

Rural Settlement: A Case of Barauli Village

Sudarshana Arya^{1*}

Abstract

We see that there is a considerable change in their style when come with the same in urban areas. Life and living of rural people is viewed in terms of demography, employment and asset structure, agriculture and allied activities, rural poverty and livelihood, social and cultural issues, institutions, government schemes/programs, village-level amenities and linkages, energy utilization patterns, recent changes and development in the villages and surrounding areas, issues related to water supply, sanitation, solid waste management, public transport, water source development and water conservation, education, recreational facilities, health facilities, and information and communication technologies. The main objectives of rural study are to understand the location, spatial and economic linkages, the social and physical infrastructure, and the availability and usage of local resources of the villages. Furthermore, the study will investigate the present problems and future possibilities in the village and propose strategies to improve the condition and development of the village. The main purpose of the study is to prepare a comprehensive, realistic, and practical blueprint for the development of the village.

Keywords: Rural society, Village Development Plan, community participation, landuse, Panchayati Raj, infrastructure

INTRODUCTION

Preparation of “Village Development Plan” of villages in Sonipat District of Haryana. It focuses on sustainable agriculture, efficient waste management, energy efficiency, improved livelihood, access to better infrastructure in different health and education sectors, heritage and tourism, and so forth.

The stages for preparation of the Village Development Plan of various villages included Secondary data collection, Primary Survey, Households Survey, Collection of village information, Data processing and data analysis, Inferences, Framework of strategy for future development, Conclusion, and final Suggestions.

The major issues identified from the primary analysis are open defecation, lack of proper drainage network, and other sanitation facilities leading to the spread of water-borne diseases like fever, dengue, malaria, and dysentery [1]. Lack of proper infrastructural and academic facilities in schools is the major cause for the high rates of drop outs of children from schools.

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Major awareness is to be created on the need for sanitation, health, and hygiene. Panchayati Raj should help villagers build individual and community toilets. Awareness of the importance of education is to be created and the improvisation standard and quality of infrastructural and academic facilities.

The local zoning plans are written documents. It determines the issues that concern the village.

Opportunities, strengths, threats, and weaknesses of the village are identified. He also gave ideas to improve the village. It provides opportunities for resource mobilization. A village plan does three essential things. It provides a VISION of what you would like your village to look like, sets out clear GOALS to achieve that vision, and gives you an ACTION PLAN to reach those goals.

1. To learn the basic need of communities after analyzing their problems with sharp-eyed observations and experiences.
2. To extract detailed information from a larger and more representative group of SC-dominated societies than from observation alone.
3. Identify the situation of villages (i) across various economic activities in the community—better over time and (ii) in terms of the extent of various developments.
4. Write down relevant information based on the identification of needs and areas.
5. Contribute to the preparation of local development plans.
6. According to the principles of PMAGY, evaluating the distance covered by the company at the end of 3 years.
7. Received “community engagement” and many people joined the watch.
8. Identify employment, self-employment—level of employment, and development needs of agriculture for economic growth and stability and use predefined job indicators.
9. Use social indicators (literacy, education, training, and skills and regardless of gender, age, race, or religion) opportunities for all members of society to determine the impact on the future.
10. Programs and interventions designed by local organizations to lead the overall development of the target area.
11. Identify gaps between federal/regional agency needs and available resources.
12. Central/state past/current interventions to balance and prevent material waste.
13. Learn about the potential to reduce funding gaps by integrating PMAGY funds with existing programs.

Planning is a plan for planning work. It is a blueprint for a definite action within a time frame. Macro planning is planning for mainstream development at macro level. Micro planning is a location-specific planning or grassroots planning (Figure 1 and Table 1).

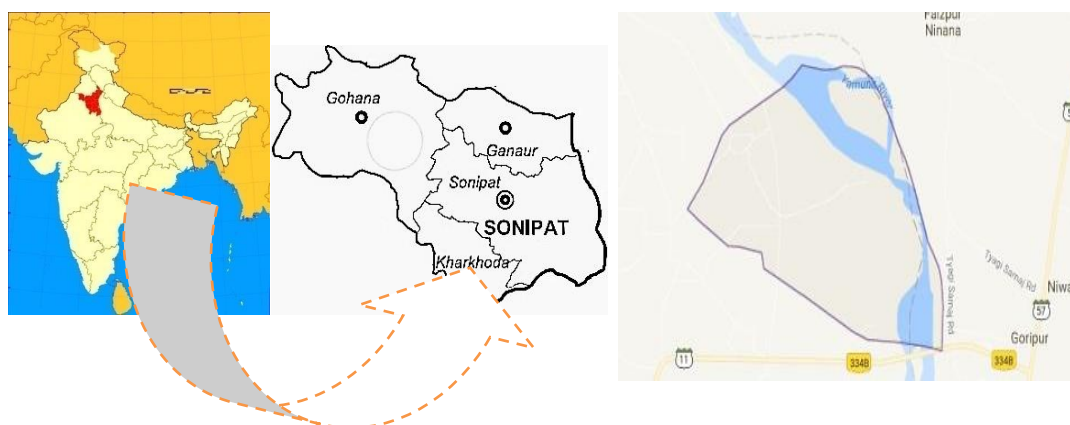


Figure 1. Location map of Haryana/Sonipat District/Barauli.

Table 1. Village profile.

State	Haryana
District	Sonipat
Block	Rai

Micro-level planning means detailed planning at a lower level, usually at or below a district, which takes into account the variations in the community of that area under study (PMAGY Report).

LOCATION OF BARAULI

Barauli Village in Sonipat Tehsil, Sonipat District, Haryana, India. It is located 18 km from Sonipat, which is the headquarters and road headquarters in the village of Barauli (Table 2). According to 2009 statistics, the village of Barauli itself is one gram of panchayat. The total geographical area of village is 849 hectares. Barauli has a total population of 3,743 peoples. There are about 630 houses in Barauli village. Sonipat is nearest town to Barauli.

HISTORY OF VILLAGE

Barauli was basically populated by Muslim community before independence. The ancestors of village were come from Narela village. There was a dispute between Muslim and Jat community after which Jat community people acquired the village. Now people from various castes are residing in the village. Mainly the people from Gulia, Kundu, Khatri, Kataria surnames are more in numbers.

Scheduled castes (SC) have 21.84% of the total population of Barauli village. Barauli Village does not currently have any Scheduled Tribe (ST) population.

VILLAGE SCHEMES

Pradhana Mantri Gram Sadak Yojana

Central support Pradhana Mantri Gram Sadak Yojana program has been implemented to provide opportunities in local areas. The main purpose of PMGSY is to provide connectivity with all aircraft to unconnected households in rural areas with a population of 500 and above.

Indra Awas Yojana

Objective/Purpose

Grants for the construction/improvement of homes for SC/ST members, volunteer workers, minorities and other non-Sc/ST remote families through Indira Awaas Yojana by providing them a lump sum financial assistance.

Vision

Provide adequate and affordable housing for all, and promote sustainable and inclusive housing development in rural areas by expanding government support within the framework of the Panchayati Raj, promoting community participation, and self-help and citizen organization.

Table 2. Village description.

Location	28.8 N, 77.04 E
Altitude	223 m above the sea level
Area	849 Hectares
Population	3743
Total no of households	630
Average family size	4.03
No of blocks in village	15
Average Rainfall	227 mm
Lok Sabha Constituency	Rai
State Assembly Constituency	Sonipat
Distance from Rai Block	7 km

Mahatma Gandhi Gramin Basti Yojana

Haryana Government launched a program called “Mahatma Gandhi Gramin Basti Yojna” for free distribution of 100 m² land to all eligible BPL families, Scheduled Caste families, Back Class (Category A) households on October 2, 2008 families in all the villages of the State. The Planning Commission, Government of India, has been stressing from time to time to frame special schemes for the upliftment of the Scheduled Castes in a focused manner. Special schemes were required to be framed for the villages which have significant Scheduled Castes population. Keeping in view the guidelines of the Planning Commission, Mahatma Gandhi Gramin Basti Yojna was launched in the State of Haryana. This scheme is aimed at benefiting the poorer sections of the society. Under this scheme, the State Government has decided to allot free residential plots to the eligible SC families, Backward Class (Category A) families and BPL families in the villages. This scheme has been started during the year 2008–2009.

METHODOLOGY

The main purpose of the Study is to prepare a comprehensive, realistic and practical blueprint for the development of the village. here is the methodology of study and data analysis, in this I have done literature review, vision, data collection, and data analysis.

Vision

To rejuvenate the rural society of India.

Aim

To achieve better quality of life of Barauli Village

Objective

1. To study the socioeconomic profile of the village.
2. To assess the agricultural resources and land utilization pattern.
3. To analyze the infrastructure scenario of the village.

Administrative Structure

Village planning through participatory planning and techniques:

A good micro-level planning methodology should be:

1. Based on an assessment of the local situation,
2. Client sensitive and participative,
3. Replicable, and
4. Easy to institutionalize.

Development endeavors in different parts of country, both within government and NGO sectors have shown that the use of participatory tools and techniques during village level micro planning improves awareness, community mobilization and empowerment [2]. Village micro planning entails a series of experiences in which the villagers assess their own situation, analyze this situation, and explore alternatives and potential actions and finally develop a plan and take action and monitor progress.

The methodology for micro-level planning comprises of:

1. Quick sample survey of households in the community
2. Analysis of this data to assess the levels of coverage, unmet needs and its reasons, as well as analysis to study their distribution in the community
3. Diagnosis of underlying causes of poor or good performance and reasons for unmet need and identifying remedial interventions
4. Develop response plans to reduce negative needs and improve service quality.

5. Implementing the plans, and
6. Resurvey at the end of the plan period to assess the change (PMAGY Report).

NSSO Research Methods and Survey

The household survey is designed to collect complete information on all households in Barauli Village. For proof, most of the answers came from women. Household survey, population, land use patterns, livelihoods, agricultural inputs, access to basic and public services (Figures 2 and 3), and so on. It allows the collection of information about the purpose of home examination is to determine microlevel problems that are critical to the holistic and integrated development interventions.

Administrative Structure

3-Tier structure of Panchayat Raj:

- Gram Panchayat (Village level)
- Panchayat Samiti (Block level)
- Zila Parishad (District level)

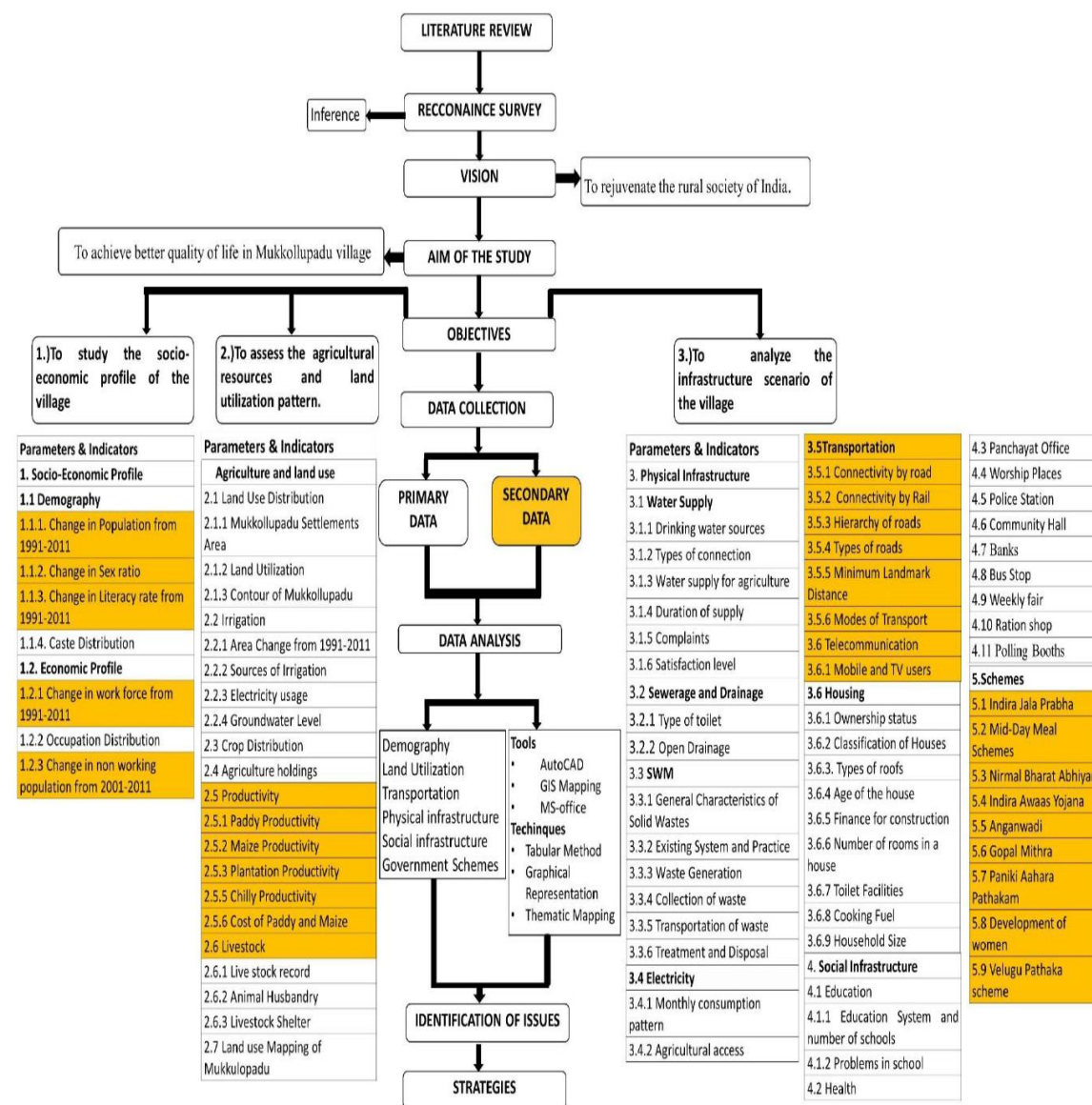
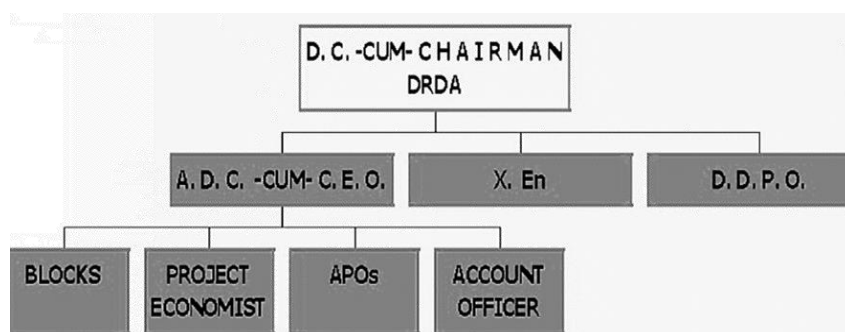
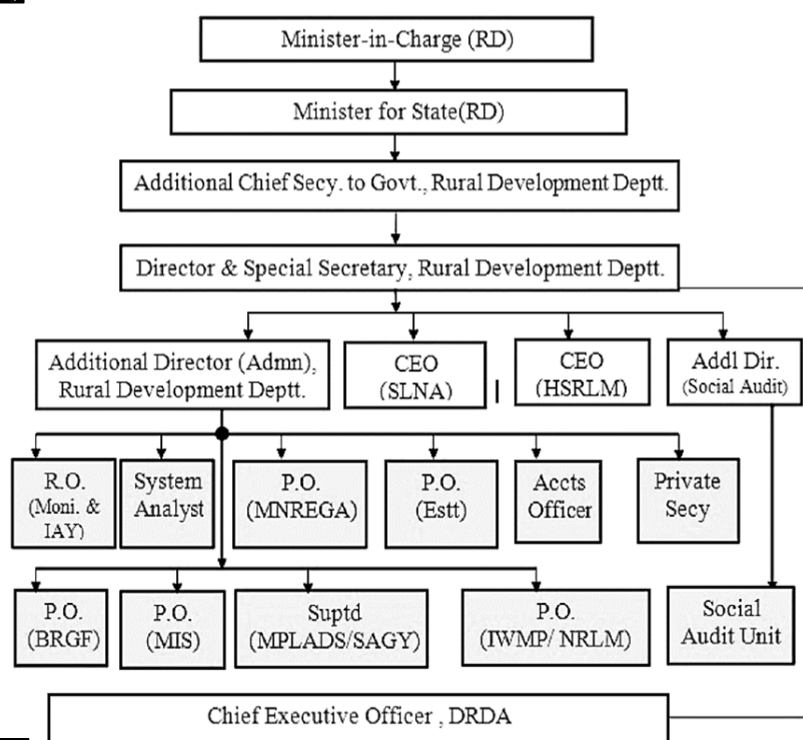


Figure 2. Methodology.



(a)



(b)

Figure 3. (a) Organizational structure of the DRDAs. (b) Organization setup of Rural Development Department Haryana.

Panchayat Samiti (Block Level)

- Chairman
- Executive Officer
- Block Development and Panchayat Officer (BDPO).

Gram Panchayat (Village Level)

A fundamental form of local government in Indian communities is the gramme panchayat. It is a political organisation that serves as the village cabinet.

Income Source of Gram Panchayat

1. Shamlat land (Leased Panchayat land)—15 million per year
2. VAT surcharge scheme
3. House tax—15,000 per annum
4. Land revenue (10% stamp duty)
5. Sale of trees/fisheries.

Zila Parishad (District Level)

Zila Parishad is a body that is elected. It is a neighborhood government which works at region level (Figure 4(a)).

Development Works Performed by Gram Panchayat

1. Welcome gate development (Figure 4(b))
2. Drains and pavements
3. Drinking water facilities
4. Chaupal Nirman
5. Educational facilities-high school, anganwadi

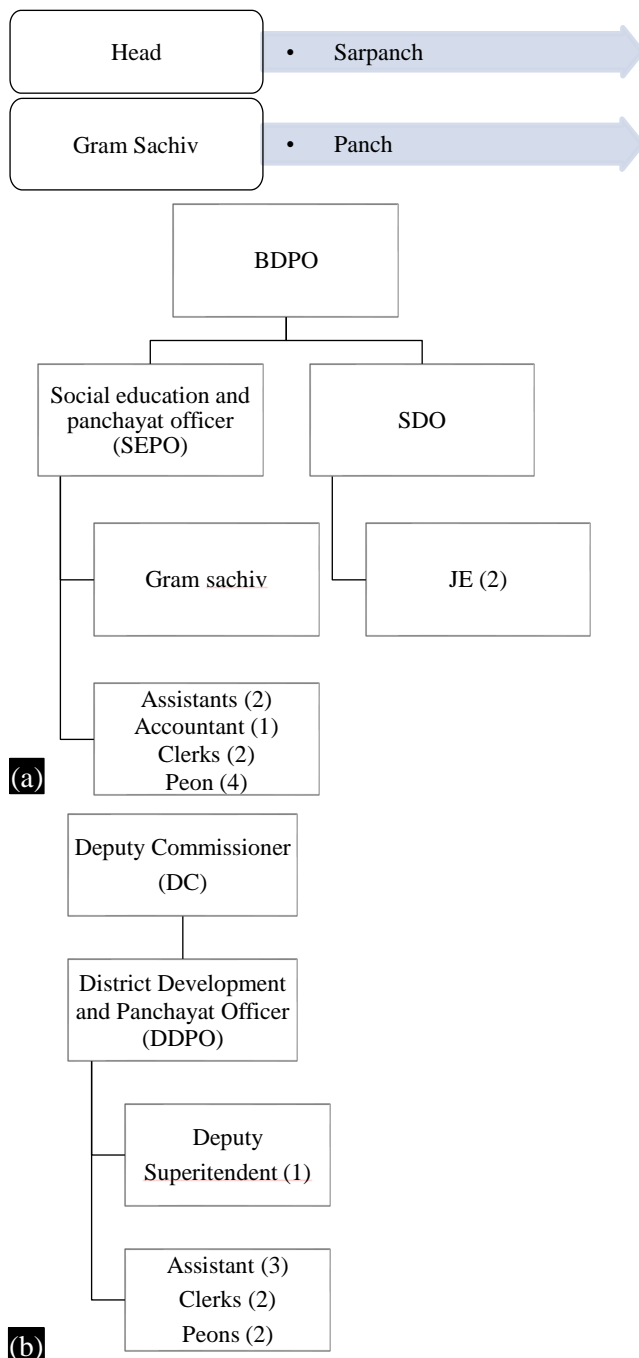


Figure 4. (a) Hierarchy of zila parishad and (b) hierarchy of district administration.

ABOUT VILLAGE CONNECTIVITY

Proximity to Nearby Villages

1. Bararuli is directly connected by roads to Basaudi, Mirakhpur, and Asadpur.
2. Bad roads and lack of maintenance
3. Village is 13 Km away from GT road (Table 3 and Figure 5)
4. There is a shortage of public transport and the village faces huge problems to access the nearby villages for services.

Table 3. Major landmarks near village Barauli.

Nearest	Distance in km
Town	Sonipat
Village	Basaudi
Sonipat railway station	21
Sonipat bus stand	20.2
G.t road (NH-1)	13
IGI airport	65.3
New Delhi Railway Station	65
ISBT Kashmere Gate	50
Civil Hospital	18.8
Private hospital	17.3
University (DCRUST)	18

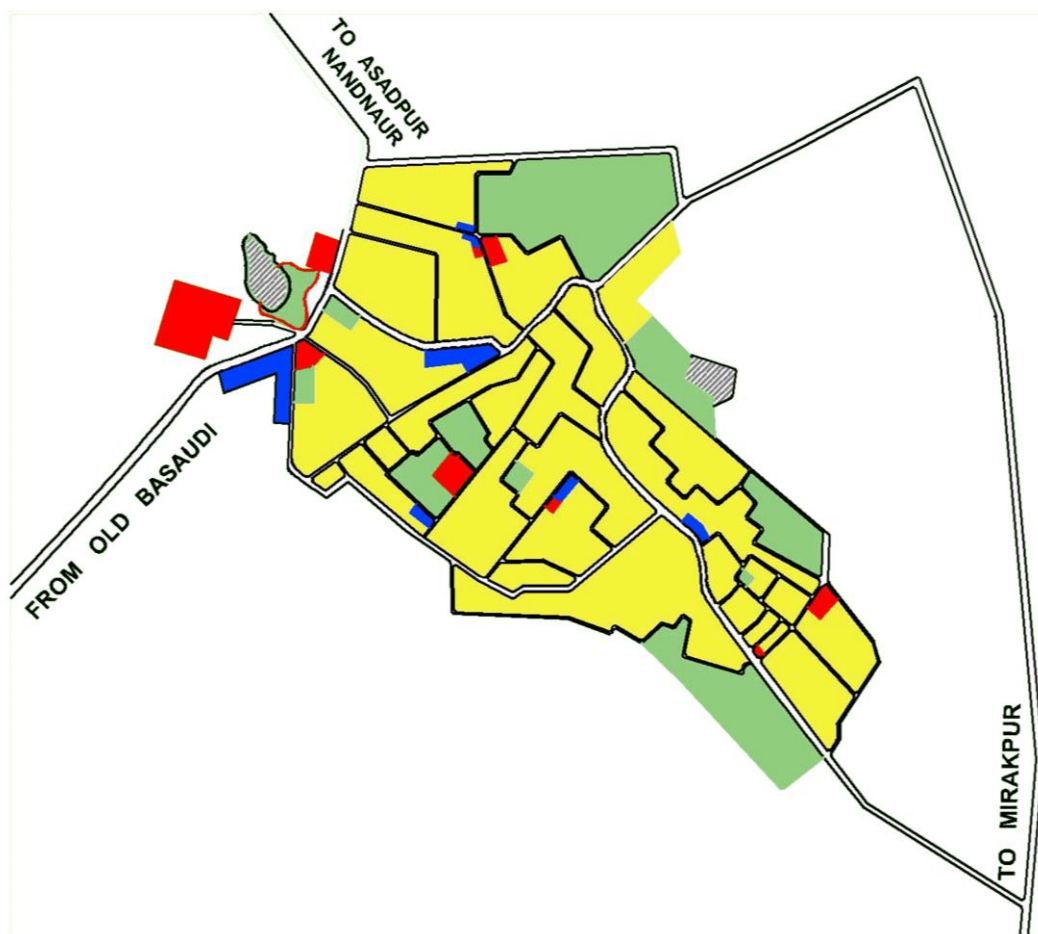


Figure 5. Connectivity of Barauli village to the surrounding villages.

ABOUT SOCIAL INFRASTRUCTURE

Colleges Near Barauli

- Deen Bandhu Chotu Ram University, Murthal

Schools Near Barauli

- SB Global School
- Stanford International School
- Kirori mal Public School
- Delhi Public School

The Nearest Railway Station in and Around Barauli

The nearest railway station to Barauli is Harsanakaln Railway Station. Which is located in and around 21-kilometer distance (Figure 6).

1. *Nearby police post:* Akbarpurbharota
2. *Nearby police station:* Sector 7 Police Station, Sonipat

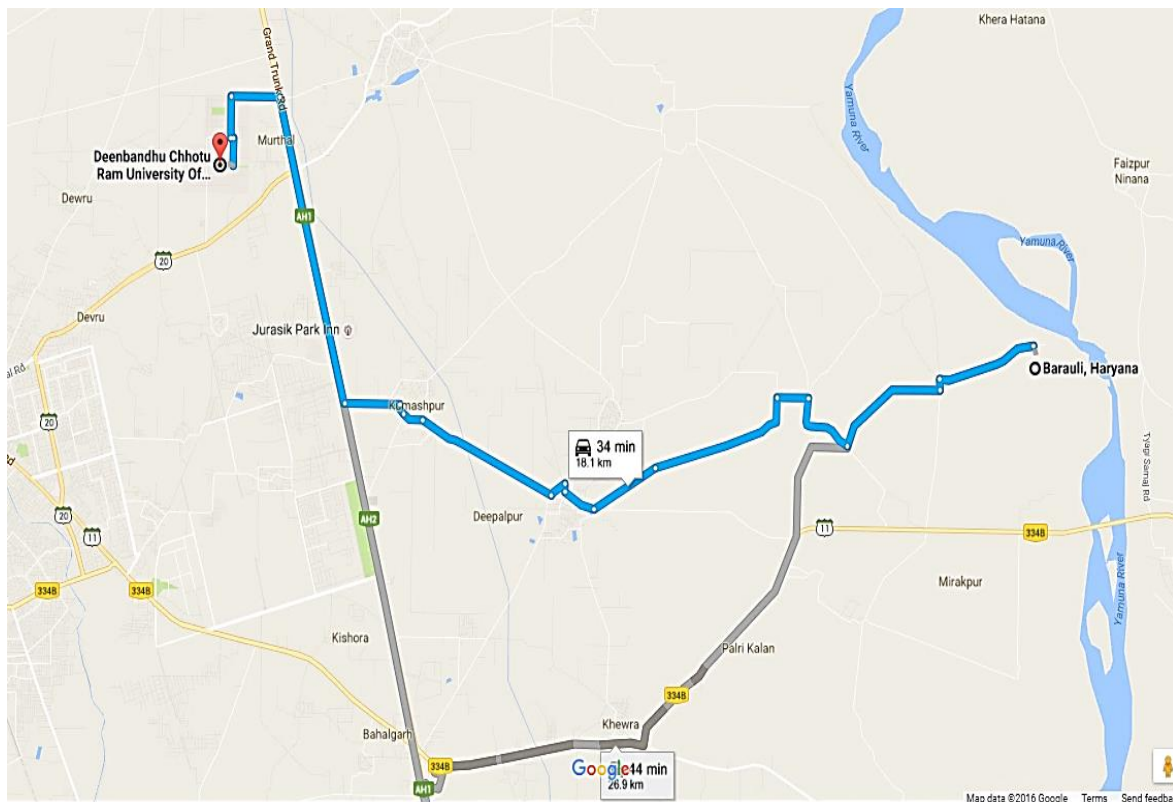


Figure 6. Connectivity of Barauli village with DCRUST Murthal.

ABOUT SOCIOECONOMIC PROFILE

Demographic Profile

The Barauli village has population of 3,743 of which 2,040 are males, whereas 1,703 are females as per Population Census 2011 (Table 4 and Figure 7).

Table 4. Demographic profile.

Particulars	Total	Male	Female
Total number of houses	630	—	—
Population	3,743	2,040	1,703

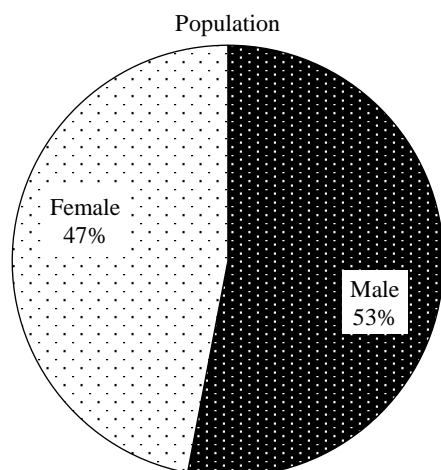


Figure 7. Demographic profile of village Barauli.

Change in Sex Ratio

The population of children aged 6 year in the village of Barauli is 593, constituting 11% of the total population of the village. The average gender ratio in the villages is 797, below the Haryana average of 879. According to the census, the sex ratio of Barauli is 550, which is below the Haryana average of 834.

Change in Literacy Rate

Literacy is higher in Barauli village compared with Haryana. In 2011, the literacy rate in Barauli village was 76.5% compared with 75.55% in Haryana (Figure 8 and Table 5). In Barauli, male literacy is 85.69% and female literacy is 65.67% (Figure 9).

Caste Distribution

Schedule Caste (SC) constitutes 21.84% of total population in Barauli village. The village Barauli currently does not have any Schedule Tribe (ST) population (Figure 10).

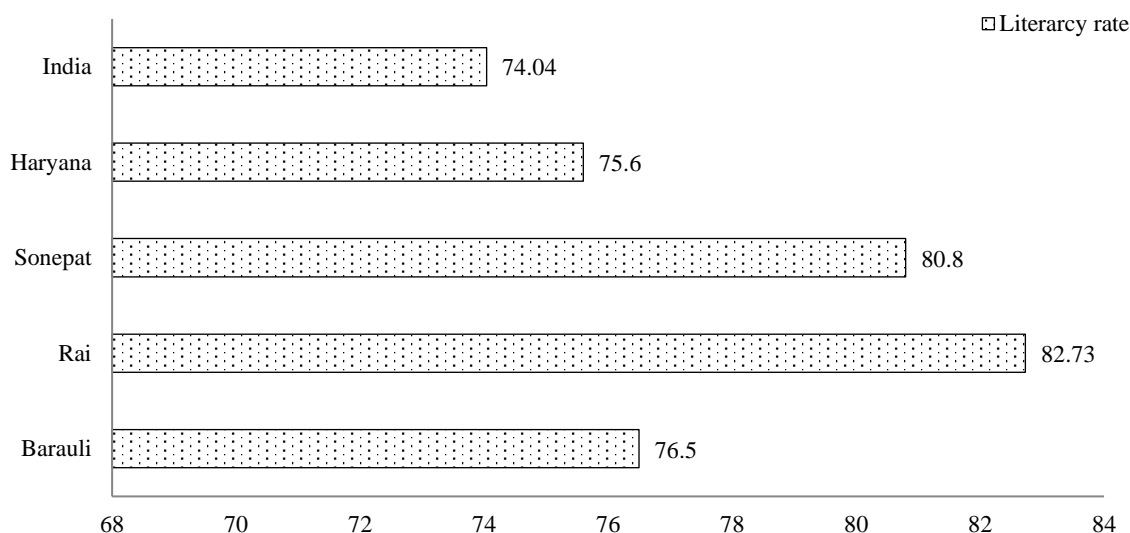


Figure 8. Literacy rate from village to state.

Table 5. Literacy rate of Barauli village.

	Persons	Males	Females
Illiterates	920	414	506

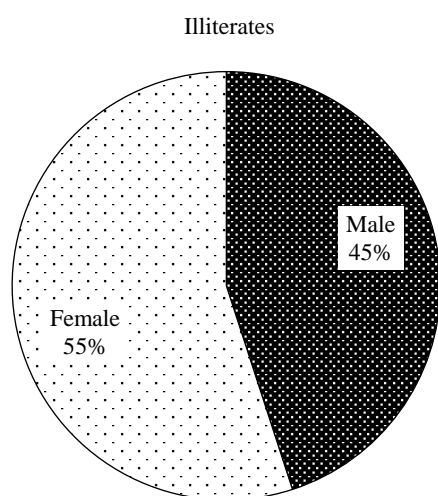


Figure 9. Literacy rate of village Barauli.

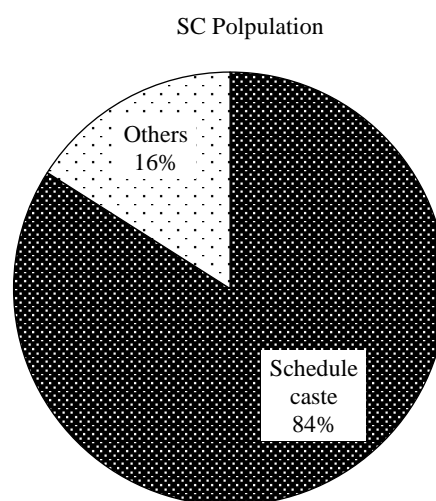


Figure 10. Caste distribution.

Economic Profile

In Barauli village out of total population, 674 were engaged in work activities. A total of 94.49% of workers describe their work as Main Work (Tables 6–8) (Employment or Earning more than 6 Months) [3] while 5.51% were involved in Marginal activity providing livelihood for less than 6 months. Of 345 workers engaged in Main Work, 439 were cultivators (owner or co-owner) while 100 were Agricultural laborer (Figures 11–13).

Table 6. Economic profile of village.

Main work	Marginal work
674	345

□ Non working population ■ Working population

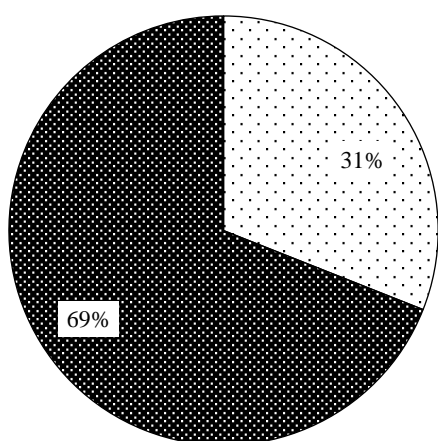


Figure 11. Working population.

Working Category

■ Main work
□ Marginal work

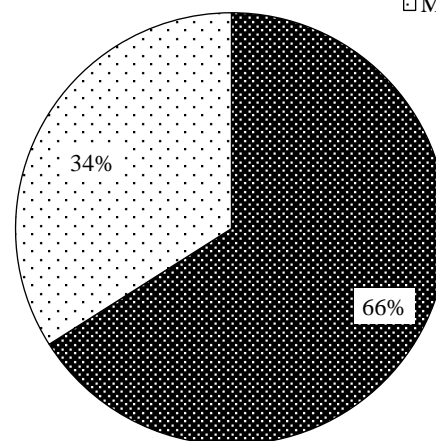


Figure 12. Main workers category.

- Cultivators
- Agricultural laborers
- Household industry workers
- Other workers

Table 7. Main work category.

Cultivators	Agricultural laborers	Household industry workers	Other workers
Persons = 439	Persons = 100	Persons = 15	Persons = 852
Males = 284	Males = 66	Males = 14	Males = 732
Females = 155	Females = 34	Females = 1	Females = 120

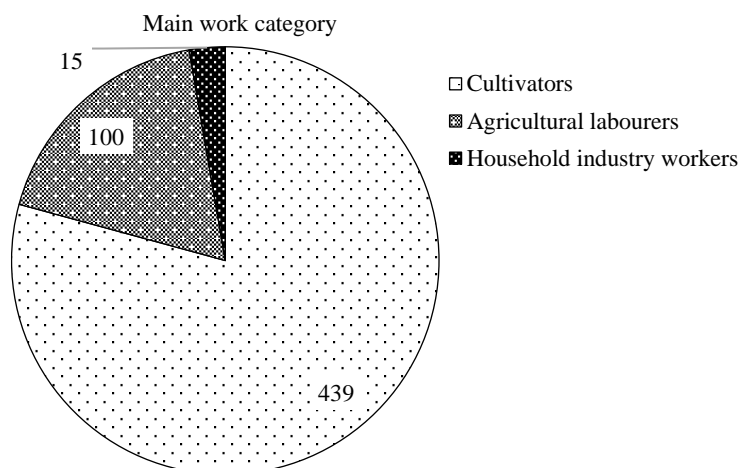


Figure 13. Marginal workers category.

Table 8. Marginal workers.

Cultivators	Agricultural laborers	Household industry workers	Other workers
Persons = 26	Persons=11	—	Persons = 45
Males = 15	Males = 7		Males = 39
Females = 11	Females = 4		Females = 6

COMMERCIAL AREA

There is a shortage of commercial area in the village (Figures 14–16). It consists of only 1% area of the total land use area.



Figure 14. Land utilization.



Figure 15. Existing land use.



Figure 16. Existing land use.

PUBLIC AND SEMI-PUBLIC

1. Aganwadi
2. School
3. Chaupal

PHYSICAL INFRASTRUCTURE

Present Conditions

1. No. of streetlight = 84
2. No. of transformer = 8
3. No. of handpump = 27

Problems/Issues

- The number of streetlights is sufficient and covers almost every area but most of them are not in working conditions.
- No proper management is done (Figures 17–19)

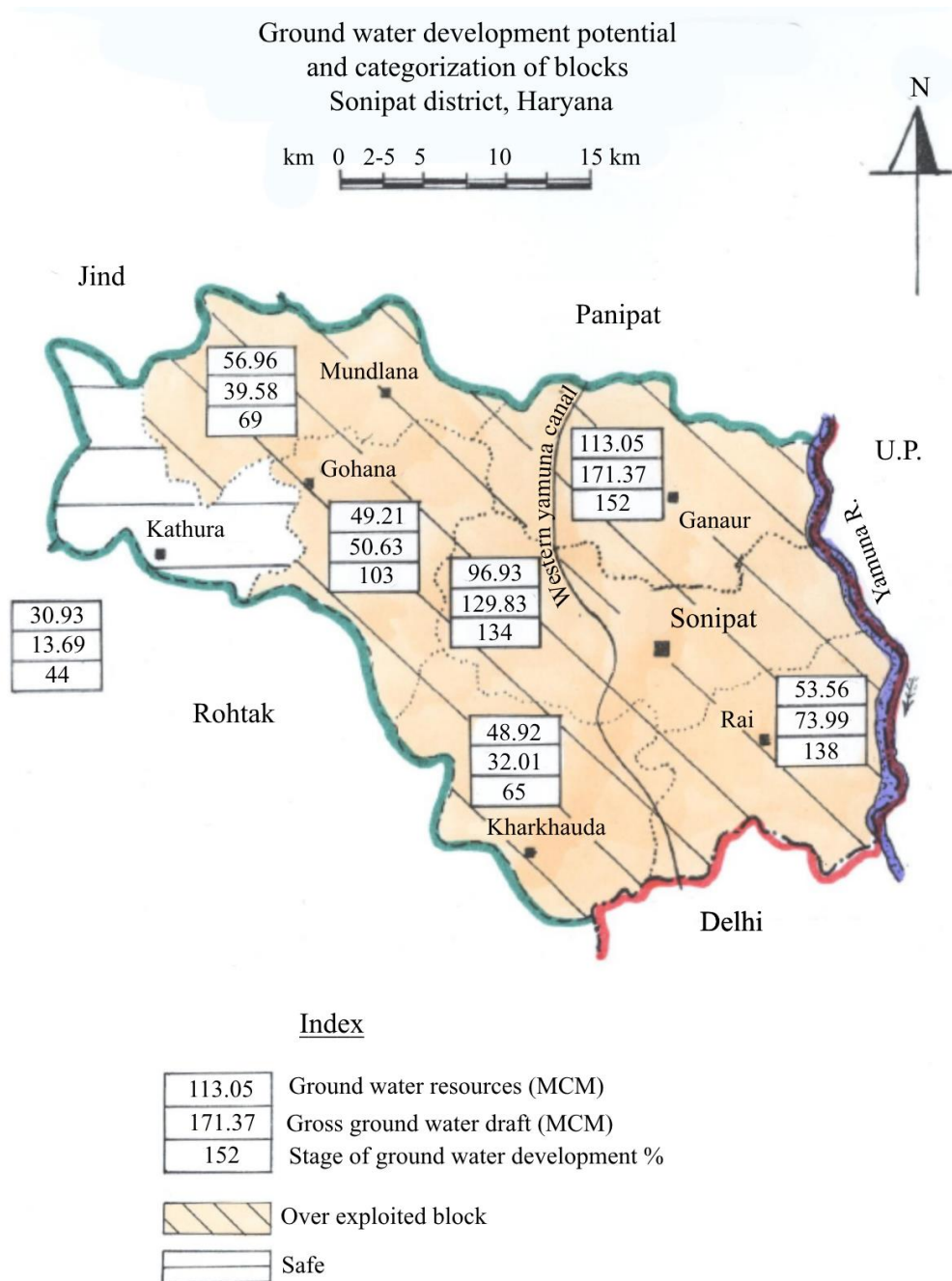


Figure 17. Ground water development potential of block, Sonipat district.

- Most of the villagers are depended on hand pumps. Out of 27, 7 are not maintained and need maintenance
- The platforms of hand pumps were in bad conditions which causes water logging triggers breeding place of mosquitoes.
- Some of the transformers are overloaded due to illegal electricity lining.
- The electricity lines are hanging at very low level which can be dangerous in rainy seasons.

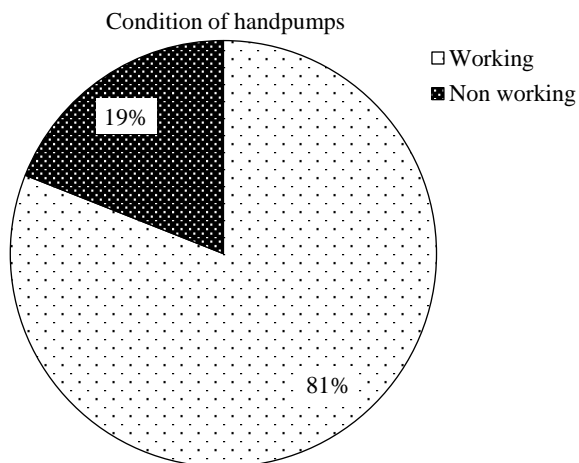


Figure 18. Condition of handpump in Barauli Village.



Figure 19. Condition of transformer in Barauli Village.

ABOUT DRAINAGE FLOW

Present Conditions

- Excessive precipitation causes rivers, streams and lakes to overflow. This additional water makes the area low and causes flooding [4].
- Flood not only destroys life and property but also destroys all crops grown in summer.
- During heavy rain, water is collected in village pond which causes major problems like overflowing and collection of waste from surrounding areas. Stagnant waste water which causes main health problems and unhygienic conditions (Figures 20–22).



Figure 20. Condition of streetlight in Barauli Village.

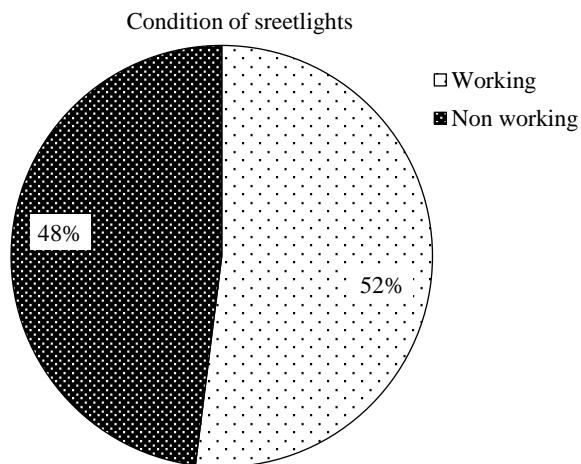


Figure 21. Condition of streetlight in Barauli village (working and non-working).



Figure 22. Existing condition of Ponds in Barauli Village.

Problems/Issues

- It is situated in North of the village.
- Mostly used for cattle. There are two ponds nearby this pond which have dried out.
- It is surrounded by grassland and panchayat land which is not utilized for any
- It became source of nuisance causing insanitary and unhygienic conditions.
- The biggest problem in this pond is all the waste of the village is collected in this pond, which causes foul smell in surrounding areas as well as unfit for any other use.
- It is situated in the east of the village.
- It is surrounded by shrubs and wooded area.
- It is an unutilized pond.
- It is relatively the largest pond in the village.

ABOUT CONDITION OF ROADS

Problems/Issues

- The peripheral roads are in very bad conditions which causes water logging problem during rainy seasons causing inconvenience to the villagers (Figure 23–26).
- Lack of maintenance of roads [5].
- Due to bad condition of roads, villagers are not accessible to various infrastructural facilities which are important for their development purposes.
- In some areas concrete pavers are used in streets of the village.
- It provides smooth and safe surface for movement of vehicles.
- Condition of roads inside the village is much better than that of peripheral roads.
- Due to concrete pavers, it prevents water logging during rainy seasons.
- During rainy season no cleaning of drains cause the problem of water blocking, which creates unhygienic condition and inconvenience for the villagers.



Figure 23. Peripheral road.

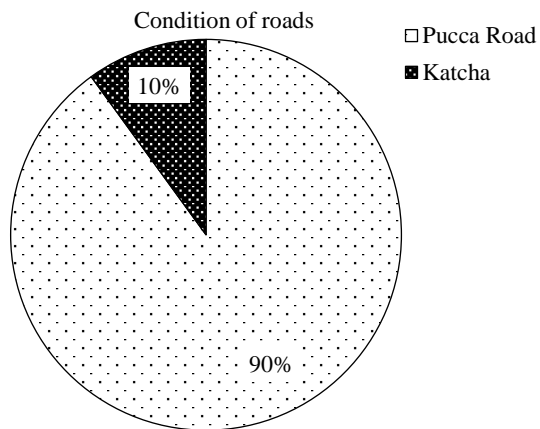


Figure 24. Road condition percentage.



Figure 25. Street roads.

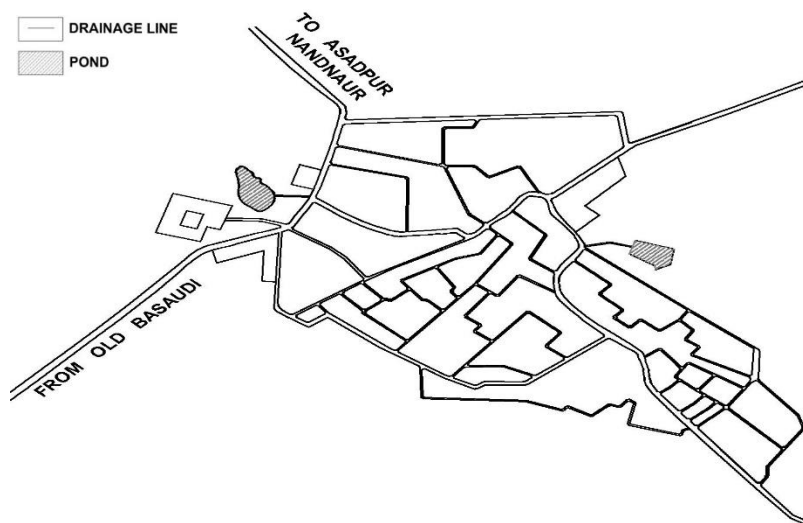


Figure 26. Drainage line and pond location.

SOCIAL INFRASTRUCTURE

1. School and Aganwadi

Present Conditions

School

- The condition of green spaces in schools were not maintained.
- The drinking water facility is available but was not in hygienic condition and is not fit for drinking purpose (Figure 27).
- There was no sitting space given in the center lawn of the school [6].
- The toilets are not accessible for children and are not maintained.

Problems/Issues

- Requirement for teachers in primary school.
- Maintenance of computer lab (only 2 CPU out of which only 1 is working, which operates 11 Lcd's).
- No Internet facility (Figure 28–31).
- No electricity backup (generator is not working).
- No permanent computer teacher.
- Two water tanks but without any purifiers and coolers.
- EDUSAT not working.
- Senior secondary school is 5 km away from the villages; due to this, most of the girls study only up to 10th class.



Figure 27. Drainage line and ponds in Barauli Village.



Figure 28. Veterinary of Barauli Village.



Figure 29. Dispensary of Barauli Village.



Figure 30. Physical infrastructure.

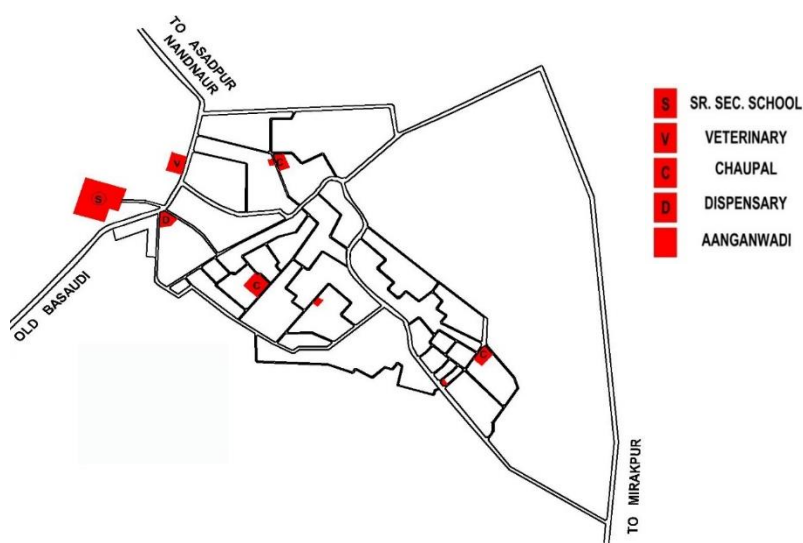


Figure 31. Location of social infra structure in Barauli Village.

Coverage of Habitations under Electrification

Coverage Under Household Connections

- All Connection (2 hours in a day and 10 hours at night)

If Some Mention the Name of the Habitations Not Covered

- 95% to 100% covered

Coverage Under Street Lighting

- 40% to 50% working; otherwise, 100% coverage

Road Connectivity

Habitations Connected by all-Weather Roads

- Need consideration

If Some Mention The Name of The Habitations Where Not Available

- Roads are there but in very poor condition, need to maintain them properly (Tables 9 and 10).
- Some stretches in the village are Katcha Rastas.

(i) Manikpur to Barauli (unmaintained)

(ii) Asadpur to Barauli

Information and communication technology facility near village.

Table 9. Physical infrastructure with their present condition.

Facilities	No.	Condition
Chaupal	3	Good condition
Dispensary	1	Unhygienic conditions and limited space
Veterinary	1	Enough space for cattle
Senior Secondary School	1	No safe drinking water is available and the condition of the school building is average
Aanganwadi	4	Two are in good condition with appropriate space but other 2 are congested and dark (no natural light)

Table 10. ICT (information and communication technology system) in village.

ICT in village	
Telephone exchange	Kundli
E- panchayat	Not present
Education-sat	Not present
Number of chaupal	5-6

Coverage of Habitations Under Waste Management System***Coverage Under Covered Drains***

- No

If Some Mention the name of the Habitations Not Covered

- No disposal

Coverage Under Open Drains

- 100%

ABOUT DRINKING WATER FACILITY**Pipe Water Supply Coverage to Habitations**

- No Tubewell

If Some Mention the Name of The Habitations Not Covered

- Covered all area but not in working condition

Hand Pump Coverage in Habitations

- 50

SPORTS FACILITY IN VILLAGE**No. of Playgrounds in the Village (Minimum Size 200 Square Meters)**

- 1 but with no facilities. (2 acres; Table 4)

MAIN CROPS IN VILLAGE

1. Rice
2. Wheat
3. Other facilities

INTRODUCTION-PROPOSALS

The proposal is based on public-private partnership pattern. The cost and working of maintenance will be combined efforts of government and residents of village [7] (Table 11).

1. For setup cost, the sharing percentage will be 50 and 50 for government and residents. The profit sharing will be range from 20% to 80%, respectively.
2. The maintenance will also be done by local villagers in order to produce employment.
3. The various works in which PPP shall be there are:
 - i. Dairy farming
 - ii. Green house
 - iii. Commercial shop
 - iv. Housing
 - v. Transport facility

Table 11. SWOT analysis of Barauli Village.

Strength	Weakness	Opportunities	Threats
Location of the village as the village is near to Yamuna River so it gets sufficient amount of potable water	Solid waste dumping space: there is no proper space for solid waste disposal	Solid waste can be used as a renewable source of energy by installing bio-gas plant in the village	As there is no proper place for solid waste dumping. So, it can lead to borne many diseases.
Water supply is in adequate amount	Lack of public transportation system	Village is connected to murthal and directly connected to GT road	Street are filled with waste water of households. It helps in production of mosquitoes.
Land is fertile	There is no banking facility	Various government policies can be run by the local bodies in village	As village is nearer to the Yamuna River, it is having the risk of flood during monsoon
Therefore, people earn through growing vegetables and by selling them in the Asadpur International Market they earn more benefit	Lack of primary health center	As agriculture is main occupation economic benefit can be earned at bigger scale	
Agriculture is the main occupation	Gram panchayat is not having vacant land for further development		

4. Works totally under government:
- i. E-Chaupal
 - ii. School and Anganwadi
 - iii. Roads
 - iv. Stadium
 - v. 3 pond and pond renovation system
 - vi. PHC sub-center
 - vii. STP (sewerage treatment plant)
 - viii. Overhead tank
 - ix. Land development
 - x. Solar power plant
 - xi. Recreational facilities
 - xii. Solid waste management

According to priority, all the development works are divided into different phases:

1. *I Phase*
 - i. Panchayat land development
 - ii. Road repair works
 - iii. 3 pond system
 - iv. Solid waste management
 - v. Sub-center
 - vi. School and Anganwadi
 - vii. Transportation
2. *II Phase*
 - i. Overhead tank
 - ii. E-choupal
 - iii. Solar power
 - iv. Commercial and recreational

3. *III Phase*

- i. Dairy farming
- ii. Green house/poly farming
- iii. Housing

- Each phase has time period of six months for completion.
- Funding should be provided phase wise.
- Furthermore, these (Table 12) works are distributed in different zones; that is, Zone A, Zone B, and Zone C.
- Some works are at village level which is not confined to specific zone.

Table 12. Cost estimate of dairy farming in Barauli village (for proposal).

S.N.	Feeding stuff	Cost/kg. Rs.	During lactation period Quantity (kg)	Cost (Rs)	During dry period Quantity (kg)	Cost (Rs)
1	Concentrate feed	12	6.5	78	1	12
2	Green fodder	1	25	Home grown	20	Home grown
3	Dry fodder	2	6	12	5	10
Total				90		22

DAIRY FARMING**Estimates of Cost**

The ultimate Aim of the project is to open a Dairy Farming of 125 cattle so that the economy within the area can be improve (Table 13). Along with this, the [8] dairy sector will provide employment opportunities to the villagers and thus improving their living standard.

Table 13. The cost required to install the dairy farm of 125 cows (the estimated cost is around 88 lakhs).

Description	Capital cost
Number of cattle	125
Covered area for 125 rows	$125 \times 325 = 43750$ sq. ft.
Cost of construction of boundary and manager for open space	250000
Construction cost of animal shed	$6000 \times 125 = 750,000$
Cost of generator set	80,000
Cost of 125 cows with minimum average 10 liter milk yields/day @ 52,000/cows including transportation	6,500,000
Cost of milking machine with accessories and installation charge	430,000
Cost of borewell with pump set	70,000
Electrification	60,000
Cost of overhead tank and pipe line	70000
Cost of chaff cutter	90,000
Total	8,780,000

SOLAR INDOOR LIGHT SYSTEM**Cost Estimation of Solar Indoor Light System**

Estimation for 6 Solar Indoor 12 Light system installation in the Asadpur village public places.

Total Expenditure

- Estimation of 3 bin system at household level = Rs. 148,500
- Estimation of 3 bin system at Community level = Rs. 43,329
- Tricycle primary collection vehicle = Rs. 34,500
- Push cart = Rs. 19,800
- Truck Mounted Garbage Compactor Vehicle of 7 cum Volume = Rs. 12,00,000 (Tables 6–8)
- Community level composting: Underground unlined manure pit or garbage pit = Manual labor (3-man days) to dig one pit = Rs. 1,050
- Underground brick lined manure pit or garbage pit = Approximate cost Rs 4,000 to 5,000 per pit
Cost of construction of Vermi tank = Rs. 14,000

Generate Employment from Solid Waste Management

Solid waste management results in generate employment.

Table 14. Cost estimation of Solar indoor light system.

S.N.	Description	Quantity	Unit price	Amount
1	Supply and installation of Solar LED Indoor 12 light system Comprising of 150Wp solar photovoltaic Module, Galvanized Mounting structure for PV module, Low Maintenance Tubular Battery 12V, 150Ah, Charge Controller with low voltage and high voltage cut off within built temperature compensation, Reverse Polarity fuse protection, 7W LED Bulbs 12no's, Rates including transportation, installation charges. Complete shipping and handling costs, including the cost of all materials and shipping and labor costs, rental of all machinery and equipment, and all other costs and other costs for model specifications and instructions of the Engineer-in-charge of the work.	07	78,000.00	5,46,000.00
VAT @ 5.5%		30,030.00		
Project Management Charges @ 10%		54,600.00		
Net amount		6,30,630.00		
Amount in words: Six Lakh Thirty Thousand Six hundred and Thirty rupees only.				

Table 15. Solar LED indoor light system model details.

Model	SHL-12 light system
Power consumption of per light	7 Watts
Power consumption of 12 lights	84 Watts
Min output in Lumens	560~630 Lumens
SPV Module	74 Watts
Battery	12V, 150Ah @ C10 Rating (Tubular)
Battery back-up	4 Hours
Autonomy	2 Days

Table 16. Electricity from cow dung.

Dung from one cow/buffalo	Cow dung required to produce 1 cubic meter of bio gas	Electricity generated from one cubic meter bio gas per day
15–25 kg	20 kg	2 kw

It creates employment at every step in the collection, transportation, and disposal of garbage from rag pickers to workers working in biogas plant [9], laborers working in vermicomposting, man who sales manure, and so on. Therefore, in a small-scale solid waste management plan, it provides employment to minimum 20 people. Therefore, solid waste management is the effective tool for creating employment (Tables 13–16).

Generate Revenue from Solid Waste Management

As garbage collection fee, each household will pay Rs 20/- and each shop will pay Rs 50/-. The income from the monthly registration and sale of waste products and organic fertilizers is used to pay beauticians and supervisors (Figures 32 and 33). For vermicomposting, an average of 50 kg of earthworms can produce 50 kg of manure per day; therefore, every month yield about 4,000 kg. Manure packets of 20 and 5 kg will sell at the cost of Rs 50/- and Rs 20/- or more than that, respectively [10]. The average yield = 4,000 kg per month and 1,000 kg waste, which is again reprocessed. Total sales of vermiculture compost will be $4000 \text{ kg} \times 5/- = \text{Rs } 20,000/-$ per month. Also, unclassified waste is sold at Rs. 2.50 per kg, that is, $1,000 \text{ kg} \times \text{Rs. } 2.50 = \text{Rs. } 2500/-$ per month and total revenue from vermicomposting is Rs. 22,500/- per month. Even the material that will be recycled will also be sale and that also generate revenue (Table 17 and 18).



Figure 32. Bio gas plant.

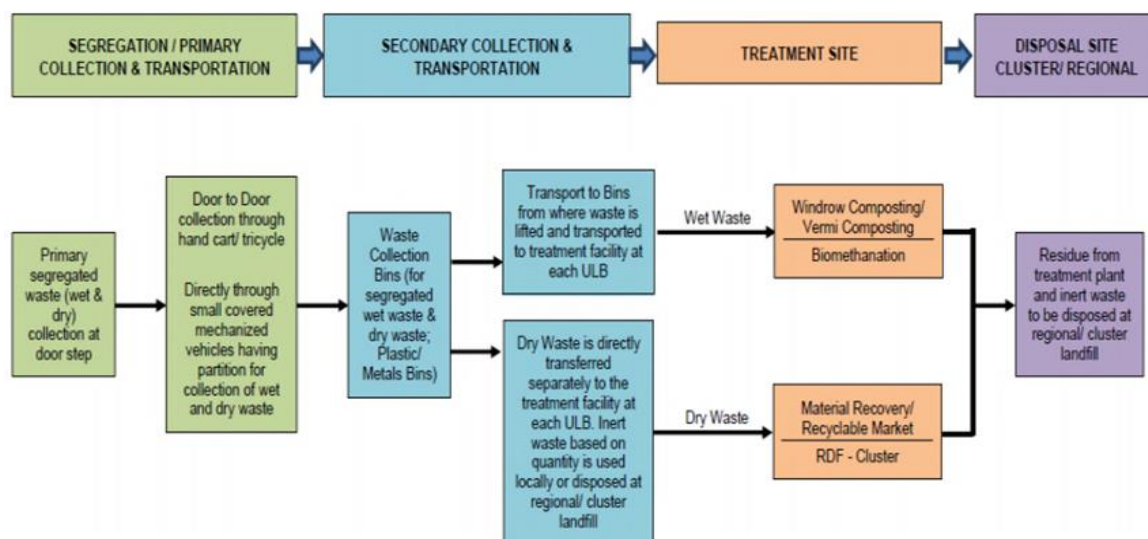


Figure 33. Flow chart: waste segregation, collection, transportation, treatment, and disposal.

Table 17. Total expenditure of solid waste management

Items	Amount (in Rs.)
Estimation of 3 bin system at household level	148,500
Estimation of 3 bin system at community level	43,329
Tricycle primary collection vehicle	34,500
Push cart	19,800
Truck mounted garbage compactor vehicle of 7 cum volume	1,200,000
Community-level composting: underground unlined manure pit or garbage pit	1,050
Underground brick lined manure pit or garbage pit	5,000
Cost of construction of vermin tank	14,000
Cost of a bio-gas plant	500,000
Total	1,966,179

Source: Handbook on scaling up solid and liquid waste management in rural areas.

Table 18. Total income from recycled material.

S.N.	Particulars	Quantity	Cost (Rs.)
1	Waste paper	5 Kg.	20.00
2	Adhesives	—	200.00
	Colors	—	300.00
	Skilled and unskilled	—	660.00
	Labor		
	Total cost	—	1120.00
	Price of finished goods	—	1650.00
	Profit	7-6	530.00

Source: Handbook on scaling up solid and liquid waste management in rural areas.

CONCLUSION

Understanding the location, spatial and economic connections, the social and physical infrastructure, and the availability and utilization of regional resources are the core goals of rural study. In addition, the study will look into the village current issues and potential future directions, and it will provide solutions to help the hamlet develop and prosper. The Study's primary goal is to create a thorough, practical, and realistic growth plan for the town.

The concept is built on the model of public-private partnerships. Government and village people will work together to cover the expense and do maintenance. For startup costs, the government and citizens will split the cost 50/50. The profit sharing will range from 20% to 80%. To provide jobs, the local villagers will also perform the maintenance. The use of participatory tools and approaches during village level micro planning enhances awareness, community mobilization, and empowerment, according to development initiatives carried out in various regions of the country by the government and NGO sectors. The process of village micro planning involves the villagers assessing their own situation, analyzing it, exploring viable solutions, coming up with a plan of action, and tracking their progress.

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