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Evolution of India's Food Policy: From Food Provision to Achieving Self-Sufficiency through the Green Revolution and Beyond

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ABSTRACT: This study examines the evolution of India's food policy, tracing its trajectory from a focus on food provision for all segments of society to achieving food security through self-sufficiency. Historically, India's food policy aimed to ensure that all citizens had access to food while maintaining price stability. However, the mid-1960s marked a pivotal shift in this approach with the introduction of the Green Revolution. This period saw the expansion of the policy's primary objective to include the goal of food security through self-sufficiency, driven by the urgent need to reduce dependency on food imports. The Green Revolution, characterized by the adoption of high-yielding varieties of rice and wheat, along with significant investments in infrastructure such as irrigation, played a crucial role in transforming India's agricultural landscape. This technological breakthrough, supported by a favorable policy environment, enabled rapid increases in food production, particularly in well-endowed regions. As a result, India achieved near self-sufficiency in key staples like rice and wheat in an unexpectedly short period. The success of the Green Revolution was subsequently replicated across various crops and regions, leading to a fivefold increase in India's food production between 1970 and 2020. This paper explores how these historical developments have shaped India's current food policy framework, examining the ongoing challenges and opportunities in sustaining food security. The study underscores the importance of continued innovation and investment in agriculture to address future demands and ensure long-term food security for India's growing population.

KEYWORDS: Food Policy Evolution, Green Revolution, Food Security, Agricultural Self-Sufficiency, India's Agricultural Growth

I. INTRODUCTION

Historically, India's food policy was focused on providing food to all segments of Indian society while maintaining a certain amount of price stability. Around the mid-1960s, the primary purpose of ensuring food was expanded to include ensuring food security through self-sufficiency. The green revolution technology, combined with a favourable policy environment and investments in infrastructure such as irrigation, assisted the country in quickly increasing rice and wheat production in well-endowed regions, bringing the country close to self-sufficiency in an unexpectedly short period of time. This result was then reproduced in numerous crops and states. As a result, India's food production grew roughly fivefold between 1970 and 2020. The rise in per capita food production did not lead to corresponding improvements in nutrition and health. Despite India's abundant rice and wheat supplies, one-sixth of the population is still said to be hungry. The demand for land and water resources is increasing, and biodiversity is being lost on a large scale. The vulnerability to climate shock is also increasing. Small and marginal farmers are under pressure to earn enough money from agriculture. There are also difficulties about the involvement of tenants and female farmers in development projects. The emphasis is changing from dietary energy consumption to "balanced and adequate nutrition" as awareness and economic development grow. This is also posing a problem to the production plan, which is disproportionately focused on staple goods. Dietary diversity is influenced by a shift from hunger to balanced and adequate nourishment, as well as changing lifestyles, growing income, and concerns about healthy diets. This necessitates manufacturing matching the changing pace and pattern of consumption and demand.

The use of agrochemicals in agri-food production has increased dramatically in pre-harvest and post-harvest stages for plant, animal, and sea foods. A strong public opinion is developing against chemical residue and chemical content in food. The idea is increasing that the increased use of chemicals in food production, storage, and preservation is a major cause of many diseases and health dangers in people. Agriculture uses the most land and water, and thus has a tremendous impact on the environment and natural resources. According to the OECD, agriculture irrigation accounts for 70% of global water consumption. In India, agriculture is estimated to account for 80-90 percent of total water

demand. While a huge portion of the population lacks access to enough water, this precious resource is used in agriculture inefficiently and without consideration for water scarcity. Agriculture is also reported to contribute same share of greenhouse gas emission as its share in the GDP. This is a major cause for climate change and resulting disasters. These indicators highlight the crucial role of agriculture for sustainable use of natural resources, climate change, environment and biodiversity and also the challenge they throw to agriculture and sustainable development agenda.

Modern agriculture has advanced through specialisation and mono farming. This has diminished crop diversity and harmed overall biodiversity. Despite much debate about crop systems and farming system approaches in production, specialisation and mono-farming are prevalent. In order to transform the food system and quickly achieve the goals outlined in the Sustainable Development Agenda 2030, we will be utilising some flagship programs, adopting success stories, scaling up innovations at the state, community, and grassroots levels, and coming up with ground-breaking ideas. These concepts are goal-oriented and have undergone extensive testing.

II. INDIAN EXPERIENCE RELATED TO SUSTAINABLE DEVELOPMENT AGENDA AND FOOD SYSTEM

2.1 Right to Employment as a Work Safety Net

Agriculture is India's greatest employer. However, because agricultural activities are seasonal, there is a labour shortage during the lean months. This resulted in the forced migration of workers for livelihood.

2.2 Safety Nets to Address Hunger and Malnutrition

India boasts the world's largest food-based safety net schemes, covering approximately 800 million people by 2020, including nearly 120 million schoolchildren through the Mid-Day Meal (MDM) program. India has established the National Food Security Act, which allows two-thirds of the country's population to get 5 kg of grains each month from fair-priced businesses in their neighbourhood. This meets approximately 40% of staple food demand at a significantly reduced price, less than one-tenth of the open market price. Families who have no source of income receive this ration for free.

2.3 School Health and Children

The Government established Integrated Child Development Services (ICDS) in 1975, with UNICEF funding. It is the world's largest integrated early childhood program aimed at improving child health, nutrition, and development. While the program is primarily concerned with child health and nutrition, it also has a tiny component in which hot cooked meals are provided to children aged 3-6 at community Anganwadi Centres as part of its preschool education. Currently, it serves approximately 19 million pregnant and breastfeeding mothers, as well as 82 million children under the age of 6. In India, the ICDS is now widely available through community-level Anganwadi centres.

2.4 Direct Income Support to Farmers

In 2019, India established a huge initiative called PMKISAN, under which each farmer receives a cash income of Rs. 2000 three times yearly. Some states across the country are also providing income assistance through a variety of techniques. An key drawback of these projects is that tenants who cultivate property without a formal lease are ineligible for such assistance. Odisha has begun to provide cash aid for livelihood to landless agricultural workers, tenant farmers/sharecroppers, as well as small and marginal farmers.

2.5 Chasing Growth in Farmers' Income

Because the country's food output is now growing faster than demand, the emphasis has shifted to improving farmers' incomes. As a result, actions such as increased output growth, diversification into high-value companies, cost reduction, and greater price realisation have been taken to double farmers' incomes, a step towards inclusive growth.

2.6 Enabling Regulatory Environment

The food system approach includes all actors (e.g., producers, service and input suppliers, agri workers, private sector, retailers, processors, and consumers) and their interconnected value-adding activities in food production, aggregation, processing, distribution, consumption, and disposal. Economic sustainability necessitates that such a system be both viable and useful to all participants and stakeholders. Partnerships, integration, efficiency, and mutual interest help to attain such goals. This necessitates enabling the regulatory environment and institutions rather than each player maximising his or her own profit. India adjusts its regulatory framework on a regular basis to build synergy and eliminate frictions across diverse players and subsystems.

2.7 Women Self Help Groups

India has a long history of women's organisations that assist women in achieving economic empowerment on their own through appropriate economic activity. Such organisations provide some cash/capital aid to members while also providing handholding, skilling, institutional assistance, and linkages on the input and output sides. Self Employed Women Association (SEWA), headquartered in Ahmedabad, Gujarat, is one such organisation that has a network of 2.6 million women small business owners. This organisation has provided its members with agri-business skills, allowing many of them to conduct economically sustainable agri-business activities.

III. GAME CHANGING IDEAS AT REGIONAL LEVEL

3.1 An Innovative Income Support Scheme for Farmers and Labourers

The Odisha State Government began providing financial help of Rs.25,000/- per farm family over five seasons beginning in 2018-19 to small and marginal farmers in order for them to purchase inputs such as seeds, fertilisers, and pesticides, as well as assistance for labour and other investments. Similarly, each landless agricultural household will receive Rs.12,500/- for agricultural linked enterprises such as small goat rearing units, mini-layer units, duckery units, fishing kits for fishermen, mushroom growing, and beekeeping, among others. This will primarily assist the State's underprivileged social class.

Vulnerable cultivators/landless agricultural labourers would get financial assistance of Rs. 10,000/- per family per year to enable them to care for their.

Some other sub important national innovative initiatives are as under:

Chhattisgarh, recently took initiatives to promote rural livelihoods along with organic farming.

- a) Odisha introduced an organic farming policy in 2018 ,It also started a special programme to promote millets in tribal areas in 2017. Millets are procured by the state government and linked with the Public Distribution System (PDS). Also ragi laddus have been upscaled under Integrated Child Development Services (ICDS).
- b) Uttarakhand is the first state to have an organic farming policy in 2000. Uttarakhand passed the Organic Agriculture Act, 2019, and declared 10 of its blocks fully organic.
- c) In 2017, Karnataka brought a new organic farming policy. The new policy focuses on providing value-chain linkages between producers and consumers along with promoting sustainable organic production systems. Policy aims to convert at least 10 per cent of the cultivable area into organic by 2022. Karnataka launched the Raitha Siri Scheme, under which all millet growers would get cash incentives worth Rs 10,000 per hectare.
- d) Punjab have been supporting organic farmers by purchasing their crops through Punjab Agri Export Corporation and selling it abroad.

IV. PATHWAYS AND IDEAS FOR FOOD SYSTEM TRANSFORMATION

4.1 Irrigation Expansion and Efficiency

In India, approximately half of the land is rainfed, with the remaining half having access to irrigation. Irrigated lands are more productive and stable than rainfed areas. As a result, irrigation is a significant source of growth and consistent income. PMKSY combines three existing schemes: the Accelerated Irrigation Benefit Programme (AIBP) of the Ministry of Water Resources, River Development, and Ganga Rejuvenation (MoWR,RD&GR), the Integrated Watershed Management Programme (IWMP) of the Department of Land Resources (DoLR), and the On Farm Water Management (OFWM) of the Department of Agriculture and Cooperation (DAC). The government has approved Rs. 500 billion over five years to implement India's flagship irrigation plan. PMKSY focusses not only on providing sources of assured irrigation, but also on creating protective irrigation by harvesting rainwater at the micro level. Micro irrigation (MI) is a key component of PMKSY to improve water efficiency and achieve 'Per Drop-More Crop' (PDMC).

4.2 Sustainable Growth

Though India has not specifically committed to reducing carbon emissions from agriculture in the Paris Agreement protocols, there is a strong emphasis on sustainable and regenerative agricultural practices such as laser levelling, direct seeded rice, zero tillage, residue management, conservation agriculture, organic farming, microirrigation, and so on for GHG mitigation. As a result, incentivising farmers to adopt such carbon-positive regenerative agriculture practices would benefit farmers while also benefiting the environment, civil society (health), and public investments via carbon markets. The carbon farming is a new focus now which can be tapped in towards sustainable development objectives.

4.3 Agro Climatic Based Crop Planning

Market prices and incentive structures frequently result in a mismatch between what is best suited for production and what is actually produced under various agro-climatic conditions. This reduces inefficiency while also contributing to unsustainable behaviour. Our research institutes have developed optimal crop planning strategies for different agroclimatic zones, taking into account soil type, rainfall, temperature, irrigation, and other natural resources. This will help us reach our sustainability target.

4.4 Healthy and Safe Food

The link between high-quality, nutrient-dense food and excellent health is well understood. Concerns about food safety are also developing as a result of the improper and indiscriminate use of agrochemicals in manufacturing and preservation. India is encouraging and incentivising alternative farming systems such as organic farming, Indian natural farming, and ecological farming to mitigate the effects of indiscriminate agrochemical usage on food quality, soil, environment, and human and cattle health.

4.5 Contingency Planning

Agriculture is subject to natural fluctuations, as well as the arrival and quantity of rainfall, which influence crop selection and planting timing. Farmers frequently sow a specific crop, but the crop fails due to a prolonged dry spell. These types of situations are rather prevalent in rainfed agriculture. We have created district- and agro-ecology zone-specific data bases on crops and types suited for sowing in a variety of time, moisture, and temperature conditions. We built a strong advice system for farmers to modify crop plans to the vagaries of nature.

4.6 Better Infrastructure and Markets

Reforms and improved competition in agricultural marketing have a significant impact on boosting price realisation for farm produce, hence increasing farmer income. To increase profitability, value addition and microprocessing must be expanded by public and private investments. To reduce post-harvest losses, farm gate infrastructure must be upgraded to world-class standards. The GOI established a significant AIF (Agriculture Infrastructure Fund) financial facility to develop farm infrastructure and facilitate access to farms. This will open the path for improved connectivity, transportation, packaging, grading, storage, processing, cold chains, and other infrastructure to improve the quality of supply and value chains for both farmers and consumers.

4.7 Women Empowerment for Gender Equality

More than 70% of India's female labour is involved in crop production, animal husbandry, and other related tasks. However, women are denied land rights and are rarely involved in crop selling, which converts output into money. Development organisations, extension programs, and lending institutions also largely target male farm household members. The primary reason for this discrimination is that ownership title of land and other assets is officially and de facto in the name of male members of the household.

4.8 Improved Access and Better Nutrition

A huge number of workers continue to relocate from their hometowns to work in distant locations, typically outside of their state. Such workers were unable to obtain subsidised food since their ration card was restricted to a specific fair pricing outlet. More recently, in 2020, the government introduced the One Nation One Ration Card (ONORC) plan, which allows all eligible ration card holders/beneficiaries covered by the PDS to get their allocated food grains from anywhere in the country.

4.9 Market Liberalisation and e-Commerce in Agri

To promote integration in agricultural markets, a pan-India electronic trading platform (e-National Agricultural Market) has been established, which connects existing agri marketplaces to form a unified national market for agricultural commodities. The technology includes electronic auctioning of produce across integrated markets, which eliminates information asymmetry between buyers and sellers and promotes real-time price discovery based on actual demand and supply. It's being expanded to include all states and markets.

4.10 Alternative Farming System

There is a growing perception in society that chemical-based agriculture has a negative impact on human health, other fauna and flora, soil, the environment, and ecology. The scientific community, on the other hand, contends that harmful impacts are the result of indiscriminate and unregulated use of agrochemicals, policy distortions, and farmers' disregard for expert advice for the balanced use of chemical and bio inputs. There is also demand to reduce the unsustainable use

of natural resources. This has led to the quest for alternate farming techniques, and several of them are gaining appeal with constrained budgets.

V. TECHNOLOGY AND R&D

Technology is essential for food system reform. Seed technologies, water-saving, energy-conserving technologies, soil health, post-harvest technologies, market-linkage technologies, and so on all play a role in the development of sustainable food systems.

- Modern biotechnologies like genome-editing can play a significant role in development of environment-friendly biotech products.
- Technologies like conservation agriculture should not be ignored; rather they are more meaningful today. There is a need to promote minor neglected crops by putting in more research, more technologies to increase their productivity and market access.
- There has been an immense growth of digital technologies in agricultural sector in India in the last five years. Digital tools or apps based on AI for providing better farm management practices are gaining currency in India.
- Public-private partnerships have gone up. Many Agri Tech Companies and start-ups have come up in the agricultural sector

5.1 Trade Related Issues

Domestic prices and farm income are determined by international trade and trade restrictions, as well as WTO rules governing domestic assistance. The Uruguay Round, which was designed to eliminate disadvantages and offer a path of growth for developing countries, turned out to be a more formalised avenue for introducing inequalities into international relations. Three topics warrant special attention. The first issue is inequality and domestic support supplied by affluent countries and what developing countries can offer to its farmers. Developing countries often help farmers through high import tariffs but offer limited support and subsidies. On the other hand, industrialised countries have low tariffs but significant subsidies, as well as non-tariff technical trade obstacles (imports). Tariffs in developing nations are not a barrier to free trade in agriculture due to varied policy measures used by each country. Non-tariff systems, such as SPS, have emerged to govern international trade processes. These are significant hurdles that agribusiness faces in gaining worldwide market access. Developed countries maintain stringent SPS norms that far exceed international standards. The current approach to health protection has become overly protective, which requires immediate action.

- The COVID experience of the past year has shown that the availability of substantial food stock are essential to prevent food crisis in a large sized country like India. The public stockholding system ensures risk-mitigation, ensuring access at affordable prices, and creating purchasing power to access foodstuff, etc. This must not be allowed to be frowned upon as a trade distorting measure since it affects the food security of other countries.

It is concluded that the food systems transformation should be anchored around the small and medium-scale production, family farmers, indigenous peoples, women and workers in food value chains to advance equitable livelihood.

VI. CONCLUSIONS

The evolution of India's food policy from basic food provision to the achievement of self-sufficiency through the Green Revolution represents a significant transformation in the country's approach to ensuring food security. Initially, the policy focus was on providing food to all segments of society while maintaining price stability. This was a necessary response to the frequent food shortages and the dependence on imports that characterized the post-independence era. However, the mid-1960s marked a critical juncture when India recognized the need to move beyond merely providing food to its population and instead aimed for food security through self-sufficiency. The introduction of the Green Revolution was a decisive factor in this shift. By adopting high-yielding varieties of rice and wheat, supported by substantial investments in irrigation and infrastructure, India was able to rapidly increase its agricultural output. The success of the Green Revolution not only brought India close to self-sufficiency in staple crops like rice and wheat but also laid the foundation for replicating this success in other crops and regions. This period of agricultural transformation led to a fivefold increase in food production between 1970 and 2020, ensuring that India could meet the food demands of its growing population. Despite these achievements, the evolution of India's food policy continues. As the country faces new challenges, such as climate change, water scarcity, and the need for sustainable agricultural



practices, there is a growing recognition that policy frameworks must adapt. The focus now extends beyond mere production to include aspects of nutrition, environmental sustainability, and equitable access to resources. The lessons learned from the Green Revolution and the subsequent developments highlight the importance of continued innovation, investment, and policy support to sustain and enhance India's food security in the future. The journey from food provision to self-sufficiency underscores the dynamic nature of food policy in India, reflecting its ability to adapt to changing circumstances and needs.

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