



Need Of Sustainable Rural Area Development To Avoid Adverse Effects On Agriculture

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Abstract

The present study examines the need for sustainable rural area development as a means to avoid adverse impacts on the agricultural sector in the contemporary scenario. Agriculture remains the backbone of rural livelihoods, yet it is increasingly affected by unplanned development, population pressure, and environmental degradation. The primary objective of this study is to identify the underlying causes and prevailing problems influencing agriculture in rural areas today. The study is based entirely on secondary data sources, including research journals, government reports, news articles, and relevant web-based resources.

The findings reveal that conventional notions of development—such as the expansion of road networks, rapid industrialization, and the growing number of transport facilities—often overlook their long-term consequences on agricultural land, soil quality, water resources, and rural ecosystems. While such developments aim to improve economic growth, they frequently generate negative externalities that threaten agricultural sustainability. With a rapidly increasing population and rising demand for food security, sustainable development has become essential across all sectors, particularly in rural areas. The study concludes that adopting sustainable rural development practices is crucial for protecting agriculture, ensuring efficient use of natural resources, and meeting the basic needs of present and future generations. Sustainable rural development offers a balanced pathway that promotes growth without compromising agricultural productivity and environmental integrity.

Keywords: Sustainable Development, Rural Development, Agricultural Challenges, Agricultural Problems, Environmental Sustainability, Food Security.

Introduction

Sustainable rural area development is actually meet current demands without compromising future needs. Development of rural areas indirectly affects our environment health livelihood sustainability and Agriculture system. Agriculture helps sustain the nation economy. The Indian agriculture sector contributes to GDP and jobs. Therefore, we need to look into the reasons that have bad effects on our agricultural system. Development of rural areas is also one of the reasons due to which our agricultural system is affected. To avoid bad effects on our agricultural system, we need to adopt sustainable rural development. Two-thirds of India's population lives in rural areas and depends on agriculture for their livelihood. For this reason, agriculture actually affects the fate of a country like India. When it comes to development of rural areas, agricultural land is the first to be affected. The reason for this is whether we build roads to connect villages with cities , set up industries to provide employment to people in villages , build shops or build big buildings to expand markets, All these works require land and mostly good agricultural land is used in the name of development. After which gradually there is a shortage of cultivable land. This development not only impacts the agricultural system but also changes our environmental health and way of life. As faster the population of our country is increasing, the more agricultural land is being destroyed in the name of development of rural areas. Shortage of agricultural land is not able to meet the food needs of the coming generations. To avoid this grave problem we need to move towards sustainable rural area development, so that the development of rural areas becomes possible in such a way that the agricultural system is not affected too much and no grave problem arises for the coming generations. The need to study is that agriculture is the biggest platform as it not only ensures food security for the future generation but also drives economic growth. The Future development investment must be concentrated to achieving sustainable rural area development goals. Thus the development investment should aim to avoid areas with high agricultural productivity and focus investment on areas where land is barren so that we can control the adverse effects on agriculture. And can develop those areas where development is really needed.

Objectives

1. To find a solution to the overall impact on the agricultural system due to non-sustainable development of rural areas.
2. To find out the ways in which the need for sustainable development is emphasized for the development of rural areas.

Methodology

The study is collected all the secondary data which includes books journals, News paper and Web Pages.

Discussion

The discussion of the study is mainly about rural area development ,issues and challenges in rural area development, impact of rural area development on agriculture sector , agriculture sector and production in India ,future prospectus and solutions for agriculture in India ,need of Sustainable rural area development in agriculture.

❖ Rural area development

Rural development is the process of improving the quality of life and economic well-being of people living in rural areas, often relatively isolated and sparsely populated areas.

Often, rural regions have experienced rural poverty, poverty greater than urban or suburban economic regions due to lack of access to economic activities, and lack of investments in key infrastructure such as education.

Rural development has traditionally centered on the exploitation of land-intensive natural resources such as agriculture and forestry. However, changes in global production networks and increased urbanization have changed the character of rural areas. Increasingly rural tourism, niche manufacturers, and recreation have replaced resource extraction and agriculture as dominant economic drivers.

The need for rural communities to approach development from a wider perspective has created more focus on a broad range of development goals rather than merely creating incentives for agricultural or resource-based businesses.

Education, entrepreneurship, physical infrastructure, and social infrastructure all play an important role in developing rural regions.

Rural development is also characterized by its emphasis on locally produced economic development strategies.^[4] In contrast to urban regions, which have many similarities, rural areas are highly distinctive from one another. For this reason there is a large variety of rural development approaches used globally.

❖ Issues and challenges in rural area development

1. Health: From the time of independence to date, several urban development's and growth-oriented programs were implemented in India, but still half of the population of rural areas are below the poverty line. Nearly 70% of all deaths, and 92% of deaths due to communicable diseases, occurred among the 20% of the poorest population. Life expectancy rose from 33 years to 62 the infant mortality rate decreased from 146/1000 live births to 72/1000 live births in 1947-1999. The health of the rural population is decreasing due to the most hazardous atmosphere, living conditions, unsafe and unhygienic birth practices, no proper sanitation, non-availability of potable water, poor nutrition. The majority of the rural population has limited resources; they spend minimal amounts on food and necessities. Lack of knowledge plays an important role in the health of the individuals of rural areas most of the people have their own beliefs and practices regarding health, they prefer un-prescribed and traditional medicines without consulting doctors. The majority of rural deaths are due to infections and communicable, waterborne infections, which account for about 80% of sickness in India. 72.5% of women aged 25–49 years marry before 18 and have very early pregnancy (75% of married women had their first pregnancy below 18 years of age) risk of the lives of women and children are higher in rural areas due to early marriage and pregnancy. Rural population covered by 5,263 sub-centers; 32,387 public health center (PHC) and 1,48,248 Community Health Centre (CHC) covered all over the rural areas of the country, but the facilities and services provided are not proper and non-availability of doctors pressuring people of rural India to approach nearby urban areas.

2. Poverty: India is one of the rapidly growing economies in the world, yet around 73 million people are living in extreme poverty (Brookings report). India's poverty is primarily rural it comprises one-third of the poverty-stricken individuals. Scheduled caste, Scheduled tribes, Landless laborers, and casual workers are mostly prevailing in the conditions of poverty. The conditions of poverty among rural communities are

characterized by a lack of financial resources, land, assets, property, and other resources. The majority of the poverty-stricken people are employed in the agriculture sector and other activities such as animal husbandry, fisheries, and daily workers. Poverty is a complex phenomenon and it overlaps and is interlinked with political, social, economic systems. The poverty of individuals is also one of the main factors which lead to the growth of a shortage of assets, discrimination, and incapability. Poverty-stricken individuals of rural communities usually migrate to urban areas in search of better opportunities and facilities, but many people due to the increased cost of living in the urban areas end up residing in urban slums or homeless. The main cause of poverty is the exploitation of the worker class by the capitalist class (Karl Marx). The important factors that influence poverty in India are Unemployment, Illiteracy, and unawareness, the occurrence of natural calamities, disasters, Inadequate financial management, Borrowing loans, Large families, Health care needs, Migration. These causes have a direct and indirect impact on poverty which is interdependent. For example, if an individual or family is poor it is difficult to get an education and employment this will again cause the situation of poverty. India stands 62nd among 107 countries with an MPI score of 0.123 and 27.9% population identified as multi-dimensionally poor, the number was 36.8% for rural and 9.2% for urban India (Global MPI 2020).

3. Illiteracy: It is defined as “one who can both read and write a short simple statement on his everyday life” (UNESCO). Rural areas do not possess adequate resources required for their livelihood opportunities, lack of social infrastructure facilities such as schools, colleges are completely absent or barely available, and affordability of the people is also low in rural areas leading to fewer literacy rates. The living conditions of many individuals are in the deprived state, people tend to migrate to urban areas for social infrastructure facilities to meet their basic needs in urban areas but they prefer to make their children as bread earners. Lack of financial resources, educational facilities, teaching-learning methods, transport facilities, Social disputes are the identified main causes of illiteracy in India. Education and literacy are the vital development indicators and key variables to measure development, quality of life, awareness level, and skill of the people. In India, 75.7% male and 62% female are literate, in rural India 72.3% Male and 56.8% Females in the year 2014 (NSS Report). The percentage increase in literacy rate from 2001 to 2011 is 26% female, 10% male, 14% total. On April 1, 2010 Right to Education Act (RTE) was implemented India joined 134 countries to emphasize the significance of free and compulsory education for children of age groups 6-14 years. Under this act, four key areas must be developed for the positive transformation of the education sector they are availability, accessibility, acceptability, and adaptability. There is a 19.4% increase in enrolment in primary school from 2006 to 2009 and improvement of the infrastructure for the school. This act has a very positive impact on the rural areas, yet there are a lot more changes to be brought to increase the literacy rate and the main important focus must be on the female literacy rate.

4. Unemployment: Unemployment is a condition when a person is able and willing to work normally, dependent upon his earning to provide the necessities of life for himself and the family is unable to obtain gainful employment (Gillin). Individuals in rural areas are dependent on agricultural activities or small and marginal works in nearby urban areas. The unemployment in the rural areas is mainly three types they are open unemployment, disguised unemployment, and educated rural unemployment. Agriculture in the Indian context mainly dependent on rainfall and season so at the time of sowing, harvesting, spraying fertilizer requirement of workers is more during this time and in the remaining season people are unemployed. So as unemployment increases the income of the individual and family decreases and poverty increases. In rural communities, the problem of unemployment is severe. As the opportunities in rural areas are limited, they start migrating to the cities for jobs which leads to the formation of slums. They possess adequate skills and abilities to put into practice their job duties in a well-organized manner. Causes of unemployment can be described as Lack of basic literacy skills, Lack of information, Decent work deficit, Skills mismatch, Lack of

work training, Social restraints upon women. The rate of unemployment in rural India in 2017-18, four percent of females and six percent of males were unemployed, while the unemployment rate was higher in urban India. However, urban women had a higher unemployment rate than rural women in the country.

5. Homelessness As the population of the country increases the housing shortage of the people is also increasing in India. Types of homelessness in rural areas are mainly Displaced persons, migrants, Inmates of Institutions, slum squatter residents, Itinerant groups, the present housing shortage of rural areas is less compared to urban areas, cities but not negligible every one out of 10 individuals in rural areas is homeless. Homelessness is a condition when individuals do not have any form of shelter or housing accommodation; homeless individuals are residing in temporary shelters, Pavilions, on the roadside or congested living. Housing is the basic requirement, if people are homeless, they experience many problems in fulfilling requirements, quality, and standards of life are also reduced. The major causes of homelessness are affordability, poverty, landlessness, natural calamities, disasters, wars, communal riots, and political conflicts. Though the government is implementing many development programs to reduce the housing shortage in rural areas with the vision "Housing for All", due to a lack of proper interventions there is still mismanagement of supply and demand of the housing sector. In rural areas, 1,165,167 people were houseless i.e., 0.85% of the rural population (Census 2001). Disasters are one of the major reason people drive to the condition of homelessness 600,000 people were made homeless by the Gujarat earthquake in 2001 (Times Higher Education, 2003), while 275,000 houses were destroyed in the 1999 Orissa cyclone (Rediff On the Net, 1999), flooding of the southern states of Andhra Pradesh and Karnataka in 2009 when 2.5 million people were made homeless. There is a lot of mismanagement of demand and supply presently but these disasters add more to the shortage of housing.

6. Crime and Violence: Crime and violence in rural areas are also increasing particularly against marginalized communities, minorities, and women. All individuals irrespective of gender, age, caste, race, ethnicity, and socio-economic background have been the victims of crime and violence. The major cause behind these crimes and violence are generally poverty. The important types of violence that are identified in the rural areas are Verbal abuse, Physical abuse, Trafficking, Exploitation, Theft and Robbery, Sexual Harassment, Dowry deaths, Domestic violence. In rural communities, girls and women are the ones, who get subjected to abuse and mistreatment more as compared to males. The birth of the girl child is still not appreciated and preference is given to male children. They are not encouraged to study and there are still many cases of child marriages of girls and they are facing harassment for dowry. On the other hand, more attention is paid towards male children, particularly, their education, health, diet and nutrition, participation in other activities. Therefore, in this manner, girls and women experience neglect and discriminatory treatment. They are not given equal rights and opportunities as compared to males. In some cases, they usually carry out their daily routine in the management of household responsibilities and are discouraged from participating in any tasks and activities. The caste system is still seen in many rural parts of India, people belong to scheduled caste and scheduled tribes are discouraged, abused, and get exploited. Though the government of India enforcing many rules and acts to bring social equality, there are many backward areas still people are constrained on basis of caste. In the case of girl safety rural and urban areas are equally not safe, there are about 10000 women, 26 % reported physical violence from spouses during their lifetime. Every hour, at least two women are sexually assaulted and every six hours, a young married woman is beaten to death, burnt, or driven to suicide. It is appalling to learn that 28.4 percent of pregnant women suffer domestic violence.

❖ Impact of rural area development on agriculture

Indian agriculture is a major industry. Agriculture employs nearly two-thirds of the Country's rural workers. Agriculture accounts for 27% of GDP, 21% of exports, and 65% of Employment in India. 8.4% of GDP and 35.85% of agriculture output come from cattle. About 43% of India's land is used for agriculture, while 75% of its population lives in rural regions and depends on it. Food grain production is estimated at 211.17 metric tones. Agriculture covers 329 MH, 265 of which have producing potential. The country's net sown area is 143 MH, with 56 MH irrigated. The best utilisation of natural and human resources drives most Indian agriculture production. Thus, India is the world's top producer of many Commodities due to its agro climatic conditions and abundant natural resources. Coconuts, Mangoes, milk, bananas, dairy products, ginger, turmeric, cashew nuts, lentils, and black Pepper is among its top exports. It produces the second-most rice, wheat, sugar, cotton, fruit, And vegetables. Indian agriculture depends on water management. Indian agriculture is Limited to the monsoon season. India has abundant rainfall throughout the monsoon season, But sometimes it turns into terror, generating unmanageable floods and harming crop Production.

❖ Future prospectus and solutions for agriculture in India

Any modification to the structure of the agriculture sector, which is a significant Contributor to the Indian economy and the centre around which socioeconomic privileges and Deprivations revolve, is likely to have a comparable impact on the existing pattern of social fairness. The efficient use of soil, water, livestock, plant genetics, forests, climate, rainfall, and topography is critical to the environmentally sound production of agricultural goods. The restrictions that affect Indian agriculture can be broken down into five categories: resource limitations, infrastructural limitations, institutional limitations, and technical limitations. Policy-generated limitations are the most significant. A key component of sustainable development is the management and conservation of the natural resource base, as well as the orientation of technological and institutional change in such a way as to ensure the achievement and continued satisfaction of human needs for

both current and future generations. This kind of sustainable development (in the agriculture, forestry, and fisheries sectors) preserves the land, water, plant, and animal genetic resources; it does not degrade the environment; it is technically appropriate; it is economically viable and socially acceptable; and it is environmentally non-degrading. Therefore, in order to achieve sustainable agricultural development, it is necessary to make the best possible use of the available natural resources, human resources, financial resources, and technical resources. Rainfall is a significant factor in determining crop yields in India, which the primary factor is contributing to the slowing growth rate of the agricultural industry. Small farmers and laborers, who typically live from paycheck to paycheck, are the ones who are the most negatively affected by these uncertainties. Because of this, something needs to be done to help support farmers, and a sufficient amount of water and energy needs to be delivered to them. This is necessary because farmers continue to feel unsafe, and they continue to perish as a result of drought, flood, and fire. India is the second-most populous country in the world, and its government ought to acknowledge the country's massive population as a significant national resource. A large percentage of the population in India is not actively engaged in any activity. There is a pressing need to identify avenues through which their talent can be explored and their numbers may be made to contribute to the expansion of the business. Particularly prevalent in the agricultural sector is a form of unemployment known as "passive unemployment." One way to help India reach its goal of sustainable development is to use all of its human resources to the fullest extent possible. The majority of the country's low-income population lives in rural areas and works in agriculture; if we do not find a way to improve their standard of living, it will be impossible for our nation to experience general economic expansion. If we continue to look the other way toward those who are less fortunate, the gap between social classes will continue to

widen. Farmers in the country are being driven to take their own lives because of the debt traps they are caught in. People are moving to cities in the expectation of improving their standard of living there, but this migration is also adding to the number of people living in slums in urban areas. As a result, it is imperative that rural populations be provided with opportunities for economic growth as well as employment in their respective regions. For a considerable amount of time now, India has been classified as a "developing" country; in order for us to make the transition towards "developed" countries, we will need to reduce our enormous reliance on the agricultural sector.

❖ **Need of sustainable rural area development in agriculture**

Agriculture and sustainable Rural Development A core challenge to sustainable development is the attainment of sustainable agriculture which means improving productivity and the income of the poor, without affecting the planet's critical life support system. Agriculture is the backbone of national economy in many developing countries, in India it accounts for 6 out of every 10 jobs. Without agricultural productivity, people in the rural areas will either starve or attempt to seek a better life elsewhere. Cities on the other hand cannot tolerate further strain. As such the need is to make the development greener but that will need new kinds of tools that will be gentle and not scar the earth's imaginative strategies that will create such tools and many hands eager to put them to work. Such tools will promote sustainable agriculture without affecting the eco-balances. Some of these tools are:

Conservation of Forests In the eco-balance system a major area is the conservation of forest. In India, annual requirement of fuel is in the order of 150 million tones whereas the production is hardly about 20 million tones. The degradation or denudation of the forest is of the order of about 1.5 million tones per annum and therefore the country is going to have barren forest in a very near future. Besides, the practice of shifting cultivation by tribal's is another important environmental situation. It is also non-sustainable economic activity for them. As such it is essential that, such individuals should be provided with forest based subsidiary occupation like minor forest produce (cultivation of fruits, vegetables, plantation crops, etc.) in order to retain them in their areas with a sustainable activity and also to promote forestry in the hill area. Further, wherever possible captivity plantation should be encouraged for the wood based industry. The Government Task force should use the tissue culture and micro propagation technique for the production of important forest trees. Fuel timbers, etc., which could be planted on Government lands, under Government Sponsored Schemes, such as social forestry and the waste land development programme, etc.

Biotechnology & Biodiversity To augment sustainable and higher production in agriculture, allied agriculture activities, agro based industry and others as well as to increase employment opportunities among the rural poor, it has become necessary to upgrade the existing technology of production. Biotechnology, a labor intensive technology, refers to variety of techniques involving living organisms as a means of production and uses tissue or cell culture, cloning and fermentation; cell fusion, embryo transfer and recombinant DNA technology etc. This technology has been developing rapidly in the world since 1980. A number of biotechnological industries have been established in the field of agriculture, pharmaceuticals, food and feeds, energy and the environment protection. In addition to the frontier technologies like genetic engineering and biotechnology, India has varying agro climatic zones, suitable to produce variety of hybrid plants and animals. It has a vast pool of high caliber agricultural scientists, cheap agricultural laborers and the agro-chemical inputs. India with this unique position can not only generate employment among rural folk and eradicate poverty but also can commercialize agriculture in the field of crop production, horticulture, aquaculture, floriculture, mushroom production, live-stock and poultry production, etc. It can become a major exporter of agricultural raw materials and food to the world.

Chemical Fertilizers vs. Bio-fertilizers It is estimated that 50% of the increase in food grains production in the last decade was due to extensive use of chemical fertilizers. However, the deleterious effects (soil salinity and alkanity) of excessive use of chemical fertilizers, particularly in the absence of organic manures were recognized in many parts of the country, including the nitrate nitrogen pollution of the ground water. Besides 75% of the farmers are in the category of small and marginal farmers, who cannot afford to use costly chemical fertilizers. Therefore, it is necessary to look for alternatives which will promote cost effectiveness and sustainability in farming. Another important fact is the use of chemical fertilizers without estimating the soil fertility. This is misuse of costly complex fertilizers and micro nutrients which also leads to environmental problems. It is estimated that only less than 30% of the applied chemical N fertilizer is made use of by rice plants and the rest are wasted by way of volatilization, surface run off and seepage losses. Higher yields of crops can be obtained without many externally purchased chemical fertilizers by recycling the farm wastes and allowing mineralization to take place. Further, the biological nitrogen fixation is the most important alternative for the replacement of nitrogen fertilizers. Crop rotation which includes pulses and the green manure legumes, can replace nitrogen fertilizers to a large extent. In Brazil and Argentina soybeans are grown without any nitrogen fertilizers. This crop contributes to soil fertility without hazards to environment.

Pesticides and Their Alternatives In India crop losses caused by pests have been estimated at Rs. 500 billion per annum. As such the use of pesticides in India is very high and it has emerged as the 2nd largest pesticide manufacturer next of Japan in Asia. According to World Health Organization (WHO) study, the average consumption of pesticides in the world is 450 grams per hectare and in India it is around 3kg. In Guntur District of Andhra Pradesh alone this figure has touched the consumption rate of 10 kg. per hectare. Because of extensive use of pesticide most of the species of pests in Guntur and Krishna district of Andhra Pradesh have been found to be 300 fold more resistant than those in other areas. While the chemical pesticides are instrumental in achieving significant increase in crop productivity, it also leads to serious ecological and human health hazards. It destroys predators and parasites, beneficial insects (honey bees, silk worms) and other useful animal species. In the contest of foregoing there is a strong need to develop the alternatives and total dependence on pesticides should be reduced. In the recent years the concept of integrated pest management has gained momentum. The use of bio-pesticides has proved beneficial not only to protect environment and human life but also has reduced the cost of cultivation of agricultural crops. Many of the beneficial insects are being used to control the other harmful insects. Use of pesticides of plant origin (Neem, Karanj) provides an excellent alternative for protecting crops from all insects/pests of economic importance. Several herbal extracts are being produced by a number of leading companies in India which are equally effective, cheaper and are fully ecofriendly.

Conclusion

It has been observed that sustainable rural area development is very important for a developing country like India because only with sustainable rural area development agricultural land can be saved from the harmful effects of development. Sustainable development gives impetus to efficiency and employment. Its objective is to develop in such a way that agricultural land is not harmed too much so that the level of production can be increased in a way that is not harmful to the environment. If we look at the performance of the agricultural sector in India, it will be very easy for us to see that there has been a significant improvement in the agricultural production of the country during the last few years. Despite continuous development in rural areas, there has been a marked improvement in the level of agricultural system. The reason for this is that at present, the use of new technology in agriculture is increasing day by day, due to which production has increased despite less cultivable land.

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