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SUSTAINABLE DEVELOPMENT: AN INDIAN CASE STUDY

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ABSTRACT

The world is currently facing a very big challenge: sustainable development. There are numerous definitions of sustainable development, but the Brundtland Commission's, sometimes known as the World Commission on Environment and Development's, definition is the most often used. Sustainable development is defined as "development that fulfills the requirements of the present without compromising the ability of future generations to satisfy their own needs" in the Brundtland Commission Report. Intergenerational justice and intragenerational justice are the key topics of this concept. Three pillars—the economy, society, and environment—were used to define sustainable development. Since achieving ecologically responsible economic growth necessitates a total restructuring of the current systems of economic production, sustainable development has emerged as a major problem for the contemporary society in which we live. India, the second-most populous nation in the world and one with a high level of poverty, must walk a fine line between the need for rapid economic expansion and protecting the environment.

KEY WORDS: Sustainable Development, Poverty, Economy, Society, And Environment.

INTRODUCTION

For governments in developing nations around the world, achieving sustainable rural development is a major problem. It is crucial to remember that rural development is a crucial aspect of economic development and the fight against poverty, hunger, and malnutrition on a global scale (Johannes F. Linn, 2012). The vast majority of a developing country's population lives in rural areas, where the prevalence of rural poverty is fairly significant and typically higher than that of urban poor, which highlights the need of sustainable rural development. Since the majority of the world's poor and malnourished people still reside in developing nations1 that are still largely rural (for instance, 68.8% of Indians do), it would appear necessary to promote rural development in order to eradicate poverty and combat hunger and undernourishment.

The eradication of extreme poverty in all of its manifestations represents a significant challenge for governments of developing nations worldwide. Out of the 17 Sustainable Development Goals (SDGs), which were adopted by world leaders from September 25 to 27, 2015, it is the first important target. We must identify the poor, their locations, and their levels of poverty in order to accelerate the eradication of poverty and eradicate extreme poverty by 2030. The majority of the world's poor, or about 1.2 billion people, reside in rural areas of emerging nations. In the past, just one aspect of poverty was considered when measuring it: financial poverty. Indicators of income or consumption expenditures are typically used to measure it. "Human lives are battered and degraded in all kinds of diverse ways, and the first step... is to recognise that deprivations of very varied kinds have to be accommodated within a broad overall framework," wrote Amartya Sen in 2000. Following Sen, it is important to acknowledge the complexity of poverty. While per capita income and expenditure is a significant aspect of poverty, it does not account for other aspects of poverty, such as a lack of access to healthcare, education, and other necessities of life.

This study is based on the essential tenet that poverty, particularly rural poverty, and environmental degradation are related issues; that is, the poor, who lack sufficient resources to support themselves, depend on the environment, which has unfavorable effects on the environment. The impact of humans on the environment is widely acknowledged. Normal human activities including consumption, transportation, garbage disposal, industrial production, etc. produce pollution that is caused by humans. The atmosphere is the primary pathway for most contaminants to reach the surrounding environment. When dangerous chemicals or particulates are released into the atmosphere, air pollution results. According to a survey by the Center for Science and Environment (CSE), air pollution ranks as India's sixth leading cause of death2. During human operations like crop burning, industrial processes, and the combustion of fossil fuels and biomass fuels, among others, local pollutants like carbon monoxide, specific matter, and carbon dioxide, a global pollutant, are emitted. In India, where indoor air pollution is a significant source of local pollution, over 500,000 children and women per year die from it, according to the World Health Organization (WHO) (WHO, 1997). Given that such local pollution has a direct and positive relationship with carbon dioxide emissions and that emissions of particulate matter and carbon monoxide are particularly high when coal and lignite are

burned, two statistical facts highlight the severity of the problem of local pollution in India: a) the total emissions of carbon dioxide (CO2) amounted to 1217 million tons (MT) in 2003-04, ranking India as the fourth highest emitter after China, the United States, and the European Union (Jemima, 2014) 3and; b) the usage of coal and lignite was responsible for 57% of these emissions. Given that this thesis explores how poor households contribute to environmental degradation, it would be essential to highlight that in 2003–04, households made up around 7% of all CO2 emissions in India (Parikh et al., 2009) 4. Given that the poor now make up one-fourth of India's population, the percentage of poor households in such emissions is certainly much smaller. However, if the poor have a larger tendency to pollute than people with higher incomes, which this thesis will determine, then we can estimate that impoverished families contribute more than 1.75 percent of all carbon dioxide emissions in India through their consumption patterns. This may be a little proportion, but it results in a lot of emissions, and since even small changes in emissions have a big impact on morbidity and mortality when the total amount released is high, even a small decrease in this percentage might have a big impact on those numbers.

SUSTAINABLE RURAL DEVELOPMENT

The greatest problem facing the developed world now is sustainable rural development. The Brundtland Commission, also known as the World Commission on Environment and Development, is credited with developing the most well-known definition of sustainable development. Sustainable development is defined as "development that fulfills the requirements of the present without compromising the ability of future generations to satisfy their own needs" in the Brundtland Commission Report (WCED, 1987). Intergenerational justice and intragenerational justice are the key topics of this concept. The Brundtland Commission Report came to the conclusion that "problems of poverty and underdevelopment cannot be solved unless we have a new era of growth in which developing countries play a large role and reap large benefits"5 and that "teaching the poor that they must remain in poverty to protect the environment is both futile and an insult to the poor." The Johannesburg Summit (2002) defined sustainable development in terms of three pillars: economics, society, and environment. This provided a complete view of the topic.

A number of additional factors, including financial, cultural, spiritual, and human rights, have come to be recognized as vital conditions for sustainable development on a global scale as a result of the globalization and modernization processes. Nevertheless, amid the many problems, the emphasis is on ending poverty, hunger, malnutrition, and promoting environmental sustainability in all nations. Due to their critical relevance and widespread acknowledgment, these challenges were included in the eight Millennium Development Goals (MDGs), which were meant to be accomplished by 2015. Global leaders, however, ignored gender disparity, the comprehensive character of sustainable development, and the underlying causes of poverty. In order to accomplish the 17 Sustainable Development Goals (SDGs) by 2030, the eradication of poverty, hunger, and environmental sustainability were once again included. This viewpoint suggests that the two most crucial objectives for attaining sustainable development are the eradication of poverty in all of its manifestations and environmental sustainability.

Sustainable rural development is a process of development that raises the quality of life for rural poor people by building capacities that support community involvement, health and education, food security, environmental protection, and long-term, sustainable economic growth. Community members can break the cycle of poverty and realize their full potential thanks to this integrated procedure. It is crucial to remember that the objectives of sustainable rural development encompass three distinct but connected dimensions: economic expansion, social advancement, and environmental protection. Money capital is a concern for economic growth. It was invented by Hicks in his seminal book, "Value and Capital." According to Hicks, "income" is "the amount one may eat over a period and yet be in good financial standing at the end of the period" (Hicks, 1939 and 1946). All significant concerns relating to human capital, such as gender discrimination, health, education, and food security, are addressed by social progress. Environmental protection is being concerned about ecological imbalance and pollution.

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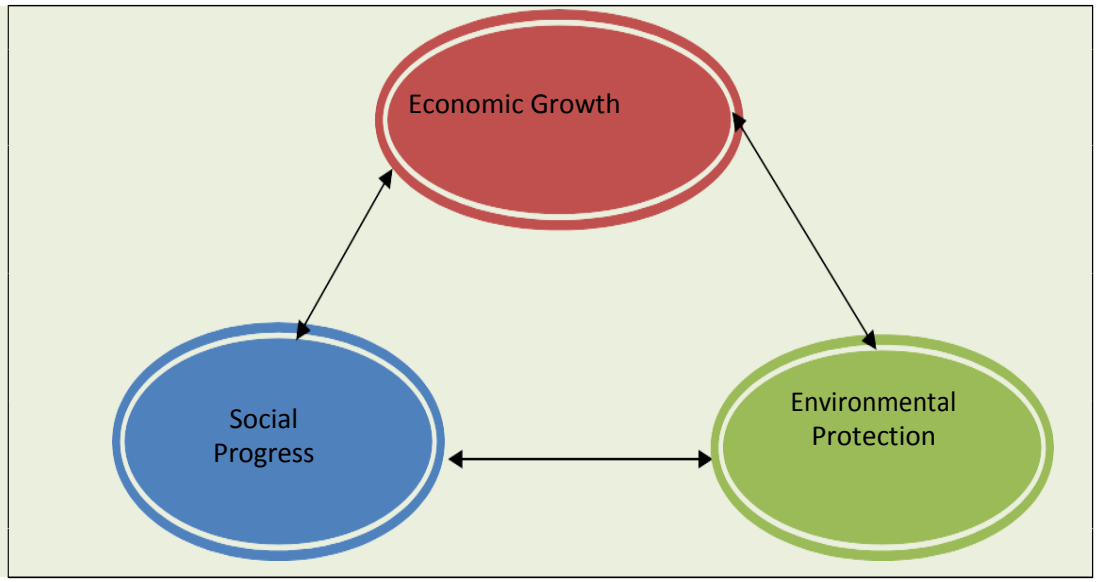
Figure-1 Interaction between three pillars of sustainable rural development



Economic operations to supply household consumption frequently put increasing demand on different environmental elements including water, air, and soil, which might impede economic progress. Increased productivity results from increased human capital, which is a function of worker skill, job happiness, and health and educational level. As a result, environmental sustainability and social progress both have a favorable impact on economic growth. These two phenomena are also linked by a positive synergy that strengthens one another. Although economic growth itself is linked to the generation of investible surpluses for undertaking environmental improvements as well as an increase in demand for environmental quality, it also has implications for the environment that are both positive and negative. An increase in the magnitude of produced output places pressure on the resource base. The relative importance of these two components clearly affects the overall effect of economic expansion on the environment. The eradication of poverty and environmental protection, which make up the core of sustainable rural development, require simultaneous success in the three aforementioned pillars.

RESEARCH METHODOLOGY

The current study concentrates on Sagar Block, a tiny section of the Sundarbans where land area decrease has been noted. Lohachhara and Suparibhanga, two islands in the Sagar Block, have already vanished. There has also been land loss on neighboring islands. Studies from the past show that many individuals have moved to Sagar Island. The largest island in the Sundarbans is this one. As their estimates were generated at various points in time separated by intervals of land submersion, contemporary researchers are at odds regarding the size and number of villages on Sagar Island. However, there is almost universal agreement when it comes to population since after land was flooded, people moved from the submerged village to an un-submerged community.

Both secondary and primary data are used in this investigation. Secondary data sources include Census Reports, West Bengal Forest Department Management Plans, West Bengal Government Agriculture Reports, Sundarban Affairs Department Reports, and numerous documents located in Sagar Block Panchayat offices. Information on geographic and demographic traits at the village and GP levels in Sagar Block, as well as information on climate change for the Sundarbans as a whole, are provided by secondary data that have been gathered.

RESULTS AND DISCUSSION

The only Pucca (concrete) road for transportation on the Island runs for 30 kilometers from Kachuberia to Gangasagar. The remaining roads are all brick-paved or (temporary) Kutchha village roads that connect to the aforementioned state highway. A vessel or launch service crosses the Muri Ganga river to connect Sagar Island to the mainland. The two points of entry to Sagar Island are Kachuberia and Chemaguri, which are respectively near the island's north- and south-eastern corners.

Sagar Island's sea level is increasing at a rate of 2.36 millimeters per year, which is faster than the world's average sea level rise of 2.00 millimeters per year and slower than the Sundarbans' average sea level rise of 3.14 millimeters per year (Hazra, 2002). The sea level increase is greater on East Sagar Island: it is 5 mm annually on average near the Pakhiralay tiger habitat, and 10 mm in the direction of Khunla in Bangladesh (Sanyal, 2007).

According to estimates based on scant data, a one-meter increase in sea level may cost India's welfare system $1,259 million, or 0.36 percent of its GDP (Roy et al 2006)

According to projected climate variability scenarios, tropical cyclone frequencies and intensities in the Bay of Bengal would rise in the next years, especially during the post-monsoon season. Therefore, flooding in low-lying coastal areas will grow. According to a short-term data analysis, the Bay of Bengal in the Indian Sundarbans may experience cumulative mean sea level elevation of closer to one meter by 2050, with a projected loss of 15 percent of land area by 2020. Due to the lack of diversity in available livelihood options, the Sundarbans are extremely vulnerable to an increase in sea level both economically and socially. Food security is endangered by an increasing population and a shrinking land mass. Food insecurity is declining, and there aren't any additional developmental issues.

The population of the Sundarbans is seriously threatened by the reduction in food security and the absence of alternative development options in the face of climate variability.

Agriculture, aquaculture, prawn seed gathering, and pisiculture are all important to the community. Others rely on pilgrimage to the Kapil Muni temple during the annual Gangasagar fair as well as seasonal tourism and tourism in general. Other crops farmed in addition to rice include betel leaf, watermelon, high-quality chillies, etc. This island's coastal lowlands make up over 80% of its total arable area. The majority of the regions are mono-cropped as a result of the presence of numerous unfavorable elements like salinity, restricted drainage, a lack of irrigation potential, as well as issues with physical connectivity and communication that obstruct the marketing of produce.

The North and South 24 Parganas districts of the state of West Bengal contain 19 administrative blocks that make up the Indian Sundarbans. It consists of 13 administrative blocks, including Sagar Block, in the South 24 Parganas district and six administrative blocks in the North 24 Parganas district. The Sagar Block in the Sundarbans' Indian portion serves as the thesis' study area. Lohachhara was buried in 1982, leaving Sagar, Ghoramara, and Lohachhara as the only inhabited islands in Sagar. More than 66% of the land area of Ghoramara has been submerged.

The results of the field survey, which was only conducted on Sagar Island and not on the other inhabited island, Ghoramara, reveal that this island has an average family size of up to 5.44 persons. Nearly all of the households of Sagar Island's settlements are struggling financially, but when family sizes shrink, circumstances get better. The population is roughly 52.45% male and the remaining 75% female, resulting in a female-to-male ratio of 906:1000, which is significantly lower than the national average of 940:1000. (Census 2011).

Table2.1:Age Distribution

Age group	**Share of sample population (%)**	**Female-male ratio** (females per1000 males)
Up to 6 yrs	13.24	**1000:1160**
6.1 –15 yrs	19.49	1000:787
15.1– 40yrs	46.32	1000:894
40.1– 60yrs	15.07	**1000:1196**
Above 60 yrs	5.88	1000:433

We notice an intriguing finding in Table 1 about the sex ratio across age groups: In the 0-6 year age range, which makes up 13.24% of the overall population, there are more female children than male children (the female-to-male ratio is 1160 females to 1000 boys). The age range of 40.1 to 60 years, which makes up 15.07% of the total population and has 1196 females for every 1000 males, has the same characteristic. Males outweigh females in all other age categories, with the exception of those 60 and older, where there are more than two males for every female. (However, given the sub sample's tiny size, it's possible that this is the only reason it isn't truly representative of the comparable population; it was only chosen from this age range.)

Due to cultural norms that support patriarchy, an occupational structure where the two most common occupations, agriculture and fishing, are inherently male-dominated, the predominance of mono-cropping in agriculture due to high soil salinity, which in turn leads to a low demand for agricultural labor, and thus keeps wages low enough that farm owners don't even have to consider replacing male farm workers, the participation of women in the workforce is much

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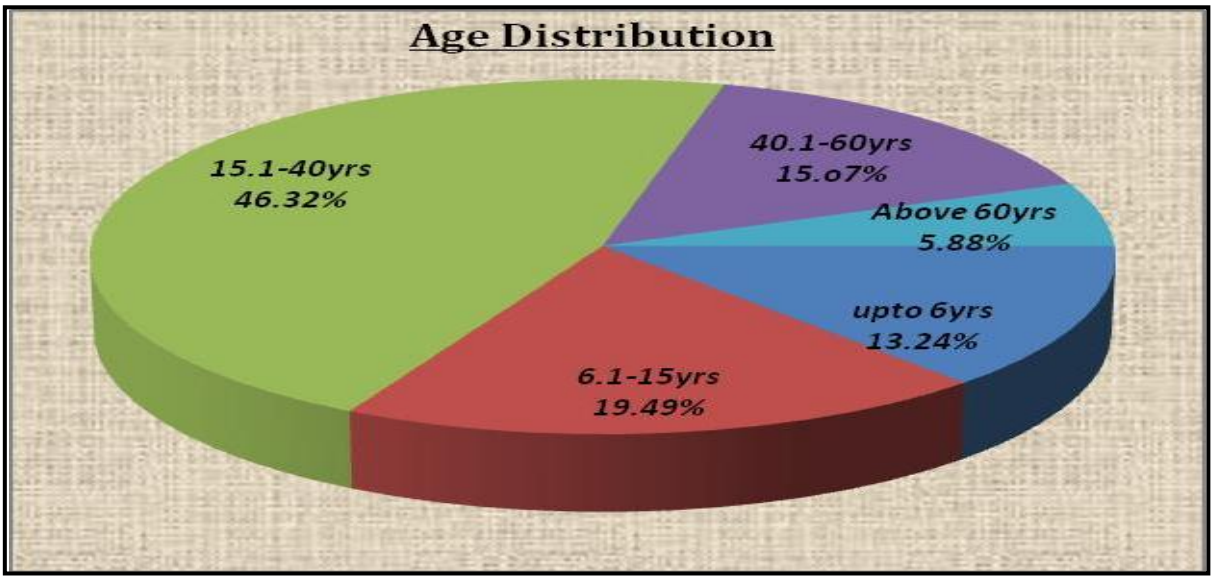
lower than that of men.

Landowners' farming (which accounts for 22.67% of the sample population32), fishing33 (18.67%), and wage labor34 (which accounts for 56.66% of the sample and is employed in agricultural and job guarantee programs) are the main occupations in this region. Over the past 50 years, coastal floods and inundation have jeopardized all of these occupations, resulting in the loss of life and property (houses, agricultural lands, crops etc.). Families who live near rivers or the Bay of Bengal have suffered the most.



CONCLUSION

The largest island in the Sundarbans deltaic complex, known as Sagar Island, is situated in our research area, Sagar Block. One of the main issues in the Sundarbans region is determining the best adaptation strategy, which is becoming increasingly crucial given that the Sagar Block's population density has been rising due to migration from nearby inundated islands and the block's declining land area as a result of erosion and inundation, as well as the strategic and economic importance of this area derived from the well-known Gangasagar fair/pilgrimage, which has been taking place there since the 16th century.

In the Sagar Block of the Sundarbans, there are two main issues: extreme poverty and environmental deterioration. Poor living conditions have a detrimental effect on the ecosystem.

Due to their greater reliance on the environment and unsustainable consumption practices that produce more CO2, extremely poor families contribute more to environmental degradation than moderately poor families and non-poor households do. As a result, Sagar Block's gross CO2 emissions can be decreased through sustainable consumption patterns brought on by the reduction of poverty.

Thus, without raising the socioeconomic standing of low-income households, it might not be able to improve environmental quality. The study's ability to categorize poverty into three categories—health, education, and living standards—remains its distinctive selling point. Due to a lack of infrastructure and basic amenities, the Sagar Block residents have a poor quality of life. The decrease in production and productivity has resulted in a lower return on investment for farmers that grow rice. In this case, eliminating the collection of prawn seeds may be impossible without enhancing the prawn seed collectors' alternate sources of income. This study can assist policymakers distinguish between false adaptation and genuine adaptation techniques, especially at the micro level, and pinpoint the precise causes of poverty. They would then be able to create appropriate regulations and effectively utilize their limited resources in the future.

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