture strengthening the rural infrastructure to support fast agricultural development promotion of value addition and to accelerate the growth of agriculture based business creation of employment in rural areas securing fair standard of living for the farmers and agricultural workers including their families discouraging migration to urban areas; facing the challenges arising out of the economic Liberalization and Globalization. Agriculture has been a way of life and continues to be the single most important livelihood of the masses in India. Agriculture has been acting as a driving force for our economy as it generates employment, national income, foreign exchange, food for people, feed for livestock. Agriculture is not only our profession it's our culture. Economic development process has to be sustainable so as to achieve long terms goals, it should be capable of increasing income, employment and production for a long time. It has a vital place in the economic development of India it contributes to

Gross Domestic Product (GDP) stood at 14 percent and working population is 54 percent during 2017-18. It means, development at present meets the needs of the present generation without compromising the ability of future generation to meet their own demand, sustainability in agriculture means the land and resources that use for agriculture today should be handed over to the future generations in a sustainable form so that they can continue to practice agriculture and have food security, this means that we have to use lands, water resources, etc in such a manner that the future generations are also will be able to have sustainable development, policy measures-declare a national policy for sustainable agriculture, establish a national strategy for integrated pest management, prioritize research into sustainable agriculture, grant farmers appropriate property right, direct subsidies and grants towards sustainable technologies, link support payments to resources conserving practices, penalize polluters, provide better information for the consumers and the public, encourage the adoption of natural resource accounting, establish appropriate standards and regulations for pesticides, support farmers' training schools, scientific method of cultivation with best inputs including credit must be provided. India has not only met its domestic requirement but is also exporting to other countries it

also has a respectable buffer stock of about 40 million tonnes of food grains. Deficiencies in micro nutrients such as zinc, iron, and manganese have also increased in Indian soil, though we have more than 100 million holdings hardly 4 percent of the total area is under pasture and grasses, the area under forest, pasture and grazing land has considerably declined over the times. The present social forestry programmes often have tended to be government foresting for the people rather than people own foresting for meeting their needs. Thus Indian agriculture has problems related to sustainability viz. Marketed deterioration of renewable resources and of environment and levelling of agricultural yield despite increasing doses of new inputs and high yielding technology. More than half of the Indian population is dependent on agriculture for its subsistence. It is a broad term which includes organic agriculture as well as sustainable agriculture is in fact the successful management of resources for agriculture to satisfying the changing the human needs while maintain or enhancing the quality of environment and conserving the natural resources it is a balanced management system of renewable resources including soil, wildlife, forests, crops, fish, livestock, plant genetic resources and ecosystems without degradation and to provide food, livelihood, for current agriculture generation maintain and improving

productivity and ecosystem services of this resources. That are designed to use existing soil nutrient and water cycles, and naturally accruing energy flows for food production, furthermore such systems aim to produce food that is both nutritious and without products. In practice such systems have tended to avoid as far as possible the use of chemical fertilizers, pesticides, growth regulators, and live stock feed instead relying upon crop rotations, crop residues, animal manures, off - farm organic wastes, mechanical cultivation and mineral caring rocks to maintain soil fertility and productivity, and on natural biological and cultural controls for insects, weeds, and other pests. It depends on quality and availability of natural resources like soil and water, India is the largest producer, consumer and exporter of spices and spice products. Indian fruit production has grown faster than vegetables, making it the second largest fruit producer in the world. Indian 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 percent of the country 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 Government has been implementing

several schemes and programmes for promoting sustainable agriculture practices, the National Mission on Sustainable Agriculture (NMSA), which aims at enhancing food security and protection of resources such as land, water, biodiversity and genetics the national initiative on climate resilient agriculture, the national food security mission, for integrated development of horticulture and national mission on agricultural extension and technology are being implemented to cover other major aspects of farming, the agriculture and allied sector continues to be pivotal to the sustainable growth and development of the Indian economy, not only does it meet the food and nutritional requirements of 1.3 billion Indians, it contributes significantly to production, employment and demand generation through various backward and forward linkages. It has several benefits over modern agriculture as it is cheap, conservation water, soil and environment, maintain crop diversity, and the food grains, produced are nutritious and free from pesticide residues. In areas where irrigation in the form of rivers and canals is not sufficiently available, ground water resources are heavily exploited. The issue of sustainable development can be studied modern agriculture system it can compare them by three dimensions, ecological, economic and social sustainability. Ecological sustainability is most of the traditional practices are not ecologically

sustainable. It facilitates the optimum utilization of the available natural resources health and pollution use chemicals, pesticides and fertilizers adversely affect the total ecology as well as the population. Improper use of pesticides, improper storage etc. may lead to health problems. Sustainable development of agriculture reduces the use of hazardous chemical and control pests. Pattern of using land now a day the because of multiple cropping system soil (land) is over utilized, this over utilization of land causes degradation of soil quality and further productivity decreases, by the practice of sustainable agriculture we can overcome by this serious issue, economic sustainability to make agricultural sector sustainable it should be viable over long period, should focus on specialization of the skills, specialization will help in enhancing the efficiency level and greater production viz. in other words productivity will increase, the development is meaningless if it is not able to reduce the level of poverty, many modern technologies are failed because of their limitation like complexities in use and are not easily accessible to poor farmers. In old method of in the field of agriculture the women's had more burden of work. Agriculture and allied activities contributed nearly 14 percent to India national income. Around 56.7 percent of total working population was engaged in Agriculture, male 46.0 percent female-65.0

percent and share of exports is 12.3 percent in 2011-12, while agriculture GDP is expected to grow above-trend at 4.1 percent to Rs 1.11 trillion (US\$ 1,640 billion)\$. As per the 2nd Advance Estimates, India food grain production is expected to be 271.98 MT in 2016-17. production of pulses is estimated at 22.14 MT. 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 2016-17 as compared to 537,888 tonnes during 2016-17, owing to the expected 70 percent increase in the crop size due to good monsoons. The NITI Aayog has proposed various reforms in 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 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.

Review of Literature:

1. **Mukesh Chalal (2015):** investigated the problems of agriculture's long-term sustainability in India. Agriculture is India's primary profession, and the green, white, and

yellow revolutions, as well as the blue revolution, have improved agricultural output. Indian agriculture has also benefited from numerous economic changes. The absence of contemporary technology and improper farming methods are the main problems in Indian agriculture. The research found that agriculture should be profit-driven, allowing farmers to take advantage of new possibilities in horticulture and farming.

2. **Teekam Singh and Shivay (2017):** looked at sustainable agriculture in terms of planting patterns and water availability. "Sustainable agriculture is a cultivation method that is adapted to the particular ecology of a given area, as well as to the study of the connections between organisms and their environment." Sustainable agriculture, according to this paper, should be "resourceconserving, socially supportive, commercially competitive, and environmentally sound," with farmers relying on crop rotation, crop residuals, animal manures, off-farm organic wastes, legumes, green manures, appropriate mechanical cultivation, and so on. The study found that sustainable water management, crop selection, and cropping pattern will increase agricultural production and

contribute to agriculture's long-term growth.

Need of the Study:

Sustainable agriculture is in sustainable ways based on an understanding of the study of relationships between organisms and their environment and climate. It has an integrated system of plant and animal production practices having a site-specific application that will last over the long term, for example satisfy human food and fibre needs, enhance environmental quality and the natural resource base agricultural performance and production has erratically fluctuated widely with a declining trend over the period, shift from modern agriculture to sustainable agriculture is the need of the hour for the conservation of natural resources, environment, crop diversity and production of nutritious food grains.

Objectives of the Study:

1. To analyze the importance and need of the sustainable agricultural development and to identify the key factors demand and supply a part of Gross Domestic Product in India.
2. To investigate the difficulties of agriculture's long-term development and propose long-term measures to ensure the long-term viability of agriculture sector in India.

3. To study the problem areas of sustainable agricultural, to evaluate the overcome steps to strengthening agriculture in the study area.

Methodology of the Study:

The study is based on the secondary data which data collected from the different sources such as articles, books, magazines, newspapers, journals, government publications, reports, research papers, articles and websites. The entire study focused on the sustainable growth and development of Agriculture production and yield of crops, per capita food grain availability and related data have been compiled from relating to selected crops on output, area, yield, fertiliser, consumption, rainfall, irrigation, and other inputs in field of agriculture sector.

Significance of the Study:

The paper aims to study the extent and importance of sustainable development its impact and effect on the agricultural practices in India, has propounded the growth stages in that an economy growth is transited from agriculture through industry to the service sector. However, one cannot neglect the primary sector if one seeks long run sustainable growth of the economy, the performance of the agricultural sector, especially in India often depends on

environments outside the reach of policy makers in the country.

Scope and Limitation of The Study:

This study is restricted to the food grains and crop sector of the India, though a study of agricultural encompasses several aspects from agricultural sustainability and production to marketing this study takes into account only the production side of the crop sector. The eleven crops included were grouped into seasonal, annual and perennial crops.

Sustainable Agriculture and Its Importance:

Organic basmati rice, rajmash, off-season vegetables, potatoes, aromatic and medicinal plants, virus free potato seeds for all seasons, development of commercial floriculture, production of virus free quality seeds for flowers and vegetables, aromatic and medicinal plants, mushrooms round the year, honey and honey by-products, fodder intensification, wide range of flora available to boost bee keeping, boost to quality saffron production, cultivation on waste lands and rainfed, limitations/drawbacks in agriculture, hilly terrain, small and fragmented land holdings, fragile soil in hilly areas susceptible to soil erosion, limits to mechanized farming and transportation of products, extreme limits to irrigation of cultivated land, single cropping season in temperate/high altitude

areas, inadequate and unorganized marketing infrastructure, distant markets for export, strategy timely sowing of treated seeds of rice, maize etc, timely arrangements and easy access of inputs (seeds, fertilizers, technology, etc.) ensuring supplies of quality inputs and services, stress on soil and water management, augmenting seed/grain storage capacity of farmers, gearing up extension network and capacity building of farmers in quality seed production, diversification in cropping system to reduce pressure on water resources, provide alternatives for marketable crop products and higher income, generate more employment opportunities through crops having scope in value addition such as MAPs, bamboo, flowers, fruits, sericulture, etc, augmenting credit through KCCs, intensive and extensive research development in the farm business management must be accelerated. Agriculture rudimentary policies and old fashioned equipment's and practices used by farmers in India are not sustainable, resulting in low yield for many agricultural commodities. Low level investment coupled with the use of obsolete technologies results in declined production, inefficiency and a higher cost that in turn becomes one of the causes for food inflation Illiteracy, lack of awareness about recent developments in the field of agriculture, and Availability of formal credit influences the output in many

dimensions; for instance, it can be used to purchase good quality seeds during the seeding season that enables a farmer to maximize the yield over the cultivated area or it can also be used to replace the informal credit which is more often than not accompanied by high rate of interest. Gravity of the problem agriculture, especially in the context of India, constitutes the back bone of the whole economic system. It provides employment opportunities to millions of Indians in addition to providing necessary inputs for high industrial growth. It also supplies fodder for India's huge livestock and has become a major way to earn foreign currency. Therefore, required attention in the form of realistic policy measures such as timely availability of formal credit and

other inputs to the farmers, creating the awareness about policies and programs of the government meant for educating the Irrigation facility problems most of the farming in India is monsoon dependent if monsoons are good, the entire economy is upbeat and when the monsoon fails, everyone everywhere takes a hit to some extent. The problem here is of proper management of water or the lack of it irrigation which consumes more than 80 percent of the total water use in the country needs a proper overhaul if the country has to improve agricultural output and boost the overall economy, seed problems especially the poor and marginal ones are dependent on seeds sold in the market.

GDP, Working population, Food grains, Irrigation area, Exports, and Growth rate in Agriculture sector in India from 1950-51 to 2010-11:

Year	Gross Domestic Product	Working population	Food grains (MT)	Area Under irrigation	Exports in Crores in US Dollars	Growth rate
1950-51	57.2	71.9	50.8	18.1	606	1.25
1960-61	56.6	76.0	82.0	19.1	642	1.96
1970-71	50.1	62.2	108.4	24.1	1535	2.22
1980-81	41.1	62.5	129.6	29.7	6711	2.20
1990-91	33.2	59.7	176.4	35.1	32553	2.14
2000-01	25.1	54.4	196.8	43.4	203571	1.95
2010-11	20.5	45.1	244.5	47.8	845534	2.22

Source: Indian economic statistics in 2012.

The above table reflects that structure of agriculture status in the

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country the growth and performance of agriculture sector in India. The GDP and

working population slowly decreases and the food grains and area under irrigation increases than the exports also increases agriculture growth is low, agricultural productivity is very less compared to world standards due to use of obsolete farming technology, coupled with this, lack of understanding of the need for sustainability in the poor farming community has made things worse, water usage is also unplanned with some arid areas misusing the irrigation facilities provided by planting water intensive crops. In areas where irrigation in the form of rivers and canals is not sufficiently available, ground water resources are heavily exploited. Sustainability in agriculture is of utmost importance as many problems faced by farmers are related to this. Excess fertiliser usage not only makes the plants dependent on artificial fertilisers but also erodes the land quality, polluted ground water and in case of a surface runoff, pollutes the nearby water bodies. Similarly, planting crops which require more water like rice on the basis of irrigation facilities extended to areas which are water deficient uses up more water than required. lack of proper understanding of the need to grow crops sustainably will push farmers into a vicious circle of debts, heavy use of fertilisers, water mismanagement, low productivity and thus more debts for the next cycle, over dependence on traditional crops like rice and wheat every crop

requires certain climatic conditions to give the best yields. An improper marketing and storage channel also leads to storage problems in the years where productivity is good, leads to poor agricultural exports due to problems in maintaining quality and in many cases leads to gross wastage of valuable food grains and other farm output. Government handling of the issue Minimum Support Prices (MSP), overall agricultural strategy of the country, PDS, storage/granaries, lack of export market creation, which negates the advantage of having a bumper crop in years of good monsoon. Exports in agricultural sector are also not very encouraging with a share of just 10 percent of the total exports, for a country where more than 50 percent of population is dependent on agriculture, consolidation of village lands and cooperative farming will ease the burden of fragmented land holdings, when the farmers form a consortium at the village level, the aggregate land can be farmed by using the latest technology. organic basmati rice, rajmash, off-season vegetables, potatoes, aromatic and medicinal plants. virus free potato seeds for all seasons. development of commercial floriculture, production of virus free quality seeds for flowers and vegetables, aromatic and medicinal plants. mushrooms round the year, honey and honey by-products, fodder intensification, etc. wide range of flora available to boost bee keeping. boost to quality saffron

production. jetropha (biofuel) cultivation on waste. limitations/drawbacks in agriculture hilly terrain. small and fragmented land holdings. fragile soil in hilly areas susceptible to soil erosion. limits to mechanized farming and transportation of products. extreme limits to irrigation of cultivated land. single cropping season in temperate /high altitude areas. inadequate and unorganized marketing infrastructure. distant markets for export outside the state, strategy timely sowing of treated seeds of rice, maize etc. timely arrangements and easy access of inputs (seeds, fertilizers, technology) ensuring supplies of quality inputs and services, stress on soil and water management. augmenting seed/grain storage capacity of farmers. gearing up extension network and capacity building of farmers in quality seed production. diversification in cropping system to reduce pressure on water resources, generate more employment opportunities through crops having scope in value addition such as maps, bamboo, flowers, fruits, sericulture, etc. augmenting credit through KCCs, intensive and extensive research development in the farm business management must be accelerated

Recommendations:

1. Poverty eradication would boost food production and rural income since poverty and hunger are a common occurrence among small

and marginal farmers, as well as difficulties to balance family and farming costs, which impedes future growth, excess rainwater will be managed via dams, reservoirs, and other water storage structures, making it easier to cultivate arid areas, drought-resistant crop types are being developed, which will allow arid areas to be cultivated.

2. Increasing agricultural production would be achieved by using existing agricultural land, restoring damaged and barren areas, evaluating soil fertility and health, and implementing sustainable agriculture methods. Intensive cropping, integrated land use, and marginal lands, through soil management, insect control, efficient use of water and land, and widespread use of organic fertilizers, farmers' traditional views will be blended with the contemporary and scientific understanding of agricultural scientists to enhance and promote food production.
3. Reframing environmental legislation and raising environmental awareness at the educational level. Governments and nongovernmental organizations (NGOs) should collaborate to raise public awareness, including at the school level. Planners and policymakers should develop public awareness

goals and methods to guarantee that the aim is met throughout the country, population control, pollution-free energy development, energy preservation and conservation, biodiversity, and agricultural waste recycling are just a few of the issues that need to be addressed, river nationalization would alleviate flood and drought problems while also promoting long-term agricultural growth.

4. Optimal use of rural human resources via education, appropriate manpower planning, and training on traditional knowledge application in contemporary agricultural techniques, Improved water-saving technologies, low-water-use crop planting, nutrient management, and agronomic techniques, adequate rural credit distribution through banks and other organizations to ensure farmers have access to funds for agricultural investment, they are also able to escape debt traps as a result of this, integrated rural development plans, such as human resource development and capacity building, financial resources, entrepreneurial skill development, with a particular focus on women, and infrastructure development, should be given more attention.
5. Establishing public-private partnerships to guarantee that poor

and marginal farmers have access to land management techniques, water, and natural resources for organic farming Soil conservation and management, including on-farm residue management and nutrient management to maintain soil fertility, irrigation schedule and technique management are two ways to manage water resources.

6. The agricultural credit and farm mechanisation for small and marginal farmers will continue to be difficult unless pooling of farm resources and/or a joint usage of farm technology is employed, the sustainability solutions are proper crop management on the basis of water availability, crop rotation, deploying modern agricultural practices to boost productivity, switching over to organic farming thrust on allied activities.
7. Scientific research in this subject is to be encouraged to promote seeds which are mild on resource requirements but help the farmers in boosting the yields. Sometimes small innovations at the grass root levels can solve a host of problems specific to a particular backward region.
8. District agricultural officers must make it a habit to encourage such ideas and also take part in knowledge sharing to implement the ideas at a regional level. Irrigation

problems can be addressed by Government preferably at the State and National levels. Though the Government cannot force farmers to produce only the designated crops in particular areas, it can surely educate them about the alternatives.

9. Seed problems can be overcome by creating in house seed banks at the village level for traditional crops (thereby reducing farmer dependence on external seed banks), selling Government approved seeds through proper channels and strict penalties on seed marketing companies in case the seeds do not match the claims germination and yield of the companies.
10. Storage facilities can be boosted by small cold storage or granaries at village level which can be established from Panchayat funds and loans to the village society, a 700 ton cold storage cum warehouse will cost around Rs. 1.5 crores which is very reasonable cost for a group of villages or a large Panchayat, provided the state or central Government funds the cost,

Conclusion:

I conclude in my paper for achieving success in promoting sustainable development in agriculture attention must be focused on land, water energy, nutrient supply, genetic diversity, pest

management, systems approach and location of specific research and development. Agriculture nowadays is highly reliant on nonrenewable energy sources, particularly petroleum. To the degree that it is economically possible, sustainable farming systems have decreased the demand for fossil fuels or nonrenewable energy sources and replaced them with renewable sources or labor. The environment has a significant influence on meeting our fundamental requirements for survival. In turn, it is our responsibility to protect the environment so that future generations will not be deprived of necessities. Sustainable agriculture helps to the replenishment of land as well as other natural resources like water and air. Sustainable agriculture has several benefits over modern agriculture as it is cheap, conservation water, soil and environment, maintain crop diversity, and the food grains, produced are nutritious and free from pesticide residues. Therefore shift from modern agriculture to it is the need of the hour for the conservation of natural resources, environment, crop diversity and production of nutritious food grains. It has been observed that for a growing country like India efficiency, employment, and providing guidance to reduce the practices which affect the quality of soil, water resources and degradation of other natural resources, it basically aims at adopting specialization and using environment friendly tools to protect and preserve the

environment as well as to enhance the level of production without harming to the environment, the agricultural research and extension systems need to be strengthened to improve access to productivity enhancing technologies, to creating the enabling environment for private sector participation and competition for agribusiness and more broadly, the rural non-farm sector growth, local government capacity to identify local priorities through participatory budgeting and planning needs to be strengthened this, in turn, would improve the rural investment climate, facilitating the involvement of the private sector, creating employment opportunities and linkages between farm and non-farm sectors for better future and well established Indian economy.

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