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Review Article

Agricultural Reforms and Rural Development: A Paradigm Shift on Self-Reliance

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Abstract

Agriculture has historically been the backbone of India's rural economy, serving as the primary source of livelihood, food security, and raw materials for various industries. Despite the success of the Green Revolution in the 1960s, which transformed India from a food-deficient nation into a self-sufficient and surplus-producing economy, structural challenges continue to hinder agricultural progress. These challenges include fragmented landholdings, declining per capita cultivable land, migration-induced labor shortages, inadequate infrastructure, post-harvest losses, and unequal access to markets. Small and marginal farmers, who constitute over 86 percent of farming households, remain particularly vulnerable due to limited resources and market linkages. This paper emphasizes the urgent need for agricultural revival and sustainable rural development. The revival process rests on five key pillars: technology, risk management, institutional support, skill development, and policy reforms. Technological innovations such as climate-resilient crops, artificial intelligence, and precision farming are critical to enhancing productivity. Effective risk management, including crop insurance and credit schemes, can safeguard farmers' incomes against natural calamities and market fluctuations. Institutional frameworks, particularly cooperatives and rural credit agencies, play a vital role in providing affordable inputs, credit, and marketing support. Skill development initiatives empower rural youth to engage in agri-business, value addition, and allied activities. Policy interventions, including the New Agricultural Policy 2020, aim to modernize markets, encourage contract farming, and attract private investment in infrastructure and cold chains. Rural development, however, extends beyond agriculture. Diversification into allied sectors such as dairy, poultry, fisheries, and horticulture, combined with government initiatives like PM-KISAN, Operation Greens, Soil Health Cards, and MGNREGA, can ensure inclusive growth. By 2035, with India's population projected to reach 1.6 billion, sustainable agricultural strategies will be indispensable to meet rising food demand, reduce rural poverty, and secure national development.

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INTRODUCTION

Agriculture has always been the backbone of the Indian economy and the primary source of livelihood for the rural population. It not only provides food security but also employment and raw materials for various industries. Nearly two-thirds of India's population still depends directly or indirectly on agriculture. Historically, Indian agriculture remained underdeveloped, primarily dependent on monsoon rains. Before independence, the country frequently faced food shortages and had to rely on imports. Post-independence, agricultural reforms were prioritised, leading to gradual improvements. The Green Revolution of the 1960s marked a turning point by introducing high-yielding seeds, irrigation expansion, mechanisation, chemical fertilisers, and pesticides. These measures made India self-sufficient in food grain production. Today, India not only meets its domestic food requirements but also exports several agricultural commodities. According to the FAO (2019), India ranks first globally in the production of mango, banana, papaya, and ginger, and second in rice, wheat, sugarcane, jute, and tea production.

NEED FOR AGRICULTURAL REVIVAL

While economic liberalisation in the 1990s accelerated industrial and service sector growth, agriculture lagged. Small and marginal farmers, who constitute 86% of farming households, often cultivate on less than two hectares and face limited market access. With a rising population and shrinking cultivable land, per capita land availability continues to decline. Migration to cities has also created a rural labour shortage. Post-harvest losses further reduce farmer income. The National Centre for Cold Chain Development estimates severe gaps in storage and marketing: 99% shortage in pack houses, 85% in refrigerated vans, and 91% in ripening chambers. Thus, agricultural revival must address productivity, infrastructure, risk management, and farmer income security.

PILLARS OF AGRICULTURAL REVIVAL

(A) Technology

Technological progress is central to agricultural transformation. The Indian Council of Agricultural Research (ICAR) and its network of universities and Krishi Vigyan Kendras (KVKs) have introduced improved crop varieties, mechanization, and training. Between 1950–51 and 2017–18, India's production of food grains increased 5.6 times, horticulture 10.5 times, and milk 10.4 times. Moving forward, India must transition from the Green Revolution to an Evergreen Revolution integrating biotechnology, artificial intelligence, precision farming, and climate-resilient technologies.

(B) Risk Management

Agriculture is highly vulnerable to droughts, floods, pests, and climate change. To mitigate risks, the government launched the Pradhan Mantri Fasal Bima Yojana (2016), benefiting millions of farmers with crop insurance. Interest subvention schemes and the Kisan Credit Card provide accessible credit. Strengthening risk management ensures income stability and encourages continued investment by farmers.

(C) Institutional Support

Institutional arrangements, cooperatives, NGOs, credit agencies, and local governments play a vital role in supporting farmers. Cooperative societies, in particular, have been instrumental in providing affordable inputs, credit, and marketing services. They also offer machinery on rent, storage facilities, and transport support. Expanding the role of cooperatives in modern agribusiness can empower small farmers and strengthen rural economies.

(D) Skill Development

Youth engagement in agriculture requires modern skill development. ICAR initiatives such as Mera Gaon Mera Gaurav, Farmer First, ARYA (Attracting and Retaining Youth in Agriculture), and Vatika Incubation Centres promote entrepreneurship and technological adoption. With more than 700 KVKs running training programs, rural youth are being equipped with skills for value addition, agri-business, and self-employment.

(E) Agricultural Policy

Policy reforms have historically reshaped Indian agriculture. The **New Agriculture Policy (2020)** emphasises farmer empowerment through:

1. Farmers' Produce Trade and Commerce Act – opening markets beyond APMCs.
2. Agreement on Price Assurance Act – encouraging contract farming.
3. Essential Commodities (Amendment) Act – promoting investment in storage and supply chains.

Though controversial, these reforms aim to modernise agriculture, strengthen markets, and reduce farmer vulnerability.

RURAL DEVELOPMENT AND DIVERSIFICATION

Rural development goes beyond farming. True progress requires diversification into allied activities such as dairy, poultry, fisheries, and horticulture. Strengthening linkages between rural production centers and urban markets is essential. The government has launched several flagship schemes:

- Operation Greens – subsidy for storage and transport of perishable goods.
- Soil Health Card Scheme – over 216 million cards distributed.
- PM Kisan Samman Nidhi (PM-KISAN) – ₹6000 annual income support to small and marginal farmers.
- MGNREGA, PMKSY, PMUY, PMAY, DAY-NRLM – providing employment, irrigation, housing, and financial inclusion.

These schemes aim to reduce poverty, enhance livelihoods, and ensure inclusive rural growth. Agriculture is the mainstay of the rural economy in our country and agriculture is the main source of income for the farmers. Of course, we depend on agriculture for the supply of food grains. Agriculture provides employment to a large population of India. Therefore, it becomes necessary to strengthen the agricultural system. Agriculture in our country was not fully developed for a long time. Before independence our agriculture was depend on rain

and we could not produce enough food for the people of our country, which required India to buy food grains from other countries. After independence, special attention was paid to the development of agriculture to overcome the shortage of food grains in the country. With the advent of the Green Revolution in 1966, traditional agriculture practices in India were replaced by industrial technology and farm dealings. Consequently, the condition of agriculture improved rapidly. In the field of agriculture, new technology was adopted, the use of improved seeds increased, there was qualitative improvement in the use of fertilizers and pesticides, the use of mechanization in agriculture increased, the means of irrigation increased and other infrastructural facilities were increased along with subsidized inputs on that land reform programs were started and facilities of crop insurance etc. were provided to the farmers. In this way, intensive and extensive farming was done with institutional and technical improvements in agriculture. With all these efforts, our country has become self-sufficient in the matter of food grains. At present, India is able to produce more food grains than its requirements and has also been able to export the remaining grains and other agricultural products to other countries. Many factors like physical structure, climate and soil of our country are favourable for agriculture, due to which many types of crops are grown in our country. Some kinds of crops are grown in our country in all seasons. According to the Food and Agriculture Organisation Report, 2019, India ranks first in the production of Mango, Banana, Papaya, Ginger and second in the world in the production of rice, wheat, tea, sugarcane, jute and oils.

THE REQUIREMENT OF AGRICULTURAL REVIVAL

Despite the economic liberalization in the country in the 90s, the pace of development in agriculture and allied sectors did not grow at the pace at which it should have increased and this led to inequalities in the agriculture sector. After the reforms of the 1990s, all sectors progressed with time, but the agricultural sector lagged behind in reforms. Many reforms initiated by the government were withdrawn due to various reasons. As a result, the agricultural sector improved but the farmer suffered. At present, the cultivable land with the farmers is decreasing and the population is increasing rapidly. Due to the increase in population, the average available land per capita is decreasing. Therefore, it has become necessary to increase the productivity of the land. Earlier invisible unemployment existed in the agriculture sector, but now people have migrated from villages to cities in search of employment in large numbers, due to which there is a shortage of labourers in the village. Therefore, modern farming techniques are needed to overcome the labour shortage. Then, 86 percent of agricultural households in India are small and marginal farmers who own 45% of the agricultural area, but sell only 12% to 33% of their produce. In fact, the income of the farmers cannot be increased by doing agriculture alone. Therefore, there is a need for special planning for the development of small and marginal farmers. Agricultural development also depends on access to markets for agricultural commodities. Therefore, proper arrangement of pack houses,

cold store, ripping rooms and refer vans is important for this. But the National Center for Cold Chain Development has estimated a difference of 99% in Pack Houses, 85% in Refer Vans, 10% in Cold Storage and 91% in Ripping Rooms. Similarly, having a market at 463 km far less than the standard of a market at 78 kms.

Apart from this, there are many other factors which make agricultural revival important.

REVIVAL OF AGRICULTURE

The revival of agriculture in the country depends on the amount of investment being made in agricultural research and development. There is a need to do new experiments in the field of agricultural research and development sector to develop cyber physical system for micro agriculture, high nutrient and processed varieties, climate resistant technologies, artificial intelligence-based agriculture and market consultancy. Therefore, with the formation of a high-level committee by the Prime Minister, the era of revival of India agriculture has begun and the reform agenda launched in 2014 has become articulate. Agriculture and allied sectors play an important role in any development planning process in India as it provides employment opportunities, provides food and food security and ensures raw material for sugar, textile, herbal, food processing industries. In which people get a large number of level jobs. It is worth mentioning that by 2035, the population of India will be 1.6 billion. Per capita availability of land, water and other limited natural resources will decrease and water availability will also be affected due to climate change. The demand for food grains is estimated to exceed 340-356 million tonnes by 2033 and so will the demand for other commodities. If this continues, there will be an increase of 3.4% in agriculture, which is not going to happen. Agriculture planning has to be changed so that it becomes profitable in a sustainable manner and such production will be possible by bringing agribusiness, value-chain, investment and governance into the mainstream of agricultural reforms. Policies and investment priorities for agriculture should be aligned with income security and inclusivity. The overall plan for the revival of agriculture focuses on five key areas with emphasis on technology, risk, institutions, policy and skill.

(A) Technology

Technology based agriculture is the engine of growth and progress, Agriculture remains a major sector of the Indian economy. The contribution of agriculture to the GVA in 2019-20 is 16.5% which is the primary source of livelihood for 58% of the population. Therefore, technological progress in agriculture is important for the overall economic development of the country. The Green Revolution is primarily a result of the National Agricultural Research System (IARCs) as instruments of change. The 'Miracle Seed' and package of technology developed through IARCs catalyzed NARS to adopt to the technology and reap the full benefit. Thus, the first stage of the revolution in production came through the interaction of seeds, fertilizers and irrigation. The NRS system is needed to switch

from Green Revolution to Rainbow Revolution and Rainbow Revolution to Evergreen Revolution and then to Green Revolution. India adopted the council of agricultural Research Model (ARC). The Council is an autonomous research organization with 101 ICAR institutes and 71 agricultural Universities spread across the country. In recent years, ICAR through its strong network of Krishi Vigyan Kendras has been playing an important and active role in dissemination of agricultural technology by supporting farmers in every possible way. ICAR is making a strong contribution towards the government's effort and initiative to double farmer's income by 2022 through its research on agricultural practices, policy, practices and coordination with state agencies. In the last few years, ICAR has increased the production of food grains by 5.6 times, horticulture crops 10.5 times, fish 16.8 times, milk 10.4 times and eggs production from 1950-51 to 2017-18 has been able to increase up to 52.9 times. Thus, there is a clear impact on national food and nutritional security.

(B) Risk

Risk in agriculture refer to the threats to the livelihood and income of the farmer due to natural calamities. Although it is not possible to completely avoid these risks, but they can be reduced by effective risk management. Agriculture risk management involves the identification, assessment and prioritization of risks, due to which it is considered an integral part of agricultural sector policies. Often a risk is classified as drought and flood, but today climate change has reshaped agricultural risks. Along with this, post-harvest damage and damage caused by pests are also included in various risks. To protect against risks in the agriculture sector, Pradhan Mantri Fasal Bima Yojana was launched in January 2016, in which many earlier insurance schemes merged. It benefited 2.81 crore farmers till Kharif season 2017 in which farmers got an average of Rs.11887.70. Then the recommendations of Sarangi Committee (2016) on crop loans have been implemented by the government. Affordable interest rates on short-term crop loans up to Rs.3 lakh and broaden the base of the Kisan Credit Card scheme, including term loans and consumption needs, as well as risk cover on accidental death.

(C) Institutions

In addition to technology and risk, sustainable agricultural revitalization requires the support of other services, such as input supplies, credit, market access, support from the local government, etc. Hence, there is a need for institutional support from various government, private and non-government sectors. Organizations like Co-operative Societies, Credit Institutions, NGOs, Gram Panchayats assist and assist farmers in providing necessary information, knowledge, skills and inputs to the farmers. Co-operative societies have played a major role in this. Initially it only provided credit to farmers in the form of societies and gradually they started working in other sectors like banking, processing and marketing. After independence, the role of cooperatives increased socio-economic development and poverty alleviation in rural India. It becomes an integral

part of the Five-Year Plan. There are four main types of cooperatives in the country-

- Primary agricultural credit or social service,
- Agricultural non-credit societies
- Agricultural cooperative marketing societies,
- Co-operative agricultural societies.

These cooperative help farmers in providing high quality fertilizers, seed and pesticides etc. at reasonable prices. The farmers are also helped by the cooperative societies with marketing, storage facilities and transportation. Government societies have poor and marginal farmers by rent out tractors, threshers etc. Rural cooperatives are now entering the real estate, electricity, insurance, healthcare and communication sectors.

If it continues to work towards development, the day is no far when the quality of rural life will be much better than that of urban India.

(D) Skill

Growing population, declining fertile agricultural land, declining employment and investment and risks from the market have posed major challenges to the youth working in the agriculture sector in making agriculture profitable. Skill development in agriculture can become a suitable solution of these challenges. The India Council of Agricultural Research has taken new steps for skill development and self-employment in agriculture along with research, education and dissemination in advanced technologies, new production technologies, improved varieties, credit and linkage facilities to the farmers, the main ones are as follows-

- Value Addition and Technological Incubation Center in Agriculture (Vatika)
- Mera Gaon Mera Gaurav,
- Farmer First,
- Attracting and Empowering Youth in Agriculture (ARYA),
- Rural Entrepreneurship Awareness Development Scheme (Student Ready),
- Zonal Technology Management and Business Planning and Development Unit,
- Skill Development in Krishi Vigyan Kendras.

This skill development program is being run in about 700 Krishi Vigyan Kendras in the country to meet the needs of trained youth in the agriculture sector, which can achieve the ambitious goal of skill India to skilled India. In the year 2011-18, 94 training institutions organized 116 skill development training programs and provided training to 2320 youth.

(E) Agriculture Policy

The government makes five-year plans for development. In these schemes, the government also makes agricultural policy for the development of agriculture. While making agricultural policy, the government has to consider what are the problems in agriculture and grain production, what are the conditions of the farmers, how to solve these problems. As the circumstances change, the government also has to change the agricultural policy. After independence the condition of the country was

very bad. The production of food grains was not sufficient for the population of the country. Therefore, in 1966-67, the Government of India announced the Agricultural Policy. This policy was mainly related to the spread of new varieties of hybrid seeds. As a result, the Green Revolutions, came in India. New Agriculture Policy 2020 has been brought to convert Green Revolution into Rainbow Revolution, the main points of which are as follows –

- (a) The Farmer's Produce Trade and Commerce (Promotion and Facilitation) Bill, 2020: This law would shift the risk of market unpredictability from the farmer to the sponsor and allow the farmer to access new technologies and better inputs.
- (b) The Farmers (Empowerment and Protection) Agreement of Price Assurance and Farm Services Bill, 2020: This bill seeks to build an environment wherein farmers and traders can enjoy the freedom of choice regarding selling and purchasing of produce.
- (c) The Essential Commodities (Amendment) Bill, 2020: This law would help accelerate investments in cold storage and food supply chain modernization.

RURAL AREA DEVELOPMENT

The meaning of the development of rural areas is to emphasize on the development of those components of the rural economy which are lagging in the all-round development of the rural economy. Agriculture is the main means of livelihood in rural areas. Even today, two-thirds of India's population is dependent on agriculture, whose productivity is still so high that it does not even subsist everyone. Due to this reason the people of the country still live in extreme poverty. If we want the progress of India then we have to build a developed rural India. The real progress of India does not mean the development of urban industrial centers but mainly the development of villages. Rural development is the center of national development. For the development of rural areas, the villages have to be oriented towards many types of productive work along with agriculture. Such as- dairy industry, poultry farming, fisheries, fruit-vegetable production and creation of links between rural production centers and urban markets. This diversification will not only reduce the risks of agriculture but will also provide new livelihood options to our vast rural population. Therefore, the central government has run many schemes to promote agriculture and agriculture related industries, the axis of development of rural areas. Operation Green scheme under which farmers will be giving 50% subsidy for transportation and storage of vegetables and fruits. Apart from this, 22000 new agricultural markets will be developed under this scheme so that farmers can easily reach the market. Under this scheme, more than 470 online agriculture services will be started for the farmers soon. A provision of Rs.33097 crore (2018-19) has been made for the development of the North Eastern region along with the development of the village, including a special fund of Rs.412 crore for the promotion of organic farming.

Soil Health Card Scheme is a unique scheme of the Central Government which has 100% reach in every agricultural house

hold. More than 216 million soil health cards have been distributed. The Beej Gram Yojaa was started by the Central Government in the year 2014-15. Under the scheme, farmers are given help for seed production. Also certified seed is provided. Farmers are trained by agricultural experts from sowing of seeds to harvesting. Pradhan antri Kisan Samman Nidhi (PMKSN) is one of the important schemes of the Government of India. Under this scheme, it provides financial assistance to small and marginal farmers who have less than 2 hectares of land. Under this scheme, all the farmers are getting Rs.6000 per year as minimum income support. This scheme, implemented from December 1, 2018 is providing to be a boon for the farmers.

Apart from this, schemes like Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA), Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), PM Formalisation of Micro Food Processing Enterprises Scheme (PMFME), Prime Minister Employment Generation Programme (PMEGP), Pradhan Mantri Ujjwala Yojana (PMUY), Pradhan Mantri Awas Yojana (PMAY), Deendayal Antyodaya Yojana (DAY) etc. are being run by the central government for the development of rural areas.

CONCLUSION

After the reforms of 1990, all sectors progressed with time but the agriculture sector lagged behind in reforms. Many reforms initiated by the government were withdrawn due to various reasons. As a result, the agriculture sector improved but the farmers suffered. It has been strengthened again since 2014. The Government of India, in its plans has focused on Five Key areas technology, risk institutions, policy and skill development necessary for the revival of agriculture. Such as the role of ICAR in technological development, Prime Minister Fasal Bima Yojana to protect farmers from agricultural risks and interest rate on short term crop loans under Sarangi Samiti and risk cover on accidental death of farmers. Role of Institutions like cooperatives in providing necessary information, knowledge, skills and inputs to farmers, agricultural policies implanted by the government from time to time as per the needs of agriculture and schemes like Prime Minister's Skill Development Program for skill development of farmers are important. The only need is that its speed should be increased further. The development of rural areas is not possible when the income of each farmer is low. Despite the presence of modern techniques and agricultural equipment, small farmers, especially in cramped conditions, are not able to take advantage of them. They are entangled in such a vicious cycle while cultivating losses that they are deprived of knowledge and skills. The need is that correct information should be made available to them about government schemes and their benefits. Today, all possible efforts need to be made to bring the farmers from plight to a state of prosperity. Therefore, the initiative of the Government of India to double the income of farmers by 2022 is an important and appropriate step. To achieve this goal, we have to focus on skill development in the agriculture sector

through efficient coordination of development programmes, technology and policies.

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