

**AN ANALYSIS OF SUSTAINABLE AGRICULTURAL DEVELOPMENT IN INDIA**

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**Abstract:**

*The paper presents focused on the new agenda in Indian agriculture should have a goal that explicitly focuses on improving agricultural systems and addresses rural development in an integrated manner. While Indian agriculture has crossed the threshold of traditional farming to modern agri-business, the objective of ensuring equity and sustainability becomes all the more important. Agriculture must change to meet the rising demand, to contribute more effectively to the reduction of poverty and malnutrition, and to become ecologically more sustainable. This paper analyses the issues related to sustainable agriculture development. There is hope for positive changes as more and more farmers are becoming open-minded and government is coming up with new initiatives. The study recommends that problems – largely institutional, structural, and administrative – need to be overcome for development in general and sustainable agricultural development in particular. In general, the farmers considered their farm activities to be more sustainable than in the past. They demonstrated an understanding of the general idea of sustainable agriculture. The farmers demonstrated a realization that there were some new, or low-cost measures that could be introduced to make management more sustainable and pro-environmental, but there was still a need for wider adoption of sustainable agricultural practices.*

**Keywords:** *Indian Agriculture, Farmers, Policy, Security, Sustainability, etc.*

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**Introduction:**

Agriculture sector is 'Backbone' of Indian economy. Agriculture impacts on the national economy, the environment, as well as contributing to climate change. Agriculture influences the structure and economy of the entire society. It is hard to exaggerate the role that agriculture plays in human development. It makes multi-faceted contributions of the global food system and to many pillars of sustainable development. Agriculture faces many challenges, making it more and more difficult to achieve its primary objective – feeding the world – each year. Population growth and changes in diet associated with rising incomes drive greater demand for food and other agricultural products, while global food systems are increasingly threatened by land degradation, climate change, and other stressors. Agriculture must change to meet the rising demand, to contribute more effectively to the reduction of poverty and malnutrition, and to become ecologically more sustainable. This transformation will be crucial for achieving many of the post-2015 Sustainable Development Goals (SDGs). The main aim of any agricultural programme is to maintain sustainable growth in agricultural production for ensuring food security to the growing population and also to generate adequate surplus for exports. To many, entering a sustainable development path for agriculture and food

seems like a daunting challenge. The sustainable agriculture development of every country depends upon the judicious mix of their available natural resources. The big objective for the improvement of agriculture sector can be realised through rapid growth of agriculture which depends upon increasing the area of cultivation, cropping intensity and productivity. Although for a country like India, increasing productivity is more important than the rest of the two. This is simply because of increasing urbanisation, industrialisation and the limited land size of the country. The productivity can be increased by two ways: (i) increasing output by efficient utilisation of available resources; (ii) increasing output by variation of input. The first system is better with respect to productivity and sustainability. But due to increasing population, this system cannot provide a permanent solution. Thus we can go for the second system which may potentially cause environmental degradation in the economy and affect its sustainability. Therefore there is need for tackling the issues related to sustainable agriculture development.

**Objective of the study:**

1. To study the Sustainable agricultural development in India.

**Research Methodology:**

In this research paper the data for the present study is collected mainly through secondary sources the objectivity of historical and current writings has been used to develop a frame work of the study and conclusion. The data collected with a view to identify and analysis the “SUSTAINABLE AGRICULTURAL DEVELOPMENT IN INDIA.” The Research approach used in this project is a ‘Secondary Data Analysis’. The information existing in the following analysis is based on Government Surveys, Internet, Newspapers, Magazines and Books etc.

**Agriculture in Sustainable Development:**

Agriculture plays a crucial role in sustainable development and in hunger and poverty eradication. The challenges faced by agriculture in sustainable development is in working out ways of bringing about a society that is materially sufficient, socially equitable, and ecologically sustainable and one that is not obsessed by growth only, but motivated by satisfying human needs and equity in resource allocation and use. Sustainable agriculture must meet economic, social and ecological challenges. All these challenges are closely related. These features of sustainable agriculture should be considered as a package, and no single feature should predominate over the others. Sustainable agriculture needs to protect the natural resource base, prevent the degradation of soil and water; conserve biodiversity; contribute to the economic and social well-being of all; ensure a safe and high-quality supply of agricultural products; and safeguard the livelihood and well-being of agricultural workers and their families. The main tools towards sustainable agriculture are policy and agrarian reform, participation, income diversification, land conservation and improved management of inputs. This policy document is an effort to identify the strategies, guidelines and practices that constitute the Indian concept of sustainable agriculture. This is done in order to clarify the research agenda and priorities thereof, as well as to suggest practical steps that may be appropriate for moving towards sustainable agriculture. Some tend to confuse sustainable agriculture with organic farming. But both are very different from each other. Sustainable agriculture means not only the withdrawal of synthetic chemicals, hybrid-genetically modified seeds and heavy agricultural implements (as in organic farming), it also tries to simulate the conditions found in nature. Sustainable agriculture involves multicultural, intercropping, use of farmyard manure and remnants, mulching and application of integrated pest management. If this is followed then there is no reason why agriculture cannot be an economically viable activity in addition to being environmentally sustainable. The issues of sustainable development can be discussed under three broad types of farming systems viz. traditional production method, modern agriculture method and sustainable agriculture system. Further we can evaluate them across three dimensions, ecological, economic and social sustainability.

**Ecological Sustainability:**

Most of the traditional and conventional farm practices are not ecologically sustainable. They abuse natural

Resources, reducing soil fertility causing soil erosion and contributing to global climatic change. But sustainable agriculture has some major advantages over traditional practices:-

- 1. Water:-** Irrigation is the largest consumer of fresh water, and fertiliser and pesticides contaminate both surface and ground water. Sustainable Development Goal no. 6 commits the world to ensuring that everyone has access to safe water by 2030, and includes targets on protecting the natural environment and reducing pollution. Sustainable agriculture raises the organic matter content of the top soil, thus raising its ability to maintain and store water that falls as rain.
- 2. Soil Fertility:-** Continuous fall in soil fertility is one of the main problems in many parts of India. Sustainable agriculture improves fertility and soil structure.
- 3. Biodiversity:-** Sustainable agriculture practices involve mixed cropping, thus increasing the diversity of crops produced and raise the diversity of insects and other animals and plants in and around the fields.
- 4. Climate:-** Conventional agriculture contributes to the production of greenhouse gases in various ways like reducing the amount of carbon stored in the soil and in vegetation, during the production of Methane in irrigated field and production of artificial fertilisers etc. By adopting sustainable agriculture system, one can easily overcome this problem.
- 5. Health & Pollution:-** Chemicals, pesticides and fertilisers faultily affect the local ecology as well as the population. Indiscriminate utilise of pesticides, improper storage etc. may lead to health problems. Sustainable agriculture reduces the use of hazardous chemical and control pests.

#### **Economic Sustainability:**

For agriculture to be sustainable it must be economically viable over the long term. Conventional agriculture involves new economic risk than sustainable agriculture in the long term. At times governments are inclined to view export-oriented production systems as more important than supply domestic demands. This is not right. Focus on exports alone involves hidden costs: in transport, in assuring local food security, etc. Policies must treat domestic demand and in particular food security as equally important to the in evidence trade balance. But market production implies certain risks as markets are fickle and change quickly. Cheap foreign food may sweep into the national market, leaving Indian farmers without a market. The main source of employment for rural people is farming. Trends to specialisation and mechanisation can increase narrowly measured "efficiency", but they decrease employment on the land. The welfare costs of unemployment must be taken into account when designing national agricultural support programmes. Sustainable agriculture, with its emphasis on small-scale, labour-intensive performance, helps overcome these problems.

#### **Social Sustainability:**

Social sustainability in farming techniques is related to the data of social acceptability and justice. Development cannot be sustainable unless it reduces poverty. The government should find ways to enable the rural poor to profit from agriculture development. Social injustice is where several section of the society is neglected from development opportunities. But having robust method of social sustainability can bridge the gap between "haves" and "have-nots". Many new technologies fail to become applicable in agriculture sector due to lack of acceptability by the local society. Sustainable agriculture practices are useful because it is based on local social customs, traditions and norms etc. Because of person familiar the local people are other likely to accept and adopt them Moreover, sustainable agriculture practices are based on traditional know-how and local innovation. Local people cover the knowledge about their environment crops and livestock. Traditional agriculture is additional gender oriented, where woman bear the heaviest burden in terms of labour. Sustainable agriculture ensures that the load and benefits are shared equitably between man and woman. While conventional farming focus on a few commodities, sustainable agriculture improves food security by improving quality and nutritional value of food, and also by producing better range of products

throughout the years. Traditional farming was too driven by the caste and wealth oriented people. The rich and higher castes benefitted extra, while the poor and lower castes are left out. Madhoo Pavaskar and others write that 'If truth were to be told, the government has neglected agriculture and only paid lip service to its importance and the well-being of the poor and marginal farmers'. Sustainable agriculture attempts to ensure equal participation which recognises the voice and speech of every people.

#### **Environment and Agriculture in India:**

Agriculture development should not be at the cost of the environment. The Green Revolution in India has achieved self-sufficiency in food production. However, in the state of Haryana this has resulted in continuous environmental degradation, particularly of soil, vegetation and water resources. Soil organic matter levels are declining and the use of chemical inputs is intensifying. Newly introduced crop varieties have been responsive to inputs but this has necessitated both increased fertiliser application and use of irrigation resulting in water contamination by nitrate and phosphate and changes in the ground water table. The total cultivable land of the country is about 144 million hectares of which 56% (80.6 million hectares) is degraded due to faulty agricultural practices and the dense forest cover has been reduced to 11% (36.2 million hectares) of the total geographical area. Watershed areas, river corridors and rangelands have been extensively disturbed. Situation is frequently so bad that even cessation of abuse may no longer lead to self-restoration of biological diversity, stability and productivity of the ecosystems. Since 1980s, the water table has risen more, and patches of salinity have started to appear at the farm level. The situation is worse in higher rainfall areas where water logging follows shortly after the rains. In the early 1980s, groundwater overtook surface water as the primary source for irrigation. It now serves more than 60% of India's net irrigated area compared to 30% for surface water. The Indus Basin, which accounts for a significant share of India's population and food production, was declared in a 2015 NASA study to be the second most overstressed aquifer in the world. Apart from affecting agricultural crops, a high water table causes floods even following slight rains due to the reduced storage capacity of the soil. Such ecological impacts are motivating farmers to reduce fertiliser and pesticides use. This has led to an increased investment in alternative technology and products including an interest in Integrated Pest Management.

#### **Food Security and Agriculture in India:**

One of the most significant features that highlight the importance of the agriculture sector is the idea of 'food security'. Every developing nation seeks to attain the goal of self-sufficiency in food grains to cater to the nourishment needs of its growing population. As such, agriculture is measured to be the very basis of political and social steadiness of a nation. The sharp rise in food grain production during India's Green Revolution of the 1970s enabled the country to achieve self-sufficiency in food grains and stave off the threat of famine. Agricultural intensification in the 1970s to 1980s saw an increased demand for rural labour that raised rural wages and led to the decline in food prices and rural poverty. Since then, however, the slowdown in agricultural growth has become a major cause of concern. India's rice yields are one-third of China's and about half of those in Vietnam and Indonesia. With the exception of sugarcane, potato and tea, the same is true for most other agricultural commodities. Despite its rising economic power, India is struggling to adequately feed its population. The 2016 Food Sustainability Index scores India last out of 25 countries, largely because of challenges regarding nutrition and agricultural sustainability. The country's approach to food loss and waste is, however, more positive. India ranks last among the 25 countries that were ranked according to their food system, as per a report by the Barilla Centre for Food and Nutrition and the Economist Intelligence Unit. The report 'Fixing food – towards a more sustainable food system' uses the Food Sustainability Index (FSI) and reports on the food system sustainability globally, spanning agriculture, nutrition, and food loss and waste. The report indicates that uneven access to adequate nutrition, resource depletion and other environmental challenges necessitate an urgent rethink on food production and consumption. Nutrition continues to be the main

challenge. India has a very high prevalence of undernourishment and micronutrient deficiency, for which it is placed at the bottom and second from the bottom, respectively (after Ethiopia).

### **Food Security:**

Agriculture plays a crucial role in sustainable development and in hunger and poverty eradication. Agricultural productivity growth can bring about swift and sustainable reductions in hunger and poverty. Increasing agricultural productivity remains one of the most effective ways to combat hunger and poverty.

### **Strategies for policy development:**

1. Ensure that agricultural, food security and nutritional objectives are integrated into broader national development policies and plans.
2. Enhancing food security, agricultural productivity, and income generation.
3. Improving access to production resources like land, finance, agricultural inputs, and information to a broader section of the population.
4. Increasing the food and feed value of staple crops of the poor.
5. Reducing post-harvest losses.

### **Conclusion:**

The agricultural technology needs to move from production oriented towards profit oriented sustainable farming. The conditions for development of sustainable agriculture are becoming more and more favourable. New opportunities are opening the eyes of farmers, development workers; researchers and policy makers like agree related businesses, dairy farming, poultry farming, cattle farming and fisheries. Most farmers are open-minded for agribusiness and to be connected to the value chain of farm to fork. Government's recent initiatives like direct benefit transfer to the farmer buyer are laudable. To conclude, a small-farm management to improve productivity, profitability and sustainability of the farming system will go a long way to ensure all round sustainability. The Indian agricultural sector is facing a crisis. Free trade has not been free from problems. Farming and farming community are waiting for a fair treatment even as many of them have lost interest or lives. The whole world knows what Indian farmers desired, deserved and derived from globalisation. There can be no better time than now – the period of second generation reforms – for a critical study of this vital sector of the Indian economy and for ensuring a second green revolution in the near future. A long term vision is needed for inclusive growth of farming and farmers. We must develop Indian agriculture into a vibrant sector contributing substantially to the growth of New Age Indian economy and for its sustainable development.

### **Suggestions:**

1. Increase agricultural productivity, close yield gaps, achieve maximum sustainable yield in farms and fisheries, and improve efficiency of resource use – e.g. more crop per kg of nutrients, more crop per drop of water, more crop per unit of energy, higher productivity per unit labour.
2. Reduce the workforce dependent on agriculture for the sake of increased incomes for agricultural households and decent, diversified rural employment opportunities.
3. Increase supply, nutritional value and safety, availability and distribution of food through support to diversified, gender and nutrition-sensitive, human rights-based, sustainable food systems.
4. Make food production systems more resilient to shocks and changes, promote food security concerns in trade regimes and trade policies, and revisit agricultural policies to promote local and regional agricultural markets.
5. Recognise indigenous and local knowledge in the design and implementation of national and regional agricultural policies.
6. Strengthen provision of public goods in support of sustainable agriculture.
7. Support sustainable consumption and production through market development, including use of international

standards and certification as well as policy and regulatory measures, giving due consideration to women's empowerment and gender-equitable participation.

8. Stop unsustainable withdrawal of water resources, land degradation, biodiversity loss, and soil nutrient depletion and establish frameworks for sustainable production systems.
9. Support universal access to renewable energy services, including a shift to renewable forms of energy and more efficient use of energy for sustainable agriculture.
10. Avoid recourse to and eliminate trade-distorting support policies and protectionism in adopting national measures to achieve the goal of sustainable agriculture.
11. Establish accountability mechanisms for damage to the environment and/or human rights violations and to provide remedies for those rights that are violated.

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