Towards Creating Inclusive Villages: The Types of Rural Settlements in India

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Abstract

Human beings first began to live in settlements a long time ago and since then, human settlements have been driven by the needs of both the individuals and the society, including the need for access to trade, food, water, and defense. India is one such a place where they came into being and the book titled "Mansara Shilpashastra" (700 AD), provides facts and evidence on these settlements. The earlier settlements are thought to have been quite successful at meeting the human needs. However, over time, these needs have increased and the settlements do not seem to meet those anymore.

To create the foundation for an inclusive developed settlement, there is a need to study the settlements from the past to the present. This study aims to unearth the types of Indian rural settlements according to the published literature and also analyze their key performing indicators.

The study uses a two-stage review of the literature. The first stage uses a semi-systematic approach that examines the government initiatives and policies. The second stage uses Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) approach based on online scholarly databases such as JSTOR, Web of Science, Scopus, and Google Scholar. The study explores only the Indian planning theories and government policies.

It concludes that harmonious architecture and the growth of planning lie at the core of past planning theories. The findings offer a perspective for creating policies that could enhance the architecture and planning of rural areas in India.

Keywords: Village typology, Rural, settlements, Rural development schemes, Semi-systematic literature review, PRISMA, Mansara Shilpashastra.

Introduction

Rural settlements account for 65.07% of the population of India. It has decreased over time, from 82.076 percent in 1960 to 67.2 percent in 2015 (Rural population-India, 2022). This is because people are migrating from the rural to the urban regions in search of work, improved living conditions, and a variety of other reasons (Mitra, 2019).

In the foundation era, food, clothing, and shelter were the most basic needs people have had while looking for a location to dwell. Gradually, those needs have evolved and have included safety from animals and security from the intruders. In fact, people began to live in groups and form communities (Nyhus, 2016). As a result, numerous types of settlement patterns

have evolved in different forms and sizes. These settlements can be distinguished by their geographical characteristics, population density, and other characteristics (Bhattacharyya, et al., 2018). Needless to say, Indian settlements have followed suit.

In terms of the Indian settlements, the book titled "Mansara Shilpashastra", which has been written in 700 AD, demonstrates how the meteorological data has been employed for the selection of sites for the settlements in the past. In India, the wind direction is generally from the Southwest to the Northeast. Therefore structures were exposed to the strong storms and rain if the land sloped in this way, affecting even the local micro-climate (Sinha, 1998). Additionally, the water reservoirs were as deep as a person standing with his arms raised above his head (Patwari, 2019). Land was not considered suitable for settlements if the location could not maintain a moderate temperature during the summer and winter (Prajitha, 2016).

In the early 1900s, settlement types have been based on socio-economic concerns. In the current era, 'requirements of the villagers have shifted to sustainability and technology, and thus the new types of houses are based on the distinguishing characteristics of the villages as conceived by their makers. They range from the Smart villages (SAGY, 2016) Green villages (IGBC, 2016), Eco villages (Eco-Village Development as Climate Solutions - South Asia, 2016), and Digital villages (Fishman, et al., 2020). These terms are frequently interchanged, regardless of the fact that some of them have little in common in terms of distinctiveness. In the same direction of development, the Ministry of Panchayati Raj, the Government of India has prepared the Rural Area Development Plan Formulation and Implementation (RADPFI) guidelines for the development of the villages and also categories of villages based on their characteristics (RADPFI, 2016).

Recently, rural settlement studies have received increased attention. Earlier research have focused on locations and transport (Mandal, 1979), housing (Mandal 1979; Mandal 1989; Estika et al. 2021; Tanriover 2020), landscape (Chattopadhyaya, 1993), water resources (Sahay, 1997) and geography (Lal, 2010). The more recent research have focused on digitization and technological advancements (Mani & Reddy, 2012), sustainability (Mukhopadhyay & Rajaraman, 2012) and tourism (Shafieisabet & Haratifard, 2020) as a result of an increase in human demand. The researchers have explored one or two aspects of the rural developments, but none have comprehensively examined these settlements. To create the foundation for an inclusive developed settlement, there is a need to study the settlements from the past to the present. Needless to say that building an inclusive community will result in an endogenous effort, culminating in a self-sufficient and sustainable world (Moravcíková, & Fürjészová, 2018).

The study addresses the following research questions: what are the different types of Indian rural settlements? what are the influencing indicators for developments in rural settlements? And what are the rural development parameters accounted in the modern rural settlements?

Moreover,

1. This study aims to understand the types of Indian rural settlements and also analyze their key performing indicators.
2. It provides combined indicators that may be used to create inclusive developed settlements.

The paper is divided into five sections. The first part briefly highlights the relevance of the study, as well as the aim and needs of the paper. In the second section, a literature review of current types is presented, therefore narrowing the study aims. The methodology for the investigation is outlined in section three. The review findings are discussed in section four. Section five concludes the research findings and offer future research directions.

It is noteworthy that this is the first of its kind to identify and describe all types of rural Indian settlements from the perspective of influencing indicators such as social, physical, environmental, economic and technical.

Literature Review

Rural settlements are the topographic representations of how dwellings and highways—the two basic components of human geography—are clustered and arranged in rural areas (Mandal, 1979). According to the Indian Census, "the essential unit for rural regions is the revenue village, which has definite surveyed limits "recognized by the standard district administration (Census of India, n.d.). The revenue village may be made up of several hamlets, although it has been classed as a single unit for census reasons. Each habitation area with locally recognized borders within each forest range officer's beat was considered as a single unit in the un-surveyed regions, such as the towns within the forest areas (census of India, n.d.). The Census Commission identified the villages by their names and specified boundaries. On the other hand, a rural settlement is also described as "any area in which the majority of the population are involved in primary activities like agriculture, forestry, mining, or fishing" (Negi, 2013:32). Rural settlements are significant in human geography and settlements because they demonstrate the intricate links between human habitation and the environment. In the literature thus, different types of villages from the past to the present have been presented.

Research Methodology

For the data collection, the semi-systematic literature review method was employed. Semi-systematic reviews frequently examine the evolution of a certain subject through time or how it has changed across study traditions. In general, the reviews aim to identify and understand all potentially relevant research traditions that might have implications for the topic under study and to synthesize them using meta-narratives rather than effect size measurements (Wong et.al, 2013).

First, an unstructured review was conducted to gather information on government initiatives and policies related to the rural settlements in India. Second, to study the papers from the database “Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) approach” was employed. The keywords chosen were: smart villages, sustainable villages, green villages, eco-villages, digital villages, and, rural settlements. The keywords were searched in all titles and case studies restricted to India in all fields and activities relating to the rural types. Relevant content was found using Web of Science, Scopus, Google Scholar, and JSTOR. Fig. 1 shows the methodological framework utilized in this study.

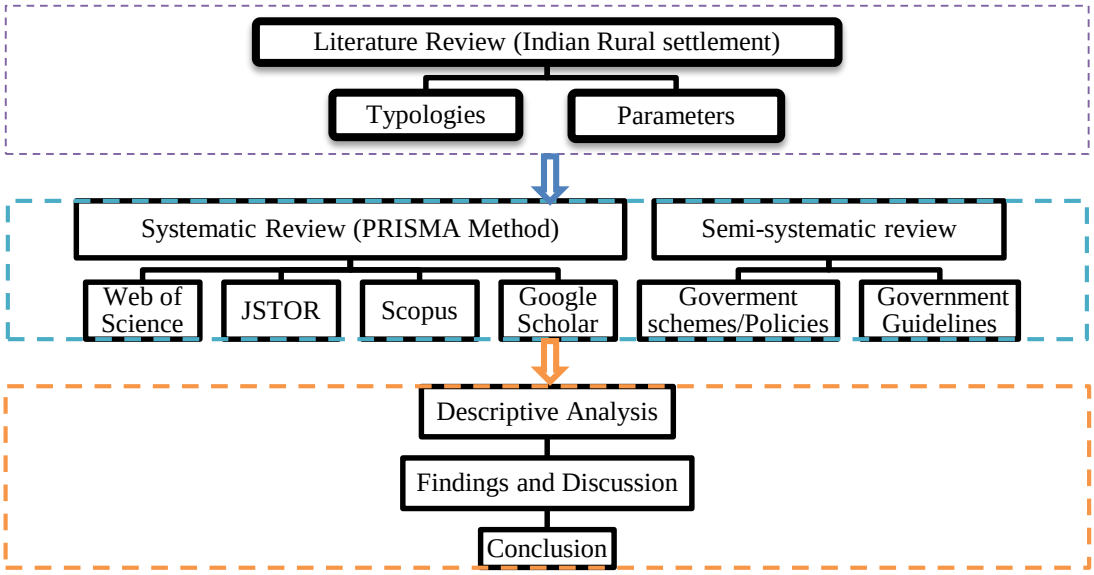


Fig. 1: Methodological Framework for Research on the Typology of Rural settlements
Source: Author

The language was confined to English, to ensure that the information was accessible. The source categories for the search were limited to journals and the document types to articles, reviews, and conference papers since peer-reviewed scientific journal articles would be the most beneficial. The initial sample of papers had 1054 publications. The list was narrowed to publications using the majority of published articles and numerous journal rankings, including the h-index, CiteScore, SCImago Journal Ranking (SJR), Source Normalized Index per Paper (SNIP), and the Journal Impact Factor (JIF). The final 60 papers were selected specifically from a shortlist of pertinent titles, abstracts, and full texts. There were no time constraints for the literature selection. They were performed between November 2021 and May 2022. The detailed screening process is discussed in Fig. 2.

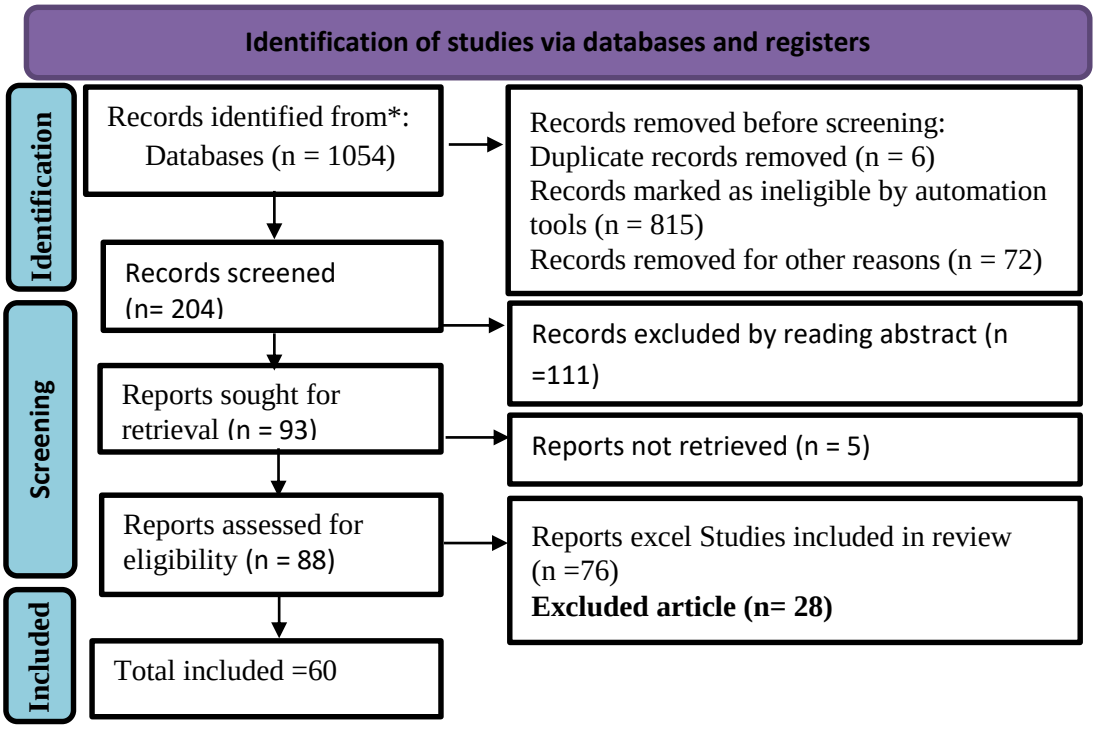


Fig. 2: The PRISMA flow diagram
Source: Authors

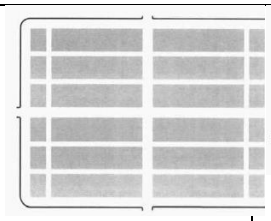
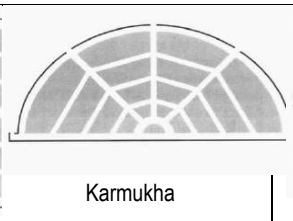
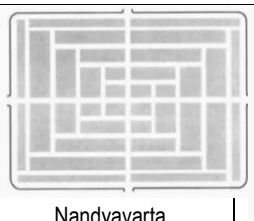
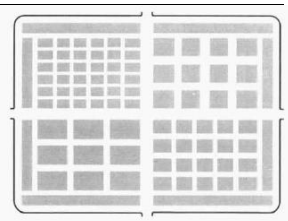
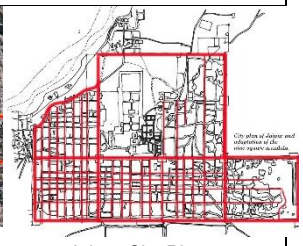
Historical Literature

Based on Shape and Size

In several historical pieces of literature from the Vedic period, circa 400 B.C. the book titled "Mansara Shilpashastra" was well-known for town planning theory. Dandaka, Swastika, Padmaka, Nandyavarta, Prastara, Chaturmukha, Karmuka, and Sarvathobadra are examples of town layouts from that era (Prajitha, 2016). Each approach is aimed at achieving a certain goal. A lot of attention have been paid to the wide roads, wide spaces, and water tanks. The topography, drainage patterns, vegetation cover, wildlife pockets, and climate have all been investigated and considered in planning (Prajitha, 2016). The Manasara does not distinguish between a hamlet, a village, a fort, or a city in terms of the layout. The fort is sometimes little more than a fortified village. In each village or city, there were four entry/exit points. This is in contrast to poorly constructed modern cities, where controlling mobility in and out appears to be impractical (Sharma & Jadon, 2019; Patwari, 2019).

Table 1 depicts several extant instances of these villages. The plan layout in Table 1 is extracted from a town planning book (Rangwala, 1977), and the the road in Google Maps image for case example plans has been highlighted.

Table 1: Plans Based on the Mansara Shilpashastra
Source: Author

Plan Layout	 Dandaka	 Karmukha	 Nandyavarta	 Prastara
Case example	 Fatehpur Sikri	 Vijaynagar	 Madurai	 Jaipur City Plan

Manasara has addressed settlement planning concerns in depth, and it is worthwhile to examine these treatises, which are still important in today's settings, particularly when contemplating the planning of settlements in harmony with Nature. These eight settlement types have placed a premium on the perceived image of the cosmos, as well as the placement of roadways and other monuments like the temples and palaces, to maximize the benefits of Nature (Sinha, 1998). The Mansara settlement focuses mostly on social, physical, and environmental factors. These settlements are found in several historic cities in India (Table 1). The following information comes from the book named Manasara Shilpa-shastra (Bose & Kumar, 2006).

Medieval

Based on Density

The four different types of villages based on density are compact (Chand, 2013), nucleated (Cohn, 1971), hamleted (Cohn 1971), and dispersed (Cohn, 1971). The dispersed are also known as semi-compact settlements (Chand, 2013).

The Compact settlement: A compact settlement is constituted of a concentration of all the dwellings of a village in one area distinguishing this form of the village (Ahmad, 1952). The compact farming villages of the great green river valley plains are well-known (Human Settlement, 2014).

The Nucleated village: In the nucleated form, dwellings are clustered together in a specific location, separated by small pathways surrounded by the fields of the village. Villages of this type can be found in Uttar Pradesh, Delhi, Punjab, and areas of South India. There is a core settlement, many hamlets, and several satellite villages distributed over the fields of the village in a "hamleted" village; they may be found in the middle and lower Gangetic plains, as well as the areas of Tamil Nadu and Andhra Pradesh. Homesteads are spread and lay connected to the fields owned or cultivated by the agriculturists in a dispersed pattern, which is seen in Kerala and the deltaic lands in the mouth of the Ganga in lower Bengal (Cohn, 1971; Ramakumar, 2018).

Semi-compact settlements: These settlements lie somewhere between the compact and hamlet settlements. They may be identified by the presence of one readily visible location and one or more little hamlets connected to one by the footpaths or cart roads (Mukerji, 1976).

Hamleted Settlements: These settlements have a core settlement, multiple hamlets, and several satellite settlements distributed around the fields of the village they may be found in the middle and lower Gangetic plains, as well as sections of Tamil Nadu and Andhra Pradesh. These communities are separated by the existence of multiple minor hamlets and individual habitations scattered around the village (Malik, 1970).

On the Basis of Village Patterns

Rural settlement evolution is intriguing because diverse morphologies arise as a result of distinct geographic settings. Some of the village patterns are Rectangular, Elongated, Circular and Semi-Circular, Triangular, 'L' Shaped, Checkerboard/Chess-board, Linear, Radial Pattern, Double Nuclei, Amorphous, and the Shapeless Agglomeration Pattern. These village patterns may be broken down into two categories: outward layout and the interior layout. Both are closely related to a wide range of physical and cultural factors. Cart tracks and alleyways form the backbone of the inner plan of a village. The structures located inside the skeleton's region dictate the hamlet's shape and form.

These villages are located typically in agricultural areas, with their main axes running North to South and West to East to provide optimum sunlight and fresh air. Houses are organized in two or even more rows in such communities, with roadways running parallel to each other. A substantial agglomeration is present in such settlements. Due to specific physical and cultural characteristics, this extended habitation pattern extends in one direction and limits in the other (Malik, 1970). The amorphous pattern is a word for such an uneven pattern. The most prevalent village pattern is a shapeless or uneven village design. This form of village layout is most common in bigger, dispersed communities where people live in a haphazard manner across the village with no defined plan.

On the Basis of Residence

On the basis of residence, there are three types of villages (Dasgupta & Laishley, 1975). They are as follows.

Migratory Village: A migratory village is one in which people just stay for a few months or a season. When the food supply from that location is depleted, they move to another location where they can obtain sufficient food. For example, in the tribal communities, we see this form of settlements, i.e. shifting cultivation.

Semi-permanent Agricultural Village: In this type of settlement, people live in one spot for a few years before migrating to another when the land's production runs out. In comparison to migratory communities, the time of residency is longer. Animals such as cows and goats are kept in this type of community, but land is not used for agriculture. When people discover that the land does not produce the appropriate food grains, they depart for a new settlement.

Permanent Agricultural Village: These villages are where people live from generation to generation. Within their own villages, they form village organizations and social relationships. In general, people do not relocate their living and farming areas. Permanent houses are formed in these villages.

On the Basis of Organisation

Harold Mann (1917-1921) and Gilbert Slater (1916), the pioneers of village studies in India, were economists by training. Their findings included qualitative and quantitative data on land and asset ownership, caste discrimination, settlement patterns, cropping patterns, agricultural techniques, credit linkages, and tenancy types. Villages are classified into three groups on the basis of organization, based on the organisation (Thorner, 1967; Slater, 1918). The following information comes from (Dube, 2018).

Co-operative Villages: Land is held privately in this type of community, and residents pool their resources for common cultivation and farming. Co-operative households are often set up to supply them with the goods they want. India has cooperative communities as well.

Semi-collective Villages: Land in such settlements belongs to the communal body. The collective owns the means of production and the resources. People collaborate in the production of food grains and other necessities. Their monthly or annual dues are set according to the income of the village for their usage. The number of hours the members work in a specific household has little bearing on the income of the villagers. The quotas were distributed to the households based on their numerical strength.

Collective Villages: Life in a communal settlements of this type of a village are where all the property is owned jointly and all arrangements are made together. Members of the village work only for the common good and get all of the life's essentials, such as food, clothes, shelter, education, and so on. In the community, there is a communal dining hall, a common store, and a communal kinder-garden. The elderly and the disabled are also supported through the common funds. Overall, such a community provides complete security for a person's whole life, as well as his offspring and dependents.

Based on Land Ownership

Villages are classified into two types on the basis of land ownership (Gilbert, 1918). The following information come from those writings.

Land-lord Villages: Individual or a small groups of families known as landlords own the land in such settlements. The landlords own all of the rights to the land, but they lease them to the tenants. Landlords also charge rent on the land, which is normally paid by the tenants. Landlords pay a portion of their rent to the monarch or the government while keeping a large portion for themselves. Before the removal of the middlemen in the agricultural industry, such villages existed in India.

Ryotwari villages: In Ryotwari villages, farmers are the proprietors of land and they cultivate them. They pay the rent straight to the government, bypassing any middlemen. Ryotwari villages are those where the land is held by Ryots or the cultivators (Baker & Jewitt, 2007).

Modern

Based on Location

There has been an attempt by the Census of India to classify the urban and rural areas according to population size which in turn also affects in terms of characteristics of the city/town. RADPFI, (2016) categorizes rural areas/villages on the basis of location and population. The following classification is as per this document.

Rural-Urban Fringe: For the economic activities and expansion of the village, the village in close proximity to the urban centre will be interdependent upon the city. The village will not be a typical rural location with solely agricultural activities, but it may feature a variety of non-farm economic activities. The changing nature of the village is frequently observed, and as a result, the region is classified as part of the rural.

Villages adjacent to the Corridor Development: "Economic Corridors" link economic regions that are separated by geography. They are not self-contained, as their contribution to regional economic growth can only be understood in the context of the network effects they generate. The impact on cities and villages next to the economic corridors has a significant impact on the cities/towns and villages, particularly in terms of land values (RADPFI, 2016)

Villages in the Interior: To reduce outward migration to urban areas, rural areas that are dependent solely on agriculture and related activities, fishing, and mining and quarrying activities should have spatial plans that have the potential to develop such activities and include the basic requirements for improving the individual quality of life. Villages with such socio-economic qualities are classified as pure rural communities isolated from the urban centers with

specialized activities based on physical region's appropriateness of the area. Following criteria must be met in order for a village to be classified as such:

More than 75% of the population is reliant on the primary activities.

In terms of distance and accessibility, it should be isolated from the metropolitan regions.

Based on the Population Size

RADPFI has categorized villages based on their population size (RADPFI, 2016). According to the Census 2011, 58.33 percent of the villages have a population of 1000-5000 people, making them appropriate for preparing a Gram Panchayat Spatial Development Plan. However, for communities with a population of more than 5,000 people, a Spatial Development Plan can be produced using the URDPFI standards from 2014. Villages with a population of less than 1000 people are evaluated for planned developments, which will be based on their location, physiographic characteristics, and connections.

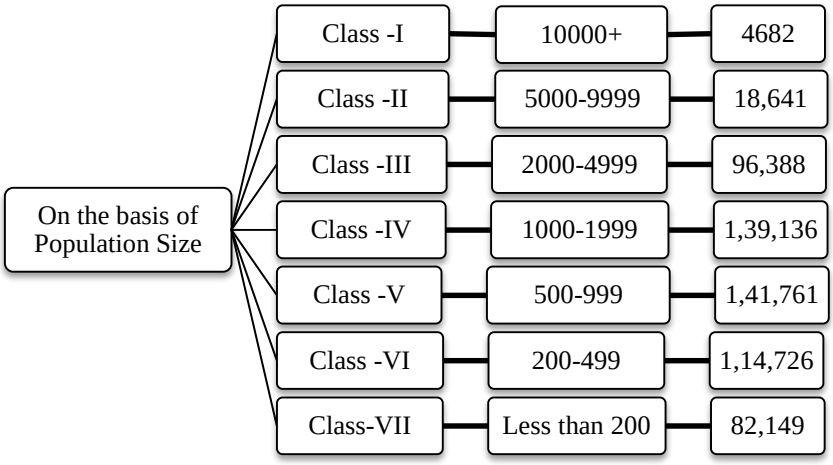


Fig. 3: Indian village categorization based on population size and the total no. of villages of each type

Source: RADPFI, 2016

On the Basis of Distinctiveness

On the basis of the distinctiveness, there are several types of villages. Some of those are as explained below.

Smart Village: In the 18th century, the British International Development Organizations first introduced the idea of smart villages. It is a rural development model that fully utilizes the solutions supplied by information and communication technologies (ICT) to support the long-term development of a village based on the definition of rural development's features and demands (Mondal, 2013; Zhang & Zhang, 2020). Ontologically distinct from the smart city research, smart village research identifies a village and its citizens as a separate study subject. In India, smart villages are launched as a scheme named Sansad Adarsh Gram Yojana (SAGY). According to this scheme, the growth of a village is based on the five routes of Retrofitting, Redevelopment, Green Fields, E-Pan, and Livelihood. The Foundation had selected the village Dhanora, the Bari, District Dholpur, and a tiny and isolated village in Rajasthan, to develop as India's first smart village under the concept (SAGY, 2016). There are several indicators to be recognized in this way. These are discussed in Fig. 4.

Eco Village: The phrase eco-village is a combination of ecology and village, and it is necessary to look into the origins of each of these concepts. The word "ecology" comes from the Greek words *oikos*, which means "home" or "place to dwell," and *logos*, which means "study" or "knowledge" (Booth, 2010. Ecology refers to the "impact of the environment on living organisms, the influence of living creatures on the environment, and the mutual link between living species" (Marten, 2008). Eco-villages promote self-sufficiency, participatory communities, and local living to create economic and social stability. By utilizing public

transportation and shopping at local merchants, residents in eco-villages spend less energy per capita, improve the natural landscape, and protect the green spaces (Sizemore, 2004).

The eco-village concept supports the sustainability of the ecosystem by using design and planning elements such as green space preservation to improve the ecological functions. When the three aspects, namely the social, economic, and ecological concerns are in harmony, the eco-village concept may substantially aid in ensuring long-term urban growth (Yuliastuti, et al. 2017).

The Korean local government has developed a basic planning method to encourage environmentally friendly residential complexes and has sought to execute the central government's planned eco-friendly development criteria (Moon, et al., 2020). Govardhan Ecovillage is a model sustainable community and spiritual retreat center that invites visitors from all over the world throughout the year. Govardhan Ecovillage, which opened in 2003, intends to show how rural communities may live in peace with the environment while also achieving self-sufficiency and a higher quality of life. It has in particular, established and built a sustainable paradigm based on India's old spiritual culture combined with contemporary science and technologies (Eco-Village Development as Climate Solutions - South Asia, 2016). Indicators of Eco village developments are discussed in Fig. 4.

Digital Village: This is the most significant plan on which the Indian government is working as part of the digital India endeavor. Under this concept, selected villages will be turned into digitally engaged communities with less cash, allowing the rural residents to do the majority of their activities fully online (Bhatt, 2020). The goal is to develop a comprehensive remote and local sensing method for farmers that combines spectral imaging with micro and nano sensor-based digitalized information and communication technology (ICT), transporting data from the farmland to the cloud, and providing accurate near-real-time logistics analysis. This method, like many others, may be used for a wide range of agricultural crops (Fishman, et al., 2020).

In recent years, concerns faced by the social and economic changes, as well as the bigger changes in people's communities, both rural and urban, have been increasingly addressed through the perspective of technological breakthroughs and digitalization. Investing in digital connectivity within the villages and throughout the larger regional community has improved the area's long-term viability and opportunities for local/regional and circular economies. All of the project cases/initiatives emphasize the need for getting ideas and solutions from the local or regional specialists, especially when planning for the long term (Zavratnik, et al., 2018).

The Indian Prime Minister dedicated the Icici's Digital Village to the nation, on January 2, 2015, and the village of Akodara located in Gujarat's Sabarkantha district was labeled "Digital Village" (PMINDIA, 2015). Digital village and Cashless village are two terms used to describe Akodara. This village is referred to as the India's first digital village. It has its own website (http://akodara-digitalvillage.in), which is used for a variety of purposes. Wi-Fi is available in this community, and residents use it for a variety of online activities (Bhatt, 2020; Saxena & Joshi, 2019). The indicators of Digital India (Digital village) development are discussed in Fig. 4.

Green Village: This is a village that provides clean electricity, appropriate water, basic education, decent healthcare, and good sanitation in an environmentally sustainable way, resulting in economic success and improved quality of life (IGBC, 2016). It is a habitat where people may live in a pleasant environment and a method that can keep a community on track to achieve a sustainable growth. On traditional resources, the community should prioritize energy conservation, efficient transportation, biodiversity, waste control, watershed management, and a rainwater collecting system (Kadave, et al., 2012). Enebavi, in Warangal, is known as a green chemical-free village because its residents practice chemical-free agriculture, water conservation, debt-free farming, and are self-sufficient in terms of seeds (Ajith, 2017). Khonoma is India's first green village launched by the Government of Nagaland and the Govt. of India through the "Green Village project" in 2005.

In this village, the inhabitants conserve the forest and never chop the trees. Khwuno, a tiny plant found in abundance across the area, gave the village its name (Papu, 2020). The

Indicators of green village developments are discussed in Fig. 4. Indicators are a method for analyzing and projecting village and neighborhood developments in the present and the future (Kalinka, et al., 2020).

The Discussion

The findings from this study address emerging patterns of types of the villages in India that may be used to build a cohesive case about a rural settlement.

Table **2** shows an Indian rural settlement typology studied by various researchers. This order says that rural settlements are an essential source of human subsistence and that they have existed since the beginning of time as settlements recounted in sacred books.

Table 2: Chronological order of the types of Indian villages
Source: Authors

No.	Year	Typology of Village	Reference
1	400 B.C	Based on shape and size	(Acharya, 2006
2	1918	Based on Land Ownership	(Gilbert, 1918)
3	1952	Based on Pattern	(Ahmad, 1952; Malik, 1970))
4	1967	Based on Organisation	(Thorner, 1967)
5	1971	Based on Density	(Cohn, 1971)
6	1975	Based on Residence	(Dasgupta & Laishley, 1975)
7	2004	Eco Village	(Sizemore, 2004) (Eco-Village Development as Climate Solutions - South Asia, 2016)
8	2014	Smart Village	(SAGY, 2016)
9	2015	Digital Village	(Phukan, 2015)
10	2016	Green Village	(IGBC, 2016)
11	2016	Based on Location	(RADPFI, 2016)
12	2016	Based on Population size	(RADPFI, 2016)

The ancient typology “based on shape and size” outlines eight types of villages that reflect how significant streets are on a North-South axis to provide proper lighting and ventilation to houses. The major focus of the ancient villages was physical elements such as drainage, roadways, and environmental aspects such as utilizing the meteorological data for the occupant’s climatic comfort, as well as the social demands. Following that, the medieval settlements are user-oriented in terms of social, physical, and economic needs. As living and working in a community is a natural human instinct for protection and security (Cohn, 1971).

As a result, colonization is based mostly on social and physical characteristics, such as the proximity to fertile land. Following that, between 1924 and 1976, several planners have classified villages based on their external and internal layout patterns. These patterns have been influenced primarily by the geographical characteristics of the land and the social division of the villages based on caste discrimination (Dasgupta & Laishley,1975). In fact, they have created a village typology based on the attitudes of the people about permanent vs. temporary houses.

For colonization, these villages mostly consider economic factors. People require more organization and land for their agricultural operations as time passes and people want variety. Thorner (1967) and Gilbert (1918) characterize the rural communities based on organizational behaviour and land ownership for social and economic purposes, respectively. Medieval settlements were focused mainly on houses, the economy, and the other human needs to survive. However, the modern settlements are more about technology, environment, the economy, and the social needs.

In 2016, RADPFI categorized villages based on their topography and population size to support village developments. Finally, based on their distinguishing characteristics, various typologies are emerging around the world, and India as a developing country is also adopting

them to develop the Indian villages. Thus, the government undertakes numerous attempts to promote the villages, each of which has its unique characteristics. Each village has its own identity, prompting the creation of a new typology based on their distinguishing characteristics. The emphasis of these communities is similar to that of smart villages, which are focused on technical, social, economic, and environmental issues.

Eco-village is a community that focuses on both the society and the environment. In contrast. The focus of a Digital village is on technology, social issues, and the economy. Green village is primarily concerned with social and environmental issues. Physical, social, economic, environmental, and technical considerations are all taken into account in all types of settlements. The target region of an individual settlement is shown in Table 3.

Table 3: The influencing factors in village settlements
Source: Authors

Category	Village Typology	Social	Physical	Economical	Environmental	Technological
Ancient	Ancient settlement	✓	✓		✓	
Medieval	Density	✓	✓			
	Pattern	✓	✓			
	Residence	✓	✓	✓		
	Organisation	✓		✓		
	Land ownership	✓		✓		
Modern	Location		✓	✓		
	Ecovillage	✓			✓	
	Green Village	✓			✓	
	Digital village	✓		✓		✓
	Smart village	✓		✓	✓	✓

In all three phases of ancient, medieval and modern settlements, social needs are a common consideration. The difference between all the three phases is such that the ancient one is more about the people and the environment. Those settlements were planned according to their geographical locations and have moulded the villages according to Nature without harming the natural features. On the contrary, the medieval phase is about the social, physical and their economic needs. As this is a developing phase of the society, the consideration of the environment and technology does not exist. The modern phase is about learning from the world like technology is incorporated in settlements and economic aspects for people's status development. Many climatic issues arise globally in this era and therefore the environment is also an important consideration.

The typologies of modern villages with distinctiveness provide indicators for developments. These village types arise when human demands grow into a need for enhanced connectedness to the rest of the world through technology. Rural people nowadays expect the same advantages as city inhabitants, because a country can only flourish if all of its members benefit equally. As a consequence, through the smart villages, the digital villages, the green villages, and the eco-village projects, the government seeks to provide technology amenities and many other development opportunities to the communities. To do so, the potential of ICT should be studied and integrated into efforts to create collaborations among (all levels of) decision-making authorities, communities, developers, and academics, as well as envisioned in a way that strengthens linkages between the rural and urban areas (Zavratnik, et al., 2020).

The four types of settlements based on distinctiveness are discussed in Fig. 4. It depicts the four types of villages as layers of concentric circles, with the first circle representing the smart village, the second eco-village, the third digital village, and the final green village, respectively. These circles are further broken into 36 divisions, each representing a different indicator of settlement growth. The black color separation in each concentric circle indicates

that one such indicator is not part of that village typology The grey colour depicts that this indicator is part of this village typology. After examining these villages, it was discovered that the majority of the indications are the same in these four village types, with just a few indicators being different, allowing them to be distinguished from one another. However, the smart village type is the most prevalent settlement type, as no single settlement can satisfy all the indicators.

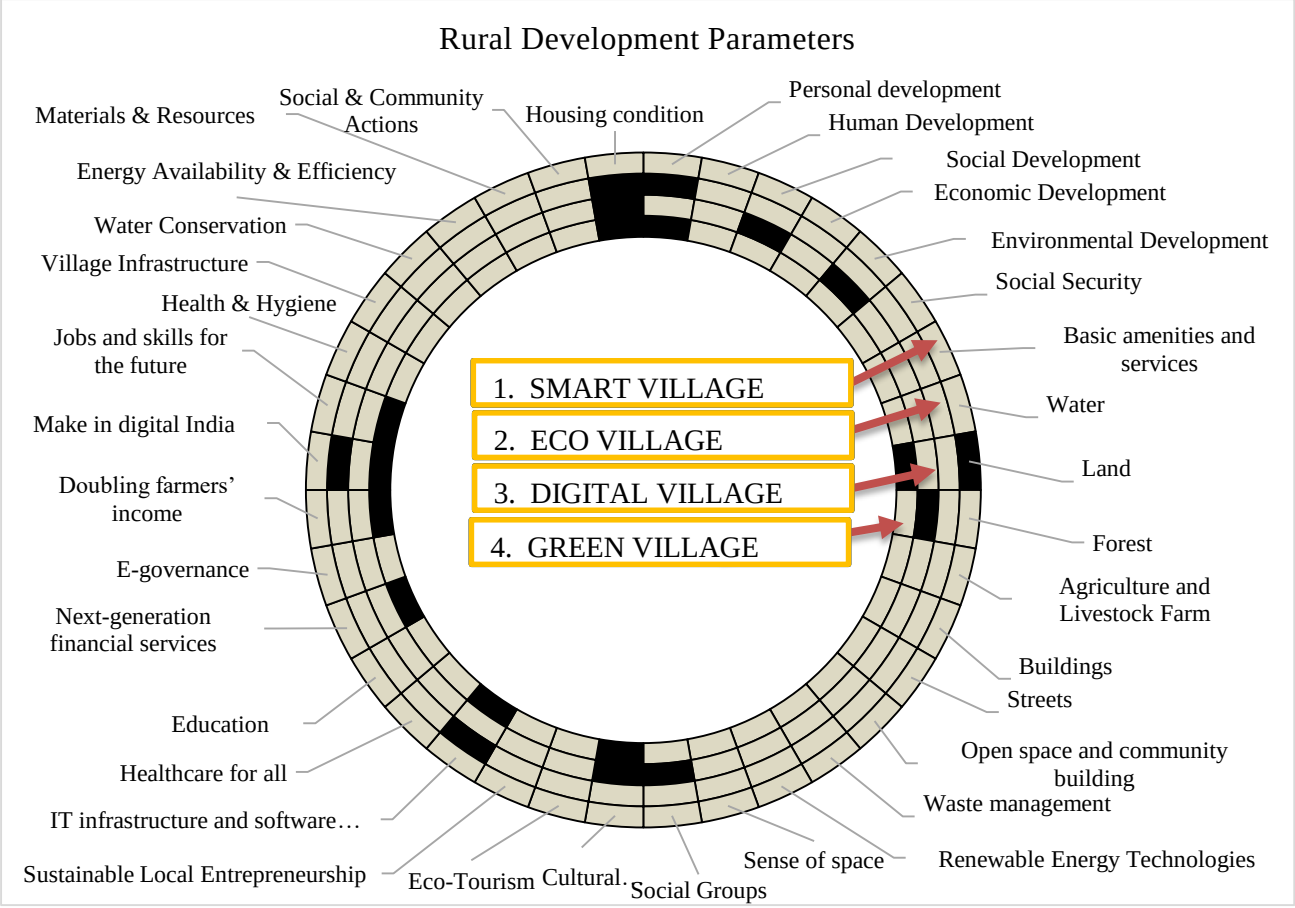


Fig. 4: Parameters of rural development

Sources: Smart Village: SAGY, 2016; Ecovillage: Sizemore, 2004; Digital Village: Phukan, 2015, Green Village: IGBC, 2016

Conclusions

To highlight the need to comprehend the changing trends in village settlements, this study adopts a comprehensive approach of research evaluation and a semi-systematic literature survey. It is the first study of its kind on settlements, concentrating on rural settlement patterns from the ancient to the present India. Concerns about rural developments are growing these days, yet there is still a scarcity of literature examining all the aspects of rural developments, even though there is no specific definition of rural settlements. In this regard, the following definition is offered.

"A rural settlement is a collection of buildings and spaces in a specific geographically-bounded location where a group of people co-exist with the environment while satisfactorily engaging in land-based economic activities without relying on sophisticated technological developments" (Authors).

It was revealed that settlement patterns change with time and that subsequent settlement needs don't have the same concerns as the earlier ones. The original concerns were with basic needs like shelter, water, and security, but today's village typology is more focused on technology, environmental sustainability, and contemporary aspirations. Lighting, ventilation, and proper house connectivity were concerns in the earlier communities, but they are not

present today. There are numerous government-sponsored programs, plans, and recommendations for village developments, but none of them is truly all-inclusive.

The findings of this study show that the viewpoints of the people, the government, and other stakeholders should all be incorporated into an ideal village development model. The study finds that physical, technological, social, economic, and environmental factors are all significant influencing factors for rural developments. Additional 36 criteria from smart villages, eco villages, green villages, and digital villages need to be taken into consideration for the inclusive developments to meet these indicators. The ancient and medieval settlements were free to choose any new place to stay, but today, land is not freely available. Hence, modern typologies are useful in the development of existing settlements.

In this context, following futuristic suggestions are made.

1. A thorough framework that equally considers all five elements (Table 3) is necessary for the holistic development of the rural areas.
2. More accurate settlement indicators can be created by combining aspects of old settlements with those of the new ones.

This study has limitations because it explores only the Indian planning theories and government policies. The conclusion shows that harmonious architecture and growth of planning lie at the core of past planning theories. The findings of this study offer a perspective for creating policies that could enhance rural areas in all dimensions of architecture and planning more successfully.

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