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AN ASSESSMENT OF INFRASTRUCTURE FACILITIES IN RURAL AREA: A STUDY IN KHARKHODA BLOCK OF SONIPAT DISTRICT, HARYANA

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Abstract
The rural lifestyle has undergone significant changes due to the lack of facilities, amenities, and social equality, leading to a notable migration from rural to urban areas. This migration has resulted in population growth, socio-economic fluctuations, and environmental pollution in urban centres, while rural areas are left deserted with declining economic opportunities. Infrastructure development plays an important role in fostering both economic growth and poverty reduction. Despite government initiatives, the desired goals for rural infrastructure development have not been achieved. The paper studied the status of infrastructural facilities in Kharkhoda block of Sonipat district, Haryana and analysed the magnitude of the deficiency of these infrastructural facilities. Using data based on the primary survey the research concludes that all the services i.e. banks, parks, playgrounds, community centres and police stations are deficient in this area.
Keywords: Infrastructure, Rural Development, Utility Services

Introduction

The term "infrastructure" originated from the concept of installations forming the foundation for any operating system. According to the World Health Organization, 2000, “infrastructure encompasses essential services, facilities, apparatus, and devices essential or desired for the physical, mental health, and social welfare of both individuals and families”. While infrastructure is widely acknowledged as a critical input for economic development, there exists no singular, clear-cut definition of infrastructure according to contemporary usage in India (Planning Commission of India, 2008).

Infrastructure plays a dual role in the development of an area: it is both essential for progress and serves as an indicator of the area's development level. Serving as a foundation for socio-economic growth, infrastructure is crucial for the overall prosperity of a country (Lal and Thakur, 2014).

The progress of a region, both economically and socially, is intricately linked to infrastructure development. Public investments across various socio-economic sectors play a pivotal role in shaping the pace of overall economic advancement and ensuring the equitable distribution of development benefits across different segments of society by creating opportunities (Thakur and Sharma, 2010). The socio-economic and human development of a nation is closely tied to its infrastructure, making it a fundamental aspect of socio-economic growth and the cornerstone of a country's prosperity (Goel, 2003).

Infrastructure development encompasses the foundational facilities essential for a nation's progress. Socio-economic infrastructure comprises the fundamental amenities vital for human advancement, while physical infrastructure encompasses various facilities such as education, healthcare, telecommunications, electricity, transportation, and energy (Kabiru, 2016). Infrastructure development plays a crucial role in driving economic advancement through several avenues. Firstly, direct

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investments in infrastructure lead to the establishment of production facilities, thereby stimulating economic activities. Secondly, it enhances competitiveness by providing necessary support systems for businesses to thrive. Additionally, infrastructure development creates employment opportunities, contributing to economic growth. Lastly, it ensures access to essential physical and social infrastructure for the impoverished segments of society, thereby fostering inclusive development (Sahoo and Dash, 2009).

As infrastructural development is necessary for socio-economic growth of nation. It is considered crucial for enhancing economic advancement as it generates employment and supports other dependent opportunities. It is very important to study the infrastructural development and deficiencies at the ground level which will be support system to create development plans at micro level.

Shyama Prasad Mukherji Rurban Mission (SPMRM)

Shyama Prasad Mukherji Rurban Mission (SPMRM) aims to prepare an Integrated Cluster Action Plan (ICAP). This is also known as the National Rurban Mission, which has the objective of creating clusters of "Rurban Villages" that can preserve the essence of the villages without compromising the facilities in the area, which are generally perceived as urban.

The scheme aims to enhance economic development and improve the status of basic services through creating planned rurban clusters. In this scheme, the aim is to create around 300 rurban clusters in different states and UTs for overall development in the area. The project would provide skill development training, and appropriate infrastructural facilities and improve local entrepreneurship (RADPFI Guidelines, 2016).

Rurban Cluster in Kharkhoda Block

According to the guidelines of Shyama Prasad Mukherji Rurban Mission (SPMRM) and Rural Area Development Plan Formulation and Implementation (RADPFI) Guidelines, (2016), the Kharkhoda block has been divided into six clusters based on the population. census of India, 2011 remarked that "in the categorization of villages medium sized villages can be assembled to form a cluster, if have locational contiguity and small sized villages where cluster plans would be viable" (RADPFI Guidelines, 2016). Every cluster has a population of 25,000 to 50,000. The six clusters in the block are Barona, Farmana, Khanda, Kharkhoda Urban, Mandura and Sisana. Khanda and Barona have 10 villages each followed by Mandaura with 9 villages, Farma with 8 villages and Sisana has only six villages in it. The highest population resides in Farmana (31,580) followed by Khanda (30,415), kahrkhoda Urban (29,870), Mandaura (29,808), Sisana (29,290) and Barona (28,245).

Rural Area Development Plan Formulation & Implementation (RADPFI) Guidelines, (2017)

The RADPFI, 2017 have the aim of creating equality in planned development in rural and urban areas. Therefore, planned development is also necessary for rural areas and spatial plans for this development should be based on norms prepared for infrastructural development for the rural areas. As rurban mission aims to create urban services in the rural areas which would eventually lead to the construction of unauthorised activities in the periphery of these areas. That is why there is a need for norms and standards for utilising rural areas with various activities. As the villages of India are very diverse Rural Area Development Plan Formulation & Implementation (RADPFI) Guidelines (2017) and Integrated Cluster Action Plan (ICAP) foresee the planned development of clusters of villages to provide parity of services in the rural areas.

Norms and Standards

Norms and standards for construction activities and infrastructural provisions are created to enhance the amenities and sustainable built-up in the areas. These standards are created by the National Building Code of the Bureau of Indian Standards, Indian Road Congress. These norms and standards have been implemented in the urban areas but are non-existential in the rural areas as their implementation in rural areas is not virtual. This leads to haphazard construction in the rural area which needs to be managed.

Urban and Regional Development Plans Formulation & Implementation (URDPFI) Guidelines

The planned development of cities and towns is crucial to accommodate the expected growth and ensure a better quality of life for all residents. To achieve this, the Ministry of Urban Development has formulated the Regional and Urban Development Plan Formulation & Implementation (URDPFI) Guide, 2014. These guidelines are designed to facilitate sustainable urban growth and development in the municipal area.

With rapid urbanization expected to continue until 2100, it is imperative that cities and towns across the country have a well-thought-out vision for development. The URDPFI Guide plays a vital role in guiding urban planning and ensuring that infrastructure and resources are efficiently utilized.

In conclusion, the URDPFI Guide, 2014, is a comprehensive framework for the sustainable development of cities and towns in India. Its adoption and implementation at both the state and local levels will play a essential role in shaping the future of urban India and ensuring a high quality of life for all its residents (Town and Country Planning Organisation, 2015).

Study Area

Kharkhoda block is situated in the southern portion of the Sonipat district. It is located at 28°52'51" to 28°53'04" North latitude 76°53'49" to 76°55'23" to East longitude (Directorate of Census Operations, Haryana, 2011 p.9). There are a total of seven blocks in the Sonipat district. Mundlana and Kathura in the North-West, Ganaur and Sonipat in the North, Gohana in the North-West, and Rai in the East of the Kharkhoda block. The block is surrounded by three blocks, i.e., Gohan, Rai and Sonipat. It shares its boundary with the National Capital of Delhi in the southeast, Rohtak in the west and the Jhajjar districts of Haryana in the south. According to the Census of India 2011, the block has an area of 296.88 sq. km. and is divided into forty-five administrative units; out of which forty-four are villages and one is Municipal Committee named Kharkhoda.

The average population of the block is 3131.97 persons. There are sixteen villages in the study area having more than the average population. The highest population is in Sisana (10169) village followed by Khanda (9029), Farmana (7019), Rohna (6611), Silana (5173) and Gorar (5077). In inhabited villages lowest population is in Karhouli (479) followed by Muzzam Nagar (637), and Nirthan (840). Apart from all these, villages have a population of more than 1000 but less than 5000

1. What is the status of infrastructure provision in the Kharkhoda.

2. Which specific areas within the Kharkhoda block exhibit deficiencies in infrastructure services?

Objectives

1. To identify the status of infrastructure provision in the Kharkhoda.
2. To find out the areas which are deficits in the infrastructure services.

Data and Methodology

A primary survey was done in all forty-four villages and the Kharkhoda municipal committee in 2019. The survey was done using a schedule created for the infrastructural facility in Kharkhoda block. For

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this, a detailed GPS Survey has been done through the Geo Tracker application of the location of various infrastructural facilities i.e., banks, parks, playground, community centres, post offices and police posts which are presented through maps. The maps are created using ArcGIS 10.3. The deficiency of various infrastructural facilities has been calculated based on norms given by the government schemes i.e., RADPFI (2017). For this, the projected population of 2019 has been used and the villages of the study area have been merged into clusters.

The projection of the population for 2019 has been calculated using the "Growth" function in MS Excel which gives predicted exponential growth based on the existing population data. According to the guidelines of Shyama Prasad Mukherji Rurban Mission (SPMRM), the Kharkhoda block has been divided into six clusters based on the population. The Census of India (2011) remarked that in the categorization of villages, medium-sized villages can be assembled to form a cluster if they have locational contiguity and small-sized villages where cluster plans would be viable (RADPFI Guidelines, 2016). Every cluster has a population of 25,000 to 50,000. The six clusters in the block are Barona, Farmana, Khanda, Kharkhoda Urban, Mandura and Sisana.

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Table 1: Cluster wise Status and Deficiency of Other Basic Infrastructure Services in Kharkhoda Block (2019)

S.No.	Services	Norms (Population served per unit)	Kharkhoda Urban				Barona				Mandaura				Farmana				Sisana				Khanda			
			(TP:29870)				(TP:28245)				(TP:29808)				(TP:31580)				(TP:29290)				(TP:30415)			
			R	E	D	S	R	E	D	S	R	E	D	S	R	E	D	S	R	E	D	S	R	E	D	S
1	Banks	10,000	6	5	1	0	6	4	2	0	6	4	2	0	6	6	0	0	6	3	3	0	6	5	1	0
2	Parks	5,000	6	4	2	0	6	1	5	0	6	0	6	0	6	0	6	0	6	1	5	0	6	1	5	0
3	Playground	5,000	6	2	4	0	6	2	4	0	6	3	3	0	6	2	4	0	6	4	2	0	6	5	1	0
4	Community Centre	5,000	6	1	5	0	6	9	0	3	6	1	5	0	6	5	1	0	6	2	4	0	6	3	3	0
5	Post Office	15000	2	2	0	0	2	5	0	3	2	3	0	1	2	4	0	2	2	3	0	1	2	5	0	3
6	Police Post	50000	1	2	0	1	1	0	1	0	1	1	0	0	1	1	0	0	1	0	1	0	1	0	1	0

Source: Primary Survey 2019, RADPFI Guidelines 2017, RBI Guidelines, URDPFI Guidelines 2015, NBC (National Building Code) 2005.
Note: (R = Required, E = Existing, D = Deficiency, S= Surplus, TP=Total Population.

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Result and Analysis

Cluster-wise Status and Deficiency of Infrastructural Services in Kharkhoda Block (2019)

The study includes various other infrastructural services, i.e., Banks, Playgrounds, Parks, Community centres, Post offices and Police posts. The population norms for requirements of these services have been taken from RADPFI Guidelines 2017 and URDPFI Guidelines 2015. The norms state that there should be a park, playground and community centre for every 5000 population. Whereas a bank should be available for every 10,000 population. The norms define that a post office should serve a population of 15,000, and a police post should be established for every 50,000 population in the area.

Bank

According to the norms of RADPFI Guidelines 2017 and URDPFI Guidelines 2015, there should be six banks in every cluster of the study area. Farmana is the only cluster which has the required number of banks available and apart from Farmana, every cluster has a deficiency of banks. The highest number of banks is in Kharkhoda urban and Khanda clusters (Table 1). The highest deficiency of banks is in the Sisana cluster where three more banks are required (Fig. 1 & 4). The lowest deficiency is in Kharkhoda urban and Khanda cluster where one bank is deficient in fulfilling the banking requirements in the study area.

Park

There are a total of seven parks in the Kharkhoda block. Out of these, four parks are in Kharkhoda Urban cluster. Barona, Sisana and Khanda clusters have one park each, and there is no park available in Mandaura and Farmana clusters. According to the projected population of 2019, every cluster requires six parks each and based on this norm the analysis results that every cluster is deficient in parks (Table 1). The highest deficiency is in Mandaura and Farmana clusters followed by Barona, Sisana and Khanda clusters. Kharkhoda Urban cluster has a deficiency of two parks (Fig. 2 & 5).

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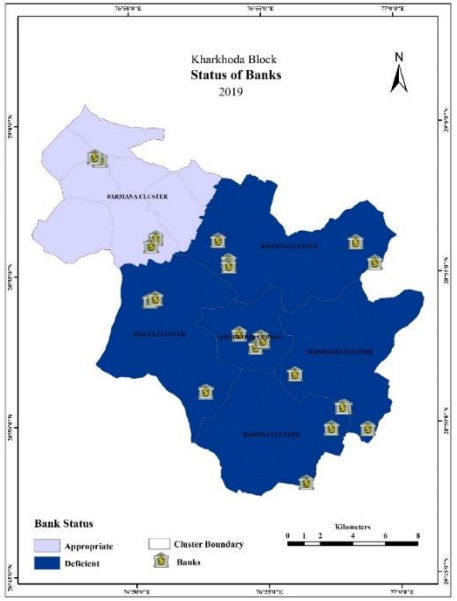
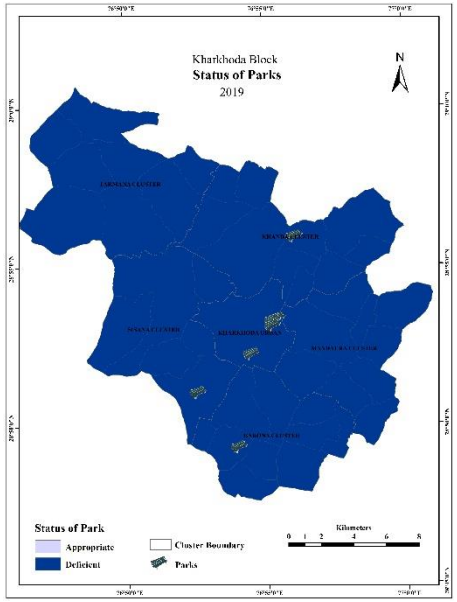


Fig.1



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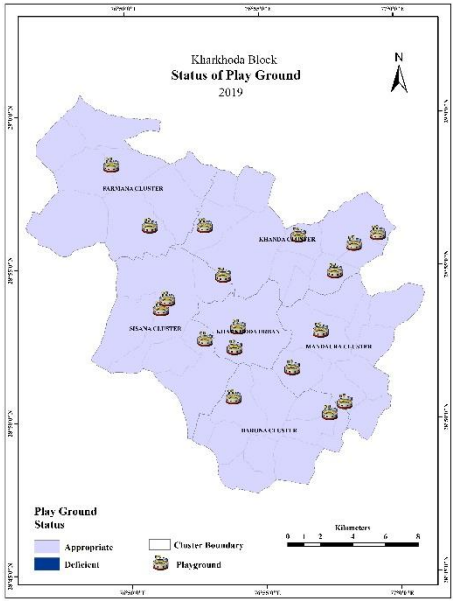

Fig.3

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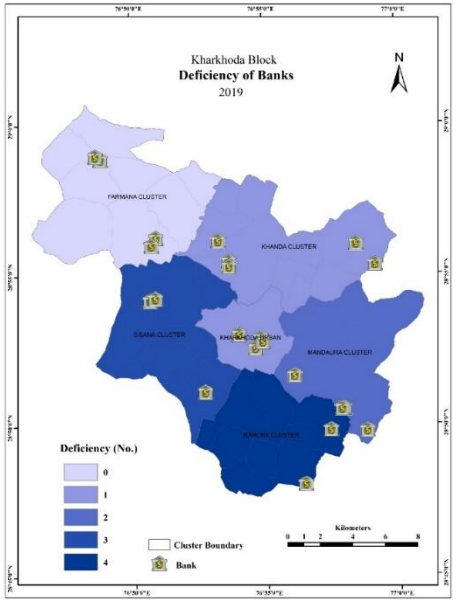

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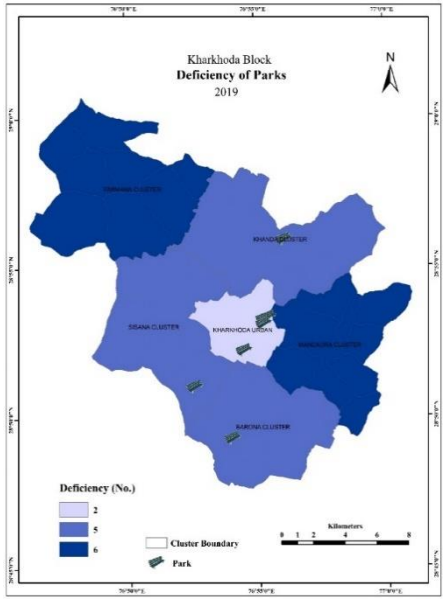

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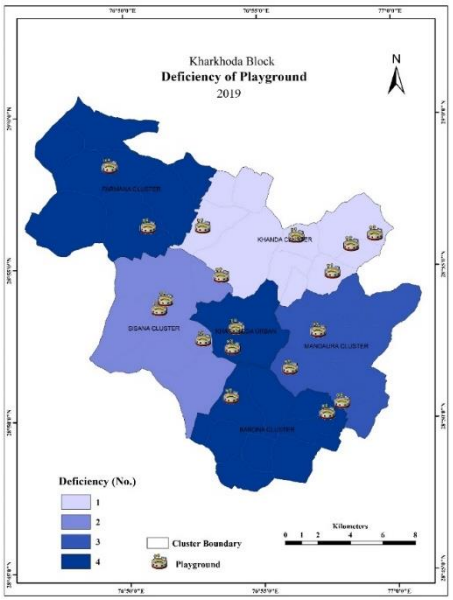

Fig.6

Source: Prepared by researcher based on Table 1

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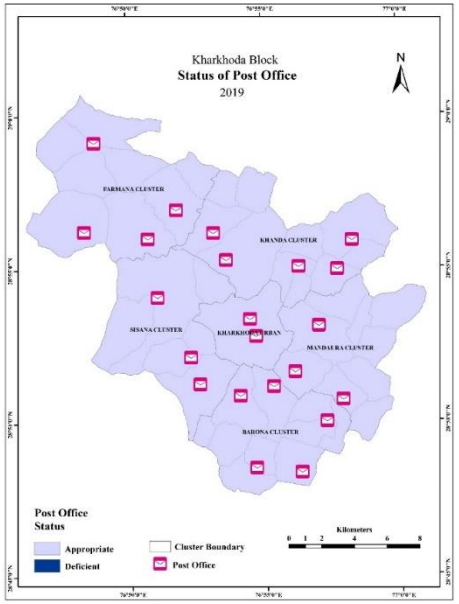

Fig.7

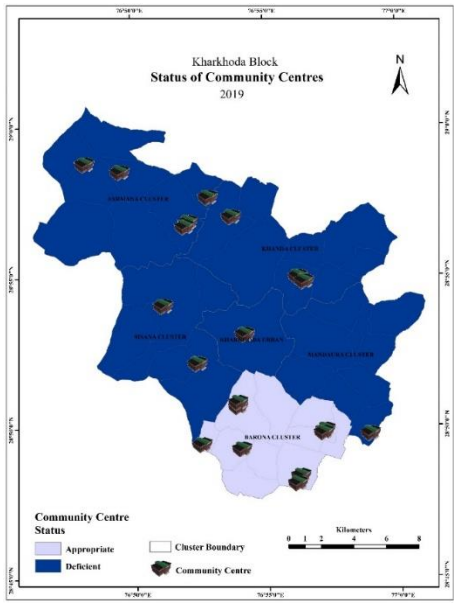

Fig.8

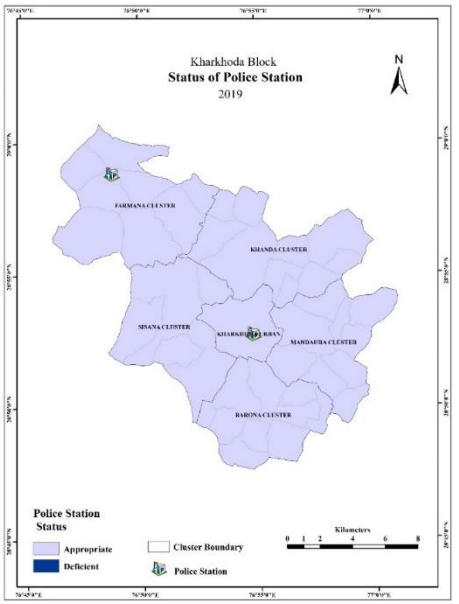

Fig.9

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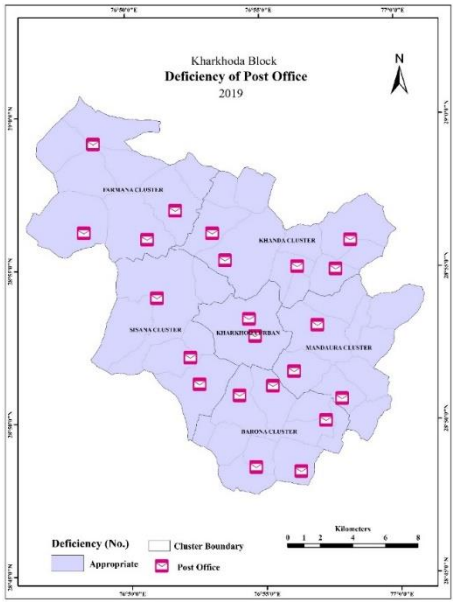

Fig.10

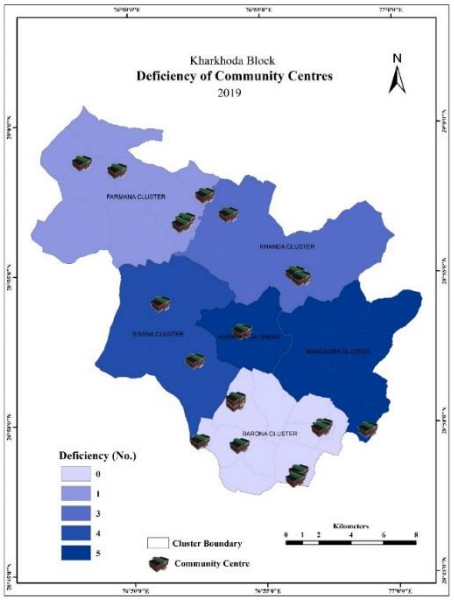

Fig.11

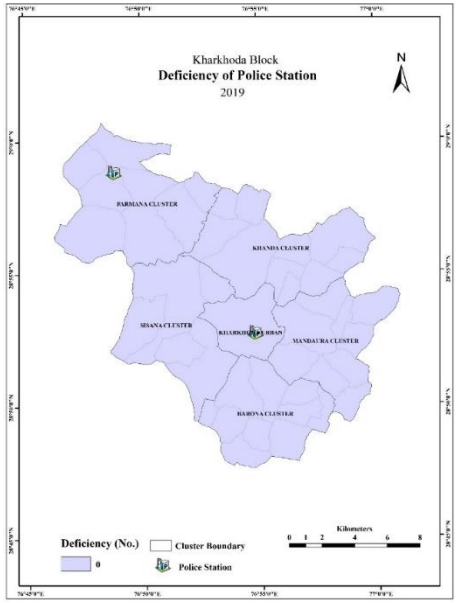

Fig.12

Source: Prepared by researcher based on Table 1

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Playground

There is total of eighteen playgrounds in the Kharkhoda block. The highest number of playgrounds (5) exists in Khanda cluster followed by Sisana (4) and Mandaura (3). Farmana and Kharkhoda urban have the least number (2) of playgrounds (Table 1). Like the parks, every cluster of Kharkhoda block is deficient in playgrounds also. The highest deficiency of playgrounds is in Kharkhoda Urban, Barona and Farmana clusters. All three clusters have a deficiency of four parks each (Fig. 3 & 6). Apart from these clusters, Mandaura, Sisana and Khanda clusters have a deficiency of three, two and one playgrounds respectively.

Post Office

Communication represents a bidirectional exchange wherein data and information flow between two or more entities. Transport and communication serve as vital mechanisms for surmounting the challenges posed by physical distances. A contemporary telecommunications infrastructure plays a pivotal role, not only in fostering economic advancement but also in facilitating connectivity within domestic markets for commodities and credit, as well as establishing links with international commodity and financial markets (Zahra et al., 2008). The Department of Posts serves as a crucial intermediary for the Government of India, extending its role beyond postal services to encompass various citizen-centric functions. For instance, it facilitates the disbursement of payments for initiatives like the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and manages wage disbursements and old age pension payments (Juneja, 2017).

The post office plays a dual role by offering both postal and non-postal services, making it a cornerstone of communication in India for over 150 years. The Department of Posts has been instrumental in driving the socio-economic development of the country. As a member of the Universal Postal Union, India adheres to the 'Universal Postal Service Obligation,' which mandates the provision of high-quality postal services to all users across the nation at reasonable prices. These services encompass a range of offerings such as postcards, Inland Letters, Envelopes, and Money Orders up to a specified limit (AMC Research Group, 2004). According to norms of URDPFI Guidelines 2015, there should be a post office for every 15,000 population in the area. The analysis shows that there is twenty-two Post office available in the Kharkhoda block and there is no deficiency of post offices in any of the clusters (Table 1). Apart from Kharkhoda Urban cluster, every other cluster has a surplus number of post offices available. The highest number of PO (5) is in Barona and Khanda clusters which have three surplus PO each. The Farmana cluster has four PO, and according to population norms, it only requires two PO (Fig. 7 & 10). Mandaura and Sisana cluster have three PO each and one surplus PO according to the norms.

Community Centre

In Kharkhoda block, there are twenty-one community centres available in 2019. The highest number (9) of community centres are in the Barona cluster which is the only cluster having a surplus number of community centres. Apart from the Barona cluster, every other cluster has a deficiency in the number of community centres (Table 1). Kharkhoda Urban and Mandaura clusters are highly deficient in community centres followed by Sisana, Khanda and Farmana clusters which have deficiencies of four, three and one community centres respectively (Fig. 8 & 11).

Police Post

There are four police posts in the Kharkhoda block, out of which two are in the Kharkhoda urban cluster, and the Mandaura and Farmana clusters have one Police post each. According to population norms, every cluster should have one Police post and according to this Kharkhoda Urban cluster has one surplus Police post and the Mandaura and Farmana clusters have an appropriate number of police posts (Fig. 9 & 12).

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Apart from these, the Barona, Sisana and Khanda clusters have deficiencies in Police posts. All these three clusters require one Police post each.

Conclusion

The analysis of the status of infrastructural services in the Kharkhoda block of Sonipat district shows that all the services i.e. banks, parks, playgrounds, community centres and police stations are deficient in this area. Out of the selected infrastructural services, only the post office is not deficient in the study area. The study concludes an immense scope of infrastructural creation in the study area to fulfil the requirements of the inhabitants. The research raises questions which build the scope for researching the land suitability analysis for the creation of infrastructural facilities in the Kharkhoda block of Sonipat district. The reason behind the status of the availability of infrastructural facilities was the government policies. Finding the in-depth reason for the geographical variation in study was not possible due to the lack of data. An analysis can be done regarding potential areas suitable for villages that will be candidates for rural development in Kharkhoda block of Sonipat, Haryana by using geographic information system (GIS) methods. Based on Rural Area Development Plan Formulation & Implementation guidelines, suitable land can be suggested for the creation of various utility services.

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