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Driving Development through Smart Village in Tripura: An Overview

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***Abstract**: Rural areas are home to the vast majority of Indians. Most Indian rural villages struggle with various challenges to accelerate rural development. They lack basic health care, education, and other infrastructure facilities. Rural India experiences the impact of global warming and climate change affecting the social and economic life of the people. Tripura, a tiny state in Northeast India, is also no exception to this. As per the census data of 2011, 73.83% of its population lives in rural villages. Like most rural villages in India, the rural villages in Tripura also face similar problems and challenges. It aims to transform rural villages into viable growth centres. The concept of a Smart Village can be a useful perspective to address the major rural problems in India. In the current study two rural villages-Punsari Smart Village located in Sabarkanta district of Gujarat, and Chantail Village, a non-smart village of Unokoti district in Tripura are taken up in order to understand the development dynamics in the smart and non-smart villages of rural India. Current study is basedon a survey conducted from June to September 2022 with 20 villagers from each ward of Chantail village of Unakoti District. To conduct the research , field observation and semi-structured interview methods were used during the survey to collect first-hand information. This study aims to reveal that in terms of providing services to the residents of villages, Chantail village is lagging far behind the Punsari smart village. This is largely due to the absence of a smart village concept in Tripura. Moreover, this paper is attempt to draw the attention of the policy makers of Tripura for sustainably accelerating rural development by focusing on the vitality of smart village.*

***Keywords:** Social inequalities, Environmental concerns, Smart village, Sustainable development, Rural development*

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Introduction: Tripura is a small state in Northeast India, with most of its population living in rural villages. According to the 2011census, 73.83% of Tripura's population still lives in rural areas. The people of rural areas are struggling with many problems, such as shortage of safe and clean drinking water, affordable housing, lack of sanitation facilities and poor waste management system, unemployment, poverty, underdevelopment, etc. The government of Tripura took several initiatives to boost the rural economy, but none yielded substantial results. In 2016, the Indian government launched a rural development programme called the Shyama Prasad Mukerji Rurban Mission (SPMRM). The principal objective of this mission was to empower and strengthen rural areas and transform India's villages into smart growth centers. A Smart Village can be a useful perspective to address the rural problems encountered by rural villages in an effective, innovative, and environment-friendly manner in India. This paper intends to discuss the various issues related to the rural problems concerning the reflections from the Chantail village in the Unakoti District of Tripura.

Conceptual and Theoretical Basis of Development and Smart Village

The word ‘development’ carries different connotations to different people according to the situations and contexts. Generally, development refers to the experience of growth, progress, and positive social, economic and political changes. According to Pearson, development means “an improvement of qualitative, quantitative or both in the use of available resources” [1]. Accordingly, it necessitates adopting strategies that help for socio-economic and environmental transformation from current states to the desired ones. In the words of Seers, development needs to be understood to reduce poverty, unemployment and inequality to pave the way for the realization of the human personality.[2] Whereas for Thomas, development refers to a process of historical change witnessing structural transformation and long-term transformation of economics and societies. [3] The Declaration on the Right to Development adopted by the UN General Assembly defines development as a ‘comprehensive economic, social, cultural and political process which aims at the constant improvement of the well being of the entire population and of all individuals on the basis of their active, free and meaningful participation in development and in fair distribution of

benefits resulting there from".[4] Sen defined development in term of freedom which include political freedom, freedom of opportunity and economic protection from abject poverty. [5] Therefore, development is a multi-dimensional process involving reorganizing and reorienting the entire economic and social system. [6] It needs to be understood in terms of elimination of poverty, inequality, and unemployment and guaranteeing human rights.

There are different theories of development. Modernization theory of development emphasizes identifying the social variables that contribute to social progress and the development of societies through social evolution. According to this theory, traditional cultures need to adopt more modern practices for development. Social practices, beliefs, values and customs are barriers of development. External factors are not responsible for underdevelopment.[7] The theory has been criticized for neglecting social inequalities and environmental concerns. [8] On the other hand, dependency theory argues that external factors are responsible for underdevelopment. According to dependency theory, the peripheral position of the developing societies in the world economy is predominantly responsible for widespread under-development in developing countries. This situation provides undue privilege to the developed core and facilitates resources flow from a "periphery" of poor and underdeveloped states to the "core" of wealthy states.[9] The flow of resources from the 'periphery to the core' enriches the latter at the expense of the former. This theory of development widely discusses the issue of social inequalities, but like the modernization theory of development, it also ignores environmental concerns. Thus, both these development theories have failed to provide an inclusive and comprehensive development concept.[10] Sustainable development provides an inclusive and holistic development perspective focusing on social, economic and environmental aspects.

The idea of sustainable development was coined at the United Nations Conference on Human Development held in Stockholm from 15-16 June 1972. The conference urged the development of international consensus on a common outlook and principles that will inspire and guide people to conserve and improve the human environment.[11]The United Nations published the Brundtland Commission's Report on sustainability, *Our Common Future*, in 1987. It defined sustainable development as a process that meets not only the needs of the present but also did not compromise the ability of future generations to meet

their own needs. [12]Sustainable development is based on three important economic, environmental, and social pillars. It pays adequate and equal attention to economic, environmental and social factors. Therefore, unlike the first two development theories, sustainable development provides a more inclusive and comprehensive development concept. The idea of smart village is adopted by national, state, and local governments in India is a holistic approach to rural development. This has been derived from Mahatma Gandhi's vision of Adarsh Gram (Ideal Village) and Swaraj (Self Reliance).Sustainable development was also deeply embedded in Gandhiji's environmental thought. According to Gandhi, nature has an abundance of resources to satisfy the needs of everyone but not to satisfy everyone's greed.[13] He was against the rich exploiting natural resources beyond their needs. According to him, it would help the unprivileged and protect the environment for generations. [14] Thus, the idea of a smart village can be linked to sustainable development.

The objectives of the study are as follows:

i. To understand the concept of green and smart village
ii. To understand the differences between the two rural villages-Punsari smart village of Gujarat and Chantail village of Tripura in terms of rural development and services provided to the residents of the two villages.
iii. To explore the major development barriers in Tripura's rural villages with special reference to Chantail village.
iv. To give some meaningful suggestions for development of rural villages in Tripura in the light of smart village concept.

Methodology

Current is based on the application of descriptive as well as analytical methods. Data collection was done following both primary and secondary sources. In order to conduct the current research, field observation and semi-structured interview methods have been used for collecting primary sources of data following application of the non-probability sampling method and technique. A survey was conducted from June to September 2022 with 20 villagers from each ward of Chantail village of Unakoti District for the collection of data

from primary sources. Research papers, articles, the internet, book chapters, journals, government documents, websites, etc. have been consulted for collecting data from secondary sources.

Concept and Importance of Smart Village

The concept of a smart village provides an important perspective for rural development and improving the quality of living standards of villagers. A smart village strives for self-dependence for improving quality of life. It insists on using technology to achieve determined goals for people's wellness and convenience. It also stresses building a responsible and empowered local community that will govern smart villages. Proper planning to keep the village clean, healthy, green and free from crime and pollution is another important aspect of smart village. A smart village takes decisions and works to provide equal opportunity for every resident, including deprived and backward people.[15] For the purpose, it involves with numerous community development and welfare-oriented initiatives.

The abbreviation of SMART itself provides a comprehensive understanding of smart village, when SMART stands for [16]:

S- Sustainable

M-Measurable

A-Affordable

R-Replicable and

T-Technology

Goals of Smart Village

(i) Achievement of self-sufficiency to provide basic amenities to its residents.

(ii) Sustainable environmental management so that future generations can live in a healthy rural environment.

Smart Village's key features include: [17]

(i) Housing with a toilet, safe drinking water and electricity facilities at a reasonable price.

(ii) Setting up and presence of micro-enterprise sallow the expansion of a wider range of livelihood options.

(iii) Planning for asset development and efficient and effective management for sustainable income and employment generation sources.

(iv) Technology-enabled village.

(v) Creating and managing assets for self-sufficiency.

Elements and action areas for the development of smart village include

(i) Emphasis on quality education which significantly impacts the development of human resources and increases employability prospects among the villagers. It also improves the quality of living standards and mitigates rural-urban migration problems.

(ii) Emphasis on environment-friendly agricultural practice. Organic farming and agricultural practices are important for sustaining soil health, ecosystems, and people.[18]

(iii) Ensuring the villagers' safety and security is essential to a smart village. The street light facility, improvement in communication facility, and installation of CCTV cameras for surveillance are important surveillance devices for ensuring the safety and security of the villagers.

(iv) Importance of using green (solar) energy and other alternative energy sources for uninterrupted power supply.

(v) Roads for connectivity and transportation facilities, construction of canals, water reservoirs, etc., are important elements of a smart village.

(vi) Access to basic utility services such as electricity, drinking water, sanitation, and healthcare, including internet facilities, is also essential for developing smart village.

(vii) Basic financial services such as banking and microfinance facilities at the village level are necessary for local businesses to grow and to encourage villagers to participate in economic affairs.

(viii) Technology occupies an important place in any development initiative. Technology will help revolutionize governance, education, healthcare and the agriculture sector in driving development through the smart village concept.

(ix) Providing basic training in disaster management among the villagers so that they can independently deal with the emergency and mitigate the losses from any natural disaster.

(x) Focusing on environment-friendly waste management and recycling to develop a healthy environment and proper sanitation in and around the village

The situation of Rural villages in Tripura and the Importance of Smart Village: Reflections from Chantail Village, Unakoti District, Tripura

As noted in the introduction section, according to the 2011census, 73.83% of Tripura's population still lives in rural areas. These rural populations are distributed over 589 villages in 8 districts. As per the 2011 census, Tripura has a total population of (3673917) approximately 36.74 lakhs. In Unakoti District, there are 91 villages which include gram panchayats and village committees. Chantail village is one of the underdeveloped villages of the Unakoti District. It is about 4 km away from the district headquarters town-Kailashahar. Presently Chantail village is divided into six wards for the convenience of governance. As per the 2020-2021 government data, the total population residing in these six wards of this village is 4476.

A survey was conducted from June to September 2022with 20 villagers from each ward of Chantail village to know their awareness of waste segregation and their satisfaction with the performance of village administration in implementing different rural development schemes. During the survey, we found that 89% of the respondents expressed extreme dissatisfaction about the poor performance of the village administration in implementing various rural development schemes due to unchecked corruption and political interference in selecting the beneficiaries of such schemes. Although, the Panchayati Raj system provides a participatory approach and public-local partnership in various development activities in rural areas, the participatory governance approach remains deeply neglected in the village administration. Such an approach is necessary for protecting public property, judicious use of resources and developing a sense of ownership among the village's residents. [19]

Level of satisfaction among the respondents about the performance of the village administration in the implementation of various rural development schemes:

Table-1

Ward	**Extremely Un-satisfied**	**Very Less Satisfied**	**Moderately Satisfied**	**Somehow Satisfied**	**Extremely Satisfied**	**Total**
Ward 1	18	02	00	00	0	20
Ward 2	20	00	00	00	00	20
Ward 3	15	03	02	00	00	20
Ward 4	18	01	01	00	00	20
Ward 5	18	02	00	00	00	20
Ward 6	18	01	00	01	00	20
Total	**107**	**09**	**03**	**01**	**00**	**120**

Source: Survey conducted by the authors

Level of awareness among the respondents about waste segregation and management

Table-2

Ward	**Aware**	**Do not know**	**Heard**	**Total**
Ward 1	00	18	02	20
Ward 2	00	16	04	20
Ward 3	02	15	03	20
Ward 4	03	16	01	20
Ward 5	02	17	01	20
Ward 6	01	17	02	20
Total	**08**	**99**	**13**	**120**

Source: Survey conducted by the authors

The village is blessed with locational advantage with a distance of just four KMs from the district headquarters and with natural beauty and greenery. However, it struggles with various problems such as, poverty, scarcity of clean drinking water, lack of safety and security measures with no light street facility, non-availability of community waste disposal system, non-availability of ATM, etc. The village has one high school and five primary schools, but they lack adequate human resources and physical infrastructural facilities, including the use of ICT. There are 323 students in the High School, with 13 teachers posted in the school. The condition of the roads is very poor, without any drainage system. As most roads are muddy during the rainy season, the roads become highly inaccessible and unsuitable for any kind of public transportation. Although open defecation is rarely seen, the village lacks proper sanitation, clean drinking water, and health care facilities. As no environmental awareness campaign is conducted at the village administration level, environmental awareness among the villagers is very poor. The village administration has not given emphasis on the implementation of the Saubhagya scheme for easy deployment of decentralized solar power. Instead of using indigenous knowledge in organic agriculture, due to the impact of globalization, the villagers of Chantail village are now more inclined towards inorganic agricultural practices with the application of different chemical fertilizers.



School building **Road condition without drainage system (Source of drinking water)**

The major barriers to the development of Chantail village include weak political leadership, lack of educational infrastructure, unscientific agricultural practices, corruption, poor implementation of rural development schemes, no emphasis on the use of technology, and lack of environmental awareness among the people of the village.

Punsari Smart Village Model of Gujarat

Punsari village is located in the Sabarkantha district of Gujarat, India. It is about 80 kilometers from Gandhinagar, the state capital. The government of Gujarat recognized the village as a model village. As per the 2011 census, approximately 5500 villagers have been living in this village. The key attributes of Punsari village are:[20]

- This village is self-sufficient in terms of electricity generation. It generates its electricity from the waste it collects.
- The entire village is well-equipped with human resources, physical infrastructure, and modern ICT facilities , including Wi-Fi connectivity. Educational institutions have good access to ICT and CCTV cameras for school surveillance. Various schemes, including Mid-day meals, are well regulated and implemented in the schools resulting in zero dropout rates in the schools
- This village has an intra-village transportation facility with mini-buses plying for transportation purposes.
- The Sarpanch of this village uses 120 waterproof speakers to communicate important information, including new schemes and initiatives among the villagers.
- The Village Panchayat maintains a RO plant to provide the villagers safe drinking water.
- The village has a completely underground drainage system and a proper sanitation facility, which helps maintain cleanliness.
- It is a 100% open defecation-free village, with each household using a toilet and fulfilling the objectives of the Swachh Bharat Mission.
- This village has good banking with an ATM facility; every household maintains and operates bank account(s).
- With government assistance, skill development centres and health care facilities also have been established within the village.
- The village has a proper waste management strategy with a door-to-door waste collection facility twice daily.
- The village provides vocational training among the aspiring villagers to ensure and increase the villagers' employability.
- The most landmark achievement of the village is that for the last six years, there has been no crime resulting in zero FIRs.

Comparison of services between Punsari Smart Village and Chantail Village

A comparison is made based on certain services and parameters between Punsari smart village and Chantail village, a non-smart village. The main objective of this comparison is to comprehend the scenario in which a smart village can take shape from Punsari village to Chantail village, and to identify the village's vulnerabilities so that suitable efforts can be done to transform this village into a smart village.

Table-3

Sl. No.	**Services/Parameters**	**Punsari village**	**Chantail Village**
1	Clean Drinking water (with RO plant)	Yes	No
2	Electricity	Yes, generated by the village from the waste collected.	Yes, but dependent upon the Tripura State Electricity Corporation Ltd for electricity supply.
3	Safety measures	Yes	No
4	Sanitation	Yes	No
5	Healthcare	Yes	Yes (PHC)
6	Wi Fi connectivity	Yes	No
7	Digital Education	Yes	No
8	Political and Environmental awareness	Yes	No
9	Intra-village transportation facility	Yes	No
10	Skill development Centre	Yes	No

11	Green Energy	Yes (solar)	No
12	Waste management & recycling	Yes	No
13	Water conservation	Yes	No
14	Organic agriculture	Yes	No
15	Banking with ATM services	Yes	No
16	Nature of administration	Participatory	Non-participatory

Findings

1) In terms of providing services to the residents of villages, Chantail village is lacking far behind the Punsari smart village of Gujarat. Services such as, basic banking facility, free WIFI, intra-village transportation, waste management and recycling, use of technology, safety and security, etc., are not completely provided in Chantail Village.

2) The study reveals that for a smart village to work, strong political leadership and political awareness among the general masses are very important for accelerating rapid rural development.

3) The study also finds that various challenges particularly like- ensuring safety and security in the village, e-governance, digital education, etc., can be improved using modern ICT tools.

4) It also reveals that unscientific agricultural practice is another barrier to rural development in rural villages like Chantail villages in Tripura.

5) It also observes that villagers give no importance to crucial issues like- environmental awareness, sanitation, waste management, environmental conservation, etc., due to their unawareness or sometimes having poor knowledge for the same. This study finds that most of the villagers are having very low-income therefore, earning money is given more importance even at the cost of environmental degradation.

Conclusion and recommendations

The concept of a smart village in Tripura has yet to draw policymakers' attention for rural development. However, adopting and implementing a smart village concept can be instrumental for mitigating and solving many rural challenges, including rural-urban migration. Punsari smart village is an example as it shows how it differs from the Chantail village, a rural village located in the Unokoti district of Tripura, in terms of providing basic amenities, sustainability and sustainable livelihood among the villagers without harming the environment. For this purpose, the Government of Tripura must consider the following measures:

1) There is a need to introduce a participatory approach and public-local partnership in various development activities in rural villages for judicious use of resources and to develop a sense of ownership among the residents of the rural villages.
2) The policymakers must introduce long-term and need-based development planning for village development because every village has specific needs.
3) The concerned authority should introduce the practice of giving awards and appreciation to the best village. It will encourage and motivate the village authority to work harder.
4) Organic agricultural practices should be encouraged to improve the productivity and economic conditions of the villagers with environmental sustainability.
5) Pay adequate attention to the social equity factor because without eradicating poverty, working on environment-friendly village development will be difficult.
6) ICT should be used for more efficient service delivery and to improve education.
7) Capacity building and skills among the youths should be increased by providing them with various capacity-building training.
8) Due emphasis on introducing services such as mobile hospitals, internet connectivity with the installation of CCTV cameras for safety and security, street light facility etc. should be given utmost importance.
8) Public awareness about waste segregation and proper waste management should be increased. One should emphasize on conducting a waste awareness campaign to increase awareness about proper waste management among ordinary villagers.

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