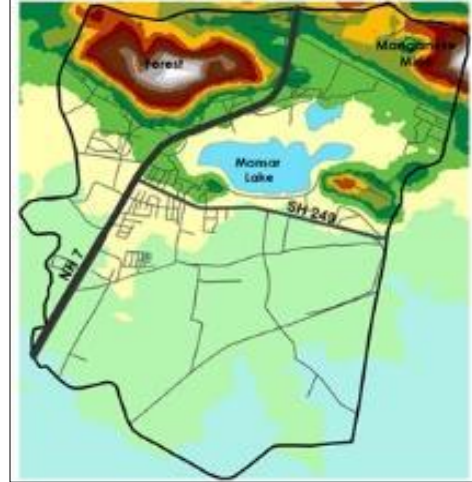


**Gram Panchayat Spatial Development Plan
For
Gondkhairi Village
Report**



Prepared by
**Department of Architecture &
Planning,
Visvesvaraya National Institute
of Technology, Nagpur**



with Support from



National Remote Sensing Centre

Initiated and Funded by



**Ministry of Panchayati Raj,
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Context for the project:

The Constitution Article 243G mandates for the Panchayats to be endowed with such powers and authority to empower them for the preparation of plans for economic development and social justice within their respective areas. Therefore, it is a natural corollary for the Panchayats to be capacitated to take over the larger canvas of local economic development in all spheres amongst their constituent villages, much in a manner similar to the spatial development planning undertaken by the Urban Local Bodies in the country. This potential for rapid economic development is particularly high in those Panchayats which are located on the National or State Highways. Thus, the villages of Gondkhairi (connected to National Highway 547E, junction at NH 53) and Mansar (connected to Jabalpur-Nagpur road National Highway NH 44) have been identified for this project.

The master plans of these villages by Gram Panchayats would help in demarcating areas earmarked for agriculture and farms, residential purposes, local markets, and commercial, Institutional area (for Banks, Post Office, Aanganwadis, PHC, Schools etc), Parks and Gardens, Waterbodies, Industries (Agro-based or MSMEs), and for making Resto or Service areas or Lay-by areas along the Highway. It would also give clear vision for immediate and future sources of Own Sources of Revenue (OSR) for the GPs making them self-reliant. It would clearly identify land and infrastructure usage requirements for the GP viz. land allocation & usage, provisioning of infrastructure services etc. creating economically productive, efficient and equitable rural growth centres resulting in harmonious and sustainable distribution of activities, so that the Panchayats/ Rural Areas can perform all their economic and social functions efficiently and effectively.

Core Team:

The Department of Architecture & Planning, Visvesvaraya National Institute of Technology, Nagpur, has been commissioned with the project of undertaking this task of planning for the villages of Gondkhairi and Mansar in Nagpur District, Maharashtra State, under the team led by- Head of the Department (Architecture & Planning).

Team

Faculty- Dr. Vijay S. Kapse, Dr. Sameer Deshkar, Dr. Pankaj Bahadure and Dr. Amit Deshmukh
M.Tech. (Urban Planning) Students- Riddhi Sarada, Akshay Kaleshwarwar, Sunny Gupta, Shreya Joshi, Saurabh Deotale, Gargi Tadas, Ankita Kabra, Vinay Girhe, Sachi Dongarwar

Acknowledgements:

The working team at Visvesvaraya National Institute of Technology (VNIT), Nagpur is thankful to the Ministry of Panchayati Raj, Government of India for initiating the project and inviting us to undertake the responsibility of preparing Spatial Development Plan for two villages Gondkhairi and Mansar in Nagpur region. The team from VNIT, Nagpur is very thankful to the ministry for funding the entire project.

This project wouldn't have been possible without the support from National Remote Sensing Centre and their regional center who have provided the geo-spatial maps and other required data for the project. The project team is humbly gratified by the same.

Special thanks to all the officials in the ministry of Panchayati Raj and NRSC for keenly following the preparation of the Spatial Development Plans of the villages.

-The Project Team

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1. Regional Characteristics

1.1 Regional Setting of Mansar Village

Gondkhairi Village is a village in Kalmeshwar sub-district of Nagpur district in the state of Maharashtra (India). The total geographical area of Gondkhairi is about 14 km² and it is the second biggest village by area in the sub-district. Population density of the village is 433 persons per km². Nearest town to Gondkhairi is Kalmeshwar at 10 Km. Kalmeshwar is the sub-district headquarter for the village of Gondkhairi and the district headquarter is Nagpur which is about 20 Km away. 0.18 square kilometer (1%) of the total village's area is covered by forest.

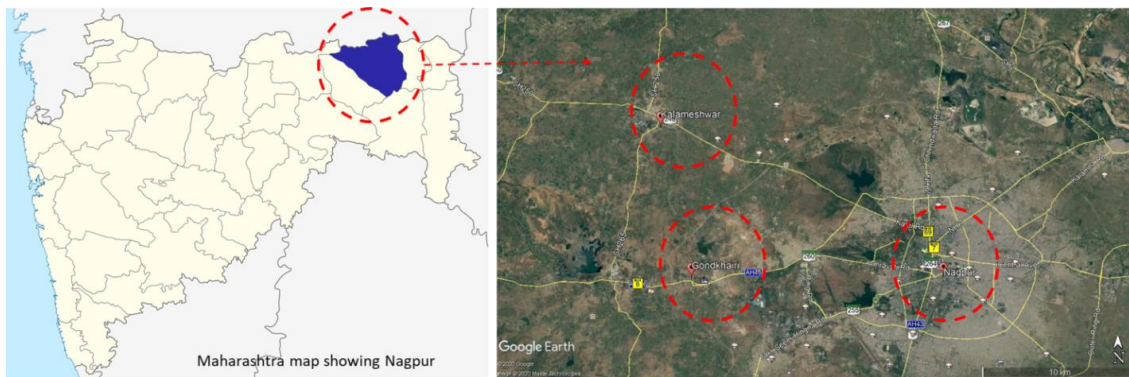


Figure 1. Maharashtra Map showing Nagpur District and Gondkhairi Village with respect to Nagpur City

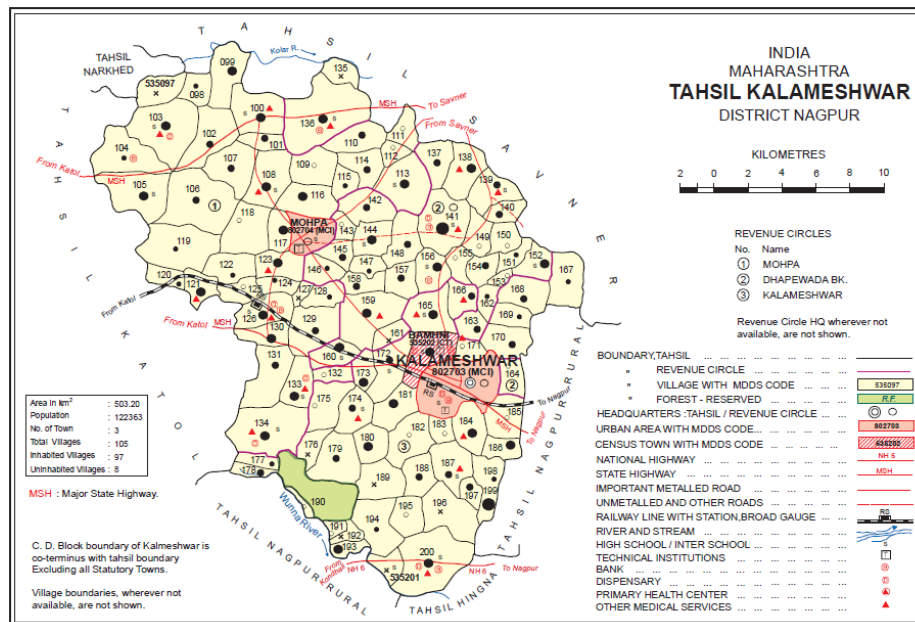


Figure 2. Kalmeshwar Tehsil of Nagpur district showing Gondkhairi village.

Gram Panchayat	Gondkhairi
Block / Tehsil	Kalameshwar
District	Nagpur
State	Maharashtra
Pincode	440023
Area	1394.25 hectares
Population	6,035
Households	1,519
Assembly Constituency	Savner
Parliament Constituency	Ramtek
Nearest Town	Kalameshwar (10 km)

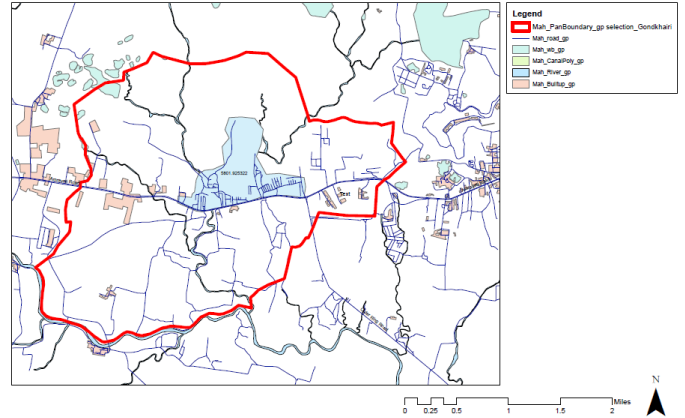


Table 1. Gondkhairi Village overview

Figure 3. Map showing boundaries of Gondkhairi Village

1.2. Connectivity

Nearby Villages -

- Surabardi (4 KM)
- Sawardhota (5 KM)
- Waddhamna (5 KM)
- Nimji (5 KM)
- Metaumri (6 KM)

Gondkhairi is surrounded by-

- Kalmeshwar Taluka towards North (10 km)
- Nagpur Taluka towards East
- Katol Taluka towards west
- Kamptee Taluka towards East

Nearby Cities -

- Nagpur (20 km)

Roads - very well connected by roadway

National Highway 547E, route - Saoner, Dhapewada, Kalmeshwar, **Gondkhairi, Junction at NH 53** Terminal near Gondkhairi.

Railway-

- Nagpur Station. - 21.2 km

Kalmeshwar Station - 18.2 km

The village is well connected with nearby towns & cities by roadways. As the google image shows, the internal roads are not planned & developed spontaneously over the period of time.

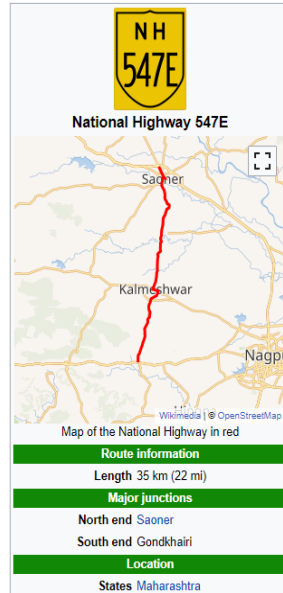


Figure 4. National Highway and Road Connectivity

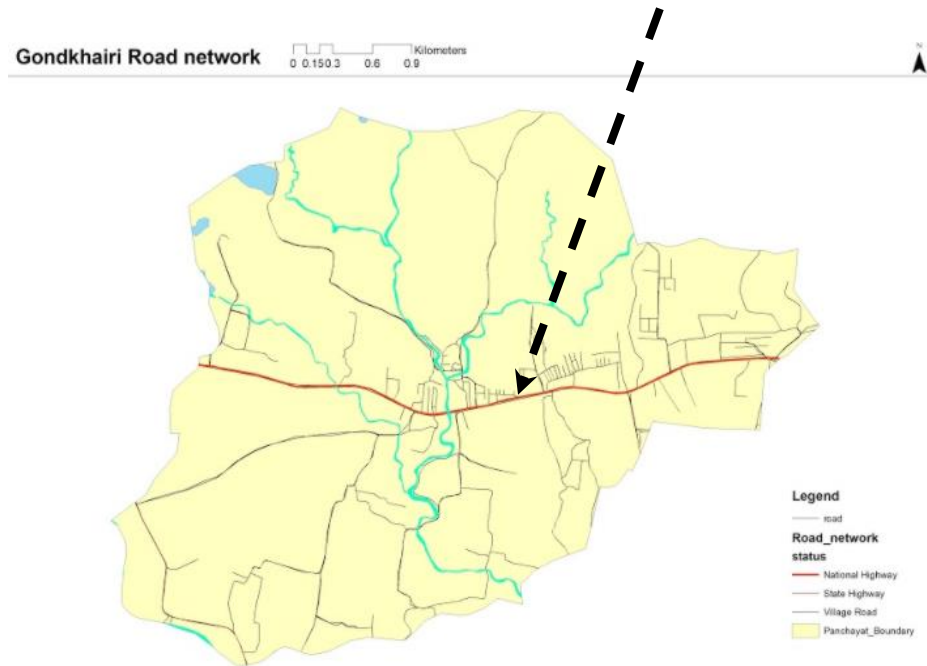


Figure 5. Gondkhairi Road Network

The village is well connected with availability of public bus services within the village along with private bus services and the railway station falls within 10 Km. distance of the village.

1.3. Physical Settings (Topography, Climate and Resources)

- The overall climate is hot.
- Avg. Temperature ranges between 28 - 42 degree centigrades.
- Humidity ranges between 24 - 80 %
- As the previous maps show, the intensity of rainfall for the 2015 & 2019 is 75 to 100%.

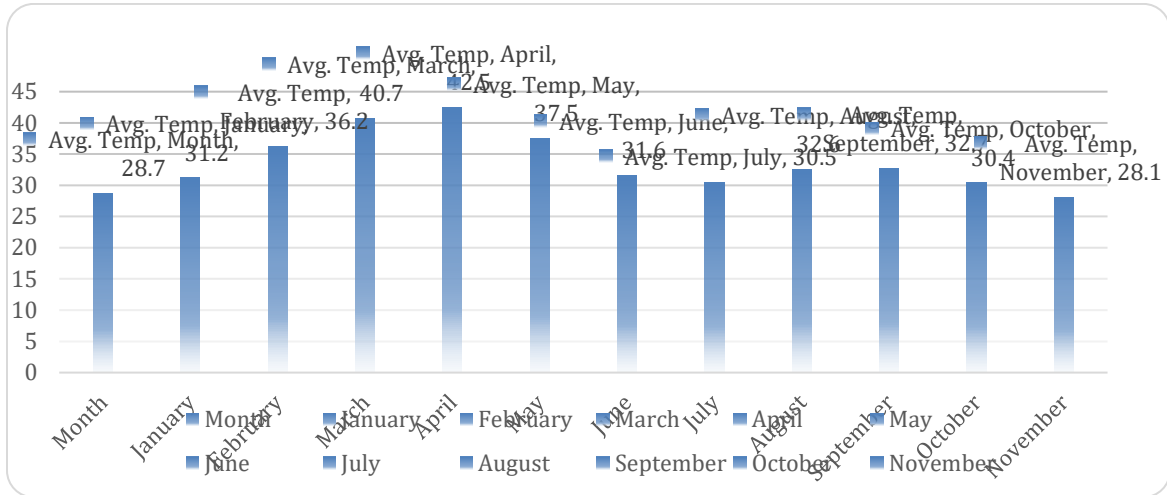


Figure 6. Average Temperature Range Gondkhairi

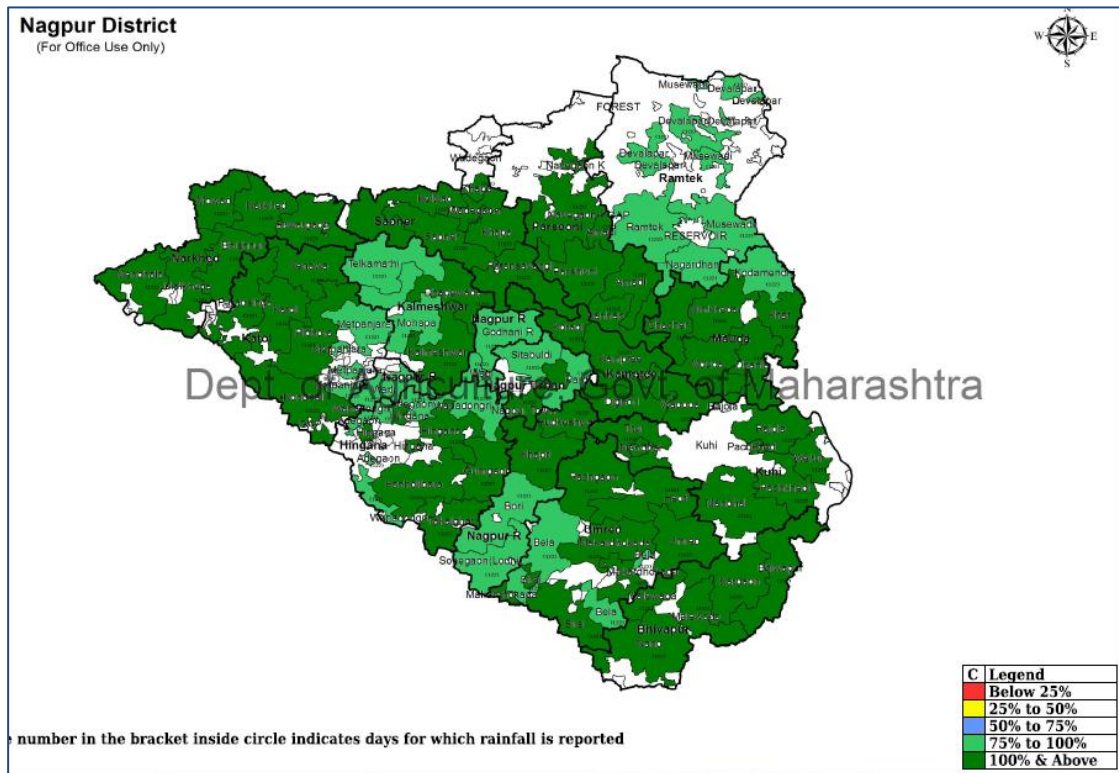


Figure 7. Rainfall Data

1.4. Statistical Data

1.4.1 Demographic profile and Population Density (Net and Gross)

The village is home to 6035 people, among them 3142 (52%) are male and 2893 (48%) are female. 67% of the whole population are from the general caste, 23% are from scheduled caste and 10% are scheduled tribes. Child (aged under 6 years) population of Gondkhairi village is 12%, among them 50% are boys and 50% are girls. There are a total 1519 households in the village and an average 4 persons live in every family. Area of GP is 1394.25 ha. The Gross population density is 4.33 ppl/ha.

1.4.2 Population growth (Natural growth and Migration Patterns) and Household Sizes

Population of the village has increased by 15% in the last 10 years. In the 2001 census the total population here was 5250. Female population growth rate of the village is 17.7% which is 5.2% higher than male population growth rate of 12.5%. General caste population has increased by 13.9%; Schedule caste population has increased by 23.1%; the Schedule Tribe population has increased by 5% and the child population has decreased by 9.5% in the village since the last census.

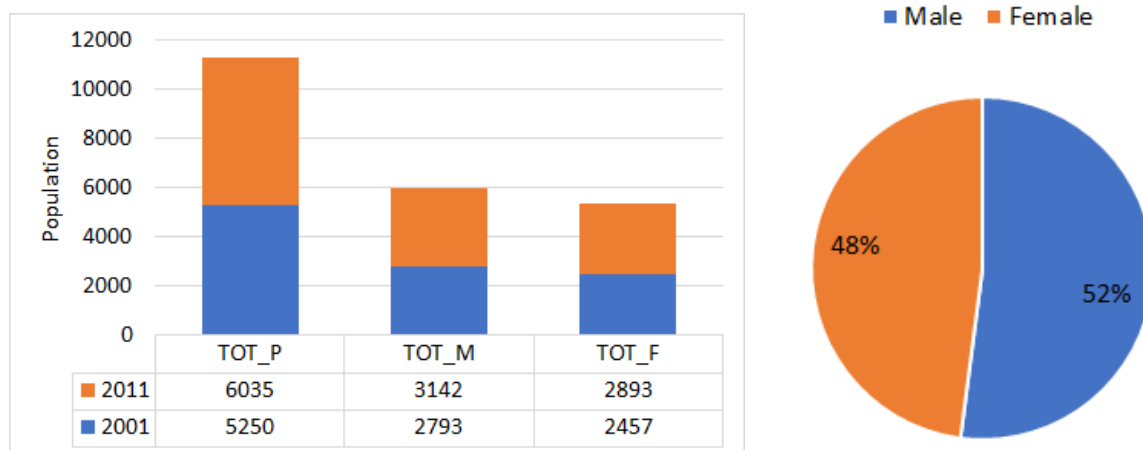


Figure 8. Sex ratio Chart

1.4.3 Literacy and Age-Sex Composition

As of the 2011 census there are 921 females per 1000 male in the village. Sex ratio in general caste is 921, in schedule caste is 884 and in schedule tribe is 1010. There are 995 girls under 6 years of age per 1000 boys of the same age in the village. Overall sex ratio

in the village has increased by 41 females per 1000 male during the years from 2001 to 2011. Child sex ratio here has increased by 127 girls per 1000 boys during the same time. Total 4593 people in the village are literate, among them 2528 are male and 2065 are female. Literacy rate (children under 6 are excluded) of Gondkhairi is 87%. 91% of male and 82% of female population are literate here. Overall literacy rate in the village has increased by 8%. **Male literacy has gone up by 6% and female literacy rate has gone up by 10%.**

1.4.4 Workforce Participation

Gondkhairi has 43% (2568) population engaged in either main or marginal works. 60% male and 24% female population are working. 57% of the total male population is main (full time) workers and 2% are marginal (part time) workers. For women 19% of the total female population are main and 5% are marginal workers.

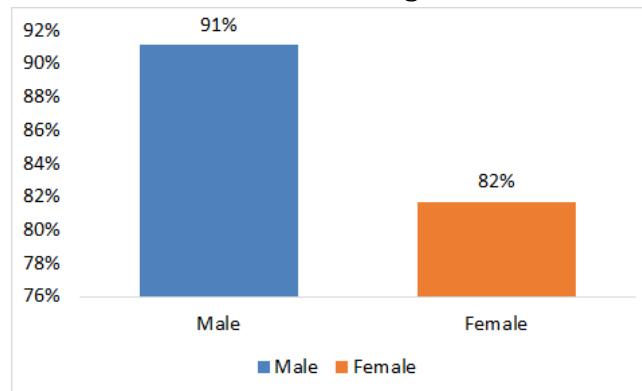


Figure 9. Workforce Participation

1.4.5 Agriculture

Pipe Factory is Product Manufactured in this village. 16 hours agricultural power supply in summer and 18 hours agricultural power supply in winter is available in this village. Total irrigated area in this village is 639 hectares from Boreholes/Tube wells 236.2 hectares is the Source of irrigation

Area under different types of land use (in hectares rounded up to one decimal place)	Forests	18
	Area under Non-agricultural Uses	93.8
	Barren and Un-cultivable land	126.8
	Permanent Pastures and Other Grazing Lands	79.5
	Land Under Miscellaneous Tree Crops etc.	0
	Culturable Waste Land	24.9
	Fallow lands other than current fallows	161.9
	Current Fallows	14.1
	Net Area Sown	875.2
	Total Irrigated Land Area	236.2
	Total Un-irrigated Land Area	639

Area irrigated by source (in hectare)	Canals (C)	0
	Wells/Tube-wells(W/TW)	236.2
	Tanks/Lakes(T/L)	0
	Water Falls(WF)	0
	Others(O)	0

most important commodities manufactured	Pipe Factory
---	--------------

Table 2. Area Distribution in Agricultural Land

1.5 Topography

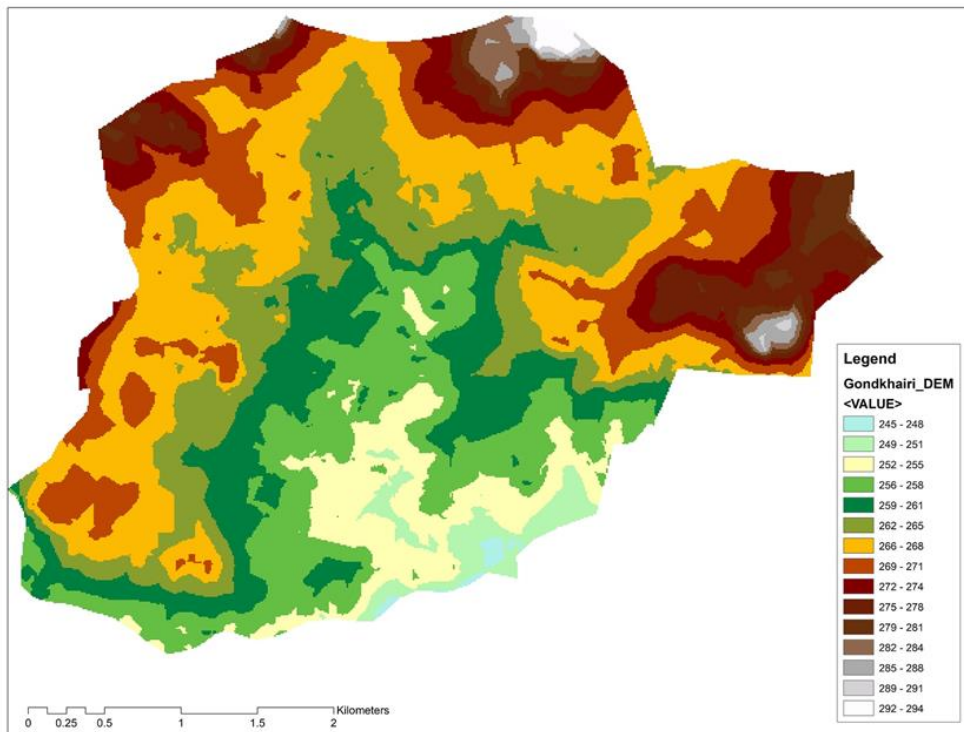
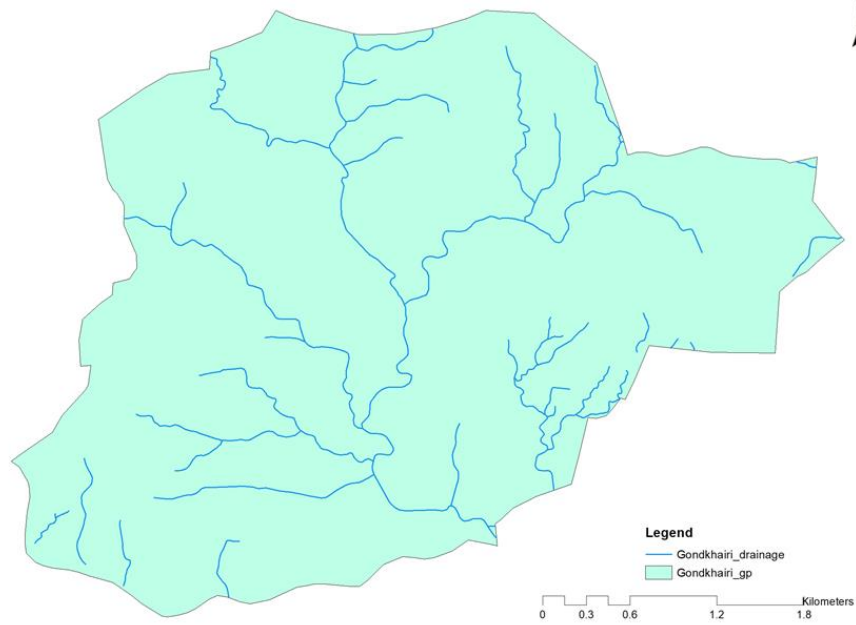


Figure 10. Map showing DEM of Gondkhairi.

Topography: The elevation ranges from about 245m above msl to about 294m msl.



Drainage map of Gondkhairi

Figure 11. Drainage Map Gondkhairi

1.5.1 Geomorphology

The top surface of Gondkhairi region is of Denudation origin.

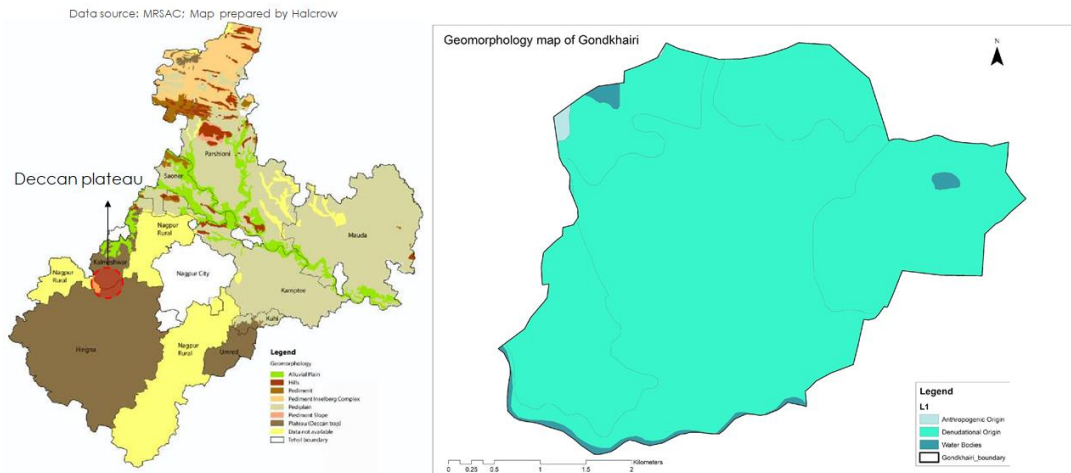


Figure 12. Geomorphology map of Gondkhairi

In geology, denudation involves the processes that cause the wearing away of the Earth's surface by moving water, by ice, by wind and by waves, leading to a reduction in elevation and in relief of landforms and of landscapes.

1.5.2 Soil Condition

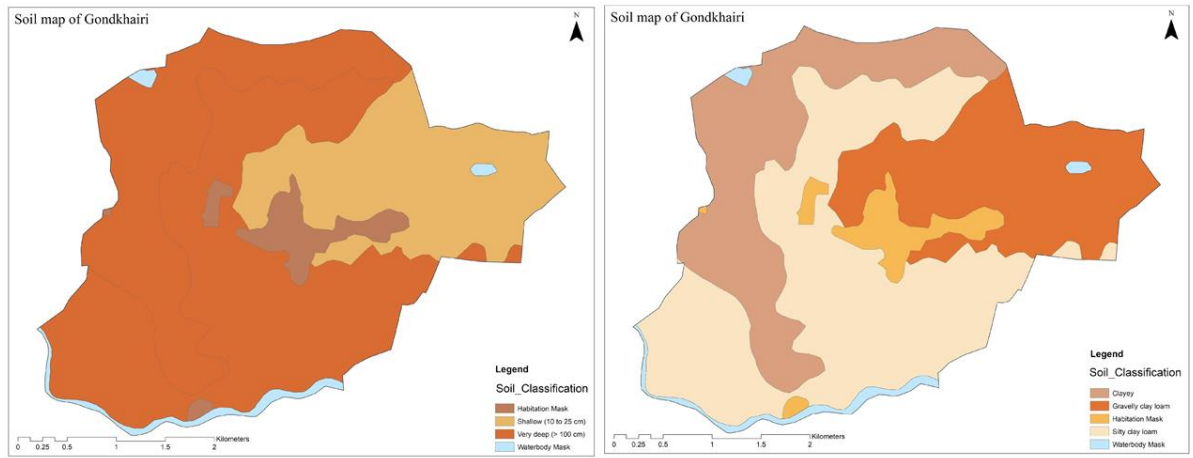


Figure 13. Soil Map of Gondkhairi

2. Existing Scenario

3.1. Land use Land Cover of Gondkhairi

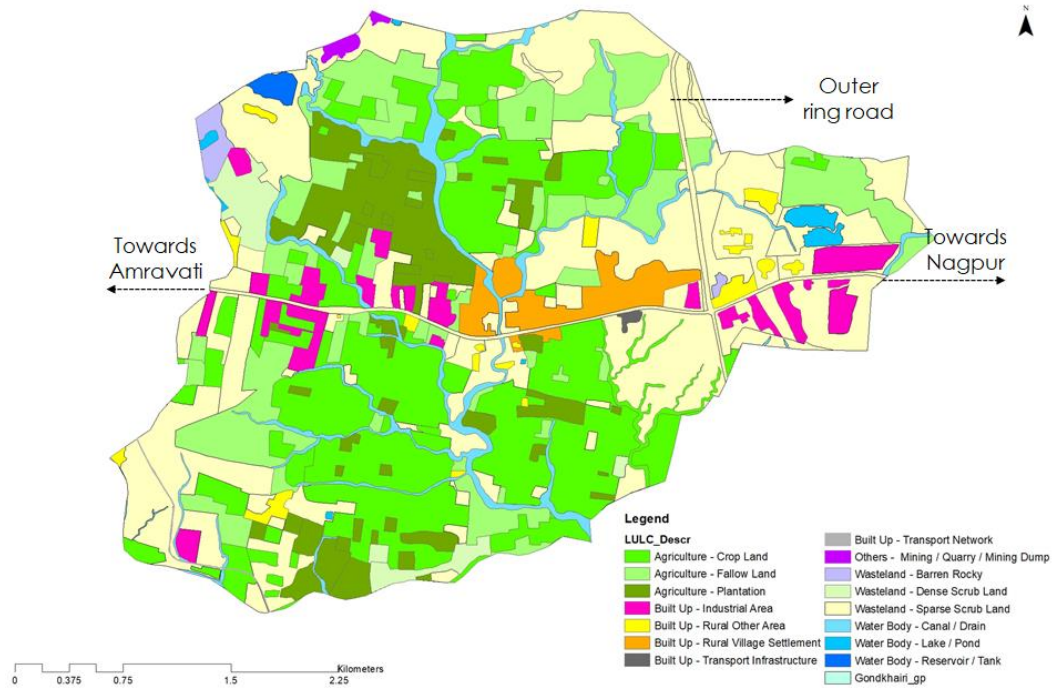


Figure 14. LULC Map of Gondkhairi

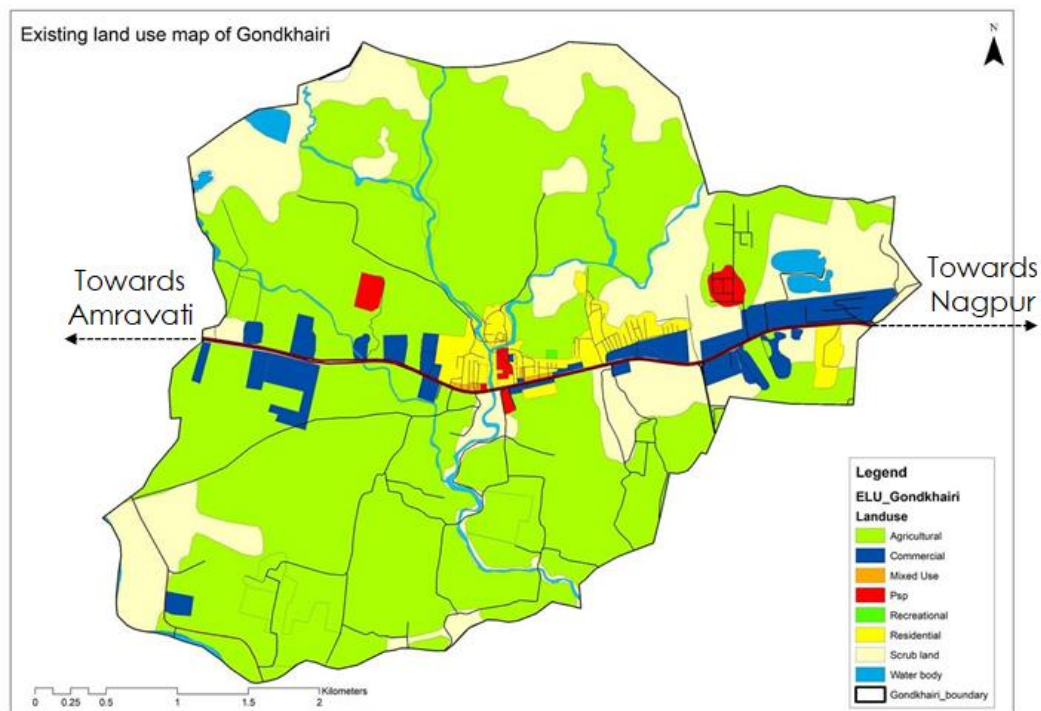


Figure 15. Existing Land Use map of Gondkhairi

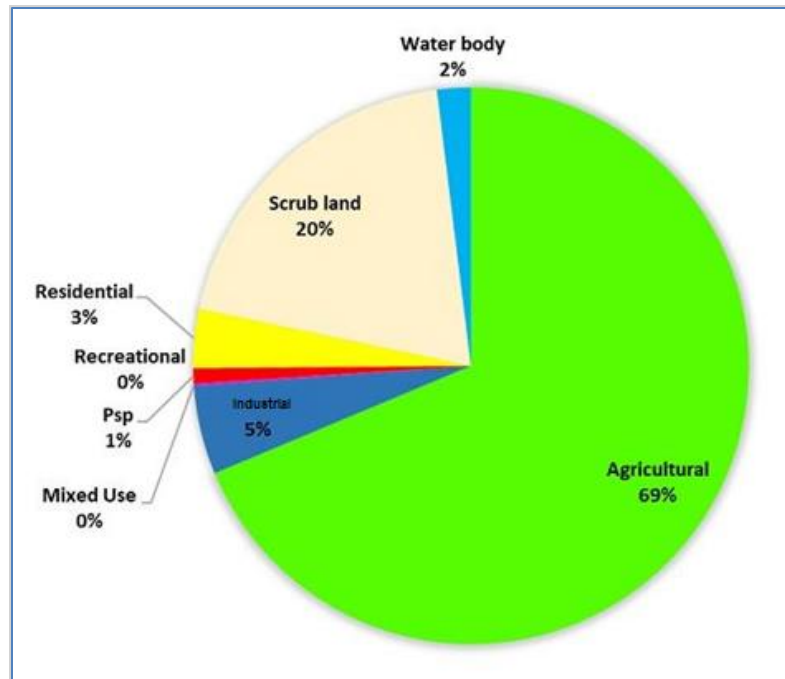


Figure 16. Land Use Percentage

- Along the National highway, there is Mixed use development and Industrial development i.e, 79 hectares (5%) which includes petrol pumps, Bharat Benz showroom and Logistics.
- Majorly 1052 hectares of land (69%) is utilised for agriculture purposes.
- The village settlement is concentrated in the centre along the highway in a linear pattern.
- 20% of land i.e, 302 hectares is scrub land.
- PSP land use includes two research centres, Gram Panchayat Buildings and schools.
- The percentage of commercial land use is more than the residential as there are few warehouses around the village settlement.

3. Sectors

4.1. Housing

Gondkhairi has almost half of the houses with concrete wall material. 34% of the houses have mixed wall materials such as concrete, unburnt bricks or mud.

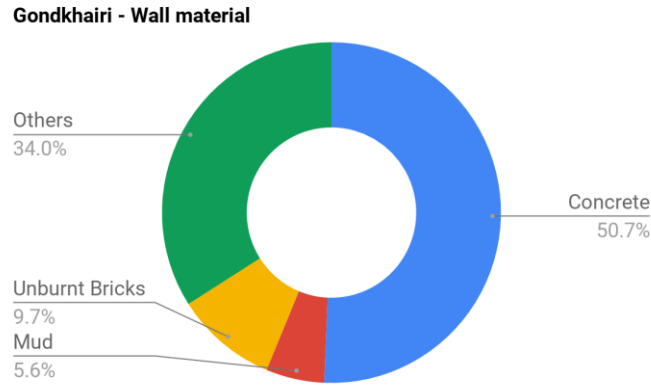


Figure 17. Wall Material used in Gondkhairi

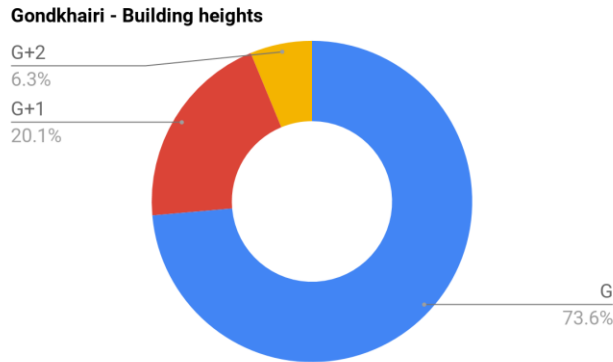


Figure 18. Building Heights as in Gondkhairi

Houses being in rural areas, around 75% of them are having ground floor. No houses are above the second floor.

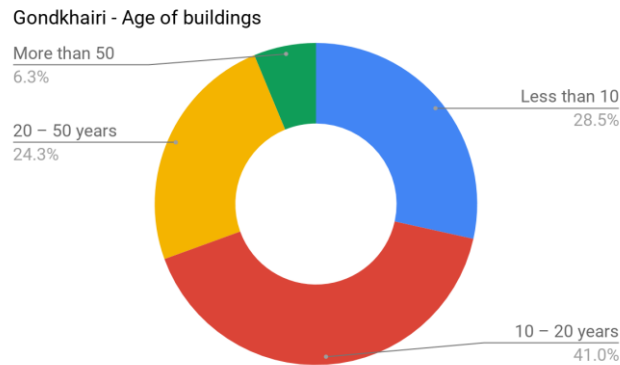


Figure 19. Age of Buildings

There are very less (6%) of the houses which are more than 50 years. Most of them (41%) are built between 10-20 years.

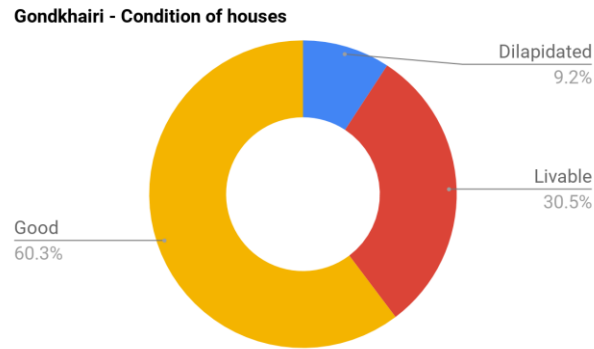


Figure 20. Housing Condition

Only a few (9.2%) houses are dilapidated. Most of them are in good condition.

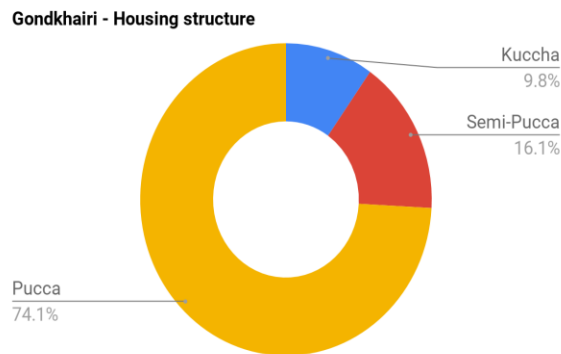


Figure 21. Housing Structure

Around 75% of the houses are pucca while only 9.8% are kuccha.

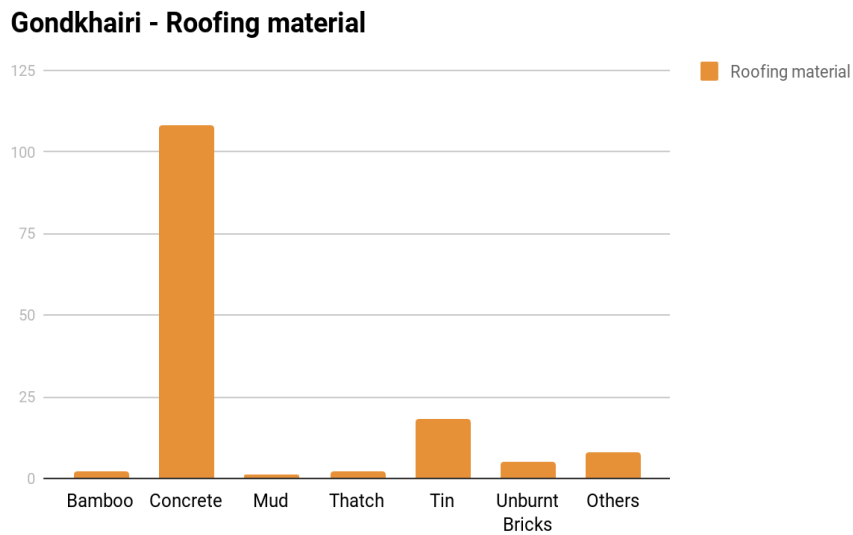


Figure 22. Roofing Material used

4.2 Water Supply

Drinking-Water and Sanitation

Untreated Tap Water Supply all round the year and in summer available. Covered Well, Uncovered Well and Hand Pump are other Drinking Water sources.

Open Drainage System Available in this Village. There is a system to Collect garbage on the street. Drain water is discharged directly into water bodies.

Availability of toilet & others Yes / No	Community toilet including bath.	no
	Community toilet excluding bath.	no
	Rural sanitary mart or sanitary hardware outlet available near the village.	no
	Community bio- gas or recycle of waste for productive use.	no
Availability of drinking water - Yes / No	Tap water (Treated/Untreated)	yes
	Well water (Covered / Uncovered well)	yes
	Hand Pump	yes
	Tube wells / Bore well	no
	Spring	no
	River / Canal	no
	Tank / Pond / Lake	no
	Others	no

Table 3. Existing water Supply Scenario

Connections

More than 50% households have private tap connections. Although the supply is for more than 2 hours daily.

25% households use water from their private wells or borewells.

17% households are dependent on public taps, whereas the distribution of public taps is uneven throughout the village.

Few households are not having any kind of water supply near them or at their disposal. These households are dependent on neighbour's wells to satisfy their water demand.

Source

Primarily water is pumped from the public wellr to the overhead tanks in the vicinity and further is supplied to the private and public taps.

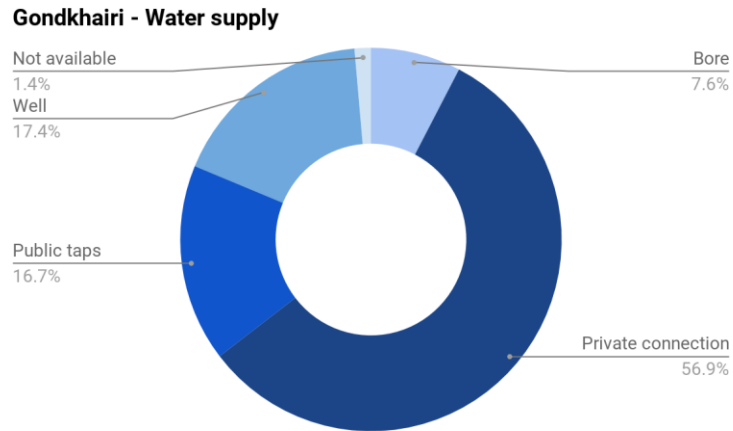


Figure 23. Water connections in Gondkhairi Gram Panchayat

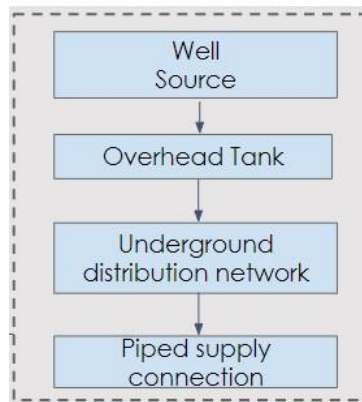


Figure 24. Source of water supply

4.3 Electricity

Electricity supply is available for all uses.

Availability of electricity (Yes/No)	Power Supply for Domestic Use (ED)	yes
	Power Supply for Domestic Use (ED)	yes
	Power Supply for Agricultural Use (EAG)	yes
	Power Supply for Commercial Use (EC)	yes
	Power Supply for All Uses (EA)	yes
Nearest Town		b

4.4 Communication

The Post Office is available in this Village. LandLine available. Mobile Coverage is available. Internet Centre available in this village. Private Courier Facility available in this village.

Communication and transport facilities	Post office(PO)	yes
	Sub post office (SPO)	c
	Post & Telegraph office (P&TO)	yes
	Village Pin Code	-
	Telephones (Land lines)	yes
	Public call office (PCO)	yes
	Mobile phone coverage	yes
	Internet cafes/ Common service centre (CSC)	yes
	Private courier facility	yes
	Bus service (Public & Private)	yes
	Railway stations	c
	Auto/Modified Autos	yes
	Taxis and Vans	yes
	Tractors	b
	Cycle-pulled rickshaws(Manual & Machine driven)	-
	Carts driven by animals	b
Sea /River ferry service	-	

Table 4. Availability of Communication Services

4.5 Transportation

Public Bus service available in this village. Private Bus service available in this village. There is no Railway Station in less than 10 km. Autos Available in this Village. The National Highway passes through this village. No Nearest State Highway in less than 10 km. District Road passes through this village. Pucca road, Kuccha Road, Macadam Road and Footpath are other Roads and Transportation within the village.

Village connected to highways, village roads, banks & credit societies	Connected to national highway(NH)	yes
	Connected to state highway(SH)	c
	Connected to major district road (MDR)	yes
	Connected to others district road	yes
	Pucca roads	yes
	Kutchcha roads	yes
	Water bounded macadam(WBM) roads	yes
	Navigable waterway (river/canal)(NW)	-
	Footpaths (FP)	yes
	Commercial & Co-operative Banks	yes
	ATM	c
	Agricultural Credit Societies	yes

Table 5. Transportation Infrastructure

4.6 Solid Waste Management

SWM is one of the key components of any sanitation initiative. In India especially in rural areas, waste is a severe threat to the public health concern and cleanliness. Though, the form of waste generated in rural areas is predominantly organic and biodegradable yet is becoming a major problem to the overall sustainability of the ecological balance.

The waste management in rural areas can be initiated through sensitization and cooperation of people. The process of waste segregation and collection is to be encouraged for a collective disposal and treatment. Inorganic wastes can be recycled locally or can be collected to be sold off for recycling.

To assess the current scenario of Solid Waste Management, a survey was conducted to gather information about the collection, treatment and disposal of the generated waste. The waste collection cart is available throughout the Gram Panchayat but due to lack of accessibility in some lanes, the households are forced into false practices of open dumping or no waste management. There is no treatment facility available at Gondkhairi. All the waste collected is dumped in and beside the canal running through the village. There is no preliminary treatment of segregation practice carried out on the collected waste.

The waste collection efficiency is to be improved as there is still a gap in waste collection. Also the issue of open dumping needs to be addressed to avoid and hazards to the environment as well as the inhabitants in the village area, including the livestock. There is no treatment facility for the collected waste whatsoever. The collected waste is dumped in open ground as well as a canal running through. Thus a proper treatment facility like a composting and recycling plant is necessary.

4.7 Social Infrastructure

Other Amenities

The important social places are available in the village but the number or efficiency of the amenities needs to be verified.

Education

Government Pre Primary, Govt Primary, Private Primary, Govt Middle, Private Middle and Govt Secondary Schools are available in this Village. Nearest Govt Engineering College and Govt Medical College are in Hingna. Nearest Govt Disabled School, Govt Arts and Science Degree College, Govt MBA college, Govt Polytechnic College and Govt ITA College are in Nagpur.

Availability of miscellaneous facilities	Self-Help Group (SHG)	yes
	Public distribution system (PDS) shop	yes
	Mandis / Regular market	yes
	Weekly Haat	yes
	Agricultural marketing society	yes
	Integrated Child Development Scheme (Nutritional Centres)	yes
	Anganwadi Centre (Nutritional Centres)	yes
	Others (Nutritional Centres)	yes
	ASHA (Accredited Social Health Activist)	yes
	Community centre with/without TV	yes
	Sports Field,	yes
	Sports Club / Recreation Centre	yes
	Cinema / Video Hall	yes
	Public Library	yes
	Public Reading Room	yes
	Newspaper Supply	yes
Assembly Polling station	yes	
Birth & Death Registration Office	yes	

Table 6. Miscellaneous facilities Availability

Senior Secondary School	Available
College	N.A.
Primary Health sub-centre	Available
Tap drinking water	Available

Bus facility	Available
Banks	Available
Approach by Pucca road	Available

Table 7. Availability of Social Infrastructure

Educational Amenities	Total area of the village (in hectares)	1394.2
	Total population (2011 census)	6035
	Number of households (2011 census)	1519
	Pre-Primary school (PP)	7
	Primary school (P)	4
	Middle school (M)	3
	Secondary School (S)	1
	Senior Secondary school (SS)	1
	Degree college of arts science & commerce (ASC)	c
	Engineering college(EC)	c
	Medical college (MC)	c
	Management institute (MI)	c
	Polytechnic (Pt)	c
	Vocational training school /ITI	c
	Non-formal training centre (NFTC)	c
Special school for disabled (SSD)	c	

Table 8. Educational Amenities

Health

- 1 Primary Health care centre,
- 1 Primary Health Sub-Centre,
- 1 Maternity And Child Welfare centre, 1 TB Clinic,
- 1 Modern Hospital,
- 1 Veterinary Hospital,
- 1 Family Welfare centre,
- 2 Medical Shops are available in this village.

Medical Amenities	Community health centre (CHC)	b
	Primary health centre (PHC)	1
	Primary health sub centre (PHS)	1
	Maternity and child welfare centre (MCW)	1
	T.B. clinic (TBC)	1
	Hospital-allopathic (HA)	1
	Hospital-alternative medicine (HO)	c
	Dispensary (D)	1
	Veterinary hospital (VH)	1
	Mobile health clinic (MHC)	c
	Family welfare centre (FWC)	1

Non-Government Medical Amenities	Charitable non Govt. hospital/Nursing home	0
	Medical practitioner with MBBS Degree	0
	Medical practitioner with other degree	2
	Medical practitioner with no degree	0
	Traditional practitioner and faith healer .	0
	Medicine Shop	2

Table 9. Medical Amenities

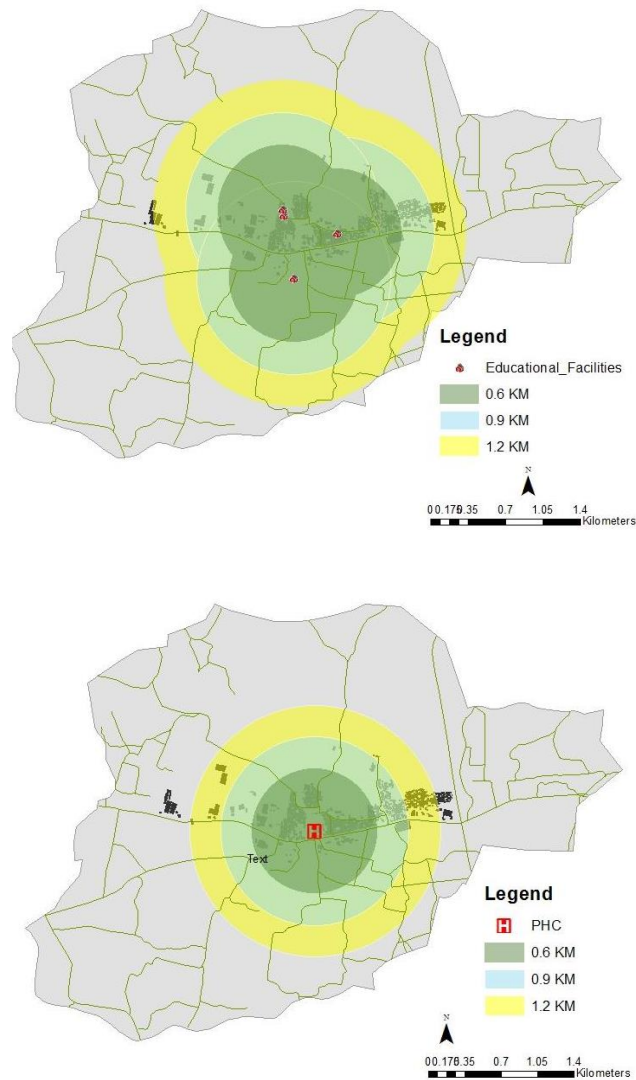


Figure 25. Map showing Spatial Distribution of existing Social Infrastructure Facilities.

Existing educational facilities are within 1.2 km away from the overall Gondkhairi area. Existing healthcare facilities are accessible within 1.2 km from the central area of the village. Within 5km-10km all the social infrastructure facilities are accessible from Gondkhairi. Nearby Police station and Fire station is in Nagpur.

	Type of School	Standard	Existing	Desired	Deficiency	Gap %	Observations
Education	Pre-Primary/ Anganwadi	1 for 2500	7	5	-	0	
	Primary & Middle	1 for 5000	4	2	2	50	Need of Primary and middle school facilities for future population projection
	Secondary/ High	1 for 5000	1	2	1	50	Need of Secondary high school facilities for future population projection
	Sr. Secondary	1 for 7500	1	2	1	50	Need of Sr. Secondary school facilities for future population projection
	Higher Ed. (Colleges)	1 for 10 lakh	0	0	-	0	
	School for challenged	1 for 45,000	0	0	-	0	
Healthcare	PHS	1 for 5000	1	2	1	50	Need of PHC facilities for future population projection
	Dispensary	1 for 15,000	1	1	-	0	
	PHC	1 for 45,000	1	0	-	0	
	CHC	1 for 10 lakh	0	0	-	0	
	Maternity	1 for 45,000	1	0	-	0	
	Family welfare	1 for 50,000	1	0	-	0	
	Veterinary	1 for 50,000	1	0	-	0	
Socio- cultural : There is no shortage in Gondkhairi							
Nearby Police station- Nagpur; Nearby Fire station - Nagpur							

Table 10. Existing Infrastructure facilities- Comparison with RADPFI guidelines and future projection

As per RADPFI guidelines, There is a need of Primary, middle, secondary and sr. secondary school for future population within the village. Quality of education facilities and medical facilities needs to be improved.

4. Data Analysis

Key Observations and Findings

At present the predominant established industrial areas are **MIHAN and MIDC industrial estates in Butibori, Hingna. Hingna, Umred and Kalmeshwar are other important industrial centres.** It has been observed worldwide that clustering industrial activities results in better efficiencies for infrastructure provision and better opportunities for developing synergies between industries. **Areas with proximity to established work centers and along transportation corridors are most suited for locating land for future employment centers and urban development.** Thus majority growth will mainly occur close to employment centers – MIHAN, Butibori, Hingna; areas located close to the city within the Outer Ring Road; and along main transportation corridors – Wardha Road (NH-7), Amravati Road and Bhandara Road (NH-6).

SWOT Analysis

Strength:	Weakness:	Opportunities:	Threat:
<ul style="list-style-type: none"> • Accessibility • Capacity for development • Housing • Order of literacy 	<ul style="list-style-type: none"> • Infrastructure/services • Poor educational facilities • Poor healthcare facilities • Poor quality of life • Areas of perpetual neglect • Financial health 	<ul style="list-style-type: none"> • Rich natural resources • Good Physical attributes • Cultural strength • Provider of food (Good produce) • Fair population base 	<ul style="list-style-type: none"> • Chaos, unemployment, • Poverty, poor health, lower quality of life, • Haphazard/unplanned urban development, • Neglect of agriculture, food scarcity • Loss of rural market • Migration

Introduction and Status of each sector

Socio-Economic Sector

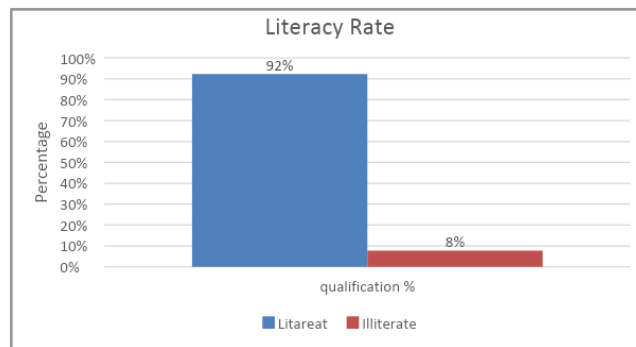


Figure 26. Literacy Rate

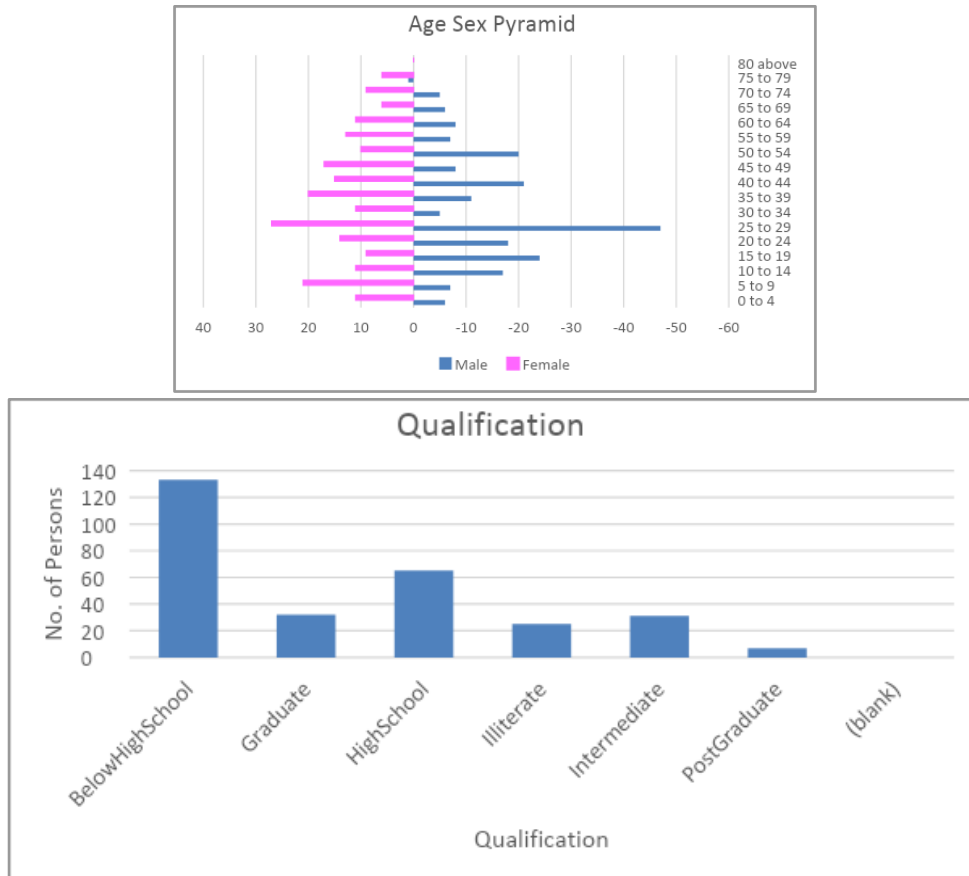


Figure 27. Demographic study of Gondkhairi - Age sex ratio and Qualification

Demography

92% population of the village is literate, but the overall percentage of highly educated is relatively lower than the below high school literates. The gender wise literacy rate shows that the number of illiterate women is more than illiterate male. Though the basic literacy rate is good, the knowledge of advanced technology is very less. The special efforts will be required to aware the people about the advanced technology

3.1.5 Economic Sector

The percentage population involved in different economic sectors is given in the pie chart. 50% of the population is involved in the tertiary sector followed by the primary sector. Unemployment is an issue but the unemployment of graduate & post graduate candidates is a serious concern.

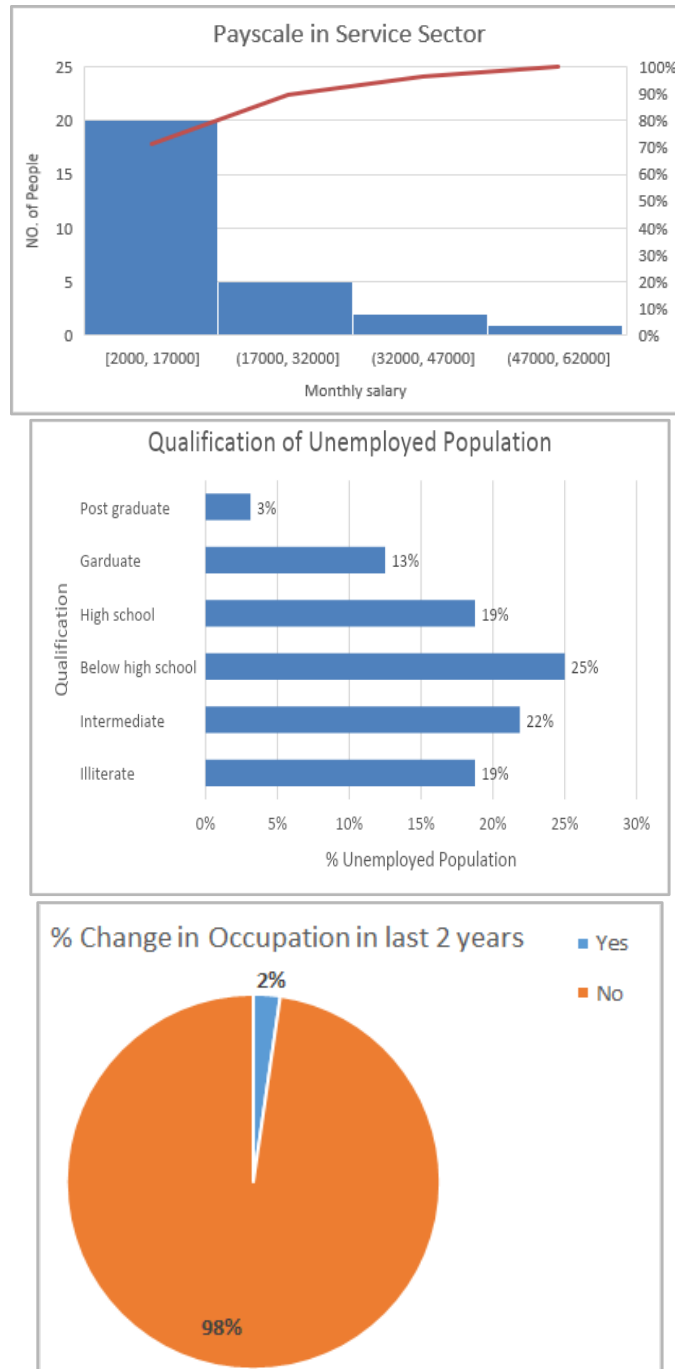


Figure 28 The involvement of population in different economic sectors, average monthly salary of villagers, education level of unemployed population and percentage change in population

Workforce

Non-agriculture

Out of 311 surveyed family members, 29 members are involved in the service sector. Majority work in private companies (25 out of 29) within villages & nearby areas such as Bazargaon &

Nagpur. Out of 311 surveyed family members, 12 family members are running business in the village itself. The income from the business ranges between 1200 to 500000

Agriculture

Out of total 311 family members surveyed, total 11 members from the different families are involved in agriculture. The no. of involved members per family ranges between 1-5; average 2 people from each family are involved in the agriculture. The black cotton soil is the predominant soil type in the village. The land is used for one time harvesting in a year. Orange, tur, cotton are the major crop types cultivated in the village. For the other farming related activities such as seed purchase, selling agricultural produce farmers commute to nearby villages & cities such as Bazargaon, Kalmeshwar & Nagpur. The marginal labours are available in village & are involved in agriculture activity. The marginal labour wedges range between 100 – 500 rs. Per day

Occupation Travel Mode

Majority of people working outside the village are largely dependent on private vehicles, mainly two wheelers (54%); followed by three wheelers (4%) & four wheelers (1%). People working in the village prefer walking as travelling mode (33%), followed by cycling (4%). No use mass public transport.

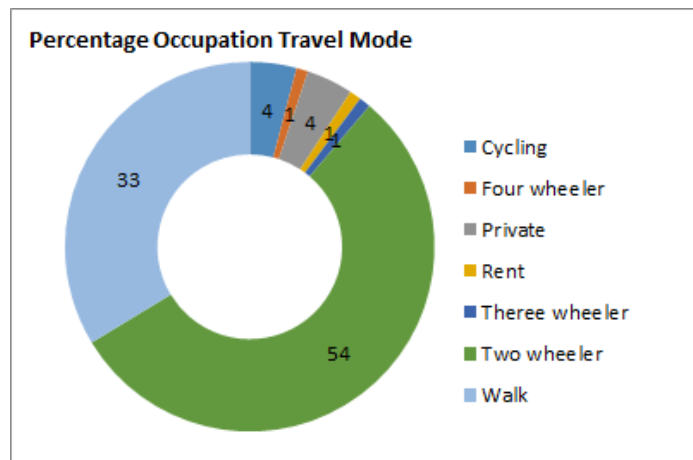


Figure 29. Percentage occupation travel mode

Agriculture Sector

Agro climatic zone: Gondkhairi falls under Central Vidarbha region (Agro climatic zone). Soils of this region range from medium black, medium heavy to light. Medium black soils are suitable for cotton crop. Medium to light soils are best suited for orange cultivation. Main crops grown in this region are Cotton, Jowar, Soybean, Tur, Mung, Urid and Paddy.

Agro Ecological situation: Moderate to highly undulating medium rainfall zone, moderately dry, shallow to moderately deep soils under jowar, cotton, wheat, fruits, vegetable etc.

Nagpur district has a low percentage (< 20 percent) of irrigated area to the total cultivable area. Amongst the various tehsils Mouda (75.8%) has the largest cultivable area and Ramtek has the lowest (23.6%).

Taluka	Total No. of Villages	Scarcity villages	Geographical Area	Net Swon Area	Gross Cropped Area	Cropping Intensity	Irrigated Area (Major, Medium & Minor) as given by Irrigation deptt.	% irrigation potential to gross cultivated area
Kalmeshwar	108	107	54345	33251	58672	176.5	12875	31.57

Table 11. Agriculture produces and irrigation status

Taluka: Kalmeshwar	Unit: Kg/ha					
	2011-12	2012-13	2013-14	2014-15	2015-16	State Avg.
CROP- Kh. Jowar	987.9	802.1	490.5	618.3	755.5	1347
CROP- Tur	804.5	855.4	591.4	159.8	384.7	829
CROP- Soybean	450.7	1165	431.7	341.7	408.3	1531
CROP- Cotton(Lint)	238.6	293.1	200.1	228	136.2	276
CROP- Sugarcane	na	na	na	na	86.7	na
CROP- Wheat	1228	1536	623.7	1305.6	1155.9	1527
CROP- Gram	547.7	790.5	466.1	621.5	799.7	765

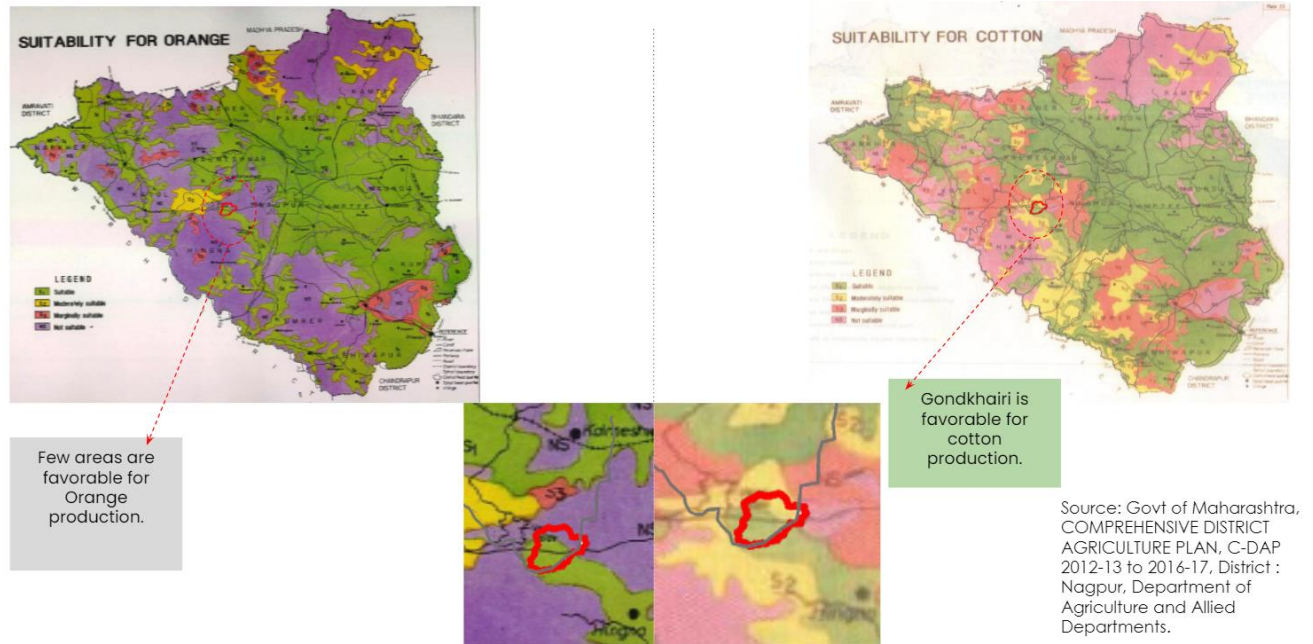
Table 12. Agriculture produce and state average comparison

Taluka	Work Phy. (ha)	No. of Works	Amount Fin.
Kalmeshwar	7642	297	1434.86 lakh
1st phase work of Jalyukta Shivar Abhiyan project plan of Nagpur Dist. Annual year plan 2015-16			

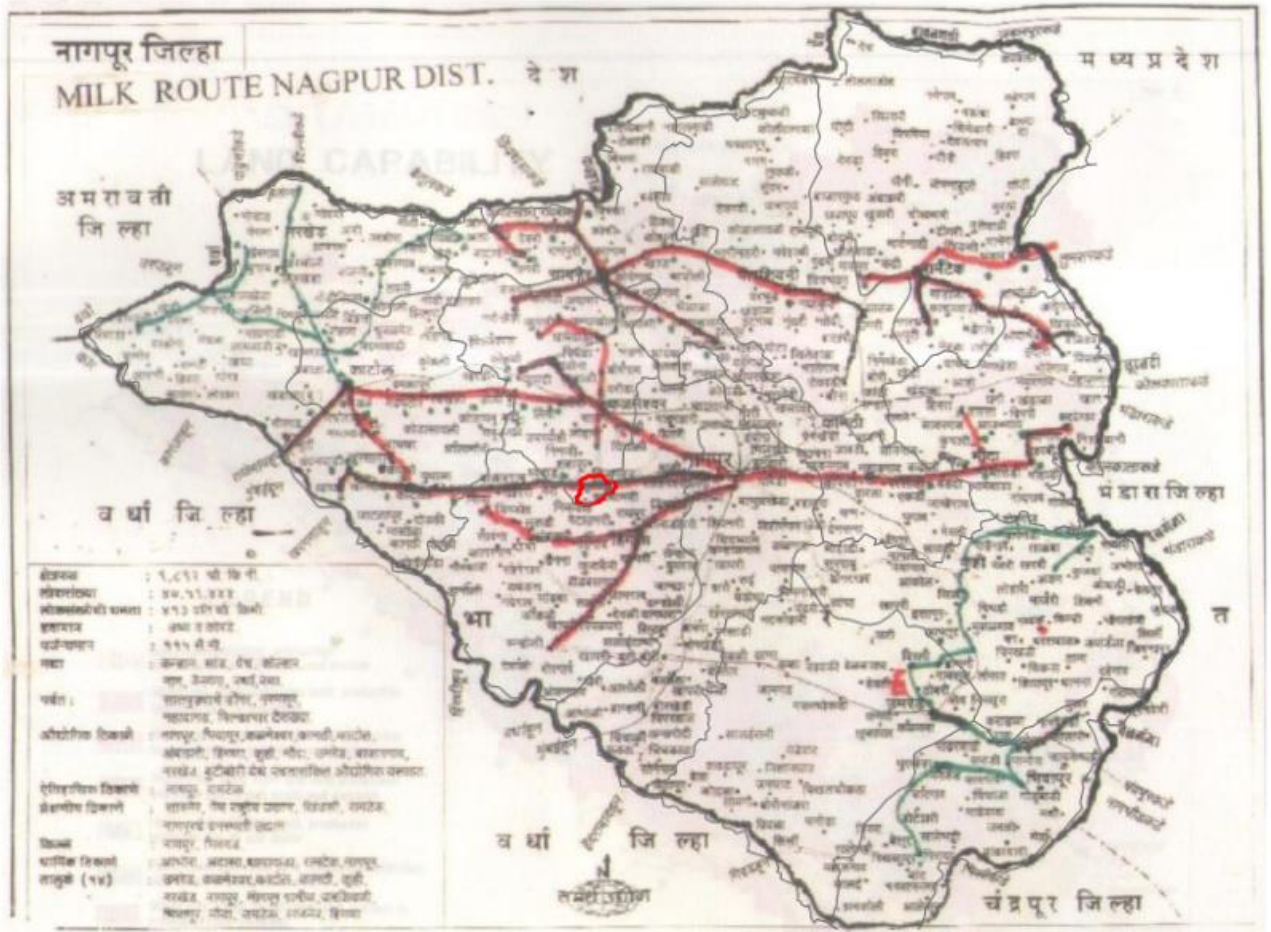
Table 13. Financial aid given and works proposed

Kalmeshwar Taluka has a higher cropping intensity of 176.5 in comparison to Maharashtra state cropping intensity of 134.3. But overall production is quite below the state level avg values. If proper resources and knowledge is made available to them, than there will be high chances of increase in overall production and boost in the economy.

Gram Panchayat Spatial Development Plan of Gondkhairi Village



Nagpur district is not self sufficient in milk requirement and about 150000 litre of milk/day is brought into the district from outside. Many proposals were proposed like Distribution of milch animals, Strengthening/ Modernization of existing Veterinary Hospital/Dispensaries, etc. Figure below shows Milk route for Nagpur District.



Source: Govt of Maharashtra, COMPREHENSIVE DISTRICT AGRICULTURE PLAN, C-DAP 2012-13 to 2016-17, District : Nagpur, Department of Agriculture and Allied Departments.

Sector wise Analysis

Social infrastructure

- PHC is available but there is no proper treatment facilities
- Primary and secondary education facilities are available. But higher secondary and college education facilities are not available
- Dedicated open ground is not available
- Community halls for social gathering are not present. Gatherings are conducted in religious spaces
- There is no dedicated bus stand for the village
- Though the settlement is along the national highway, there is no employment opportunities for the youngsters

Water supply

- Because of the topographical condition water table is very low, below 250 ft
- Water is pumped from the public wells to the overhead tanks and is further supplied to the households
- Wells are drained during summers, so no water supply during this period.

Waste collection

- Garbage collecting carts are available but are not accessible to all areas.
- Dedicated Dumping ground is not available

Sewage

- Sewer line is available in the new settlement but not in the old settlement.
- Open defecation is practiced.
- Ends up into the river adjoining to the settlement.

Wastewater

- Few areas are having drainage lines but the rest of the areas have open drains.
- These drains are opened into the adjoining river.

Population Projection

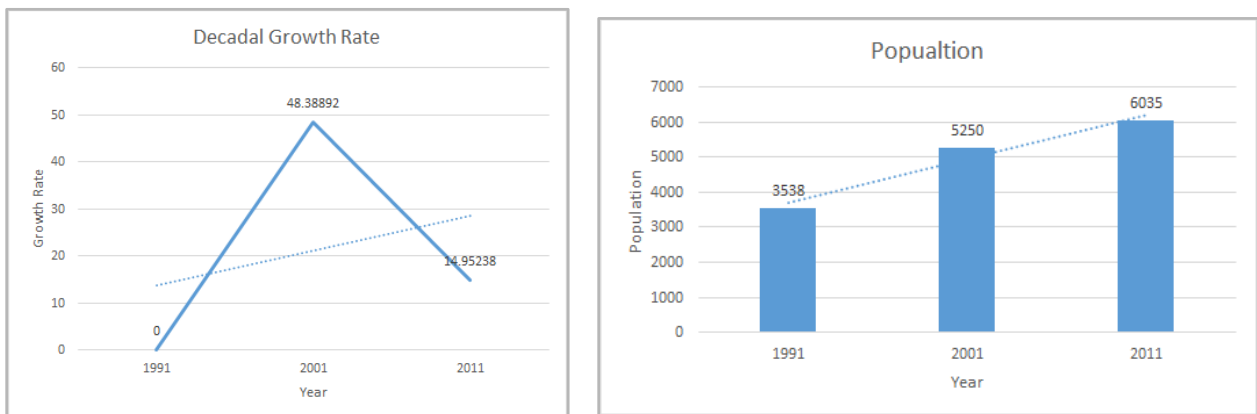


Fig: Decadal Growth Rate of Population and Year wise Population

The Gondkhairi village shows an increase in the overall population from the year 1991 to 2011 as per the Census data. Despite an increasing population, the decadal growth rate of village is

quite fluctuating. From the year 1991 to 2001 growth rate was 48 percent approximately but after 2001, it decreased to the 15 percent sharp reduction of 23 percent.

On the basis of population and decadal growth rates, the projected population was calculated by using four simple mathematical methods -

1. Arithmetic method
2. Geometric method
3. Incremental Increase method
4. Exponential method

Then the average of all four projected populations has been taken to get the final balanced value of projected population.

Arithmetic Method				Geometric Method			
Year	Population	Increase		Year	Population	Increase	Growth Rate
1991	3538	-		1991	3538	-	
2001	5250	1712		2001	5250	1712	0.4838892
2011	6035	785		2011	6035	785	0.14952381
		2497	Total			2497	
	K=	1248.5	Average				0.07235296
					K= for 2 decades root of		0.26898505
2020 (Present)	7159			2020	5150		
2021	7284			2021	7658		
2031	8532			2031	9718		
2041	9781			2041	12332		
2051	11029			2051	15650		

Incremental Increase Method				Exponential Method			
Year	Population	Increase	Incremental Increase	Year	Population	Increase	Growth Rate
1991	3538	-	-	1991	3538	-	
2001	5250	1712	-	2001	5250	1712	0.4838892
2011	6035	785	-927	2011	6035	785	0.14952381
		1248.5					0.63341301
						r=	0.31670651
2020	7575.8			2020	8018		
2021	8210.5			2021	8276		
2031	11313			2031	11348		
2041	15342.5			2041	15561		
2051	20299			2051	21339		

Fig: Population projection Methods

After the calculations the final projected populations are -

1. Average Population Projection for **2021** is **7,857**
2. Average Population Projection for **2031** is **10,228**
3. Average Population Projection for **2041** is **13,254**.

Future demand for water supply:

According to the census for the years 1991, 2001 and 2011 the population for the Gondkhairi were 3538, 5250 and 6035 respectively. So according to the geometric method, the future projection for the years 2021, 2031 and 2041 will be 7857, 10228 and 13254 respectively. 135 litres of water is required for per person per day, considering the loss of 15% the future demand of the water is given below:

FUTURE DEMAND - WATER SUPPLY			
1	PER CAPITA WATER SUPPLY DEMAND	135	LPCD
2	WATER LOSSES	15	% (ASSUMED)
3	PER CAPITA WATER DEMAND (LPCD +%LOSS)	155.25	LPCD
4	PROJECTED POPULATION	13254	PERSON
	TOTAL DEMAND	2057683.5	LPD

fig: future water supply demand for Gondkhairi

Priority Defining and SWOT analysis

Based on the field survey data analysis and response from the residents, the following development priorities were defined for Gondkhairi -

SWOT Analysis - Gondkhairi

<p>Strength:</p> <ul style="list-style-type: none"> • Accessibility • Capacity for development • Housing • Order of literacy 	<p>Weakness:</p> <ul style="list-style-type: none"> • Infrastructure/services • Poor educational facilities • Poor healthcare facilities • Poor quality of life • Areas of perpetual neglect • Financial health 	<p>Opportunities:</p> <ul style="list-style-type: none"> • Rich natural resources • Good Physical attributes • Cultural strength • Provider of food (Good produce) • Fair population base 	<p>Threat:</p> <ul style="list-style-type: none"> • Chaos, unemployment, • Poverty, poor health, lower quality of life, • Haphazard/unplanned urban development, • Neglect of agriculture, food scarcity • Loss of rural market • Migration
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Identified Concerns: Water Source; Hygiene; Literacy; Unorganized Markets; Quality of life

<p>Identified Concerns:</p> <ul style="list-style-type: none"> ● Clean Water Supply ● Education & Employment opportunities ● Health Infrastructure ● Hygiene & Sanitation ● Lack of community areas and recreational spaces ● Public Transport and Connectivity ● Sewage & Drainage Infrastructure ● Street lighting and road infrastructure 	<p>PRIORITY DEFINING:</p> <p>Priority 1: Supply of Clean Water: Provision of taps, water lines, 24 Hour water supply of purified and clean water, etc.</p> <p>Priority 2: Improvement in Road Infrastructure and Street Lighting: Provision of street lights, reflective signs for better vision, better road conditions, etc.</p> <p>Priority 3: Better Education and Employment Opportunities: Facilitation for industrial growth providing employment, entrepreneurship initiatives, etc.</p> <p>Priority 4: Improved Drainage and Sewage Infrastructure: Focus on maintaining and cleaning/closing the open stormwater drains, provision of toilets, etc.</p> <p>Priority 5: Improved Hygiene and Sanitation: This includes collection and disposal of solid waste, Maintaining roads and public spaces and common areas by sweeping, cleaning the canals, etc.</p> <p>Priority 6: Better facilities for Health Infrastructure: Provision of hospitals, clinics and aid centers for residents as well as their cattle.</p> <p>Priority 7: Focus on Public Transport and Connectivity: This may pertain to an increase in frequency of public transport to connect Gondkhairi to the nearby commercial areas.</p>
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5. Proposals

5.1 Economic Development

As per the analysis, though Gondkhairi village has ample number of industries present and approximately 70 percent of land is under agriculture activity, the livelihood opportunities are not available for the residents in that proportion. The major reason behind this could be the lack of education perhaps an appropriate and quality education. This indicates that skill development of villagers is the need of the hour for the village.

The presence of industries along the national highway is a major opportunity to boost the economy and provide employment opportunities which require a certain set of skills.

For skill development activities -

- Existing educational Institution's infrastructure can be used on 'Resource sharing' basis
- The given Central government scheme PMKVY can provide technical as well as financial support

Schemes for Skill Development:

Pradhan Mantri Kaushal Vikas Yojana (PMKVY) - Under the PMKVY, the central government provides skill training courses in different industrial verticals through authorized training centers.

National Skill Development Corporation will be the governing authority and will take care of -

- Funding and incentivising
- Enabling support services
- Shaping/creating

PMKVY scheme provides a variety of agriculture related courses. The existing infrastructure of PMKVY in Gondkhairi can be shared to nurture agricultural skill development.

5.2 Sector wise development strategies & proposals

5.2.1 Water Supply

As per the analysis, Gondkhairi village has water streams around, because the topographical condition water table is low, below 250 ft and groundwater available is limited. Water is pumped from the public wells to the overhead tanks and further supplied to the households. During summers these wells are drained, so no water supply during this period.

The presence of Wena dam reservoir within the proximity of 5 km is an opportunity to provide clean water to the village.

A water filter plant to be proposed within the village boundary will provide clean water to the village, which will help create job opportunities for the locals.

For water supply -

- water brought from Wena reservoir to the filter plant from where the clean water further be distributed into the village
- The Ministry of Drinking Water and Sanitation has launched the Swajal scheme which provides adequate safe water for drinking, cooking and other domestic basic needs on a sustainable basis.

Schemes for water supply:

Swajal scheme:

Objective:

To provide de-centralised, preferably solar energy-based piped water supply through community-designed, implemented, maintained and safely managed single village water supply schemes. The programme would also sustain the ODF status.

Vision:

Community-led drinking water projects to be called 'Swajal' aiming at providing sustainable and adequate drinking water in an integrated manner to the rural masses. It is envisaged that the State government in partnership with rural communities; shall plan, design, construct, operate and maintain their water supply and sanitation schemes; so that they get potable water and attain health and hygiene benefits; the State Government and its sector institutions shall act as supporter, facilitator and co-financier and as per need shall provide technical assistance, training and cater for bigger construction works and sectoral contingencies.

Components of the scheme:

Groundwater based schemes.

Mandatory components

- Construction of bore-well/tube well or an existing such structure of required yield with proper casing.
- Installation of the pump of required capacity with a dry run sensor.
- Sensor to regulate the pump operation.
- Pipes of required sizes and length, quality for water delivery (raising main) to the tank and for the distribution network.
- Required number of stand posts within the village (location and number to be decided by the community).
- A recharge structure for source sustainability. The type of structure is to be decided in consultation with the State Ground Water Dept/Agency.
- Soak pit for safe disposal of wastewater around every stand-post.
- If the GP resolves to provide piped water supply to (i) to schools; (ii) to Anganwadis; etc, then providing the necessary infrastructure for such connections with multiple hand wash units.

Optional components

- Community water treatment unit to address the quality issue.
- An online chlorination unit if disinfection of water is anticipated (only if required).
- An LED light powered by a battery charged through a solar panel for drawl of water at night.
- Sensors with required data logging facility to measure (i) groundwater level in the bore/tube well (ii) discharge (iii) leakage.
- Cattle troughs.

Surface water or spring-based schemes.

Mandatory components

- Identification of a sustainable surface water source in consultation with the community.

Sustainability of source is to be certified by the Water Resources Department of the State.

- Construction of infrastructure required (intake structure) and filtering arrangement.
- Installation of the pump of required capacity with a dry run sensor.
- Sensor to regulate the pump operation.
- Pipes of required sizes and length, quality for water delivery (raising main) to the tank and for the distribution network.
- Required number of stand posts within the village (location and number to be decided by the community).
- Soak pit for safe disposal of wastewater around every stand-post.
- If the GP resolves to provide piped water supply to (i) to schools; (ii) to Anganwadis; etc, then providing the necessary infrastructure for such connections with multiple hand wash units.

Optional components

- An LED light powered by a battery charged through a solar panel for drawl of water at night.
- Sensors with required data logging facility to measure (i) discharge (ii) leakage.
- Cattle troughs.