Research Report Series: 139

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ISBN: 978-93-91412-31-9

EDITION: 1

JUNE 2022

COVER PAGE: SHRI V. G. BHAT

BACKGROUND IMAGE: WATERCOLOR BACKGROUND PHOTO CREATED BY RAWPIXEL.COM (WWW.FREEPIK.COM)

PUBLISHED BY:

NATIONAL INSTITUTE OF RURAL DEVELOPMENT AND PANCHAYATI RAJ
(MINISTRY OF RURAL DEVELOPMENT, GOVERNMENT OF INDIA),
RAJENDRANAGAR, HYDERABAD-500030, INDIA

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ABBREVIATIONS

APGVB	:	Andhra Pradesh Grameen Vikas Bank
ATM	:	Automated Teller Machine
ATW	:	All Time Water
CAS	:	Common Application Software
CLTS	:	Community-led Total Sanitation
DALY	:	Disability-Adjusted Life Years
FFC	:	Fourteenth Finance Commission
GDP	:	Gross Domestic Product
GIS	:	Geographic Information System
GoI	:	Government of India
GPDP	:	Gram Panchayat Development Plan
GP	:	Gram Panchayat
GPSDP	:	Gram Panchayat Spatial Development Plan
ICDS	:	Integrated Child Development Scheme
ICMR	:	India Council of Medical Research
IMR	:	Infant Mortality Rate
ISRO	:	Indian Space Research Organisation
LGD	:	Local Government Directory
LPG	:	Liquid Petroleum Gas
MDM	:	Mid-Day Meal
MGNREGA	:	Mahatma Gandhi National Rural Employment Generation Act
MMP	:	Mission Mode Project
MMR	:	Maternal Mortality Rate
MoPR	:	Ministry of Panchayati Raj
MS	:	Middle School
NEP	:	New Education Policy
NIC	:	National Informatics Centre

NIRDPR	:	National Institute of Rural Development and Panchayati Raj
NRSC	:	National Remote Sensing Centre
ODK	:	Open Data Kit
OHT	:	Over Head Tank
OoSC	:	Out of School Children
PDS	:	Public Distribution System
PES	:	Panchayat Enterprise Suite
PHC	:	Primary Health Centre
PMFBY	:	Pradhan Mantri Fasal Bima Yojana
PPC	:	People's Plan Campaign
PRA	:	Participatory Rural Appraisal
PS	:	Primary School
RADPFI	:	Rural Area Development Plan Formulation and Implementation
RGSA	:	Rashtriya Gram Swarajya Abhiyan
RMP	:	Rural Medical Practitioner
RO	:	Reverse Osmosis
SAGY	:	Saansad Adarsh Gram Yojana
SDP	:	Spatial Development Plan
SECC	:	Socio-Economic Caste Census
SHG	:	Self-Help Group
SRS	:	Sample Registration System
TLM	:	Teaching and Learning Material
UPS	:	Upper Primary School
VO	:	Village Organisation

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ACKNOWLEDGEMENTS

"Only those who will risk going too far can possibly find out how far one can go." –T.S. Eliot

It takes great pleasure to acknowledge one and all who inspired me to take up this research and come out with the results as desired. First and foremost, heartfelt gratitude is expressed to Dr. W. R. Reddy, former Director General, NIRDPR, who was a man of vision and instigated the same spirit in us as well. Under his guidance and support, this research could see the light of the day.

I am also thankful to Dr. N.S.R. Prasad, Assistant Professor, Centre for Geo-Informatics Applications in Rural Development, who was there from the inception to the conclusion of this research study. He contributed to data collection as well as the mapping process. I am equally thankful to Dr. N. V. Madhuri, Associate Professor and Head, Centre for Gender Studies, for her unstinted support in this research process. She was a great support in ice-breaking and initial correspondence with the stakeholders during the initial phase of the project.

My sincere thanks go to all the Sarpanches, Secretary, ward members and community people of the Burgula Cluster for helping the research team with this study.

This study would not have been possible without the help of Mr. Srinuvas Bathula, Senior Project Scientist, Centre for Geo-Informatics Applications in Rural Development, who provided the technical support. The research team is also thankful to Dr. P. Kesava Rao, Associate Professor and Head, Centre for Geo-Informatics Applications in Rural Development, for his guidance and support.

It was not an easy task to take up an interdisciplinary research and come out with meaningful conclusion and policy interventions. I take this opportunity to express my sincerest gratitude to the National Institute of Rural Development and Panchayati Raj, Hyderabad, for giving me this opportunity to complete this challenging research study.

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EXECUTIVE SUMMARY

As per the Census of India (2011), 69 per cent of India's population lives in villages. Rural India is on a roadmap of transition, and several development indicators have drawn more attention in the previous years, especially in the case of rural areas.

The government has always strived to provide adequate facilities and services in rural areas. It is now time to integrate such thrusts on a spatial decision-making platform. The rural-urban dichotomy in India is acute. In densely populated metropolitan regions, rural and urban settlements exist side by side with overlapping of many functions and intense human and commodity exchanges at the fringes. However, rural India lags behind urban India in every indicator of progress. The efforts by the government towards improving the scenario can be boosted significantly through spatial decision-making, wherein the physical, socio-economic and infrastructure conditions shall be mapped spatially, offering options for data-driven planning. Indian states have legislative frameworks in place for the spatio-economic planning of urban areas. However, when it comes to rural areas, there is a lack of integration of spatial aspects in development plans. In 2016, the Ministry of Panchayati Raj came up with the Rural Area Development and Plan Formulation and Implementation (RADPFI) Guidelines. This exercise is to verify its applicability at the ground level. The 73rd amendment to the Constitution of India has paved the way for democratic governance in rural areas.

Taking it further ahead, the XIV Finance Commission award has created an opportunity for responsive local governance at the Gram Panchayat level through Gram Panchayat Development Plan (GPDP), that are to be prepared by the Gram Panchayats, incorporating the functions devolved to them as per State Panchayat Acts. Herein lies the importance of preparing a template for a spatially integrated version of the GPDP, namely the GPSDP (Gram Panchayat Spatial Development Plan). However, it has to be noted that GPSDP is not a separate plan but an integrated plan along with GPDP from a long-term perspective.

The GPSDP incorporates the spatial layers corresponding to attributes like physical features, landholding, land ownership, land use in Abadi area, overall physical and social infrastructure, etc.; built environment parameters like housing typology, building height, building age, etc.; economic parameters like landholding-wise cropping pattern, etc. It also considers the non-spatial attributes like socio-economic condition, skill level, governance dimensions, etc. The outcome is in the form of a zoning system and prescriptions for rural settlements.

In this research study, the researchers aimed at mapping the Burgula Panchayat. It covered six Gram Panchayats, and mapping was done using ODK forms and satellite imaging. This apart, primary surveys for physical verification and assessment of socio-economic conditions were part of the study, along with Focus Group Discussions (FGDs) with stakeholders and key informants. Given the current

trend of infrastructure development and land conversion in the village, it has been proposed that land for future development/colonisation be earmarked along a particular stretch of road on the fringes of the village. The data revealed that the Tandas on the margins of the main village are bereft of the fruits of government interventions meant for development. This leads to a lop-sided development scale wherein the tribals and other marginalised sections of the society do not get access to the basic necessities of life. This was proved by geo-tagging the assets created and mapping of villages ethnographically.

An Interactive Performance Management Dashboard has been created for easy monitoring and visualisation for the stakeholders. It will assist them in future planning and better allocation of resources. Thus, this study has attempted to integrate the social domain with GIS and highlight the issue of concentration of resources and marginalisation of tribals and minorities through mapping. The report has come up with some policy advocacy initiatives at the end.

Chapter 1: About Burgula

Introduction

Transforming Rural India

High rate of urbanisation and modernisation has had a hard impact on rural India. The rural people are out-migrating towards cities in search of better job opportunities, disinterested farmers are leaving fields, and disoriented youth are struggling for livelihoods. There are 6.4 lakh villages in the country, and 68.84 per cent of the total population lives in the rural areas. In India, rural areas cover 94 per cent of land and 69 per cent of the population, while urban area holds 6 per cent of land and 31 per cent of the population as per Census of India, 2011. The rural population and settlement figures across the Indian States are shown in Figure 1.

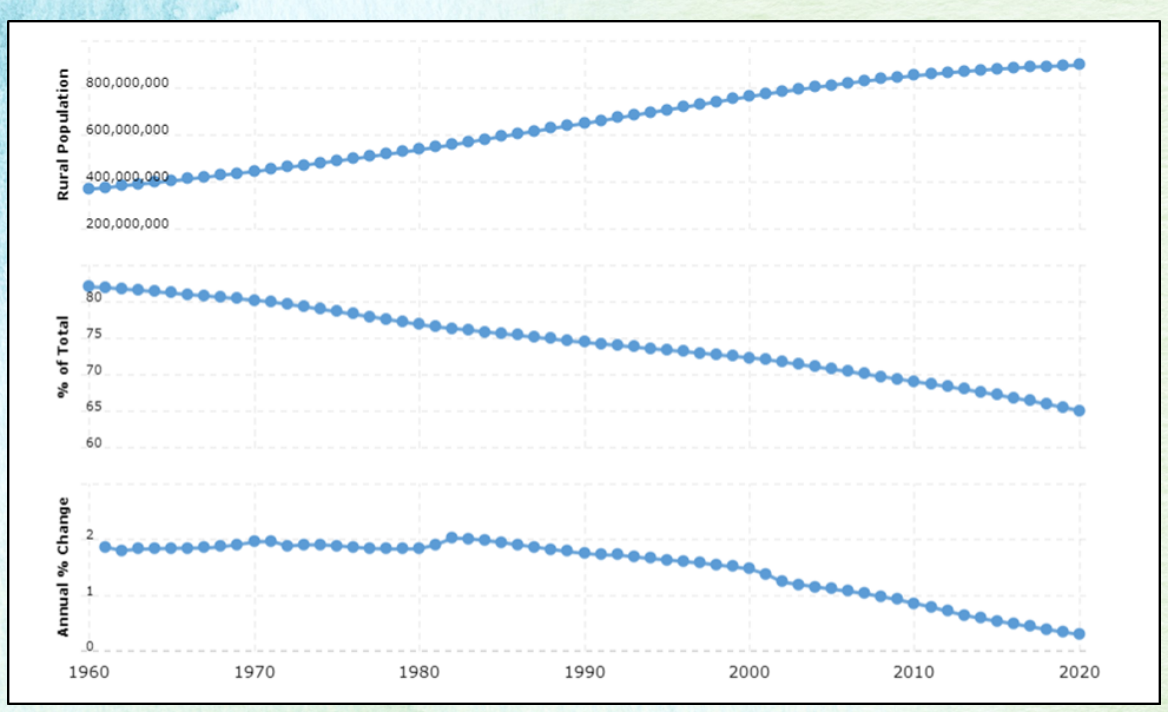

Figure 1: Rural Population and Settlements across the Indian States

Source: https://www.macrotrends.net/countries/IND/india/rural-population.

The rural scenario is undergoing a huge transition. This is due to the varied impact they have due to rural-urban interaction. One such interaction is due to the flow of people from rural to urban areas. The migrants are not always victims; instead, they are rational decision-makers who prefer to move to cities for lucrative benefits. This unidirectional migration leads to the gravitation of population in

cities, which implicitly asks for a balance to be brought between rural and urban areas. Another interaction is through exchanges of goods via market, which is a significant factor in the development of rural areas reflecting the global trend towards market-led strategies. Many peri-urban areas possessing a mix of rural-urban characters face the brunt of waste generated from urban centres. These interactions have leapfrogged, and now we even witness a peculiar kind of interaction, which is sectoral interaction. This is defined as rural activities taking place in urban areas and vice versa. The case of villages having industries and urban areas doing agriculture is one such example (Tacoli, 1998).

The above-mentioned interactions have major spatial impacts. If not dealt with properly at the right time, this will culminate in poor spatial growth of rural areas. This calls for a dire need to make Spatial Planning a part of rural planning so that the changes that these villages witness become smooth and not abrupt. The facilities and services required for villages have always been a part of government schemes and policies. The only aspect that has not been incorporated is how these things should be applied spatially.

A brief about the cluster

When the study was conceptualised, Burgula Panchayat was a single unit. But as the time progressed, the Panchayat was divided into six Panchayats that shared one Panchayat Secretary. On 2nd August, 2018, Burgula was divided into six Gram Panchayats, namely

1. Burgula
2. Chintaguda
3. Kadiyala Kunta Tanda
4. Kasireddyguda
5. Kundel Kunta Tanda
6. Nerella Cheruvu

Burgula and Thimmajipalle are the revenue villages. In the following paragraphs, a brief about each Panchayat is given.

Burgula

Burgula is a village in Farooqnagar mandal in Mahbubnagar district of Telangana State, India. As part of the reorganisation of districts in Telangana, Burgula village in Farooqnagar mandal was reorganised from Mahbubnagar district to Ranga Reddy district. It is located 39 km towards the north of district headquarters Mahabubnagar, and 8 km from Farooqnagar. Burgula's postal head office is located in Shadnagar, and the PIN code is 509216. Balanagar (3 km), Gouthapoor (4 km), Raikal (4 km),

Hemajipoor (5 km), and Gunded (5 km) are the nearby villages. Burgula is surrounded by Farooqnagar mandal towards the north, Keshampeta mandal towards the east, Kothur mandal towards the north, and Nawabpet mandal towards the west. Farooqnagar, Badepalle, Mahboobnagar and Vikarabad are the nearby cities. Burgula is situated on the border of the Mahboobnagar and Rangareddy districts.

The local language here is Telugu. The total population is 5993, and the number of houses is 1452 in about 738 ha. The female population is 48.6 per cent, the village literacy rate is 52.7 per cent, and the female literacy rate is 21.1 per cent. The other details are as follows:

Table 1: Socio-Economic Details of Burgula

Census Parameter	Census Data
Total Population	5993
Total No of Houses	1452
Female Population (in %)	48.6 % (2915)
Total Literacy rate (in %)	52.7 % (3158)
Female Literacy rate (in %)	21.1 % (1264)
Scheduled Tribes Population (in %)	14.3 % (858)
Scheduled Caste Population (in %)	23.7 % (1418)
Working Population (in %)	50.3 %
Child(0 -6) Population by 2011	702
Girl Child(0 -6) Population % by 2011	49.6 % (348)

Source: http://www.onefivenine.com/india/villages/Mahbubnagar/Farooqnagar/Burgula

Figure 2: Panchayat Bhavan at Burgula

In Burgula, overhead tanks have been used for water supply to all households. Moreover, 99 per cent of the underground drainage work has been completed. It is one of the mainstream villages in the cluster and the people are quite aware of the government interventions. Here, public announcements are made through speakers. All main services, such as high school, PHC, bank, water ATM, etc., are easily accessible. The main cement concrete (CC) road directly connects Burgula to the highway.

Chintaguda

Chintaguda is a Panchayat situated to the south of Burgula. Spread over 600 ha, Chintaguda was formed when the whole Gram Panchayat was divided into smaller Panchayats for better governance. The term "Chinta" in Telugu refers to tamarind. There are boroughs of trees in this area, and hence the name "Chintaguda".

Kadiyala Kunta Tanda

Kadiyala Kunta Tanda lies towards the north-west of Burgula. It is basically a tribal hamlet wherein the majority of population belongs to Lambadas. Spread over 657 ha, Kadiyala Kunta is GP headquarters and is divided into two Tandas-

1. Raikal Tanda

Raikal Tanda has a total population of 1566 comprising 799 and 767 females. The total number of households is 435. The entire cultivable land is 900ha, wherein the net sown area is 800ha, and the total irrigated area is 500ha. In Raikal Tanda, there are 30 SHGs and a primary school having 30 students (14 boys, 16 girls). The school with Classes 1 to 5 engages two teachers. Raikal has nearly 80 households, all coming under the ST category. There is an anganwadi with 12-18 kids. The area has 99 per cent Individual Household Latrine (IHHL) with running water.

A little further, there is another primary school but the building is incomplete. It has 17 students (4 boys and 13 girls) and two positions for teachers were remaining vacant. There are 50-60 households in the vicinity; of them, 30 per cent do not have IHHL. The houses, initially belonged to Raikal Tanda, are now attached to Burgula.

2. Thimmajipalle Tanda

Thimmajipalle Tanda is a revenue village. In Thimmajipalle, there is a primary school with 23 students (11 girls and 12 boys) and two teachers. Though there is no kitchen shed, the local Lambada women prepare mid-day meal on payment basis. There are about 50 households in the vicinity, which are majorly occupied by Lambadas.

Figure 3: Gram Panchayat Bhavan at Kadiyala Kunta Tanda

Kundel Kunta Tanda

Kundel Kunta Tanda lies towards the south of Burgula. It is adjacent to Nerella Cheruvu Tanda and is mostly inhabited by tribals, especially Lambadas and is spread over an area of 452 ha. The population of Kundel Kunta Tanda is about 630. This village has a primary school. Though a road from Burgula to Kundel Kunta Tanda was laid, there is no bus facility to the village. People have to cover 1.2 km to reach the main highway. They are also awaiting the construction of own Panchayat Bhavan. There is a Swargdhamam at survey no. 250.

Nerella Cheruvu Tanda

Nerella Cheruvu Tanda lies towards the south of Burgula and north of Kundel Kunta Tanda. It is spread over 323 ha and the population here is approximately 462. There is a school with classes 1-7. A room in the school has been functioning as Panchayat Bhavan in a makeshift arrangement.

Kasireddyguda

Kasireddyguda is next to Burgula and is one of the most developed areas in the Cluster. It is spread over an area of approximately 451 ha with the availability of a school, and access to PHC and water ATM. The village also has a Panchayat Bhavan, but lacks mechanism for making announcements through speakers. The village is a plastic free zone, and the people follow the practice of segregating garbage for easy disposal.

Figure 4: Water ATM Arrangement at Kasireddyguda

Mapping all Tandas/Hamlets

The Burgula cluster is dominated by tribals, the Lambadas. The seven Tandas that encircle the Burgula cluster are:

Table 2: No. of households in each Tanda in Burgula Cluster

S. No.	Tandas	No. of Households
1	Raikal Tanda	20
2	Thimmajipalle Tanda	30
3	Kundalkunta Tanda	30
4	Devinigunta Tanda	18
5	Nallamaita Tanda	30
6	Munchenguda Tanda	20
7	Pothurajuguda Tanda	18

The Tandas are marked the at Figure 5.

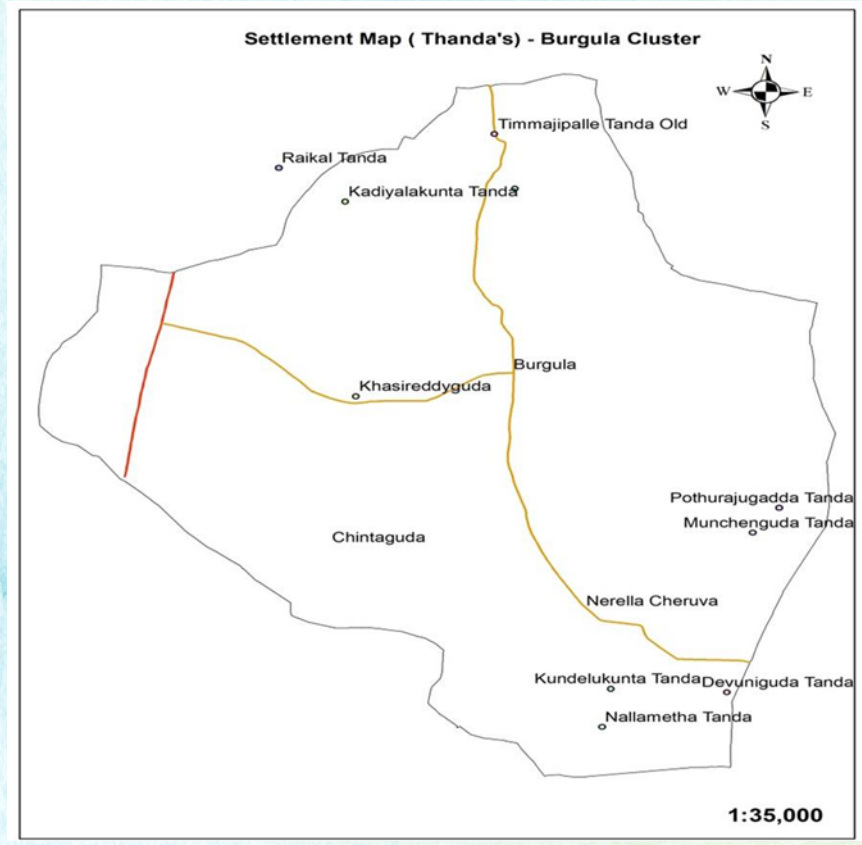

Figure 5: Map Showing all the Tandas in Burgula Cluster

Various Development Indicators

The research team made an ethnographic study related to all development indicators such as health, water and sanitation, education, roads and infrastructure, etc., with respect to all the villages in Burgula Cluster. The same has been put in this report to give an indication to the readers that while some sectors in the cluster are developed, a focused intervention needs to be implemented in other areas. In this study, various socio-economic indicators were studied for the whole cluster. The concept of human development centres around the notion that human welfare depends on various dimensions, with education and health emerging as the prime welfare indicator.

Health

Health is one of the most important indicators of development in a country. Better health is central to human welfare and well-being. It also makes an important contribution to the economic progress, as healthy populations live longer and are more productive. Healthy citizens are a big asset any country can have. Many factors influence the health status and a country's ability to provide quality health services to its people. Infant mortality and the crude death rate have been reduced considerably. Life expectancy at birth has increased; infant mortality and crude death rates have been greatly reduced;

diseases such as smallpox, polio and guinea worm have been eradicated; and, leprosy is on the verge of elimination. Updated, sound and reliable health information is the foundation of decision-making across all building blocks of health systems. It is essential for health system policy development and implementation, governance and regulation. A sound health information system brings together all relevant partners to ensure that users of health information have access to reliable, authoritative, useable, understandable and comparative data.

As per Census 2011, while 28.5 per cent population of India lies between the 0-14 age group, only 8.3 per cent are above the age of 60 years. The estimated birth rate, death rate and natural growth rate are showing a declining trend. The estimated birth rate declined from 25.8 in 2000 to 20.4 in 2016, while the death rate declined from 8.5 to 6.4 per 1000 population over the same period. As per the latest available information, the natural growth rate fell from 17.3 in 2000 to 14 in 2016. The SRS (2016) shows that the Total Fertility Rate (average number of children born to a woman during her lifetime) in 12 States has fallen below two children per woman, and nine States have reached replacement levels of 2.1 and above. Delhi, Tamil Nadu and West Bengal have the lowest fertility. The country's literacy rate has shown an increase of 8.2 per cent during the decade 2001-2011. The overall literacy rate of India is 73.0 per cent, whereas for males and females, it is 80.9 per cent and 64.6 per cent, respectively. The rural literacy rate is 67.8 per cent, and the urban literacy rate is 84.1 per cent. It has been observed that non-communicable diseases dominate over communicable in the total disease burden of the country. A recent report by the India Council of Medical Research (ICMR, 2017) notes that the disease burden due to communicable, maternal, neonatal, and nutritional diseases, as measured using Disability-adjusted life years (DALYs), dropped from 61 per cent to 33 per cent between 1990 and 2016. In the same period, the disease burden from non-communicable diseases increased from 30 per cent to 55 per cent. However, the epidemiological transition varies widely among Indian States: 48 per cent to 75 per cent for non-communicable illnesses, 14 per cent to 43 per cent for infectious and associated diseases, and 9 per cent to 14 per cent for injuries. In recent years, India has made ground-breaking progress in reducing the maternal mortality ratio (MMR) by 77 per cent, from 556 per 1,00,000 live births in 1990 to 130 per 1,00,000 live births in 2016. The urban-rural divide traditionally seen in institutional deliveries has been largely closed. Overall, 75 per cent of rural births are now supervised as compared to 89 per cent in urban areas. This is, indeed, a significant change, evidenced by the available data.

Access to Healthcare

Many people in the developing world go without healthcare and are devoid of the healthcare benefits that should have been available to them. The poor in developing countries are even less likely to receive adequate healthcare than the better off. In its most narrow sense, it refers to geographic availability. A far broader definition identifies four dimensions of access: availability, accessibility, affordability, and acceptability (Penchansky et al., 1981).

In this study, the authors look at the access to healthcare facilities available at the GP level.

Moreover, they also explore the access issues or challenges related to tribals and marginal populations. The tribals in Burgula are mainly from the Lambada community and are settled in Tandas on the periphery of Burgula GP. The Tandas are geographically dispersed around Burgula and Kasireddyguda and are located on the outskirts of the main villages. Burgula has a Primary Health Centre. The residents of Burgula and Kasireddyguda can easily access healthcare services, but there are no connecting roads or modes of transport for people from various Tandas to access the PHC.

Figure 6: Entrance of Primary Health Centre at Burgula

Primary Health Centre (PHC)

The PHC takes general health cases; otherwise, people go to Shadnagar to avail medical facilities. The PHC is well equipped with a pharmacy, a general ward, a labour room, toilets, and a doctor's cabin. The PHC has an extension on Ayurveda Unit with a doctor and a lab technician. Most cases of institutional deliveries are reported. Other cases involve patients complaining of joint pains, diabetes, anaemia, hypertension, etc. The medical staff has to serve 12 hours of duty, and it might be turned to 24 hours, after fresh recruitment and additional workforce in the future. The lab technician reported that cases of liver cirrhosis were frequently reported, largely from the Tandas. About 10-15 people visit the PHC each day.

A sub-centre used for immunisation has also come up in recent times, and the camp is held every Wednesday.

There are two Rural Medical Practitioners (RMP) based in Burgula. People prefer to visit them too for regular check-ups. There is no medical shop per se at the cluster. Generic medicines are available across the counter at kirana shops.

The Integrated Child Development Services (ICDS) centres look after the nutrition of infants. It is one of the major flagship programmes launched in 1975 in 33 blocks by the Government of India. It focuses on early childhood development and caters to nutritional aspects. The major objectives of the scheme are:

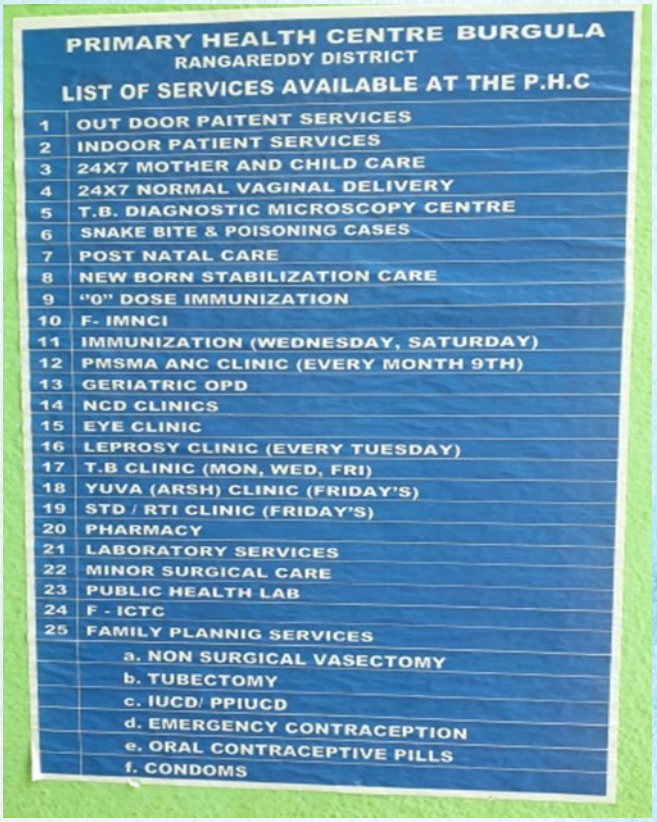

Figure 7: List of Services Available at PHC at Burgula

- to improve the nutritional and health status of children in the age group of 0-6 years,
- to lay the foundation for proper psychological, physical and social development of the child,
- to reduce the incidence of mortality, morbidity, malnutrition and school dropout,
- to achieve effective coordination of policy and implementation amongst the various departments to promote child development, and
- to enhance the capability of the mother to look after the normal health and nutritional needs of the child through proper nutrition and health education.

The programme's main beneficiaries include children below six years of age, pregnant women, and lactating mothers. The authors visited two anganwadis at the Burgula GP and found that the anganwadi workers were given tablets and imparted requisite training to operate the same. Through tablets and smartphones, the workers can enter the data more precisely and accurately. The heavy load of maintaining 14 registers was done away with.

Table 3 shows the number of ICDS centres available and children enrolled and staff at Burgula GP.

Overall, the research team could find only one functional PHC at Burgula. Those living in Burgula, Kasireddyguda, Chintaguda and Nerella Cheruvu still have better access to the PHC, whereas the tribals residing in Kadiyala Kunta Tanda and Kundel Kunta Tanda do not have proper road connectivity to avail medical help; also, the PHC is quite far for them.

Education

Schooling for all children until they reach young adulthood is recognised as important because it leads to many substantial positive effects: better family health, lower birth rate, higher productivity, higher earnings, and improved economics of the country as a whole. According to World Bank (2006), better education and health lead to higher individual income due to increased efficiency. Besides, it is a necessary precondition for long-term economic growth. Education, in general, contributes to the growth of an economy through the acquisition of training and skills. In contrast, primary education lays the foundation stone for the capabilities of

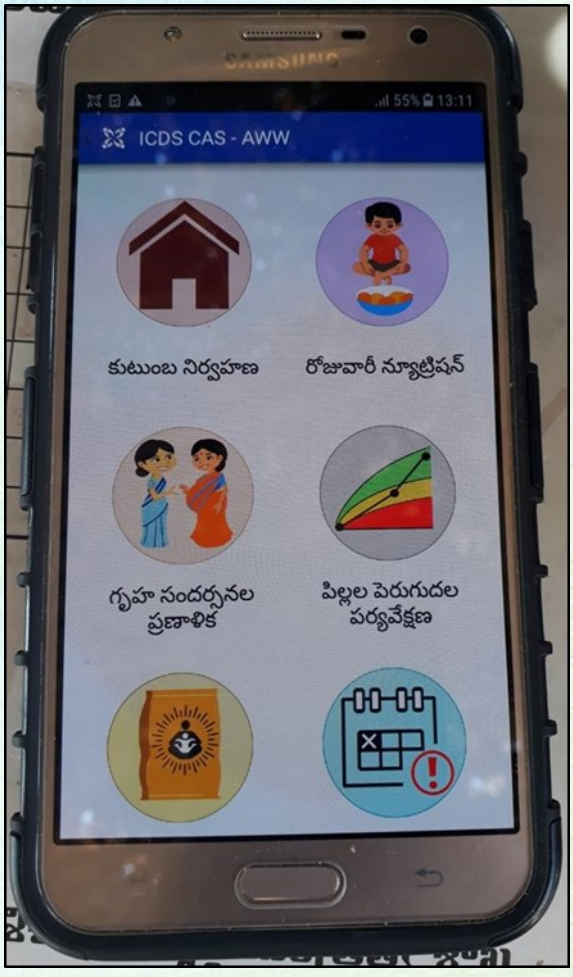

Figure 8: A Smartphone Screen Showing ICDS App Developed for Smart Entry of Data

Table 3: ICDS Details at Burgula Cluster

S. No.	GP	No. of ICDS Centre	Children enrolled	Staff (Teacher & Ayah)
1	Burgula	2	40	2, 2
2	Kasireddyguda	1	20	1, 1
3	Nerella Cheruvu and Pothurajuguda	1	15	1, 1
4	Kadiyala Kunta and Thimmajipalle	1	15	1, 1
5	Kundel Kunta	1	20	1, 1

labour and is a powerful lever for poverty alleviation and socio-economic growth. Its results can be empowering, enabling people to take charge of their lives and make more informed choices, contribute to the building of a democratic polity, increase earning potential and social mobility as well as improve personal and family health and nutrition (particularly for females), and enable women to control their fertility.

Education can act as a powerful tool for reducing poverty and unemployment, improving health and nutritional standards, and achieving a sustained human development-led growth (World Bank, 2004). The New Education Policy (NEP) was announced in 1986 and subsequently revised in 1992. The revised NEP envisaged universal access to enrolment and retention of all children in the age group of 6-14 and substantial improvement in quality of education to enable them attain essential levels of living, thereby highlighting the greater importance of primary education. This is also indicated by the fact that until 1985- 86, the allocation of funds for plan spending on primary education was the lowest and higher education was the highest. Thereafter, funding for primary education gradually increased and reached the highest level among all the sectors of education (Srivastava, 2005). 'Operation Blackboard' launched in 1987 aimed at providing at least two rooms in all primary schools and one room in upper primary schools (grade VI to VIII), along with two teachers in the former and a minimum of one teacher in the latter. Additionally, there was also provision for Teaching-Learning material (TLM) which teachers can use. Since the scheme was launched with the initiative of the Central government, there was difficulty in making provision for the funds for the salary of teachers and its sustenance, which was the responsibility of the respective State governments.

Table 4: Status of Schools in Burgula Cluster

S. No.	GP	No. and Classification of School
1	Burgula	1 Primary School 1 Upper Primary School 1 Zilla Parishad High School
2	Kasireddyguda	1 Primary School
3	Narella Cheruvu and Pothurajuguda	1 Upper Primary School (till 7th std.)
4	Kadiyala Kunta Tanda and Thimmajipalle	1 Primary School
5	Kundel Kunta Tanda	1 Primary School

Since all the primary and upper primary schools cater to the needs of the GPs, no child was left out of school. For attending college, i.e., post high school, students attend intermediate college at Shadnagar (nearly 13 km away) or Degree College at Jadcherla (30 km away).

Figure 9: High School at Burgula

There is a high school at Burgula with 464 students. It is a fully functional campus with a big compound, boundary wall, playground, and other basic amenities. The children of all clusters, mainly of Burgula and Kasireddyguda, study here. There is also a primary school with 183 students.

Kasireddyguda School

Figure 10: Primary School at Kasireddyguda

There is a fully furnished and well established Primary School at Kasireddyguda with decent student-teacher strength.

The primary school at Kadiyala Kunta Tanda runs classes 1 to 5. The school has two classrooms each for instructional purposes for non-teaching activities and a separate room for the headmaster/teachers. The school has got electricity connection. It has no boundary wall and the toilets not fully maintained. The school also has a playground and a library with 350 books.

Figure 11: Primary School along with Gram Panchayat Office at Kadiyala Kunta Tanda

As the study team moved towards the Tandas, a gradually decline in the quality of infrastructure of schools was evident. Below are the snapshots of those schools.

Figure 12: Primary School at Nerella Cheruvu Tanda

The primary school at Nerella Cheruvu has classes 1 to 5. The school is co-educational, and it doesn't have an attached pre-primary section. Telugu is the medium of instruction. This school is approachable by an all-weather road. It has two classrooms for instructional purposes and a separate room for headmaster/teachers. The school has a boundary wall with barbed wire fencing. It has separate toilets for girls and boys, playground and a library with 100.

Figure 13: Primary School at Chintaguda

The primary school at Chintaguda has classes from 1 to 5. Telugu is the medium of instruction. There is a headmaster's room and a staffroom for teachers. It has a small playground and a library with adequate number of books. The school has a proper boundary wall and has electricity connection. The source of drinking water in the school is tap water, and it is functional. Toilets for both girls and boys are available.

Figure 14: Primary School at Thimmajipalle Tanda

The primary school at Thimmajipalle has moistly tribal students in classes 1 to 5. Telugu is the medium of instruction. It has got two classrooms each for instructional purposes and non-teaching activities and a separate room for headmaster/teachers. The school has neither playground nor boundary wall. The toilets are poorly maintained. It has a library with a stock of 250 books.

There is an anganwadi at Raikal Tanda, which caters to mostly tribal children.

Figure 15: Anganwadi Centre at Raikal Tanda

Figure 16: Primary School at Kadiyala Kunta Tanda

The school consists of grades from 1 to 5. The school is co-educational with predominantly tribal students. Telugu is the medium of instruction. The school has no boundary wall. The toilets are poorly maintained. It has a playground.

The primary school at Pothurajuguda is well-maintained. The school has classes 1 to 5, and mostly tribal students are enrolled here. There is a playground with a boundary wall too. However, the toilets were poorly maintained.

Figure 17: Primary School at Pothurajuguda

Figure 18: Anganwadi at Nerella Cheruvu

There is an anganwadi with inadequate infrastructure at Nerella Cheruvu, which was not properly maintained.

Sanitation

Together with good hygiene and safe water, adequate sanitation is fundamental to good health and social and economic development. Community-Led Total Sanitation (CLTS) is a communications-based approach that aims to achieve "open defecation-free" status for the whole communities rather than helping individual households to acquire toilets. The past and present Sarpanches have ensured that all the GPs maintain hygiene and sanitation. There is an underground drainage system, but it is only confined to Burgula and Kasireddyguda. Elsewhere, the waste water is simply discharged in the open.

There are no designated dumping yards; hence, a place was identified for the purpose. With NIRDPR's intervention, a proper mechanism is being worked out.

Figure 19: Clearing of Waste Dumped Using Excavator in Progress in Burgula

Door-to-door collection facility is provided to collect waste from each household. Now an attempt is being made to segregate the waste and its reuse. Under the MGNREGA scheme, many tribal households have constructed Individual Household Latrines (IHHL). These can be seen at Kadiyala Kunta Tanda, Kundel Kunta Tanda, and Raikal Tanda.

Figure 20: A Toilet Constructed under MGNREGS at Raikal Tanda

Figure 21: Waste Water Disposal at Munchiguda Tanda

Sights, as seen in the Figure above, are very common. The tribal women would wash clothes and laundry, fill drinking water, and bathe the young ones at the tank itself. This creates to a lot of clutter near the tank area. The stagnated water raises stink in the area and acts as a breeding ground for mosquitoes.

Figure 22: Garbage Dump on the Way to Nerella Cheruvu from Burgula

The above figure shows garbage being dumped on a barren land near Burgula GP on the way to Nerella Cheruvu. This generates a foul smell and the site has turned an eyesore for the passers-by. Besides, pigs and stray dogs feed on the garbage.

The whole Burgula cluster suffers from severe shortage of drinking water. Mini trucks carrying water containers are a common sight at the cluster.

Figure 23: Drinking Water being Supplied through Containers

Roads and Transport

The development of the road network plays a vital role in the economic development of a country. Therefore, the kilometre-age of paved roads existing in a country is often used as an index to assess the extent of its development. Proper development of the transport road network reduces the cost of transportation, both in terms of money and time. It helps integrate various regions within the country and get a better understanding of neighbouring countries at the international level.

Transport is considered an essential feature of all modern economies. In general terms, as an economy grows and develops, it becomes more dependent upon its transport sector (Robinson and Bamford, 1978). For a long time, transportation was considered as the most important factor in regional, economic and social development. Transportation has a vital role in increasing production, reducing travel times, increasing employment and improving accessibility. Furthermore, it plays an important role in reducing regional disparities and improving competitiveness of regions by facilitating trade, movement of labour, and economies of scale. The relationship between transportation infrastructure and economic development has been the focus of increasing analysis, discussion and interest during the past decade (Weiss, Felloni et al., 1999, Weiss and Figura, 1999). Different modes of transportation form prominent landscape features. Indeed, roads, railway tracks, waterways, and electricity structures form imposing features on the landscape. There is usually a dense pattern of transportation lines in well-populated, industrial and urban areas. One reason for this positive relationship is that transportation infrastructure influences regional productivity by facilitating efficient movement of goods and labour for the production industries. Hence, improved transportation infrastructure can enhance the efficiency of goods and labour movement. The reduction in time and effort required to produce goods translates directly into increased regional productivity.

Improvements in accessibility are seen as a critical priority in the development of the polycentric urban systems and a precondition for the inclusion of economic development within an overall spatial strategy of harmonisation.

The Burgula cluster has a network of roads. This includes one National Highway (NH) for 2.2 km, one Other District Road (ODR) for 10.63 km, twelve other roads for 5.6 km. and 10 village roads (VR) for 14.41 km.

Figure 24: A Bus Plying on the Main Road Connecting Burgula to the Highway

Figure 25: Unmetalled Road Connecting Kundel Kunta Tanda to Burgula

The research team found that almost all Tandas had unmetalled roads, and the terrain was also rough. This poses a high risk to the commuters, especially the elderly, pregnant women and children.

Figure 26: Unmetalled Road Connecting Raikal Tanda to Burgula

Figure 27: Metalled Road Connecting Nerella Cheruvu to Burgula

Except for the main areas in Burgula and Kasireddyguda, all other villages and Tandas are connected through unmetalled roads.

Water Supply

Water is the scarcest resource across the country. The villages sizzle during the summers when the temperature soars. The Burgula cluster is a rain-shadow zone facing stark water scarcity. The problem escalates every year and has resulted in shortage of drinking water as well as water for irrigation. There are Reverse Osmosis (RO) plants to supply drinking water - one each at Burgula, Kasireddyguda and Chintalguda - to cater to the needs of the people. They will be issued Any Time Water (ATW) cards on completion of registration with the caretaker maintaining the RO plant. The customers can recharge smart cards and swipe to avail drinking water.

The RO Plant at Burgula started functioning on 31st January, 2015 and is sponsored and maintained by the Gram Panchayat. Initially, it supplied drinking water at Rs.3 per litre, but since 29th April, 2019, the price per litre has been Rs.5. The high demand for drinking water can be assessed by the supply per day. During the summers, 200 bottles (20 litres each) are sold per day. Approximately, Rs.1000 is generated as income and Rs. 30,000 is generated for the Panchayat fund. The plant also needs maintenance cost for chemicals to purify water, and change filters monthly. The RO plant at Kasireddyguda came up recently. A third unit was set up at Chintaguda and plans were on to install a machine at Nerella Cheruvu.

A sump is constructed at Kamadaanam village under the Mission Bhagiratha scheme. Water is supplied to Burgula from 7 km ahead of the sump. Water is provided for three hours each in the morning and evening. There is no Water Committee per se to monitor the water supply.

There are Over Head Tanks (OHTs) across the cluster to supply water to all Tandas as well. The community people fetch water from the taps connected to these OHTs.

Figure 28: Overhead Tanks at Thimmajipalle Tanda and Chintaguda

The figures above show an OHT being constructed and a woman fetching water. The OHT has come in as a respite in this drought-stricken area.

Figure 29: Observation Wells of CGWB at Burgula Cluster

Burgula cluster suffers from water shortage throughout the year. The Central Ground Water Board (CGWB) has provided observation wells to supply water during summers to the Cluster to resolve the issue.

Figure 30: Drinking Water Arrangements Made through Tank, Water ATM and Tap at Burgula Cluster

While the study was in progress, the work of laying pipelines connecting the households in the cluster was in progress. This was being done under the Bhagirathi Mission to solve water scarcity and save the waiting time for tankers.

Figure 31: Drinking Water Pipelines being Laid under Mission Bhagiratha at Burgula

Banking

The country's planners and policymakers have recognised the importance of rural banking since independence. Majority of the population in India lives in rural areas. Given the problems they face in accessing banking services, India has adopted a multi-pronged approach towards their financial inclusion, as has been the case in several other countries. Though the term financial inclusion is of recent origin, the efforts to bring the poorer and weaker segments of the society within the fold of the formal banking system were initiated by the Reserve Bank and the Government. The challenging issues in rural banking of commercial banks are lack of infrastructure, reluctance of staff to serve in remote rural areas, large number of accounts dealing in small amounts, difficulty in getting financial information on rural borrowers leading to some degree of uncertainty in the minds of the bankers, and lack of security for carrying cash in remote areas for mobile banking.

Banking services are essential to the economy of the village. The presence of a branch of a bank facilitates cash withdrawals and deposits. A branch of Andhra Pradesh Grameen Vikas Bank (APGVB) functions in Burgula Cluster. The farmers take loans from the banks mainly for paddy and cotton crops. This apart, the bank offered insurance schemes. The total number of accounts, as mentioned by the Branch Manager, was 4602.

Figure 32: The Sole Branch of a Bank at Burgula Cluster

The details of pensioners in Burgula cluster is given in Table 5:

Table 5: People Availing Pension (Burgula Cluster) for 2018-19

S. No.	Beneficiaries	Number
1	Old Age pensioners	126
2	Widow pensioners	277
3	Physically handicapped pensioners	64
4	Weavers	08
5	Toddy Tappers	09
6	Single women	26
	Total	510

Good Governance

The Burgula cluster has been divided into new Gram Panchayats for better governance and implementation of government schemes. Initially, Burgula was itself a Gram Panchayat. In 2018, the cluster was formed.

Chintaguda has a Panchayat Office, which was opened after the village was identified as a Panchayat.

Figure 33: Panchayat Office at Chintaguda

Kasireddyguda has a well-maintained makeshift functional Panchayat office with basic infrastructure such as computers, tables and chairs. They are getting funds to make one. They are using Pragathi NGO's building.

Figure 34: Make-shift Panchayat Bhavan at Kasireddyguda

Livestock Details

The main objectives of veterinary centres functioning under the Department of Animal Husbandry are safeguarding the health of all farm animals, their sustenance and further improvement in their productivity. At each mandal, there is a Primary Veterinary Centre with a lab assistant and an attendant. The veterinary sub-centre at Burgula that functions in an old building is used for conducting immunisation every Wednesday. A new building has come up; however, it is non-functional as the construction works are pending.

The Veterinary Sub-centre has a Livestock Assistant to attend to the needs in Burgula and Chintalguda GPs. Table 6 presents the details of livestock:

Table 6: Details of Livestock (2018-19)

S. No.	GP	White (Cows)	Black (Buffaloes)	Sheep and Goat
1	Burgula	650	120	850
2	Chintaguda	750	50	1200

Figure 35: The Veterinary Clinic at Burgula and the Signboard Hung Inside

The veterinary office is not well-maintained and an office is coming up at Burgula. Meanwhile, a makeshift arrangement has been made. Table 7 shows GP-wise veterinary details for the year 2018-19.

Table 7: GP-wise Details of Livestock (2018-19)

S. No.	GP	White (Cows)	Black (Buffaloes)	Sheep and Goat
1	Kadiyala Kunta Tanda	150	10	850
2	Nerella Cheruvu	120	200	600
3	Kundel Kunta Tanda	400	50	1000
4	Kasireddyguda	200	50	300
5	Burgula	500	60	500

The common disease suffered by cattle and livestock are:

a. Cows: FMD (yearly vaccinated two times), Mastitis, Pneumonia, Theileriosis

b. Buffaloes: BQ, HS

c. Sheep and Goat: PPR, ET (vaccinated thrice a year)

All vaccinations are done free of cost at the Veterinary sub-centre. But the diseases are frequently occurring due to animals being brought from outside as they carry new infections.

Livelihoods

The people in the cluster depend on cattle for their livelihoods. The following are three milk procurement centres:

1. Vijaya (government)
2. Dodla (private)
3. Atson (private)

The above centres together procure 500-600 litres of milk from chilling centres every morning. Sheep and goats are reared for meat, whereas cows and buffaloes are raised for milk.

As Burgula Cluster is a dry land area, people do not have much choice for livelihoods. Poultry and goatary are commonly adopted as the primary sources of livelihood in tribal areas.

Figure 36: An Old Shepherd Grazing His Flock

In some pockets, where ground water is easily available, some tribals resort to paddy cultivation too.

Figure 37: A Paddy Field at Nallametha Tanda

One of the major livelihoods of the area is the hatcheries present in the cluster. A good number of local men are employed here.

Figure 38: One of the hatcheries at Burgula Cluster

Several food processing units at the Burgula Cluster also employ the locals.

Figure 39: A Food Processing Unit at Burgula Cluster

Many brick kilns were spotted in Burgula Cluster. The semi-arid soil and high temperature are feasible for kiln business. Also, local people find employment in these units.

Figure 40: A Brick Kiln at Burgula Cluster

In Burgula, a spinning centre employs SHG women for weaving jobs in indigenous methods. The cloth produced is put to sale at the centre as well as supplied to Ms. Uzramma's Malkha (a known social worker in Hyderabad).

Figure 41: A Spinning Centre at Burgula Cluster

Electrification

All villages in Burgula Cluster have electricity connection. However, the Tandas (Kadiyala Kunta Tanda and Kundel Kunta Tanda) have very poor connections. There is a provision for local transformers, as seen in Figure 42.

Figure 42: A Transformer at Kadiyala Kunta Tanda

Figure 43: Electric Poles and Mobile Towers along the Main Road in Burgula Cluster

More than three mobile towers can be seen on the outskirts of Burgula Cluster. The electric poles along on the main roads confirm electricity connection in these areas.

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Chapter 2: GIS and Spatial Mapping

Maps are not new to mankind. Though the concept of 'democratisation of maps' has picked up recently, maps have been an integral part of human history for thousands of years. From cave paintings to ancient maps of Babylon, Greece, and Asia, through the Age of Exploration, and on into the 21st century, people have created and used maps as essential tools to help them define, explain, and navigate their way through the world. Mapping is a central function of Geographic Information Systems (GIS), which provides a visual interpretation of data. Viewing and analysing data on maps impacts our understanding of data and helps in better decision-making using GIS. Not only are they interactive, but also user-friendly. Maps are now becoming all-pervasive, with the government to corporates using maps for making informed decisions and helping communities improve quality of life. Data acquisition in real-time mode leads to accurate measures and judicious decision-making. It leads to reducing redundancy and time for optimum utilisation of resources.

The planning process has undergone a drastic change with innovations and technological advancements. Now, participatory planning and crowd mobilisation are the key features of inclusive development. However, for this participatory decision-making, accessibility to a comprehensive database that is easy to access and understand land records, topography, resources, settlement patterns, and infrastructure is needed. This is where spatial technologies play a crucial role by generating timely and reliable information for planning and decision- making.

A geographic information system is designed to capture, store, manipulate, analyse, manage, and present spatial or geographic data. GIS applications are tools that allow users to create interactive queries, analyse spatial information, edit data in maps, and present the results of all these operations. Planning requires the association and integration of various activities with spatial (geo-referenced) and non-spatial characteristics. Recently, geomatics-based approaches have garnered attention due to their efficiency and effective solutions.

Further, rapid advances in the hardware and software technologies coupled with growing competition among the related vendors have brought down the cost of Geomatics/GIS technology manifold, making it affordable for deployment on a large scale for use in decentralised planning.

Available Spatial Planning Applications for Panchayat Development

Some of the available Spatial Planning applications for Panchayat Development are listed below:

Gram Manchitra

Ministry of Panchayat Raj (MoPR) launched 'Gram Manchitra', a Spatial Planning Application developed by the National Informatics Centre (NIC). It is a geospatial-based decision support system

for the Panchayats. This application, based on NIC's Bharat maps (*https://bharatmaps.gov.in*), is a multi-layered GIS platform/web service. It comprises seamless countrywide base maps, satellite images and hybrid maps aligned with the global geospatial standards. It is an essential component of the Digital India programme to ensure easy, effective and economic governance. It is envisaged to provide a GIS-based decision support system to Central/State government departments to deliver citizen-centric services.

The Panchayats can utilise this application to plan, develop and monitor developmental activities on a real-time basis. Use of Spatial Planning (Gram Manchitra) in local self-governance can ensure openness and accountability in the functioning of GPs. With the aid of GIS and satellite imagery, a detailed visual record of the projects can be maintained, which can be accessed anytime. Physical verification of the projects can be done by anybody, anywhere anytime. GIS can increase the legitimacy and acceptability of the PRIs among its stakeholders.

Figure 44: Various Thematic Layers and Other Map Functions in Gram Manchitra

Various functions of this application include integration of Panchayat Enterprise Suite (PES) Application MIS data with Spatial Application Platform so as to support in development and execution of planning activities. It also integrates data with Mission Antyodaya and Socio-Economic Caste Census (SECC). It helps in geo-tagging/geo-referencing the location from where data is being collected, thereby enhancing the reliability of data when plotted on the base map to enable a "granular" analysis at the disaggregated level. Moreover, it helps in the visualisation of spatial trends in GPDP implementation, such as:

- Focus area-wise activities being implemented in a Panchayat.
- Fund utilisation trending.
- Assets Mapping.
- Management of infrastructures.
- Identification of suitable sites for the creation of new amenities.
- GIS based Decision Support System.
- Visualisation of Panchayat level assets and funds utilisation through mActionSoft (mobile Application – Geotag assets created/maintained using Fourteenth Finance Commission funds).
- Enrichment of map content at GP/village level at a scale useful for planning.
- Provide geospatial tools like buffer, proximity analysis, query builder, etc., for spatial analysis at the district/block/GP level
- Creation of a GP-centric GIS platform with the available layers at NIC.

Some of its key features are:

- Spatial analysis tools provisioned to identify suitable sites for creating new amenities/ development work like schools, anganwadi centres, etc.
- "Real time" tracking of progress of work undertaken under different schemes. Work status is displayed in different colours, along with geo-tagged photos of assets on the map.
- Introducing better accountability and transparency in the process of preparing GPDP through the Geographic Information System (GIS) platform.
- Gram Panchayat profile with details of Sarpanch, Functionaries, address of Panchayat office, demographic data, etc., are available.
- Socio-Economic Caste Census (SECC) report, Mission Antyodaya (MA) data and MA gap analysis for the Gram Panchayat are available.

The following tools are integrated into the Gram Manchitra:

- Proximity analysis
- Query builder
- Multiple buffer

- Elevation profile
- Measurement/Swipe tool
- Resource envelop
- Base maps – street/ terrain/satellite from NIC and ESRI
- Report and Print map option

Mission Antyodaya – GIS

Mission Antyodaya is a convergence and accountability framework aiming to bring optimum use and management of resources allocated by 27 Ministries/Department of the Government of India under various programmes for the development of rural areas. It is envisaged as a State-led initiative with Gram Panchayats as focal points of convergence efforts. An annual survey in Gram Panchayats across the country is an important aspect of the Mission Antyodaya framework. It is carried out coterminous with the People's Plan Campaign (PPC) of the Ministry of Panchayat Raj, and its' purpose is to lend support to the process of participatory planning for the Gram Panchayat Development Plan (GPDP). NIC has developed a Mission Antyodaya Android mobile application (Samridh Gram) for collecting the data (141 parameters) covering all 29 subjects as per the 11th Schedule of the Constitution, annually by PRI members.

The framework makes use of the Geo-ICT application, i.e. Mission Antyodaya – GIS, to ensure that the benefits reach the most deserving as per SECC data. Backed by robust MIS linked to the scheme's databases using common Local Government Directory (LGD) code, it would be possible to ensure end-to-end targeting against a defined set of indicators to measure the progress against the baseline. The data of various programmes and schemes of over 25 departments and ministries of Central and State governments are incorporated in the application.

e-Gram Swaraj

eGram Swaraj is one of the applications developed as part of Panchayat Enterprise Suite (PES) under the e-Panchayat Mission Mode Project (MMP) of the Ministry of Panchayati Raj (MoPR). To strengthen e-Governance in Panchayati Raj Institutions (PRIs) across the country, the Ministry of Panchayati Raj (MoPR) has launched eGram Swaraj, a user-friendly web-based portal. eGram Swaraj aims to bring better transparency and strengthen the e-governance in Panchayati Raj Institutions through decentralised planning, progress reporting and work-based accounting. Furthermore, eGram Swaraj provides a platform for effective monitoring by the higher authorities. It's a single platform for all planning and accounting needs of the Panchayat.

The major features available for GIS planning are:

1. Spatial Planning: It provides Spatial Planning tools through Gram Manchitra for scientific, qualitative and evidence-based planning at the Panchayat level.
2. Geo-tagging: To support geo-tagging and photo capturing of assets created. The physical progress of asset-based activities becomes smoother through the mobile application, mActionSoft.
3. Generates a unique Asset ID for identification of assets created/maintained/controlled by a planning unit.
4. Captures asset details such as asset absolute location (latitude/longitude), status, ownership, etc.
5. Provision to locate assets on Gram Manchitra GIS.
6. The status of the activity can be shown as ongoing, suspended, abandoned or completed in Gram Manchitra GIS.

Bhuvan Panchayat

An enabling environment named Bhuvan Panchayat Portal is developed and hosted by NRSC (ISRO) under the project named 'Space-based Information Support for Decentralised Planning' (2016). The web portal integrates geospatial layers derived from space-based inputs in a web-GIS framework with interactive modules like Area Profile Report Generation, Asset Mapping, Activity Planning and Implementation-Monitoring for facilitating effective developmental planning in the light of the Village Developmental Plan (Figure 45).

The following are the database available on Bhuvan Panchayat Portal:

- **Satellite imagery:** An Ortho-corrected high-resolution satellite imagery database (fused product of Cartosat-1 and LISS-IV imagery) is generated for the entire country to act as a base layer for further mapping.
- **Thematic data:** Overlaid on the base layer, various thematic layers (such as land cover, drainage, transportation and slope layers) are prepared at a 1:10,000 scale for the entire country.
- **Legacy data:** Soil information layer, groundwater potential, forest boundary, watershed boundary, wasteland information and slope class layer.
- **Cadastral data:** Prepared at a 1:4000 scale for five priority States

- **Administrative boundaries:** Village, Panchayat, Intermediate Panchayat, District, State, Parliamentary and Assembly Constituency

- **Asset Data:** A continuously growing national inventory of geo-tagged community assets along with their photographs and related attributes is available on the Portal for its utilisation in developmental planning. The inventory is crowd-sourced for citizens/PRIs/facilitators to map assets through Bhuvan Panchayat Asset Mapping Mobile App.

- **Non-spatial data:** In addition to the geospatial layers, the project database comprises village amenities, and demographic and climatic data integrated with the spatial database.

- **Periodicity of the satellite data:** There is a provision to update the satellite data every two years to facilitate regular monitoring of progress per village.

- **Accessibility of the datasets:** All the datasets are available in the public domain, and viewing them on Portal does not require any registration.

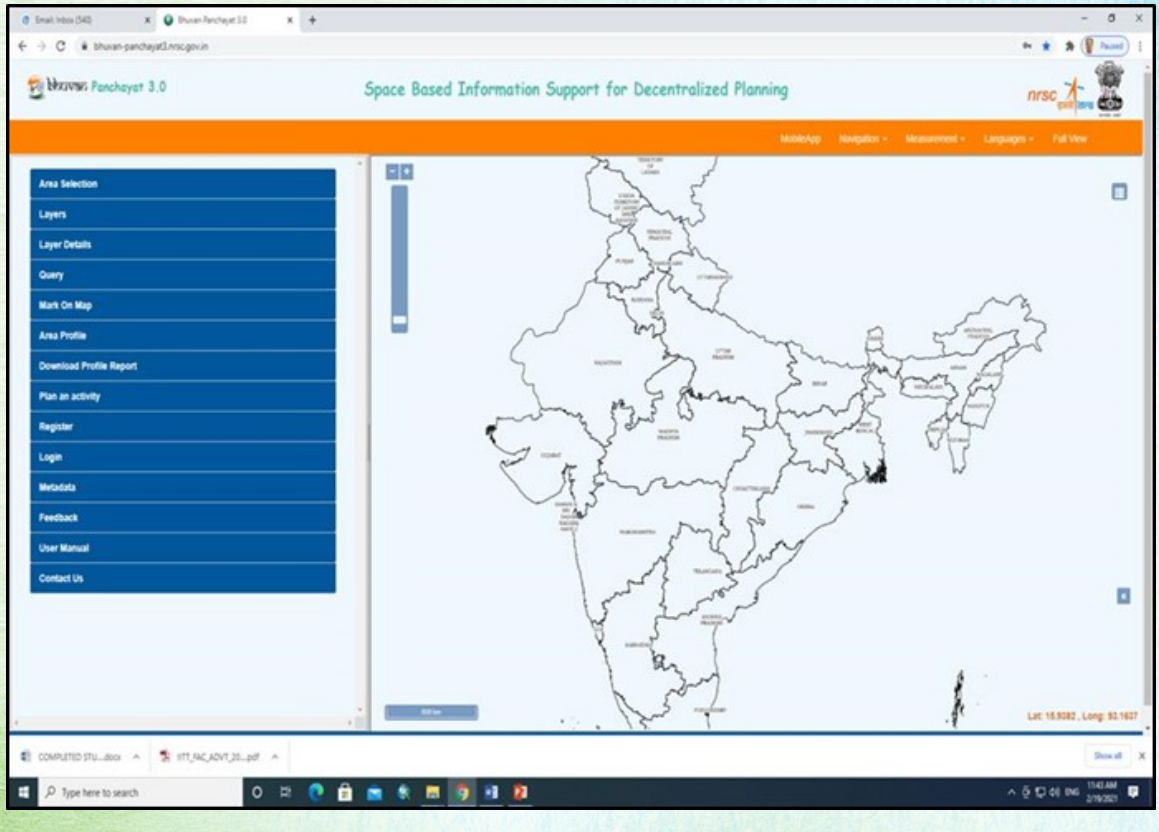

Figure 45: Bhuvan Panchayat Web Portal Showing Various Layers and Activity Options

Bhuvan Panchayat platform brings Spatial Planning deeply embedded in governance systems at all the three tiers of Panchayati Raj system. It helps guide land-use decisions considering the pattern of resource mobilisation and resource allocation. It is a single window interface providing an information system and decision support system along with facilitating spatial developmental planning.

Spatial Consolidation of Plans

In India, we have a three-tier system that follows the decentralised governance pattern. The focus here is on the requirements at the grassroots level that need to be contextualised and focused upon when the plans are drawn. However, this does not happen commonly. In a decentralised setup, plans evolve from the grassroots level. They are the draft development plans which successively ascend to the sub-district and district levels. Ideally, the ascending plan should speak about the local necessities and simultaneously be in communion with the vision strategic plan of the region or State. The spatial depiction of such plans helps in reducing spatial disparities. The framework of spatial strategic planning should be interlinked at all the three tiers of Panchayati Raj. Bhuvan Panchayat provides a platform for such spatial consolidation and interlinking. Spatial Planning, when integrated with sectoral planning, is called 'spatial strategy.' Spatial Planning has the power of integration with individual sectoral plans.

Importance of Spatial Planning

Spatial Planning is largely a public sector function to influence the future spatial distribution of activities. It aims to create a more rational territorial organisation of land uses and the linkages between them to balance demands for development with the need to protect the environment, and achieve social and economic objectives. Spatial Planning tries to coordinate and improve the impacts of other sectoral policies on land use to achieve a more even distribution of economic development within a given territory than would, otherwise, be created by market forces. Therefore, Spatial Planning is an essential lever for promoting sustainable development and improving the quality of life.

Spatial Planning refers to the methods used by the public sector to influence the distribution of people and activities in spaces of various scales in order to improve the built, economic and social environments of communities. Separate professional disciplines that involve Spatial Planning include land use, urban renewal, regional, transportation, and economic and community planning. Spatial Planning takes place on local, regional, national and international levels and often results in creating a spatial plan.

Using Spatial Planning in local self-governance can ensure openness and accountability in the functioning of GPs. With the aid of GIS and satellite imagery, a detailed visual record of the projects can be maintained, which can be accessed anytime. Physical verification of the projects can be done by anybody anywhere anytime. GIS can increase the legitimacy and acceptability of the PRIs among its stakeholders.

At the local level, in particular, non-availability of information in a spatial manner renders the information that poses a challenge to grasp and understand, which leads to adhocism in the prioritisation of schemes/programmes, poor decision-making, slow process of making corrections during implementation and narrow participation of people in the process. This lack of transparency further leads to corruption and jeopardises the interests of the people and the government. In respect of Spatial Planning, it becomes beneficial if the current statuses as well as proposed developments are shown on maps.

Spatial panning resolves the pressure of land use between basic needs and quality of life on the one hand and the provision of infrastructure, on the other hand, to address the needs and aspirations of the rural areas and hinterlands and urban peripheries. Spatial Planning is an important aspect of any planned development. It is vital for providing serviced land and laying down infrastructure further to which 'development' occurs. These spatial plans are prepared in the form of Master Plans, Development Plans and Comprehensive Development Plans. All planning practitioners appreciate that urban areas and rural settlements should be considered in totality for planning at the district and regional levels. Several States also have their Town and Country Planning bodies for undertaking Spatial Planning; such exercises for rural settlements have altogether been absent.

The rural areas are devoid of planned spatial development. The absence of planned spatial development in rural areas has a major impact on regional development, especially in the case of villages. Spatial data analysis is a multidisciplinary activity concerning land and water resources, geography, urban planning, hydrology and earth sciences. These data sets may be derived from text, maps, charts, organisations, aerial photographs, satellite images and ground information. The management and analysis of such large volumes of spatial data require a computer-based system called Geographic Information System (GIS), which can solve complex geographical, hydrological, and planning problems (Garg, 2008). GIS is defined as a system of computer hardware and software designed to allow users to collect, manage, analyse and retrieve large volumes of spatial referenced data and associated attributes compiled from various sources (Burrough and McDonnell, 1998). In the planning process at the regional level, integration of various spatial data and their attributes are required to arrive at different alternatives. GIS is a useful tool for integrating and analysing the multi-thematic information for a particular application, thereby providing managers and planners with the necessary tools for generating new information from existing thematic layers of data required for a specific need.

In GIS, both spatial (e.g., satellite images, maps) and non-spatial (e.g., census surveys) data may be integrated, and a set of spatially registered layers may be analysed independently or in combination. GIS supports multiple views of data and yet provides an integration that would minimise redundancy and maintain data integrity and security. It allows concurrent access to multiple users and the processing of user transactions in an efficient manner.

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

guidelines emphasise the need to prepare rural spatial plans integrated with the overall development. The RADPFI guidelines aim to provide direction for preparing spatial plans for Gram Panchayat and mention the required alterations and additions in the existing statutory provisions of planning. The need for the RADPFI guidelines arises from the fact that there are 6.49 lakh villages in the country and 68.84 per cent of the total population lives in the rural areas (Gram Panchayat Spatial Development Plan, SPA, Bhopal, 2018). These villages have varied characteristics and show different degrees of transformation from rural to urban. The villages that show a high degree of transformation due to their spatial location may attain urban characteristics in the future, and therefore, it becomes indispensable to plan these settlements.

Out of nearly 7933 urban settlements in India, only 3892 qualify to be classified as Census Towns by the Census of India. From 2001 to 2011, India's urban population has increased, and a significant contribution was the inclusion of large rural settlements as urban settlements in 2011. Such Census Town attracts migration from surrounding villages, serving as nodal centres or market places and as centres of socio-economic activities. The Gram Panchayat areas surrounding the settlements are used for agriculture, grazing, mining, resource collection, and various other purposes. Environmental concerns are also rapidly gaining importance on account of increasing pressure on land and other resources. Planned development is intricately linked with socio-economic development, including poverty alleviation. Therefore, the need for Spatial Planning in Gram Panchayat areas can hardly be over-emphasised.

The present RADPFI Guidelines Document is an attempt in this direction to make Spatial Planning an integral part of the GPDP, SAGY, Model Village Plan, Smart Villages and all such initiatives to make the Gram Panchayat the focal point of development and empowerment.

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Chapter 3: Objectives and Methodology

This particular study was envisaged to understand the development scenario at the ground level. Burgula Panchayat was selected for the study. The main objectives of this study were:

1. Mapping of all resources: Natural as well as cultural (man-made) resources, i.e., infra structure such as educational institutes, health centres, banking, PDS, Common Proper ty Resources, land use including agricultural and barren lands, water bodies, roads, etc.)
2. Mapping all Settlements (Tandas /hamlets)
3. Finally, the development of a web GIS-based application with an interactive dashboard.

Methodology

The data was collected through a crowd-sourcing approach. Collaboration with local youth through an NGO was done. Open Data Kit (ODK) forms were used to collect data of existing locations of infrastructure facilities and settlements, including pictures, videos, etc., and geo-tagging the same. Other data collection tools such as interview schedules, questionnaires and FGDs were used to collect in-depth data from the beneficiaries, government officials working at the village level, and households. Participatory Rural Appraisal (PRA) was adopted to gather data from community members. Both qualitative and quantitative approaches were used. Household surveys were conducted to gather data for mapping the whole village with ODK. The ODK forms helped in generating Excel sheets and maps, and subsequently converting raw data into insights.

Secondary data was drawn from Mission Antyodaya, which is a convergence and accountability framework aimed at bringing optimum use and management of resources allocated by 27 Ministries/ Department of the Government of India under various programmes for the development of rural areas. It is envisaged as a State-led initiative with Gram Panchayats as focal points of convergence efforts. All the 141 indicators were used in the mapping and designing of the dashboard. Census data was used as a reference point. Moreover, GIS has been used to generate maps regarding development indicators of Mission Antyodaya and locations of cultural resources and land-use details.

Web GIS-based application and visualisation dashboards were finally created.

Study Area

The study area is Burgula, also known as Burgula Panchayat, which is situated 65 km away from the Telangana State capital of Hyderabad. Physio-graphically, the study area comprises big elevation on one hand and depression on the other, forming irregular and diverse topography. The total geographical area of the village is 2730 hectares and the aerial extension is 29 sq.km. Burgula has a total population of 5,993 people, and about 1,452 houses. Mahbubnagar is the nearest town to Burgula, located approximately 50 km away.

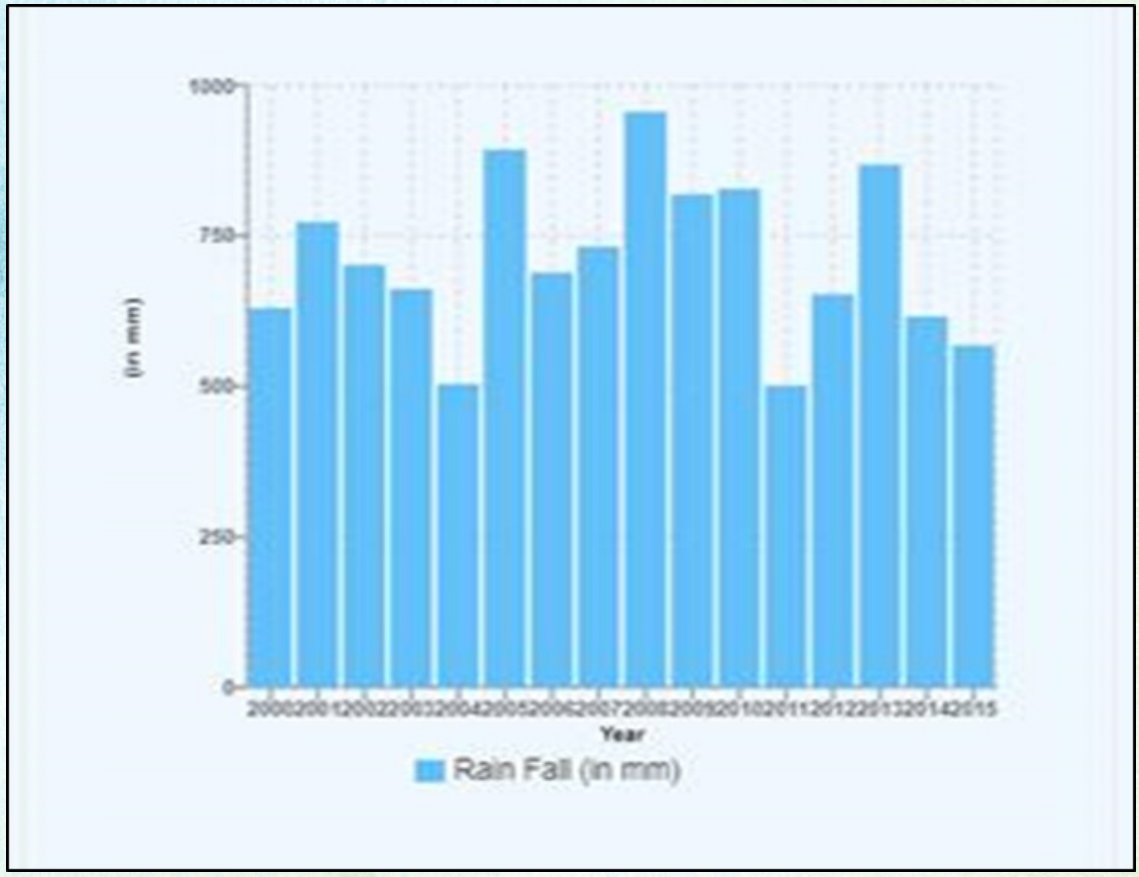

Figure 46: Graph Showing Rainfall (in mm) from 2000 to 2015

Figure 46 shows the rainfall pattern from 2000 to 2015. It shows that from 2005 to 2010, the rainfall was above 600mm; however, it decreased considerably by 2015. In 2008, the rainfall had increased to about 900mm, but in 2011, Burgula Cluster received 500mm of rainfall.

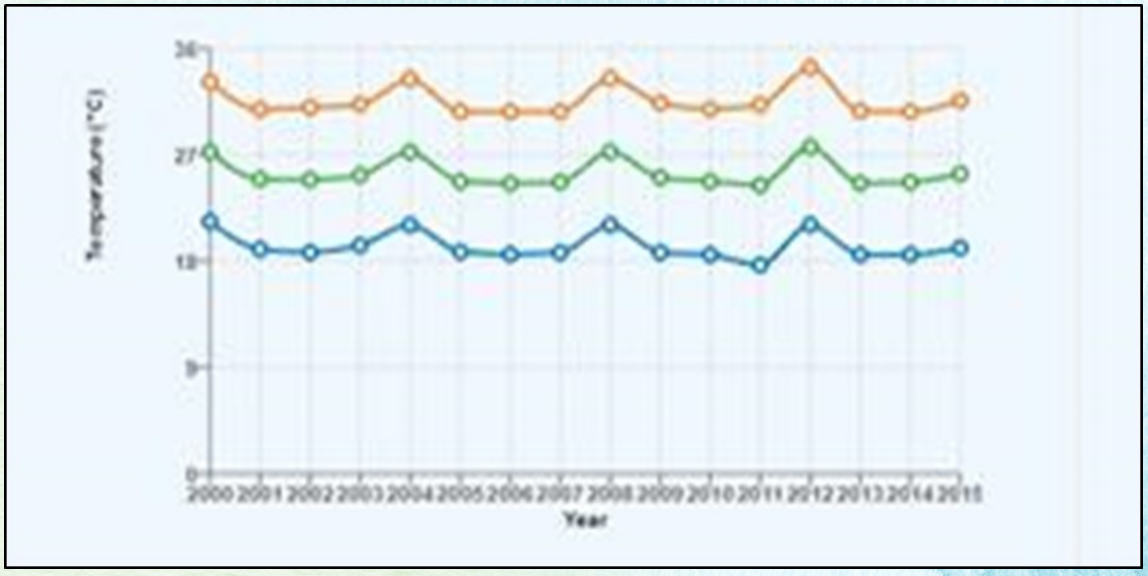

Figure 47: Graph Showing Year-wise Temperature from 2000 to 2015

The above figure shows the temperature variation across years from 2000 to 2015. It shows that the average temperature varied between 27 degree Celsius and 25 degree Celsius from 2000 to 2015.

The Burgula Cluster was also one of the adopted villages of NIRDPR, and the community people were more than welcoming and cooperated in the process of data collection.

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Chapter 4: Web GIS Application along with Interactive Dashboard

GIS-based application for mapping the 29 sectors under Mission Antyodaya

The project outcomes have been placed on an interactive dashboard for easy and convenient monitoring and tracking. The dashboard is made for easy maneuvering and navigation by the end users. The screen is divided into two panels:

1. The interactive map from the Google
2. The drop-down list of indicators for selection

The 29 sectors are selected according to the ones mentioned in Mission Antyodaya. They are mentioned in XIth Schedule under Article 243G and are as listed below.

Table 8: The 29 Indicators in Mission Antyodaya

1.	Agriculture, including agriculture extension.	16.	**Poverty alleviation programmes**
2.	Land improvement, implementation of land reforms, land consolidation and soil conservation.	17.	Education, including primary and secondary schools
3.	Minor irrigation, water management and watershed development	18.	Technical training and vocational education
4.	Animal husbandry, dairying, and poultry	19.	Adult and non-formal education
5.	Fisheries	20.	Libraries
6.	Social forestry and farm forestry	21.	Cultural activities
7.	Minor forest produce	22.	Markets and fairs
8.	Small-scale industries, including food processing industries	23.	Health and sanitation, including hospitals, primary health centres and dispensaries
9.	Khadi, village and cottage industries	24.	Family welfare
10.	Rural housing	25.	Women and child development
11.	Drinking water	26.	Social welfare, including welfare of the disabled and mentally retarded
12.	Fuel and fodder	27.	Welfare of the weaker sections, particularly, the Scheduled castes and Scheduled Tribes
13.	Roads, culverts, bridges, ferries, waterways and other means of communication	28.	Public Distribution System
14.	Rural electrification, including distribution of electricity	29.	Maintenance of Community assets
15.	Non-conventional energy sources		

Following the Mission Antyodaya pattern, the map here on the dashboard shows the indicators in red (critical), yellow (moderate) and green (strength) for all the Panchayats.

The above-listed indicators have been put in the drop-down list and are discussed below in light of the study:

1. Agriculture

a) Households Engaged Majorly in Non-farm Activities

The corresponding map shows that majority of the households in Kasireddyguda are engaged in non-farm activities. At the same time, houses in Burgula, Chintaguda and Kundel Kunta Tanda are moderately engaged, and those of Kadiyala Kunta Tanda and Nerella Cheruvu are hardly engaged in non-farm activities, which may include jobs in private sectors, hatcheries, private business, self-employment, etc.

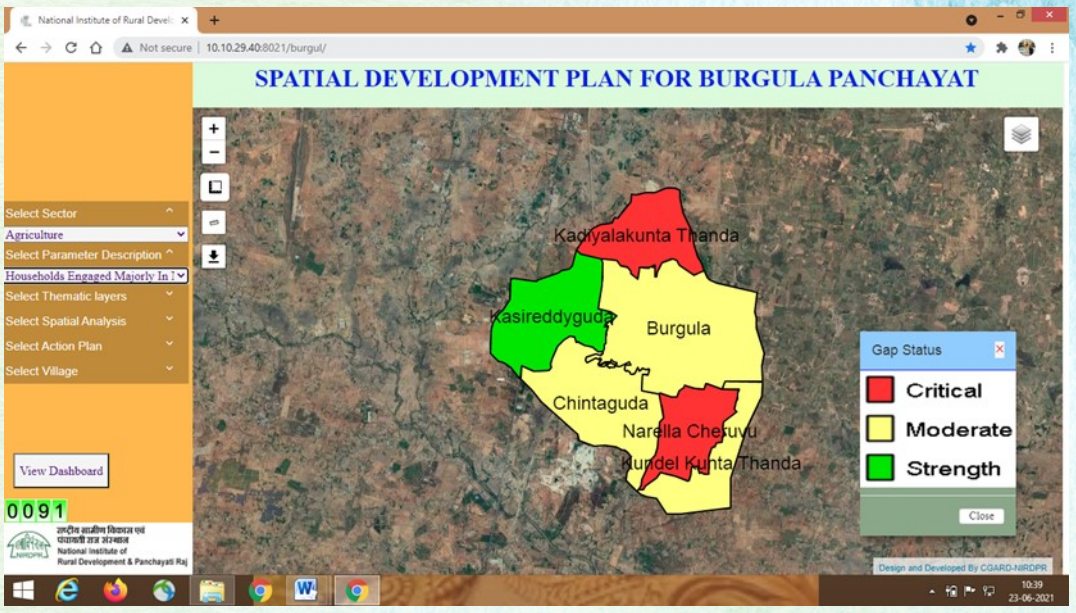

Figure 48: Households Engaged Majorly in Non-farm Activities

b) Availability of Government Seed Centres

The corresponding map shows that except for Kasireddyguda, which has a moderate number of government seed centres, other Panchayats do not have the facility, and hence are shown in red.

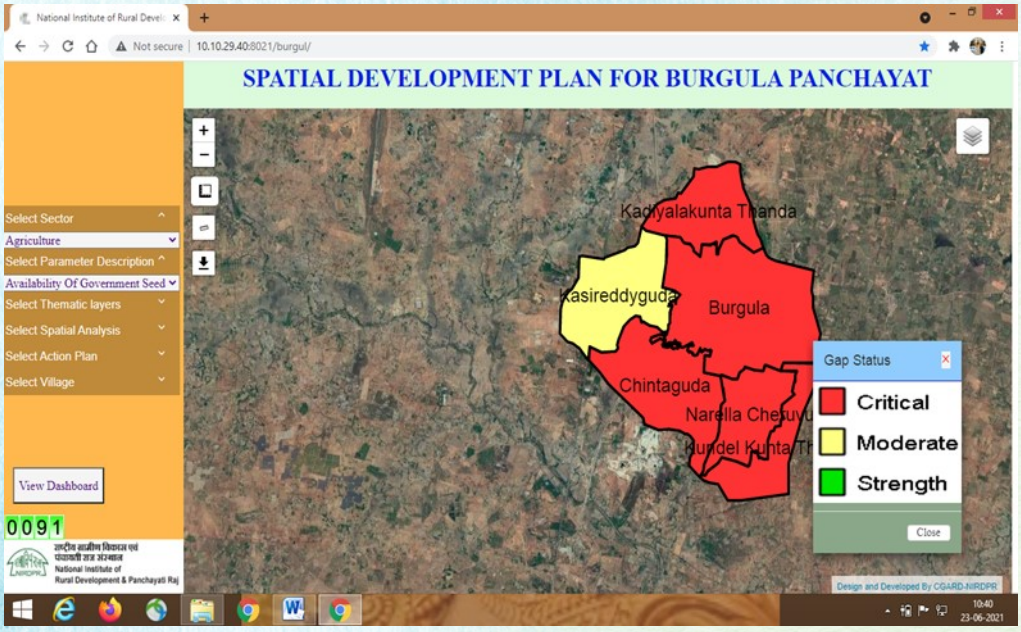

Figure 49: Availability of Government Seed Centres

c) Whether the Village is Part of the Watershed Development Project

As seen in the corresponding map, Burgula, Nerella Cheruvu, and Kadiyala Kunta Tanda are part of the Watershed Development Project, whereas Kundel Kunta Tanda, Chintaguda and Kasireddyguda are shown in red, i.e. they are not a part of any such project.

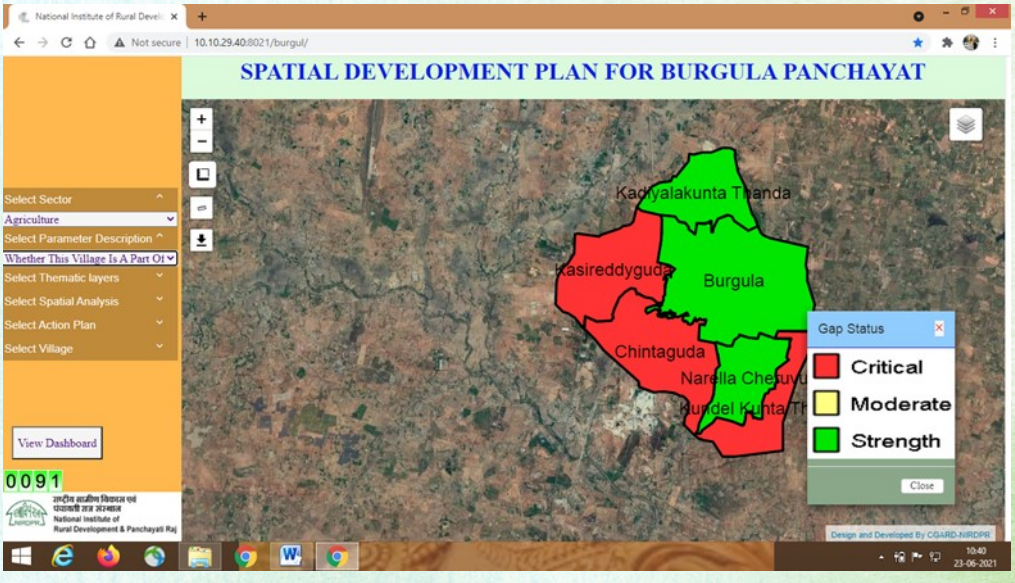

Figure 50: Villages that are Part of Watershed Project

d) Availability of Pond, Dam, Check Dam

Except for Burgula, which is shown in green, no other Panchayat has water bodies, and hence are depicted in red.

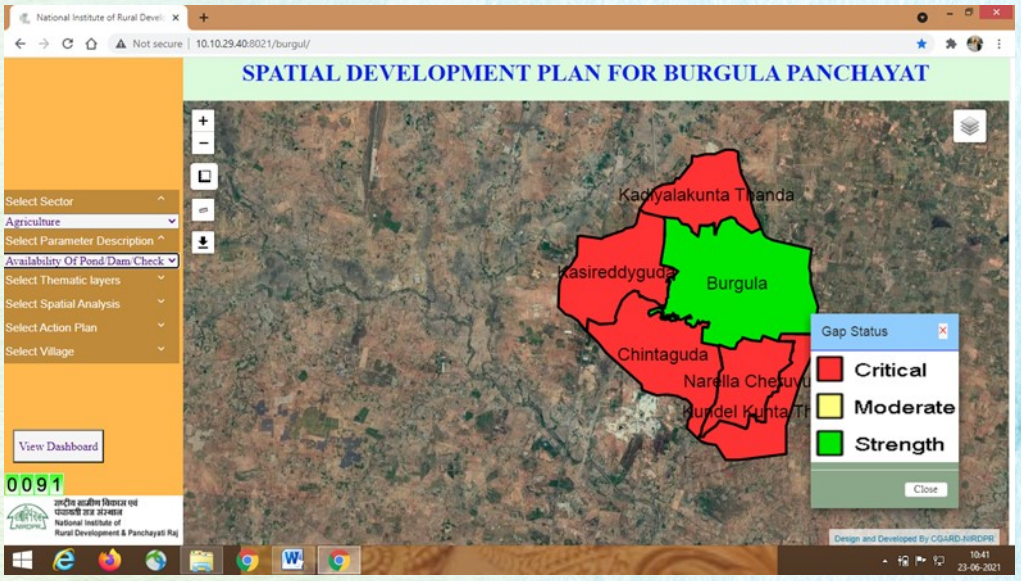

Figure 51: Availability of Pond, Dam, Check Dam

e) Does the Village have Any Farmer's Collectives

It is seen that Kadiyala Kunta Tanda, Burgula and Nerella Cheruvu have Farmers' Collectives and are shown in green, whereas Kasireddyguda, Chintaguda and Kundel Kunta Tanda have no Farmer's Collectives and are shown in red.

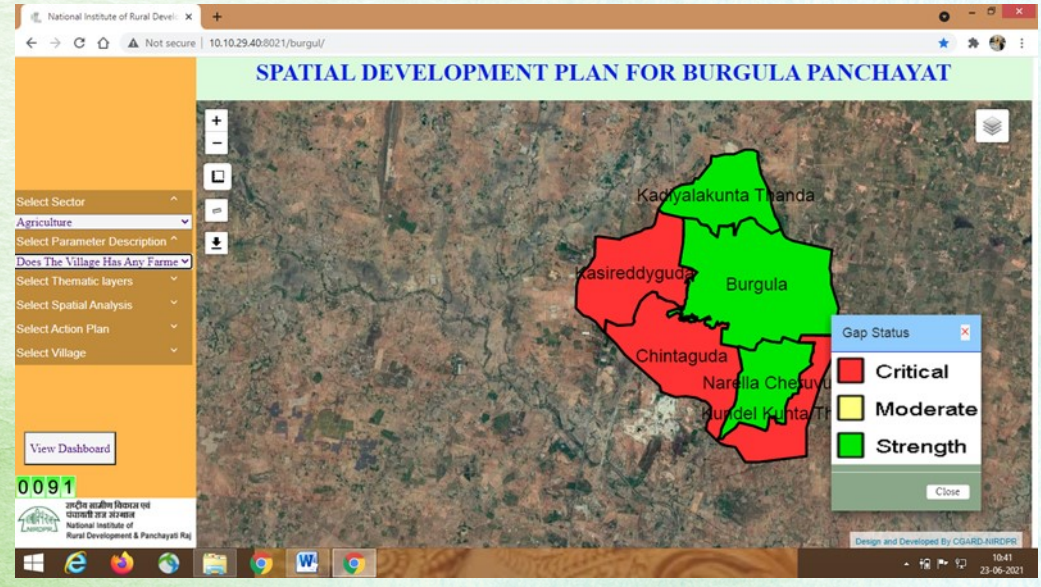

Figure 52: Availability of Farmer's Collectives

f) Availability of Warehouse for Foodgrain Storage

As per the corresponding map, it can be deduced that none of the Panchayats have warehouse for foodgrain storage, and hence all are shown in red.

Figure 53: Availability of Warehouse for Foodgrain Storage

g) Availability of Primary Processing Facilities at the Village Level

As per the corresponding map, it can be deduced that none of the Panchayats have such facility, and hence all are shown in red.

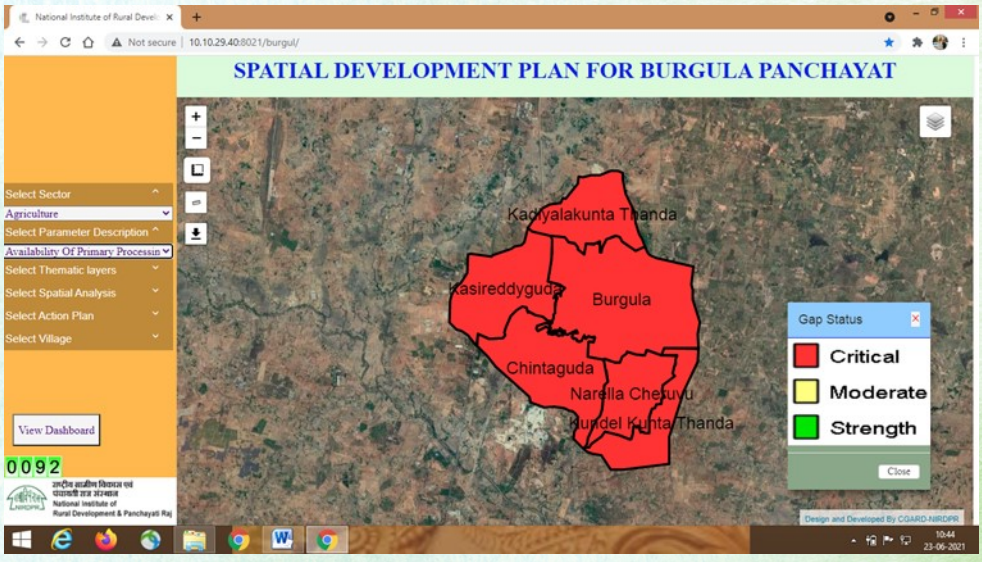

Figure 54: Availability of Primary Processing Facilities at the Village Level

h) Does the Village have Access to Custom Hiring Centre?

As per the corresponding map, it can be deduced that none of the Panchayats have such facility, and hence all are shown in red.

Figure 55: Availability of Custom Hiring Centre

2. Land Improvement and Minor Irrigation

a) Availability of Soil Testing Centres

As per the corresponding map, it is seen that soil testing centres are available at Kadiyala Kunta Tanda, Kasireddyguda and Chintaguda and are shown in green. They are moderately available in Burgula and Nerella Cheruvu, but not at all available in Kundel Kunta Tanda.

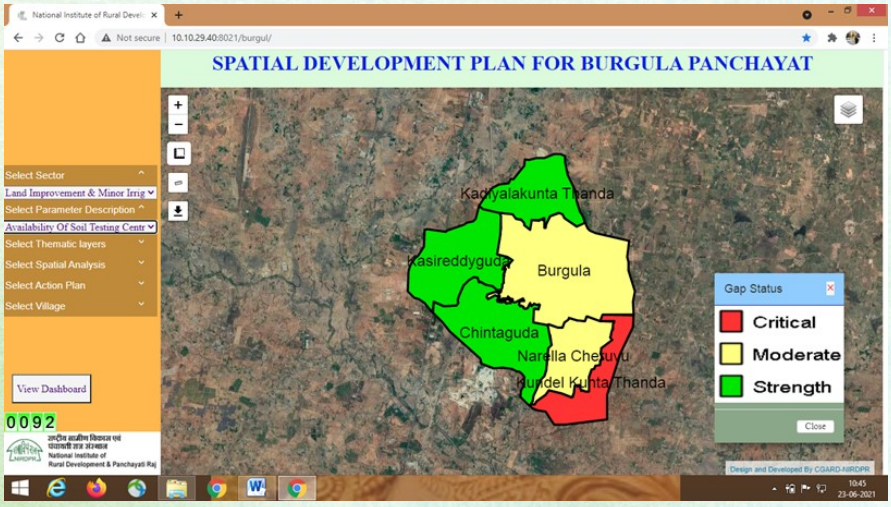

Figure 56: Availability of Soil Testing Centres

b) Availability of Fertiliser Shop

The corresponding map shows all the Panchayats in red, thus depicting the absence of fertiliser shops everywhere.

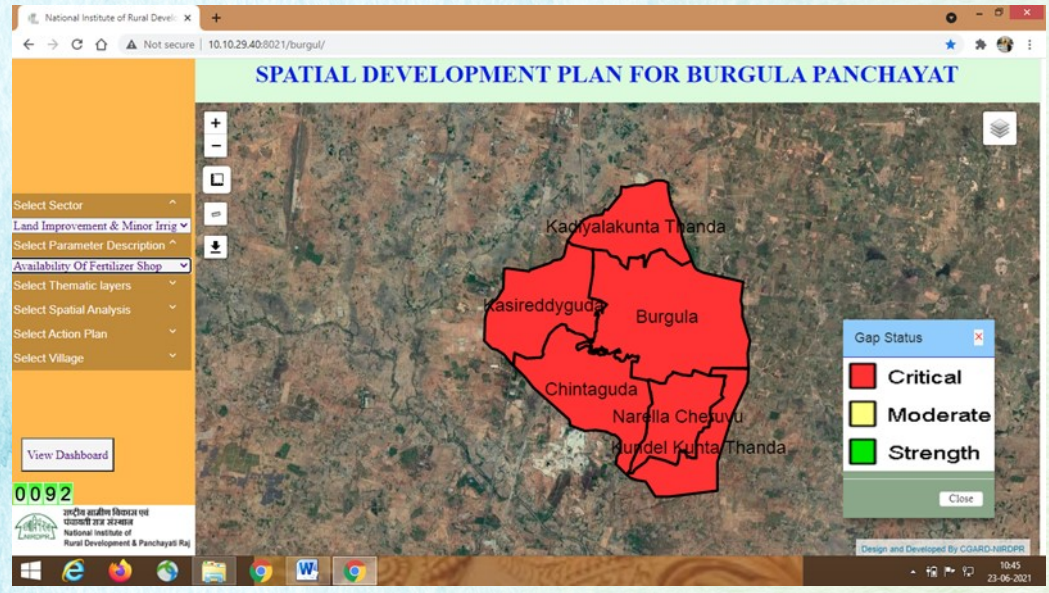

Figure 57: Availability of Fertiliser Shop

c) Main Source of Irrigation

The corresponding map shows that Burgula has a moderate source of irrigation which is shown in yellow. All the other Panchayats have main source of irrigation available, and are hence shown in green.

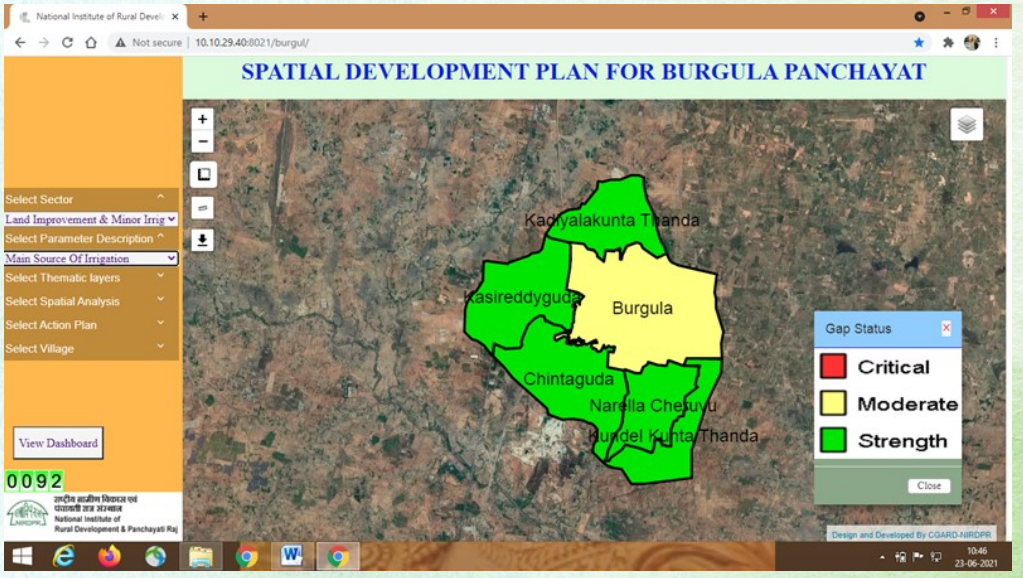

Figure 58: Main Source of Irrigation

d) Usage of Drip/Sprinkler Irrigation

The corresponding map shows all the Panchayats in red, thus depicting the absence of drip irrigation/sprinklers.

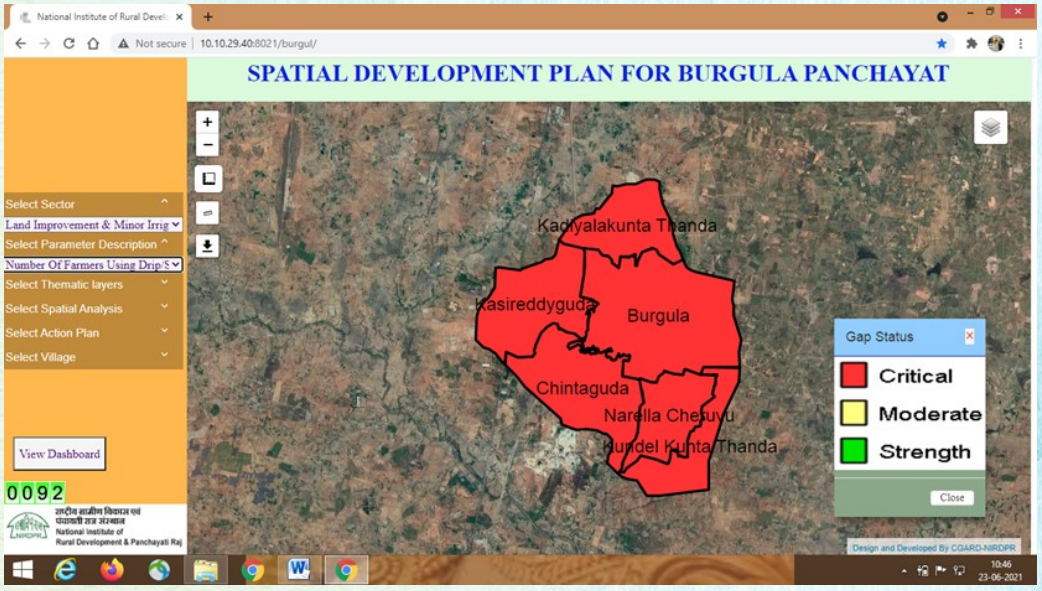

Figure 59: Usage of Drip/Sprinkler Irrigation

e) Total Irrigated Area (in hectare)

In the corresponding map, Burgula and Kundel Kunta Tanda are shown in green, and hence have a majority of the areas irrigated. In contrast, Chintaguda and Nerella Cheruvu are shown in yellow, and hence have moderate areas under irrigation. Kadiyala Kunta Tanda and Kasireddyguda are shown in red and have no area to be irrigated.

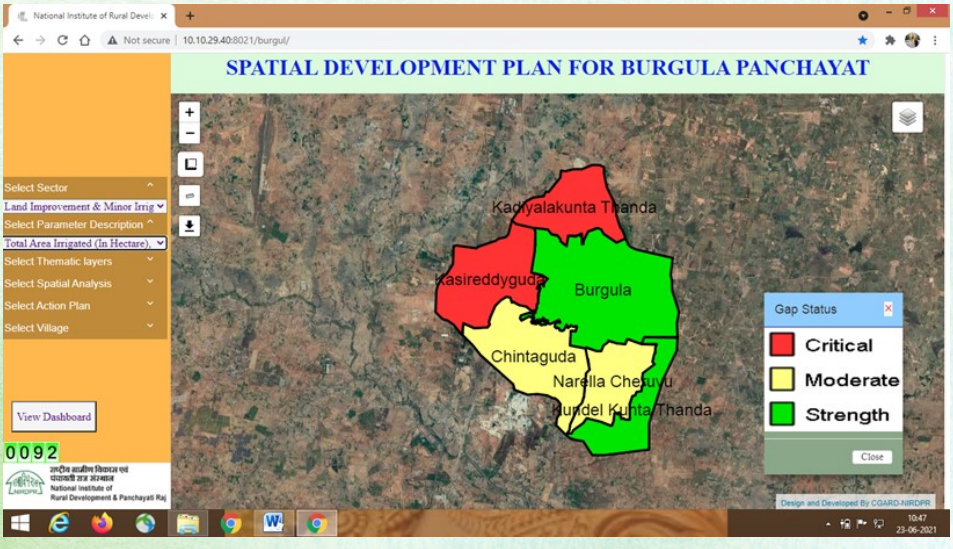

Figure 60: Total Irrigated Area (in hectare)

3. Animal Husbandry

a) Does the Village have Livestock Extension Services

Kasireddyguda, which is shown in green on the corresponding map, has livestock extension services. Limited services are available in Burgula, Chintaguda and Kundel Kunta Tanda. Kadiyala Kunta Tanda and Nerella Cheruvu have no such services available.

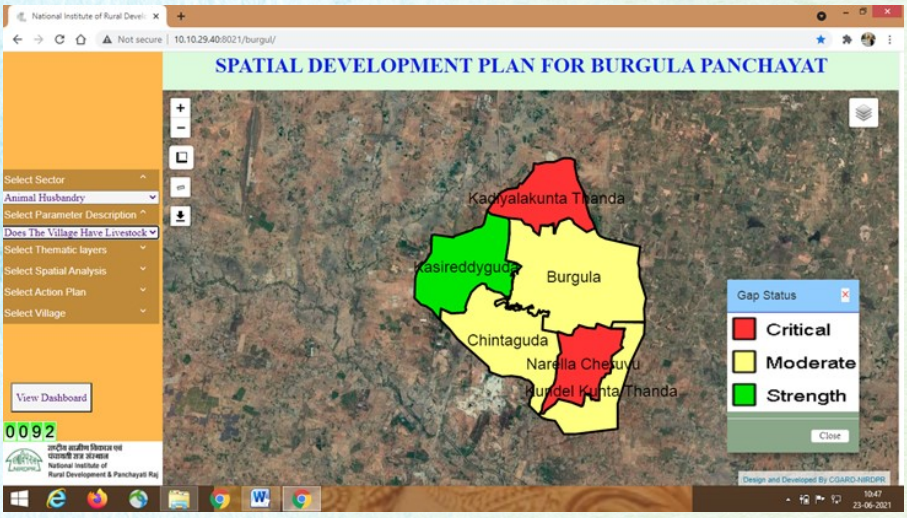

Figure 61: Availability of Livestock Extension Services

b) Availability of Milk Collection Centre/Milk Routes/Chilling Centres

Except for Burgula, no other Panchayat has milk collection centre/chilling centres, and therefore Burgula is depicted in green, and others are shown in red.

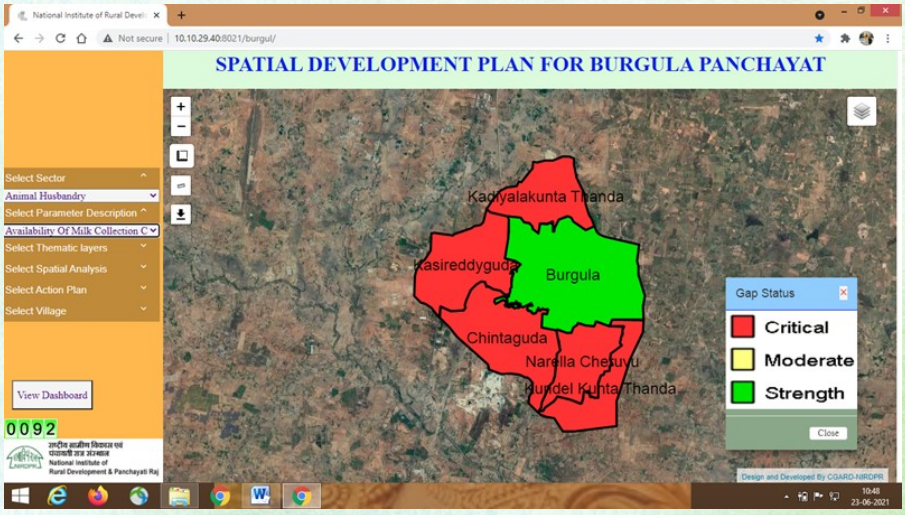

Figure 62: Availability of Milk Collection Centre/Milk Routes/Chilling Centres

c) Projects Supporting Poultry Development

None of the Panchayats has any project supporting poultry development, and hence all are shown in red on the corresponding map.

Figure 63: Availability of Projects Supporting Poultry Development

d) Projects Supporting Goatary Development

None of the Panchayats has any project supporting goatary development, and hence all are shown in red on the corresponding map.

Figure 64: Availability of Projects Supporting Goatary Development

e) Projects Supporting Piggery

None of the Panchayats has any project supporting piggery development, and hence all are shown in red on the corresponding map.

Figure 65: Availability of Projects Supporting Piggery

f) Availability of Veterinary Clinic or Hospital

All the Panchayats are shown in yellow depicting moderate availability of such service.

Figure 66: Availability of Veterinary Clinic or Hospital

4. Fisheries

a) Pisciculture-Inland Fishery/Coastal Fishery/Any other

In the corresponding map, Kasireddyguda is shown in green and has households that practice inland fisheries. In contrast, Burgula, Chintaguda and Kundel Kunta Tanda are shown in yellow, and Kadiyala Kunta Tanda and Nerella Cheruvu are shown in red.

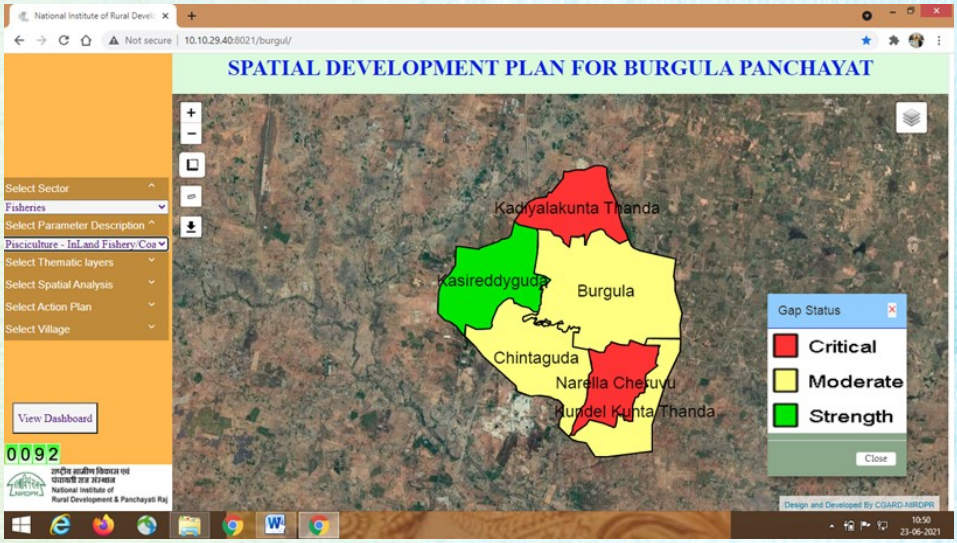

Figure 67: Pisciculture- Inland Fishery/Coastal Fishery/Any Other

b) Community Ponds Used for Fishery

All the Panchayats are shown in red, depicting that community ponds are not used for fishery.

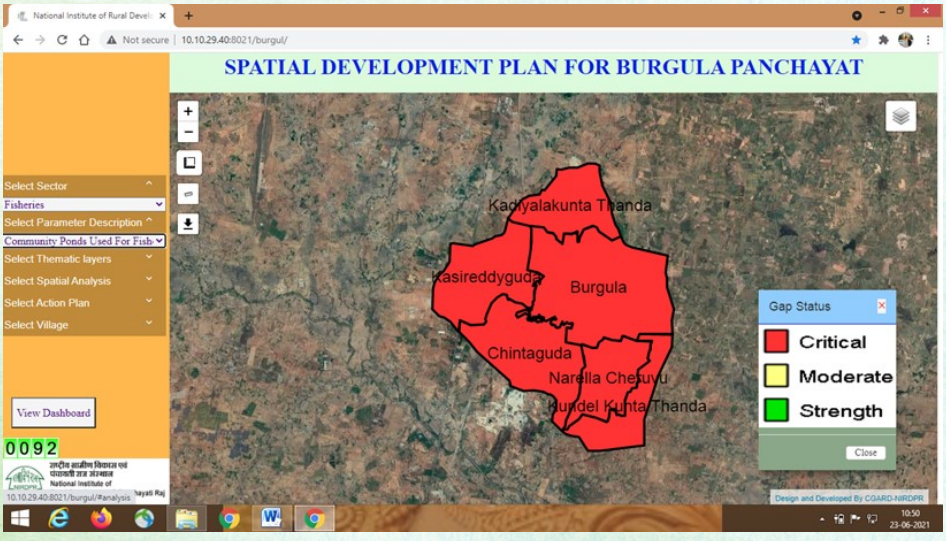

Figure 68: Community Ponds Used for Fishery

c) Extension Facilities for Aquaculture

Kadiyala Kunta Tanda and Burgula are shown in yellow, while Kasireddyguda, Chintaguda, Nerella Cheruvu and Kundel Kunta Tanda are shown in red, thus showing that extension facilities are not available for aquaculture.

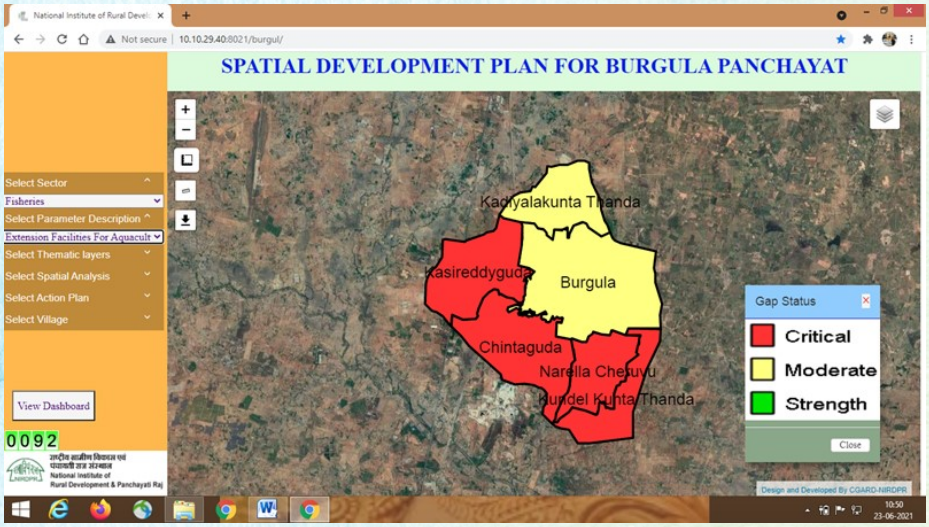

Figure 69: Extension Facilities for Aquaculture

5. Rural Housing

a) Number of Households with Kutcha Wall and Roof

Except for Nerella Cheruvu, which has the maximum number of households with kutcha wall and roof and is shown in green, others have pucca households, and are thus shown in red.

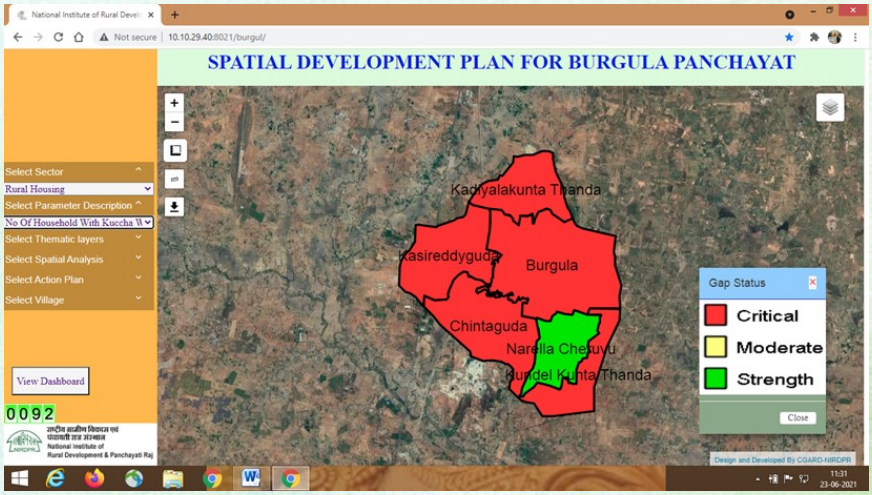

Figure 70: Number of Households with Kutcha Wall and Roof

6. Drinking Water

a) Availability of Piped Tap Water

Piped tap water facility is available in all the Panchayats and are shown in green on the corresponding map. The credit goes to the Mission Bhagirath programme of the Government of India, which aims to provide safe drinking water to every household in Telangana.

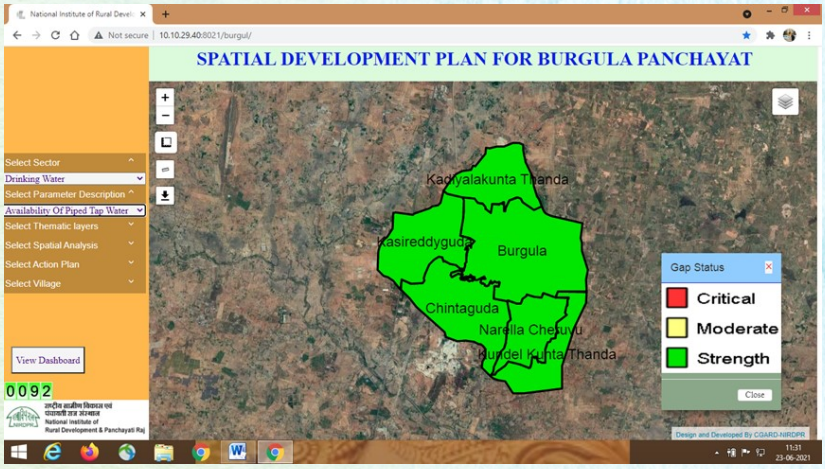

Figure 71: Availability of Piped Tap Water

7. Roads

a) Whether the Village is Connected to All-Weather road?

Whereas Kasireddyguda, Burgula and Nerella Cheruvu are connected with all-weather roads and are shown in green on the corresponding map, Kadiyala Kunta Tanda, Chinta-guda, and Kundel Kunta Tanda are not that well-connected and are shown in yellow in the map.

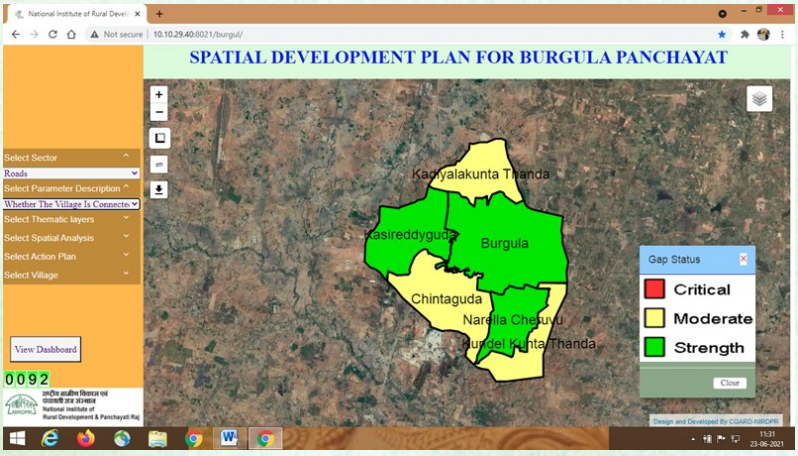

Figure 72: Availability of Connectivity through All-Weather Road

b) Whether the Village has Internal Pucca Roads (CC/Brick Road)

All the six Panchayats do not have internal pucca roads and are shown in yellow on the corresponding map.

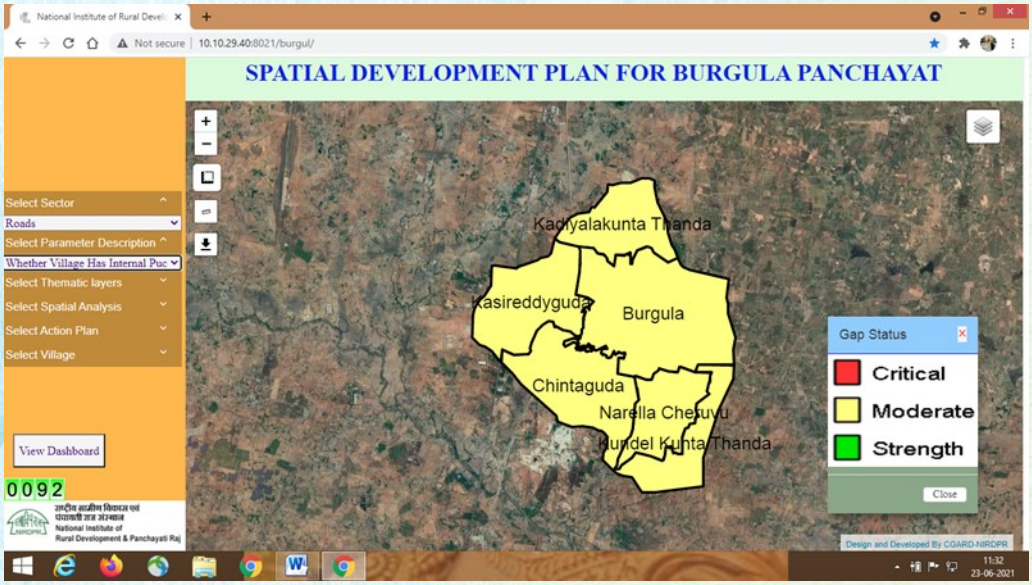

Figure 73: Availability of Internal Pucca Roads (CC/Brick Road)

c) Availability of Public Transport

Public transport is available in Kasireddyguda, Burgula and Nerella Cheruvu and hence are shown in green. Kadiyala Kunta Tanda, Chintaguda and Kundel Kunta Tanda do not have any public transport facility, and hence are shown in red.

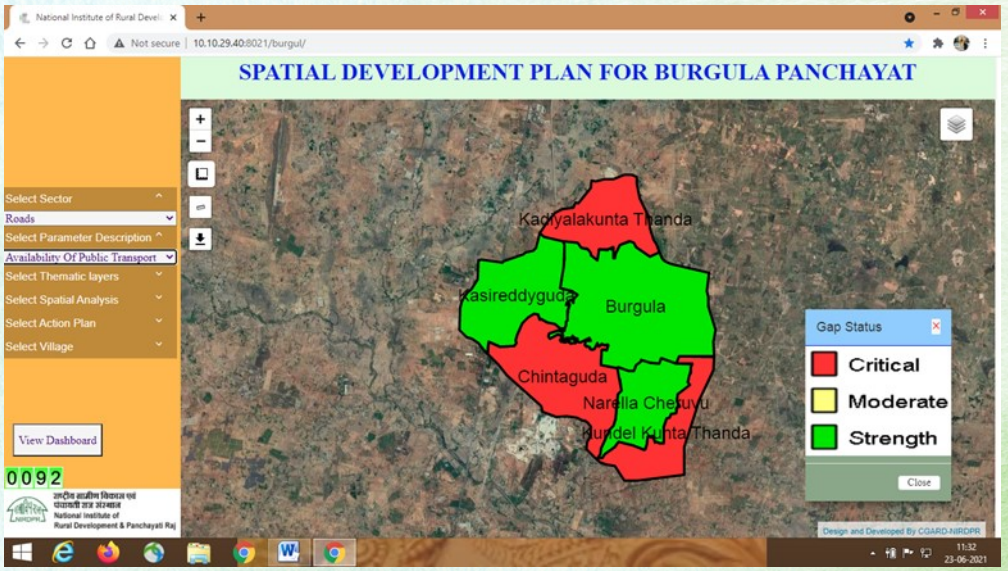

Figure 74: Availability of Public Transport

d) Availability of Railway Station

Except for Kadiyala Kunta Tanda, which does not have any railway station, others have a railway station, which is shown in green.

Figure 75: Availability of Railway Station

8. Rural Electrification

a) Availability of Electricity for Domestic Use

Except for Kadiyala Kunta Tanda, which does not have electricity for domestic use, other Panchayats have electricity for domestic use and are shown in green.

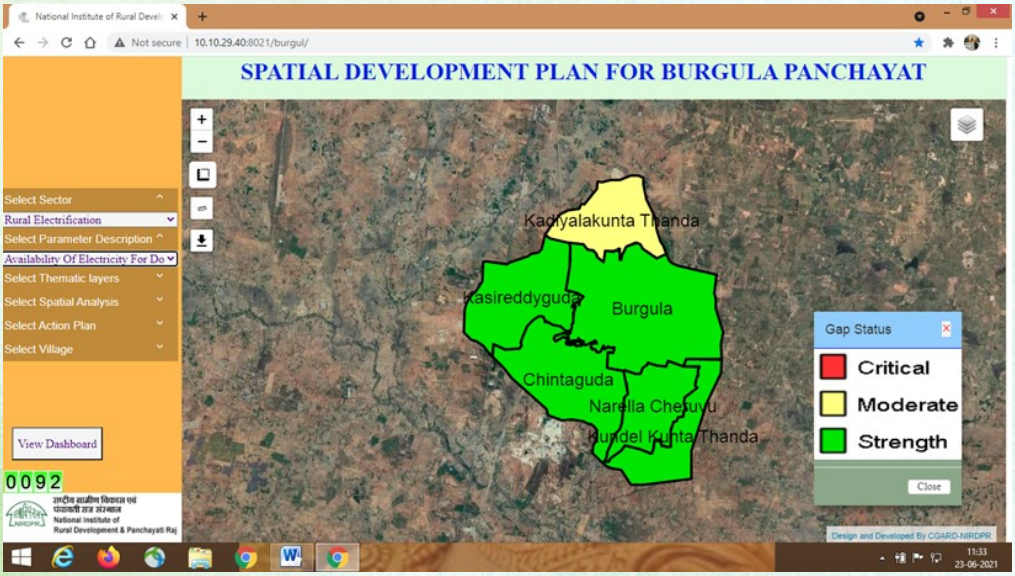

Figure 76: Availability of Electricity for Domestic Use

9. Non-Conventional Energy

a) Use of Solar Energy/Wind Energy for Electrification of Houses

Solar energy is used at Chintaguda and is shown in green, and the rest of the Panchayats do not have to use solar energy/wind energy for electrification of the house, and hence are shown in red.

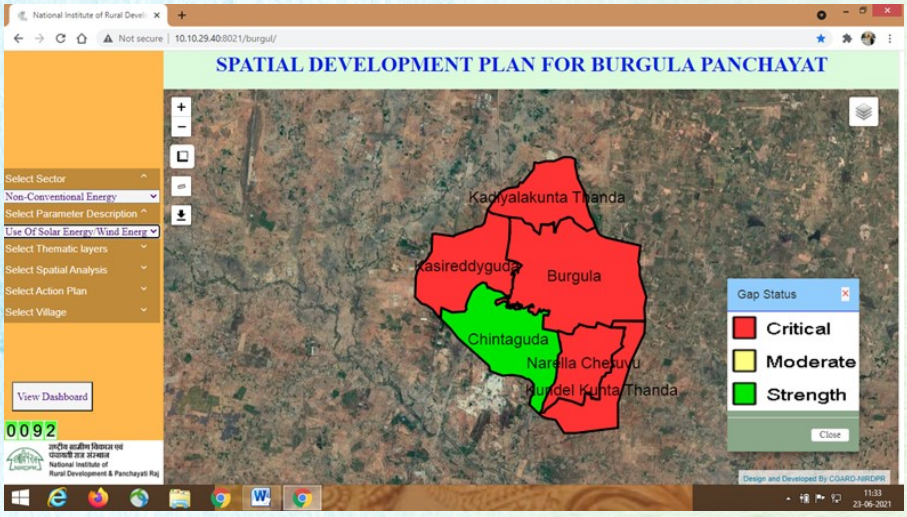

Figure 77: Use of Solar Energy/Wind Energy for Electrification of Houses

10. Maintenance of Community Assets

a. Availability of Panchayat Bhavan

Kadiyala Kunta Tanda, Burgula and Chintaguda have Panchayat Bhavan, whereas Kasireddyguda, Nerella Cheruvu and Kundel Kunta Tanda do not have it.

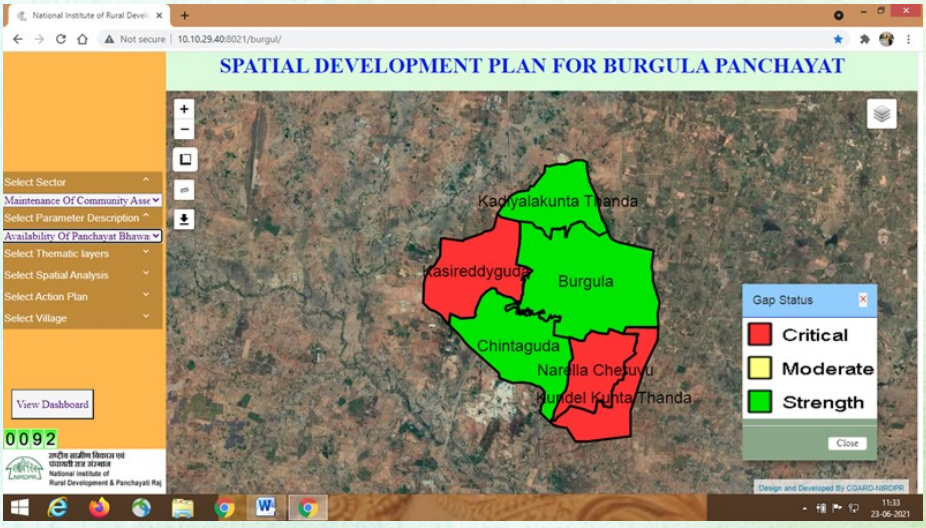

Figure 78: Availability of Panchayat Bhavan

b) Is there a Common Service Centre in the Village?

Except for Burgula, no other Panchayats have a common service centre.

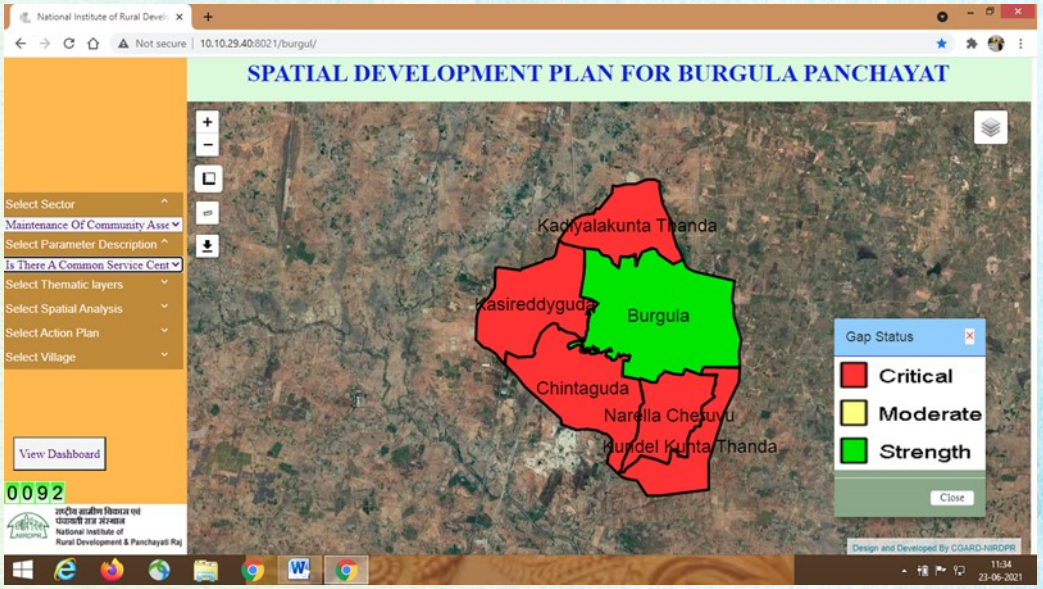

Figure 79: Availability of Common Service Centre in the Village

c) Availability of Public Information Board under People's Plan Campaign

Under the People's Plan Campaign, Public Boards are installed at Kadiyala Kunta Tanda, Burgula, Kasireddyguda, Chintaguda and Nerella Cheruvu, but not at Kundel Kunta Tanda.

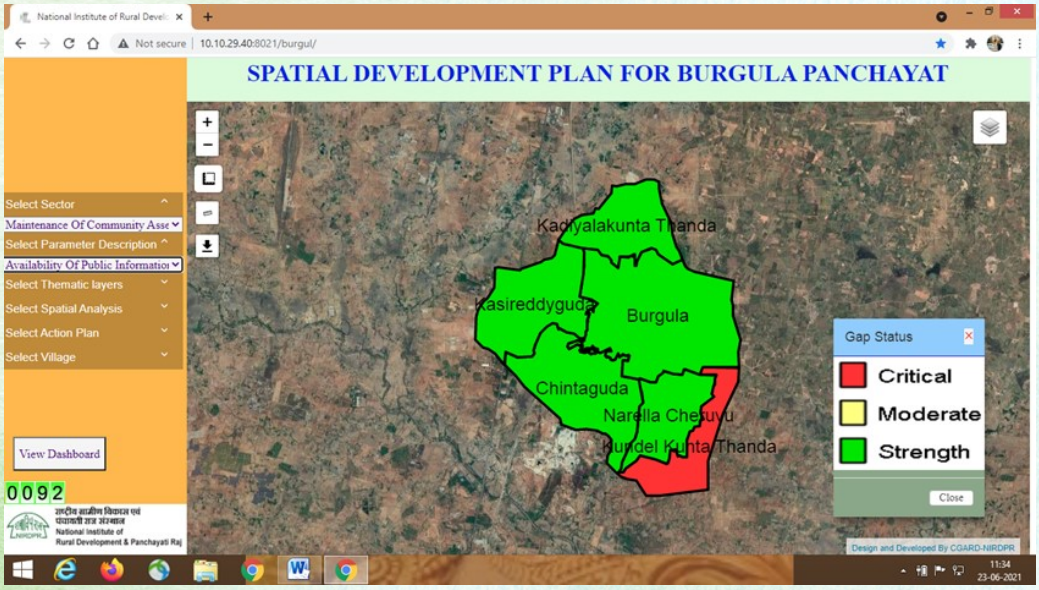

Figure 80: Availability of Public Information Board under People's Plan Campaign

11. Fuel and Fodder

a) Common Pastures as per Revenue Records

None of the Panchayats have common pastures as per revenue records.

Figure 81: Availability of Common Pastures as per Revenue Records

12. Libraries

a) Availability of Public Library

None of the Panchayats have libraries, and hence all are shown in red.

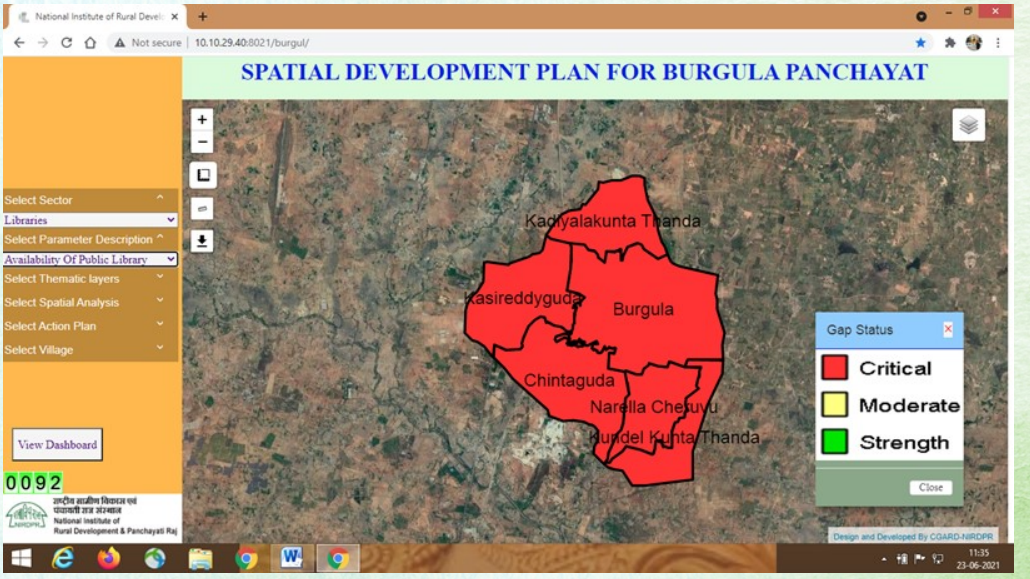

Figure 82: Availability of Public Library

13. Cultural activities

a) Availability of Recreational Centre/Playground, etc.

None of the Panchayats have recreational centres/playgrounds, etc.

Figure 83: Availability of Recreational Centre/Playground, etc.

14. Financial and Communication Infrastructure

a) Availability of Banks

Except for Burgula, no other Panchayat have banking infrastructure, and hence are shown in yellow.

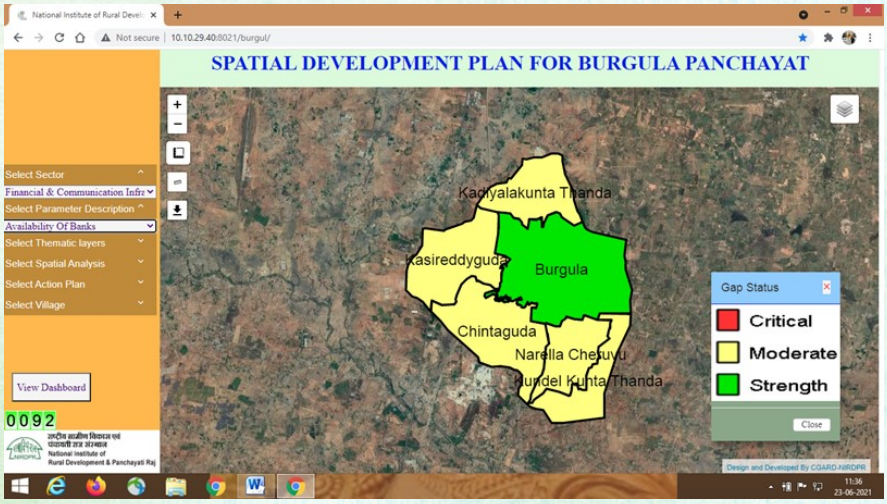

Figure 84: Availability of Banks

b) Availability of Business Correspondent with Internet Connectivity

Other than Kundel Kunta Tanda, no other Panchayats have Business Correspondent with internet connectivity.

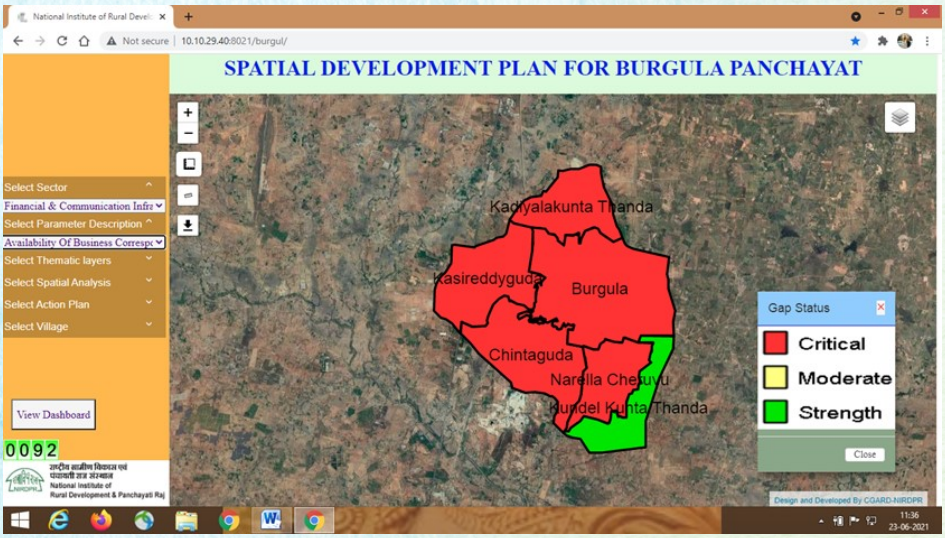

Figure 85: Availability of Business Correspondent with Internet Connectivity

c) Availability of ATM

Only Burgula Panchayat has ATM facility, whereas other Panchayats have money withdrawal facility. Hence, in the figure below, it is marked in green, and other villages are marked in yellow.

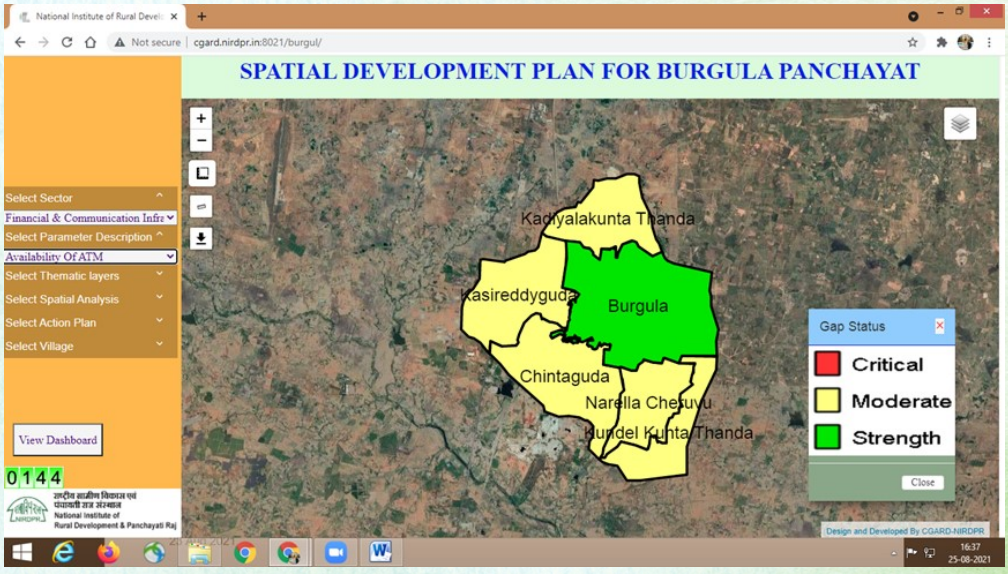

Figure 86: Availability of ATM

d. Availability of Post Office/Sub Post-Office

All the Panchayats are shown in green on the corresponding map, thus depicting the availability of Post Office/Sub Post Office.

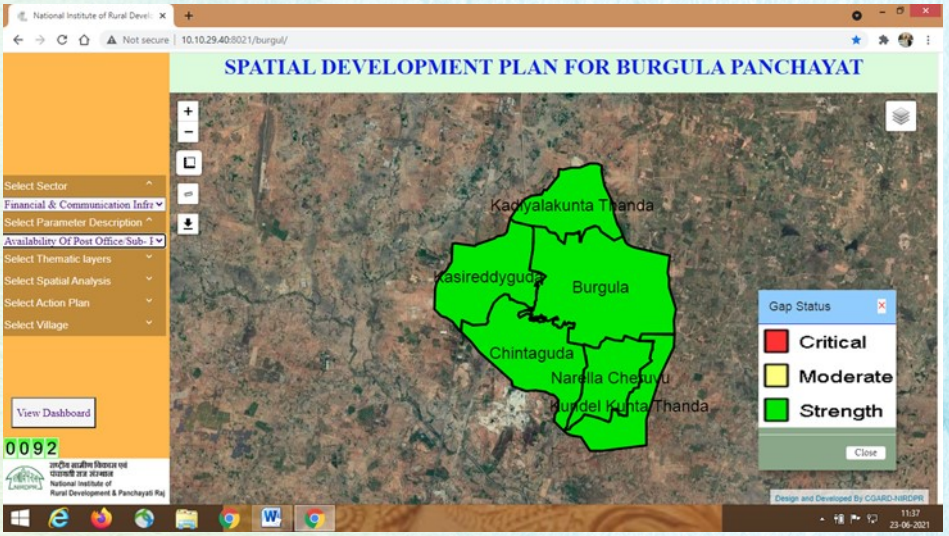

Figure 87: Availability of Post Office/Sub Post-Office

e) Availability of Telephone Services

All the Panchayats are shown in green on the corresponding map, thus depicting the availability of telephone services at each Panchayat.

Figure 88: Availability of Telephone Services

f) Availability of Internet/Broadband Facility

Chintaguda has internet and broadband facilities at moderate level, and hence is shown in yellow. Other Panchayats are shown in red.

Figure 89: Availability of Internet/Broadband Facility

15. Public Distribution System (PDS)

a) Availability of Public Distribution System

While PDS is available at Burgula, Kasireddyguda, Chintaguda and Nerella Cheruvu and is shown in green on the corresponding map. It is moderately available at Kadiyala Kunta Tanda and Kundel Kunta Tanda and is shown in yellow.

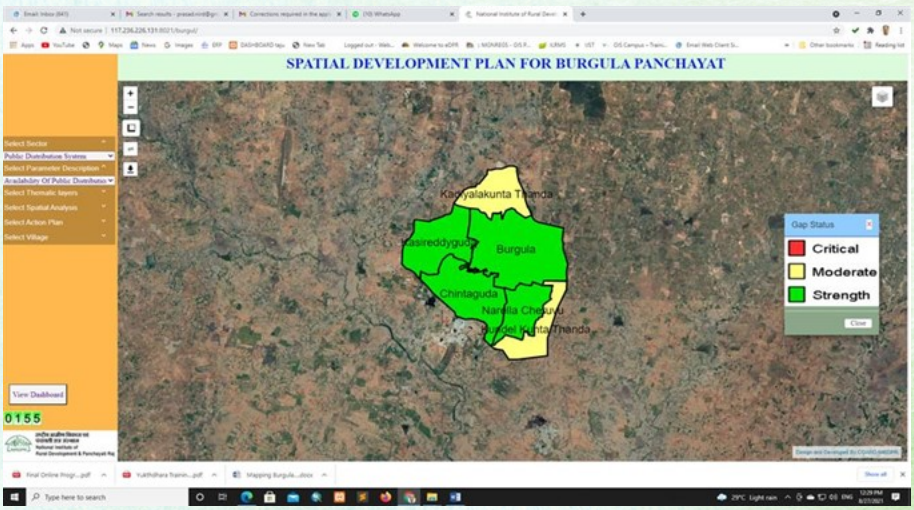

Figure 90: Availability of Public Distribution System

16. Education

a) Availability of Primary School

All the Panchayats have primary schools, and hence they are shown in green on the corresponding map.

Figure 91: Availability of Primary School

b) Availability of Middle School

Middle Schools are available at Burgula and Nerella Cheruvu, moderately available at Kundel Kunta Tanda and not available at Chintaguda, Kasireddyguda and Kadiyala Kunta Tanda.

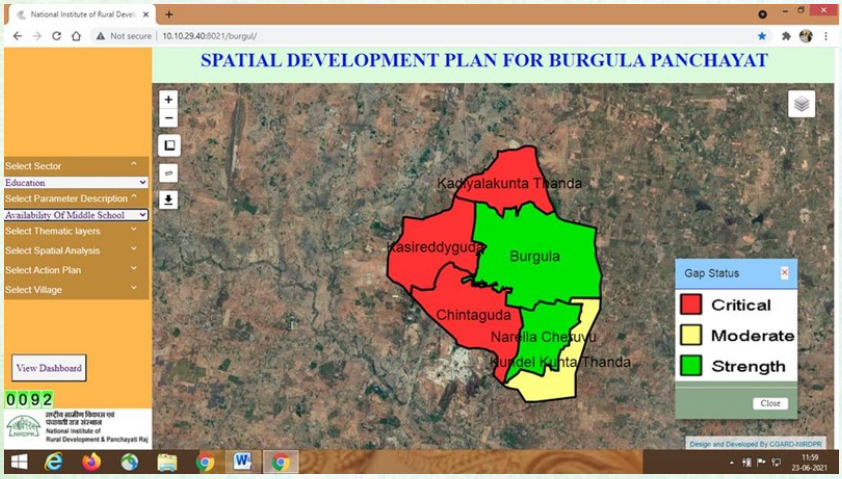

Figure 92: Availability of Middle School

c) Availability of High School

A High School is available at Burgula, and hence it is shown in green. The facility is moderately available at other Panchayats, and they are shown in yellow on the map.

Figure 93: Availability of High School

d) Availability of Higher/Senior Secondary School

Burgula and Nerella Cheruvu have Higher/Senior Secondary School and hence are shown in green, while Kasireddyguda, Chintaguda, and Kadiyala Kunta Tanda are shown in red and Kundel Kunta Tanda in yellow.

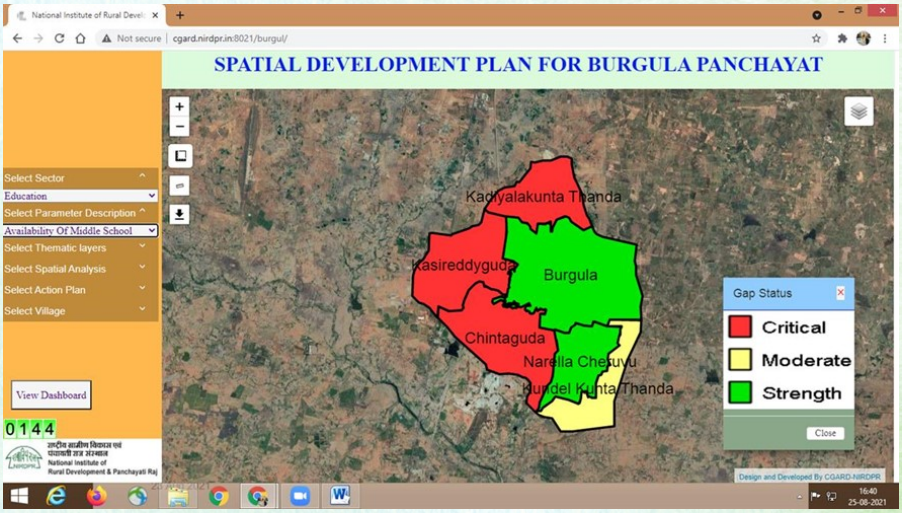

Figure 94: Availability of Higher/Senior Secondary School

e) Availability of Degree College

Burgula and Nerella Cheruvu do not have a UG College and hence are shown in red, while Kasireddyguda, Chintaguda, Kundel Kunta Tanda and Kadiyala Kunta Tanda are shown in yellow.

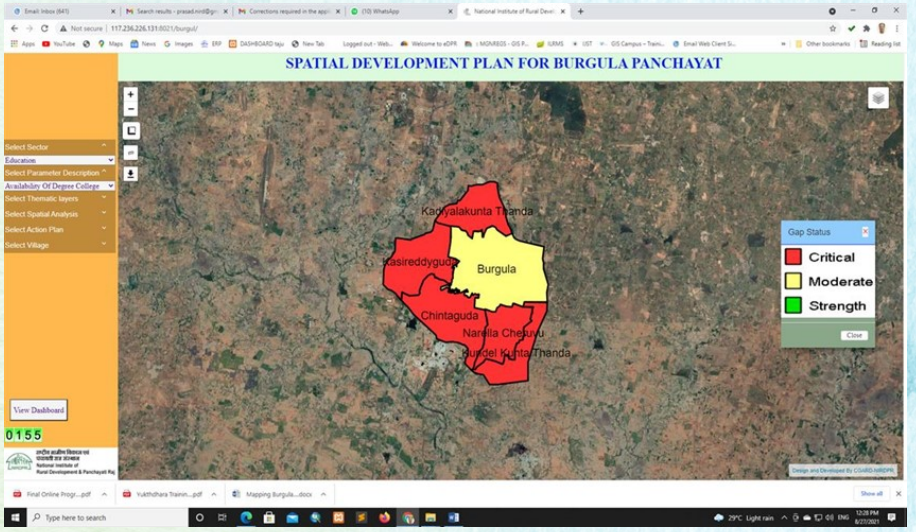

Figure 95: Availability of Degree College

17. Vocational Education

a) Availability of Vocational Training Centres/ Polytechnics/ ITI/ RSETI/ DDU-GKY

Such facilities are moderately available at Kadiyala Kunta Tanda and Kasireddyguda, and they are shown in yellow. No such facility is available in the rest of the Panchayats.

Figure 96: Availability of Vocational Training Centres/ Polytechnics/ITI/RSETI/DDU-GKY

18. Markets and Fairs

a) Availability of Markets

There is no market facility available at any of the Panchayats, and hence all are shown in red on the corresponding map.

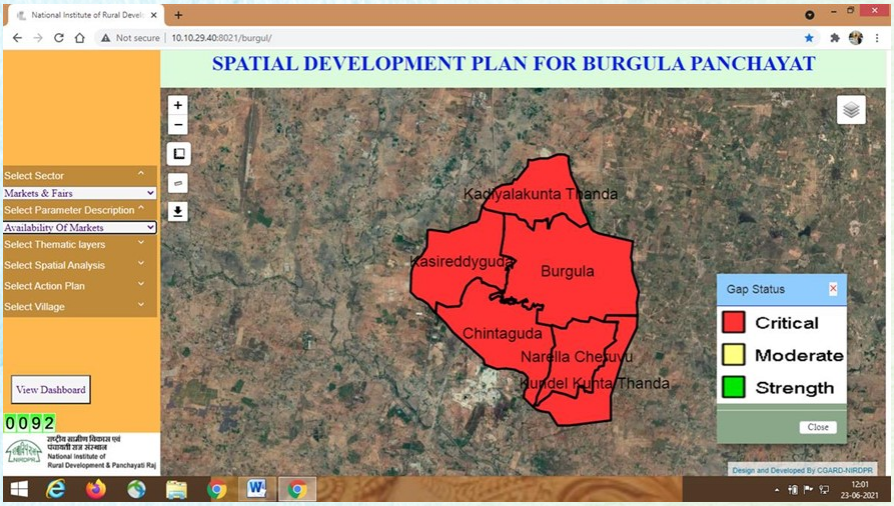

Figure 97: Availability of Markets

19. Health and Sanitation

a) Availability of Sub-Centre/ PHC/ CHC

A Primary Health Centre and Sub-Centre are available at Burgula, and hence it is shown in green on the corresponding map. No other Panchayats have this facility.

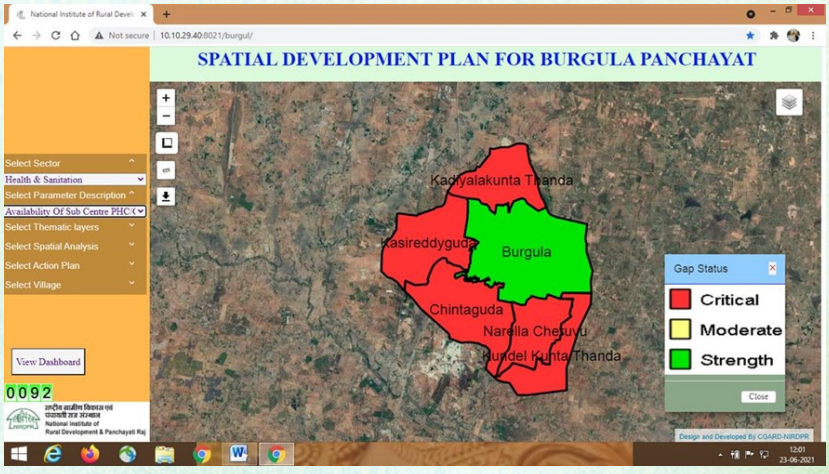

Figure 98: Availability of Sub-Centre/PHC/ CHC

b) Availability of Jan Aushadhi Kendra

A Jan Aushadhi Kendra is available at Burgula, and hence it is shown in green on the corresponding map. No other Panchayats have this facility.

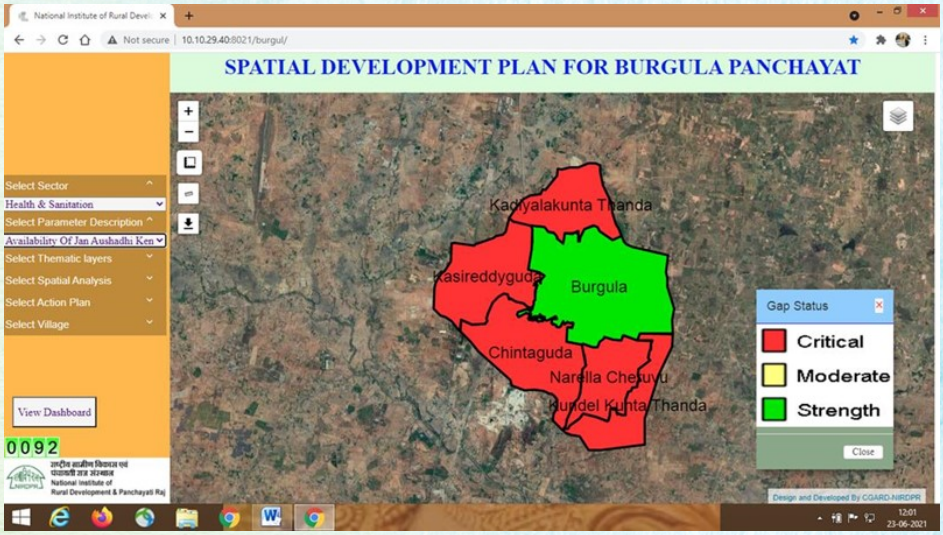

Figure 99: Availability of Jan Aushadhi Kendra

c) Availability of Drainage Facility

All the Panchayats have a drainage facility, and hence all are shown in green on the corresponding map.

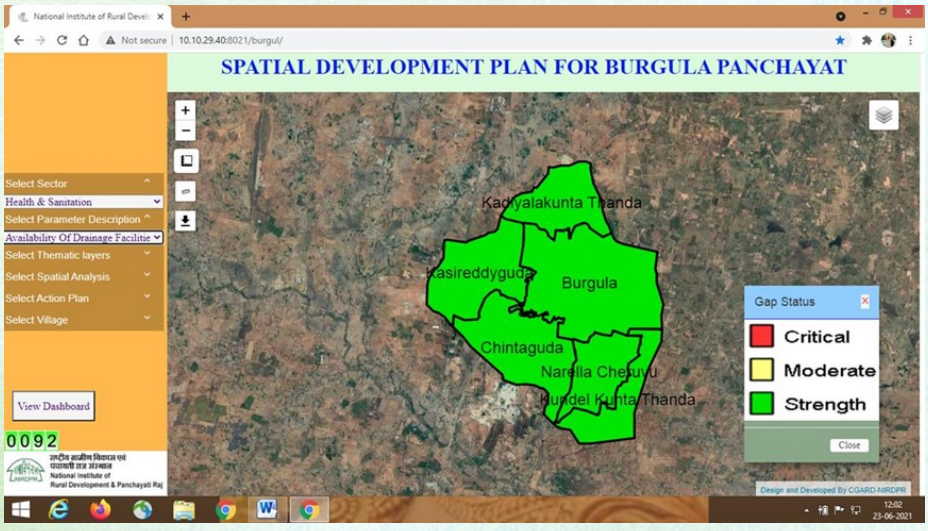

Figure 100: Availability of Drainage Facility

d) Community Waste Disposal System

Burgula has a Community Waste Disposal System and is shown in green, while Kadiyala Kunta Tanda and Chintaguda have moderate facilities and are shown in yellow. There is no such facility in Kasireddyguda and Kundel Kunta Tanda.

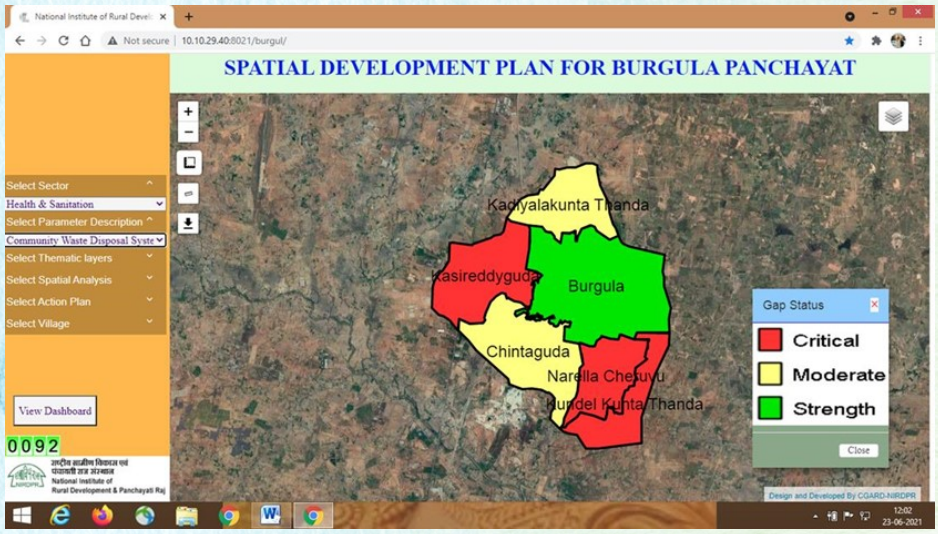

Figure 101: Community Waste Disposal System

e) Households Using Clean energy (LPG/Bio-Gas)

Burgula has maximum number of households using clean energy and is shown in green. In contrast, Kadiyala Kunta Tanda and Chintaguda have a moderate number of households using clean energy and are shown in yellow. At the same time, there is no such facility in Kasireddyguda and Kundel Kunta Tanda.

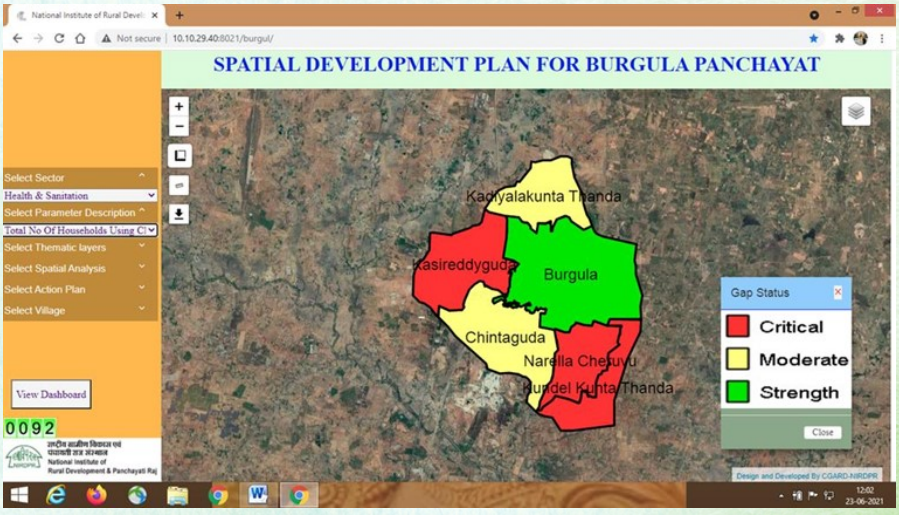

Figure 102: Households Using Clean Energy (LPG/Biogas)

20. Community Biogas or Recycling of Waste

All the Panchayats are shown in red as all of them lack community biogas or recycling of waste facilities.

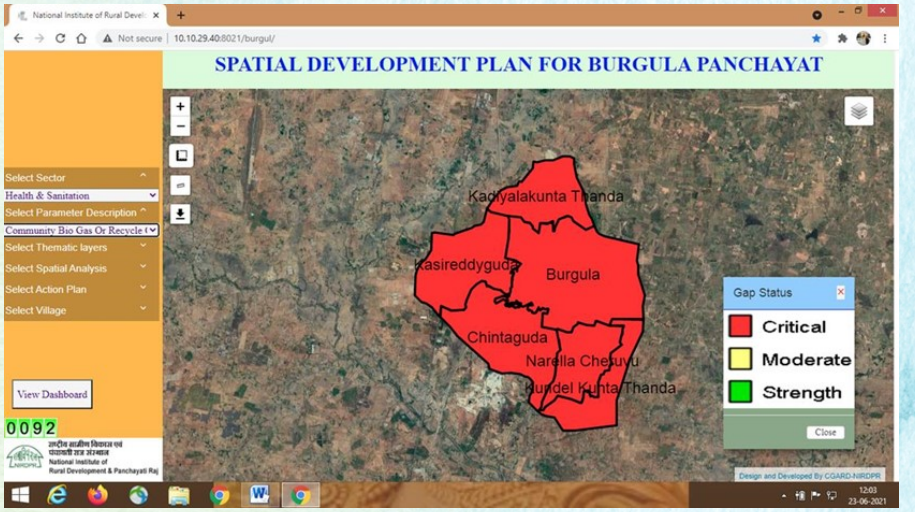

Figure 103: Availability of Community Biogas or Recycling of Waste

21. Women and Child Development

a) Availability of Anganwadi Centre

Anganwadi centres are functioning in all the Panchayats, and hence all are shown in green on the corresponding map.

Figure 104: Availability of Anganwadi Centre

b) Is Early Childhood Education Provided in the Anganwadi?

Early childhood education is provided at anganwadis in all the Panchayats, and hence all are shown in green.

Figure 105: Availability of Early Childhood Education in Anganwadi

c) Children Aged 0-3 Years, Who are Registered in Anganwadis

The children aged 0-3 years in all the Panchayats are registered with Anganwadi centres.

Figure 106: Children Aged 0-3 years Registered in Anganwadis

d) Children Aged 0-3 years, Who are Immunised

All the villages in Burgula Panchayat have children aged 0-3 years immunised; hence they are shown in green.

Figure 107: Immunisation of Children Aged 0-3 Years

e) Children Categorised as Non-stunted as per ICDS Records

Except for Kadiyala Kunta Tanda, where children were not classified as non-stunted as per the ICDS record and are shown in red, all other Panchayats are shown in green.

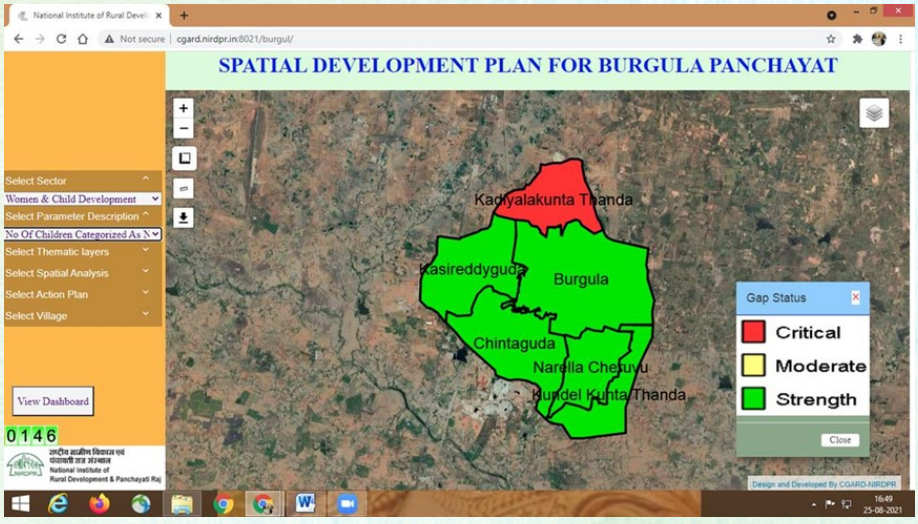

Figure 108: Children Categorised as Non-stunted as per ICDS Records

f) Anaemic Pregnant Women

The Kadiyala Kunta Tanda and Burgula have a large number of anaemic pregnant women, and hence are shown in green. Nerella Cheruvu has moderate number of such cases and is shown in yellow. Burgula, Kasireddyguda, Chintaguda and Kundel Kunta Tanda have no such cases and are marked in red.

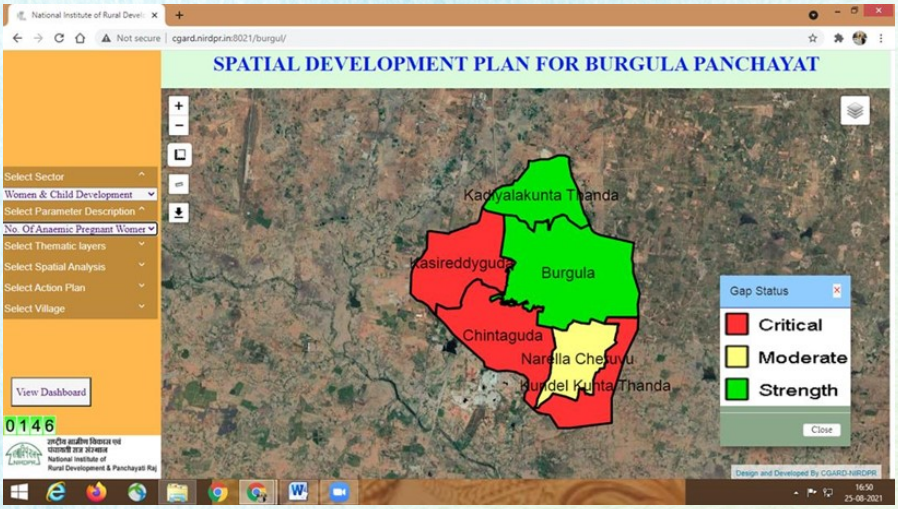

Figure 109: Presence of Anaemic Pregnant Women

g) Children under the Age of 6 Years Who are Underweight

Nerella Cheruvu and Kundel Kunta Tanda have moderate number of cases, and are shown in yellow. All other Panchayats do not have such cases and are shown in green.

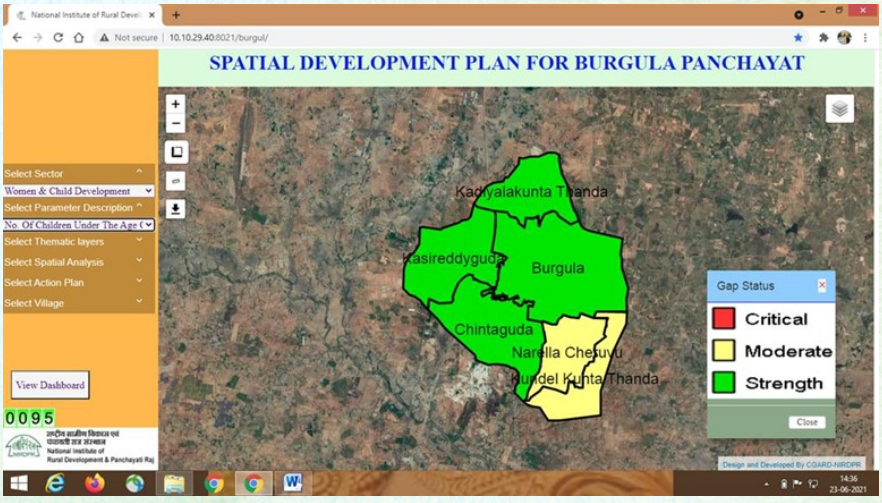

Figure 110: Presence of Underweight Children Aged below 6 Years

22. Family Welfare

a) Households with More Than Two Children

Kasireddyguda Panchayat does not have households with more than two children, and is hence shown in green, while Burgula, Chintaguda and Kundel Kunta Tanda have

moderate number of cases. Kadiyala Kunta Tanda and Nerella Cheruvu have the maximum number of such households and are shown in red.

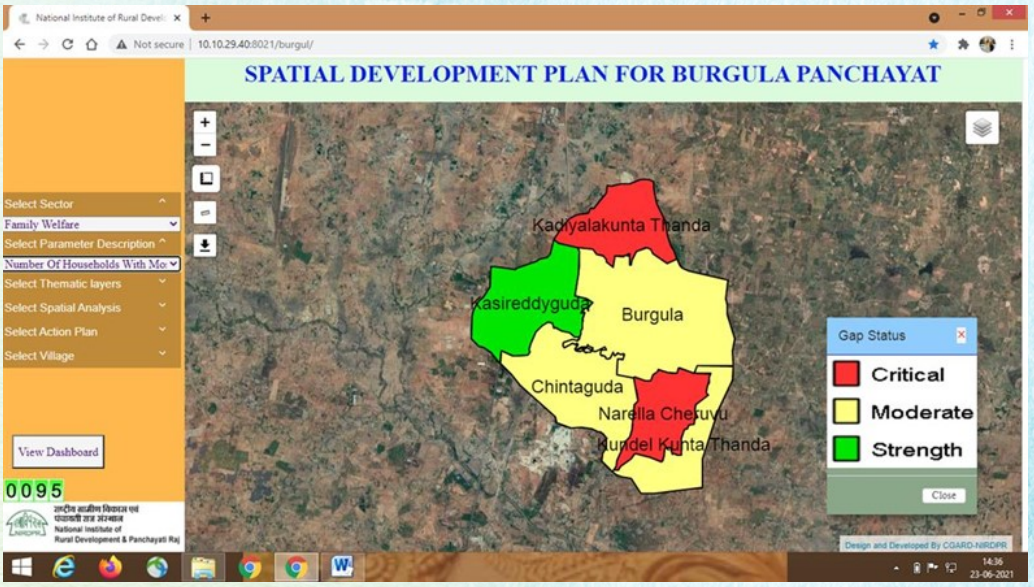

Figure 111: Households with More Than Two Children

b) Availability of Mother and Child Health Facilities

Mother and child health facilities are available at Burgula and Chintaguda Panchayats and are shown in green on the corresponding map. These facilities are not available in Kadiyala Kunta Tanda, Kasireddyguda, Nerella Cheruvu and Kundel Kunta Tanda, and hence they are depicted in red.

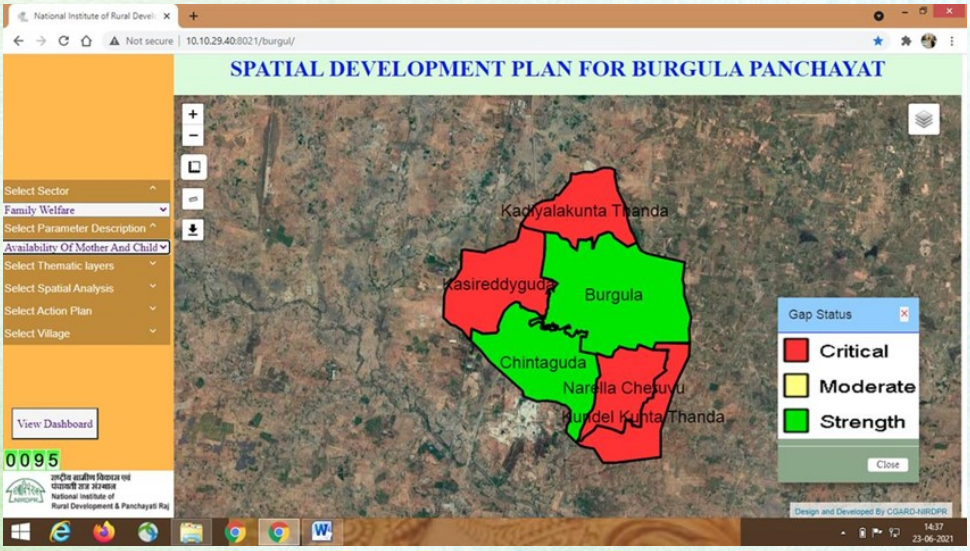

Figure 112: Availability of Mother and Child Healthcare Facilities

23. Poverty Alleviation Programmes

a) Availability of Self-Help Groups (SHGs)

Except for Kundel Kunta Tanda, SHGs are available at all the Panchayats.

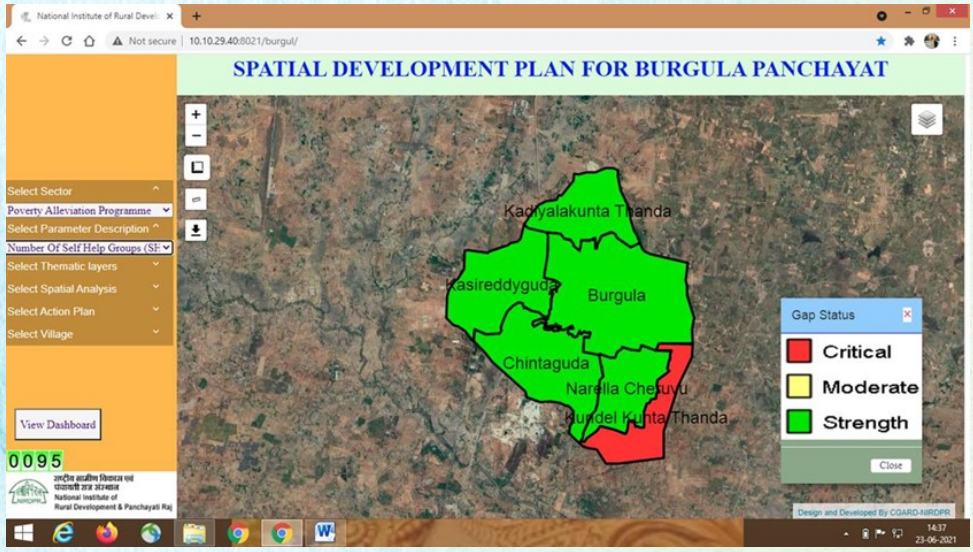

Figure 113: Availability of Self-Help Groups (SHGs)

b) Availability of Households Mobilised into SHGs

Only at Burgula and Kasireddyguda, the households have been mobilised into SHGs. A moderate number of cases are found at Kadiyala Kunta Tanda.

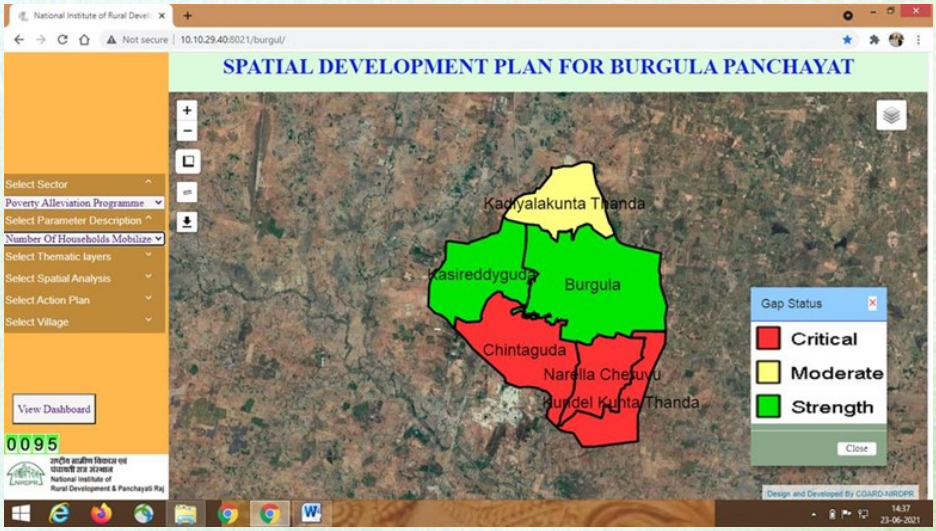

Figure 114: Availability of Households Mobilised into SHGs

c) Availability of SHGs Federated into Village Organisations (VOs)

As per the figure below, all villages except Kundel Kunta Tanda have SHGs federated into Village Organisations (VOs).

Figure 115: Availability of SHGs Federated into Village Organisations (VOs)

d) Availability of Households Mobilised into Producer Groups (PGs)

The households are mobilised into PGs at Kadiyala Kunta Tanda, Burgula and Kasireddyguda, but not at Chintaguda, Nerella Cheruvu and Kundel Kunta Tanda.

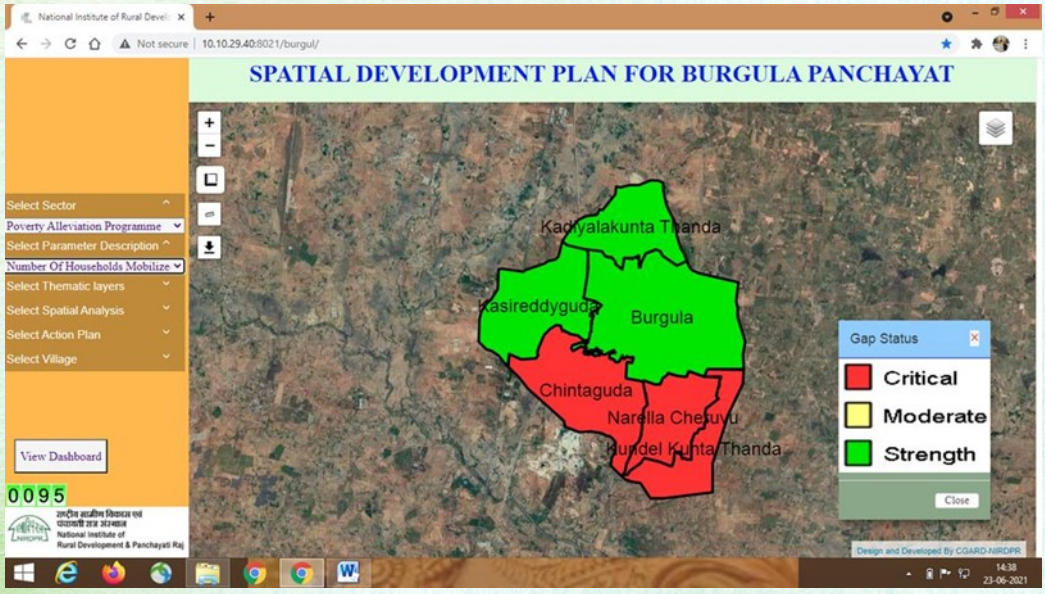

Figure 116: Availability of Households Mobilised into Producer Groups (PGs)

e) SHGs that Accessed Bank Loans

All the Panchayats are shown in green on the corresponding map, thus showing that all Panchayats have people availing bank loans.

Figure 117: SHGs that availed bank loans

24. Khadi, Village and Cottage Industries

a) Beekeeping

None of the Panchayats has people engaged in apiculture, and hence all are marked in red on the corresponding map.

Figure 118: People Engaged in Beekeeping

b) Sericulture

None of the Panchayats has people engaged in sericulture, and hence all are marked in red in the corresponding map.

Figure 119: People Engaged in Sericulture

c) Handloom

None of the Panchayats have people engaged in handloom sector, and hence all are marked in red on the corresponding map.

Figure 120: People Engaged in Handloom

d) Handicrafts

None of the Panchayats have people engaged in handicrafts, and hence all are marked in red on the corresponding map.

Figure 121: People Engaged in Handicrafts

25. Social Forestry

a) Availability of Community Forest

None of the Panchayats have community forest, and hence all are marked in red on the corresponding map.

Figure 122: Availability of Community Forests

26. Minor Forest Produce

a) Availability of Minor Forest Produces

None of the Panchayats has availability of Minor Forest Produces, and hence all are marked in red on the corresponding map.

Figure 123: Availability of Minor Forest Produces

27. Small-Scale Industries

a) Availability of Cottage and Small-Scale Industry

Since Kasireddyguda Panchayat has cottage and small-scale industries, it is marked in green on the corresponding map. Other Panchayats do not have such facilities.

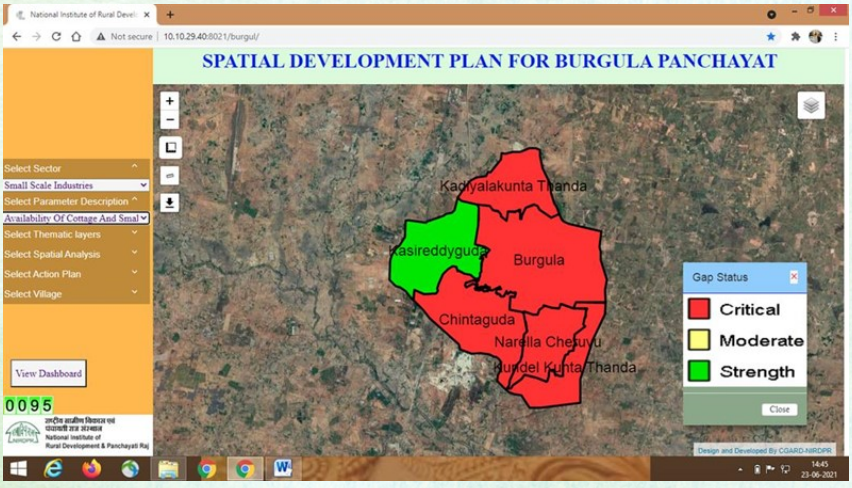

Figure 124: Availability of Cottage and Small-Scale Industry

28. Adult Non-Formal Education

a) Availability of Adult Education Centres

None of the Panchayats have Adult Education Centres, and hence are marked in red in the corresponding map.

Figure 125: Availability of Adult Education Centres

29. Health and Nutrition

a) Total number of children (0-6 years) immunised under ICDS

None of the Panchayats except for Burgula, Kadiyala Kunta Tanda and Kundel Kunta Tanda, have such cases.

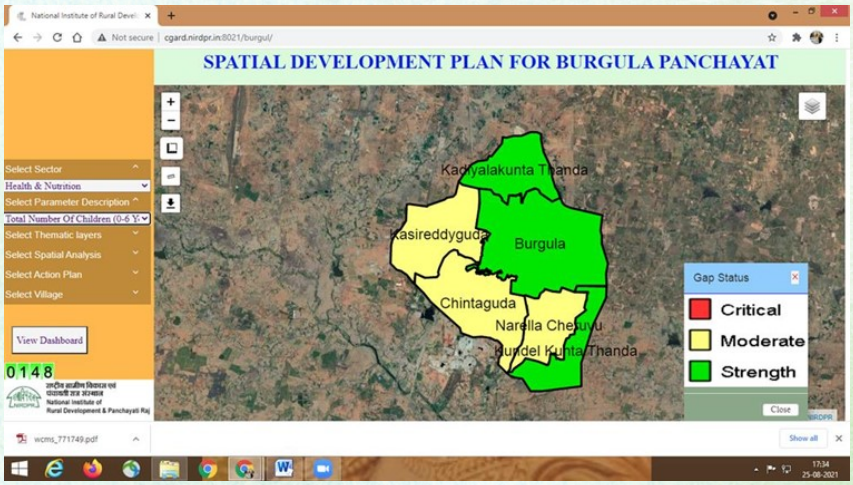

Figure 126: Presence of Children (0-6 years) Immunised under ICDS

b) Presence of Pregnant Women Receiving Services under ICDS

All the villages in Burgula Panchayat have been marked in green showing that pregnant women received ICDS services.

Figure 127: Presence of Pregnant Women Receiving Services under ICDS

c) Presence of Lactating Mothers Received Services under ICDS

All the villages under Burgula Cluster are marked in green, which shows that lactating mothers receive ICDS services.

Figure 128: Presence of Lactating Mothers Receiving Services under ICDS

d) Presence of Children in ICDS Common Application Software (CAS)

Kundel Kunta Tanda is shown in red as it does not have children registered in CAS. All other Panchayats have children registered in CAS.

Figure 129: Presence of Children in ICDS Common Application Software

e) Inclusion of Young Anaemic Children in ICDS Common Application Software (CAS)

The corresponding map shows Nerella Cheruvu having moderate number of young anaemic children in ICDS Common Application Software (CAS) and other Panchayats not having such cases and hence marked in green.

Figure 130: Inclusion of Young Anaemic Children in ICDS Common Application Software

f) Underweight Newborns during the Year 2018-19

The corresponding map shows that Chintaguda has a moderate number of cases, and is hence marked in yellow. Other Panchayats do not have such cases, and hence are marked in green.

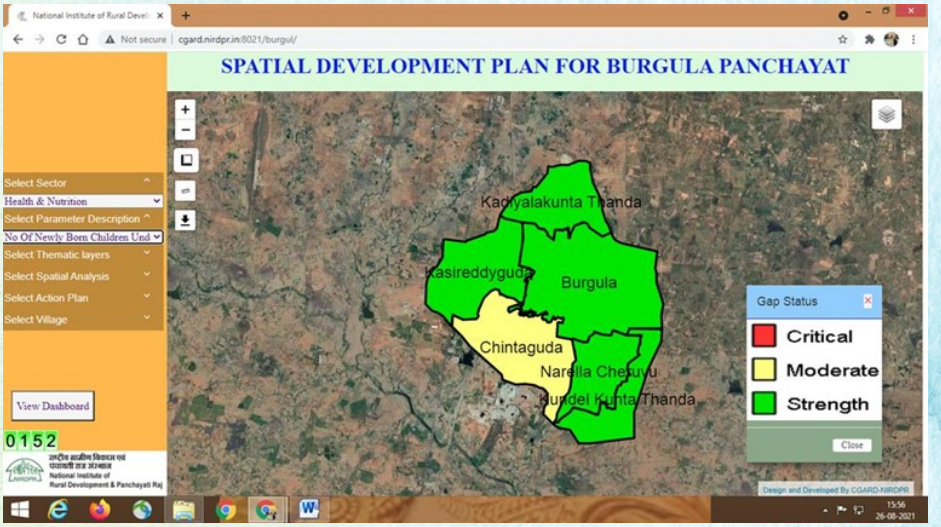

Figure 131: Underweight Newborns during 2018-19

g) Households Not having Sanitary Latrines

All the Panchayats in the corresponding map are marked in green as they have households with sanitary latrines.

Figure 132: Households Not having Sanitary Latrines

30. Social Security

a) Beneficiaries Receiving Benefits under Pradhan Mantri Matru Vandana Yojana

Except for Kundel Kunta Tanda, which is marked in red, all other Panchayats have beneficiaries of Pradhan Mantri Matru Vandana Yojana, and hence are marked in green.

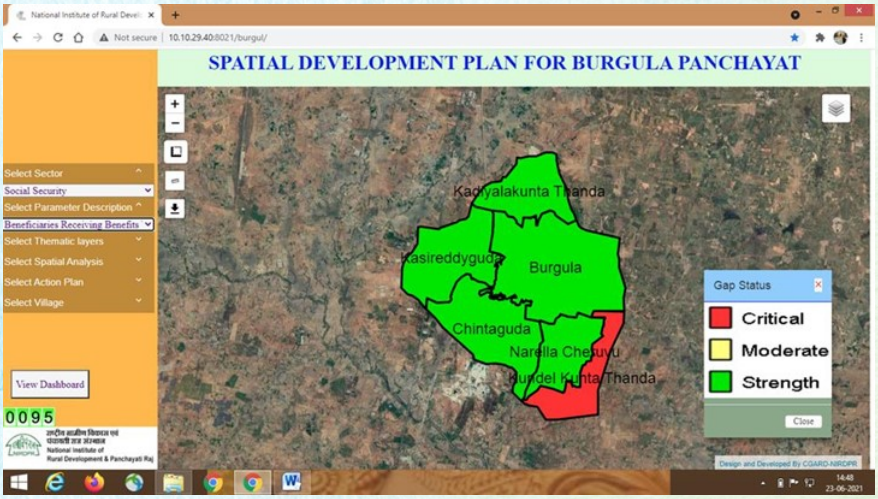

Figure 133: Beneficiaries Receiving Benefits under Pradhan Mantri Matru Vandana Yojana

b) Beneficiaries Receiving Benefits under Ayushmaan Bharat – PM Jan Aarogya Yojana

The corresponding map shows that Burgula and Kasireddyguda have beneficiaries receiving benefits under Ayushmaan Bharat – Pradhan Mantri Jan Arogya Yojana, and hence are marked in green. Kadiyala Kunta Tanda is marked in yellow and Chintaguda, Nerella Cheruvu and Kundel Kunta Tanda are marked in red.

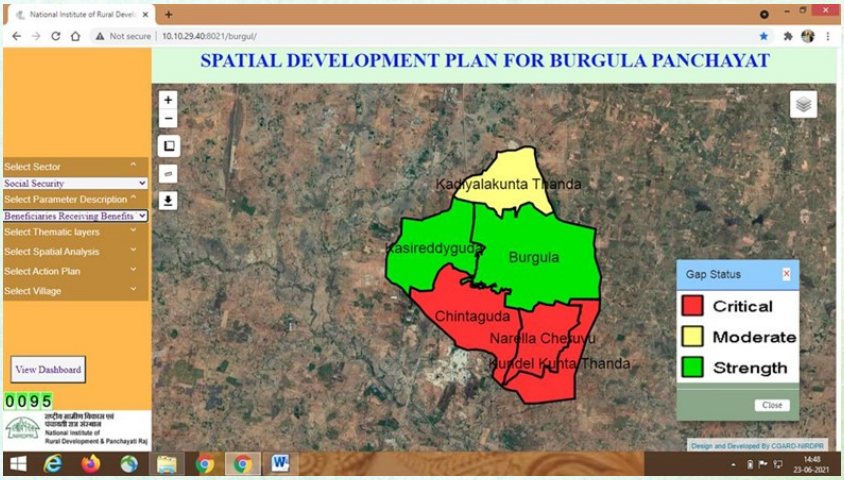

Figure 134: Beneficiaries Receiving Benefits under Ayushmaan Bharat – PM Jan Arogya Yojana

c) Households Receiving Foodgrains from Fair Price Shops

Nerella Cheruvu and Kundel Kunta Tanda are marked red, showing that households do not receive foodgrains from fair price shops. In contrast, Burgula, Kasireddyguda, Chintaguda and Kadiyala Kunta Tanda are marked in green.

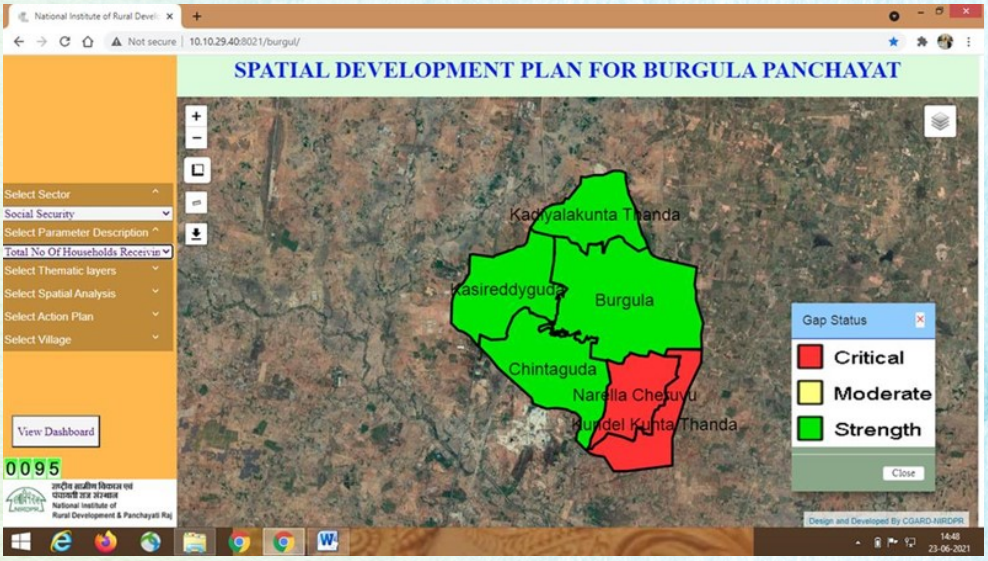

Figure 135: Households Receiving Foodgrains from Fair Price Shops

d) Farmers in the Age Group of 18-40 years, Who Subscribed to PMKPY

Burgula has farmers in the age group of 18-40 years subscribed to PMKPY and is shown in green, while all other Panchayats are marked in red.

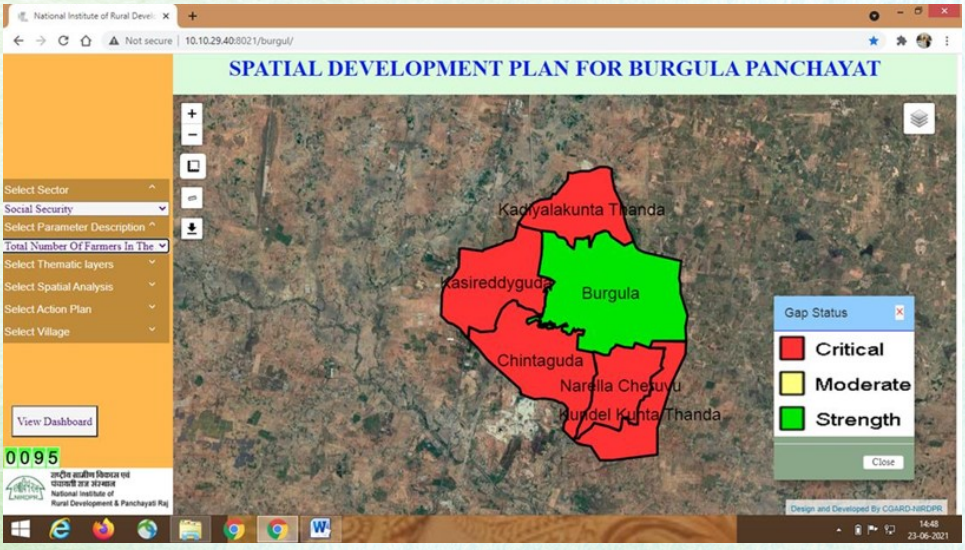

Figure 136: Farmers Aged 18-40 Years Who Subscribed to PMKPY

31. Agriculture Livelihoods

a) Farmers Who Received Benefits under PMFBY

While Kundel Kunta Tanda is marked in yellow indicating presence of farmers receiving benefits under PMFBY, all other Panchayats are marked in red.

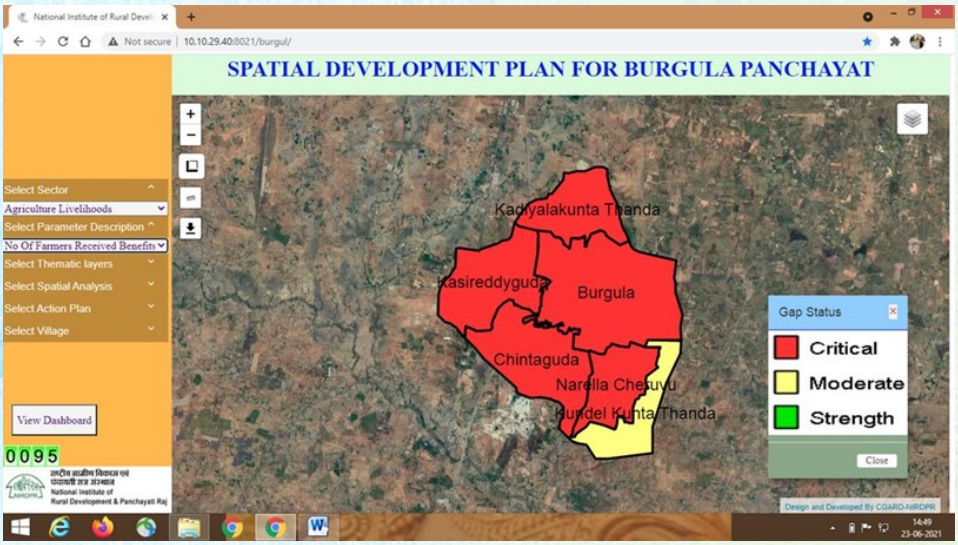

Figure 137: Farmers Who Received Benefits under PMFBY

b) Farmers Who Adopted Organic Farming during 2018-19

The farmers in none of the Panchayats have adopted organic farming in 2018-19, and all are marked in red on the corresponding map.

Figure 138: Farmers Who Adopted Organic Farming during 2018-19

c) Farmers Who Received Soil Testing Report

Farmers in Kasireddyguda received soil testing reports, and hence it is marked in green. At the same time, Burgula and Nerella Cheruvu are shown in yellow because of moderate numbers, and Kundel Kunta Tanda, Kadiyala Kunta Tanda, and Chintaguda are marked in red.

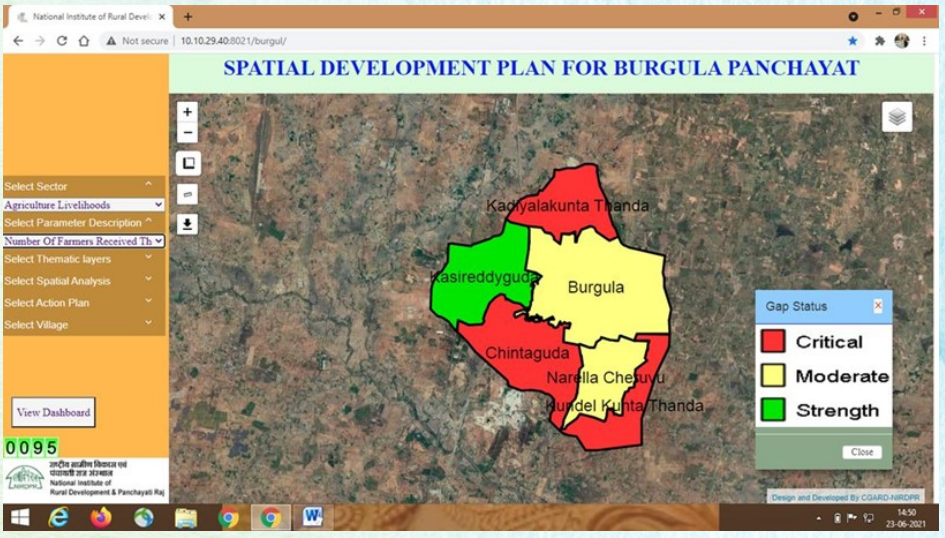

Figure 139: Farmers Who Received Soil Testing Report

32. Good Governance

a) Elected Representatives Undergoing Refresher Training under RGSA

Kundel Kunta Tanda is marked in green as it is the only Panchayat where the elected representatives has undergone refresher training under RGSA.

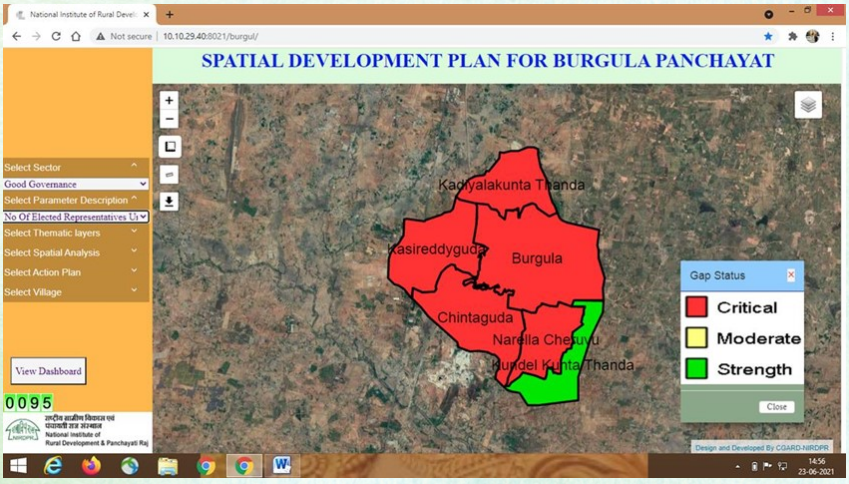

Figure 140: Elected Representatives Who Underwent Refresher Training under RGSA

33. Water Management and Efficiency

a) Total Area Covered under Irrigation

Kasireddyguda is marked in green as it has area covered under irrigation; all other Panchayats are marked in yellow.

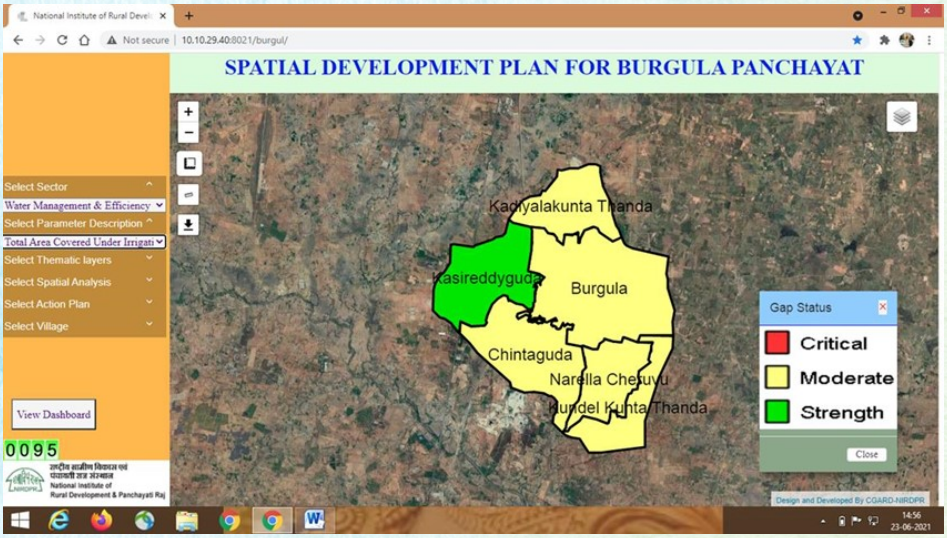

Figure 141: Total Area Covered under Irrigation

b) Households having Piped Water Connection

Kadiyala Kunta Tanda, Chintaguda, Nerella Cheruvu and Kundel Kunta Tanda are marked in green as the maximum number of households has piped water connection, while Kasireddyguda and Burgula are marked in yellow.

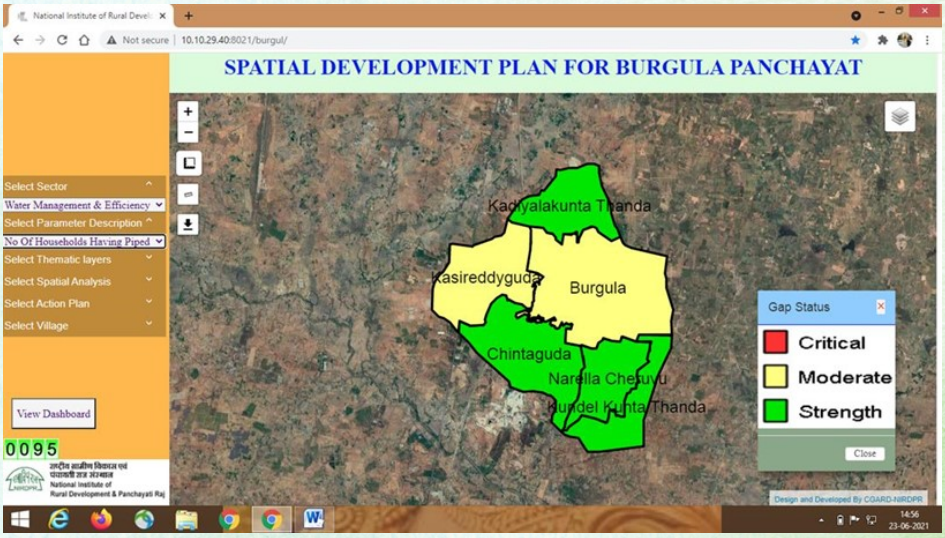

Figure 142: Households having Piped Water Connection

Thematic Layers

The research team came up with various thematic layers to better understand the development scenario at Burgula Panchayat. The dashboard has thematic layers that depict indicators as listed below:

1. Assets
2. Cadastral map
3. Drainage
4. Groundwater prospects
5. Land use and Land cover
6. MGNREGA Assets
7. Roads
8. Railway Line
9. Settlements
10. Built-up Growth
11. Watershed

The attempt was to map the existing assets, settlements, watershed areas, etc., and perceive the access and usage given the geographical area in the background. Mapping these has helped the team understand the needs and gaps areas of the village.

Assets

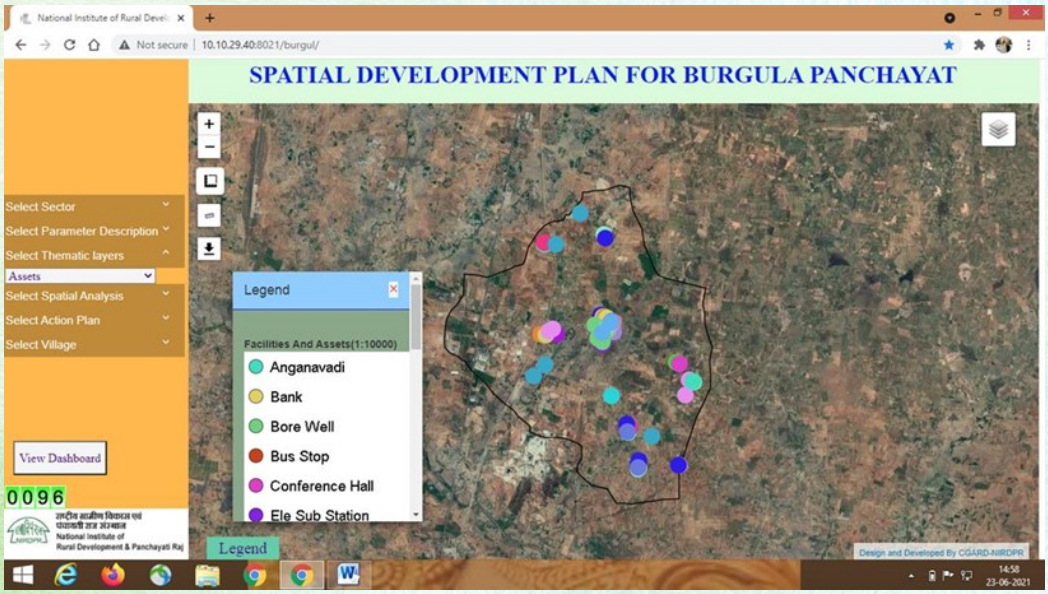

Figure 143: Various Assets Mapped at Burgula Panchayat

Cadastral Maps

Cadastre is a technical term for a set of records showing the extent, value and ownership. Strictly speaking, a cadastre is a record of areas and values of land and landholders that originally was compiled for taxation purposes. The map below shows the ownership of land, i.e., government land or private land, along with the area in hectares.

Figure 144: Cadastral Map Showing Land Parcels

Drainage

Figure 145: Drainage Pattern of Burgula Panchayat

A drainage system is a system of watercourses or drains for carrying off excess water. The same was mapped in Burgula cluster. It is a geometric arrangement of streams in a region. The factors controlling the pattern of drainage in a region include topography, slope, structural control, nature of rocks, tectonic activities, supply of water, and majorly the geological history of that region. In the map below, one can see the drainage order of the study area. It is observed that the maximum drainage order in the study area is 4. The drainage order helps to suggest the appropriate water harvesting and soil conservation structures.

Groundwater Prospects

A groundwater prospect map shows controlling factors such as geology, geomorphology, drainage pattern, drainage density, lineaments, slopes, land use/land cover, etc. In the map below, one can see that most groundwater prospects are moderate to poor in this study area. A limited area is under good prospects. There is a dire need for water conservation practices in the study area.

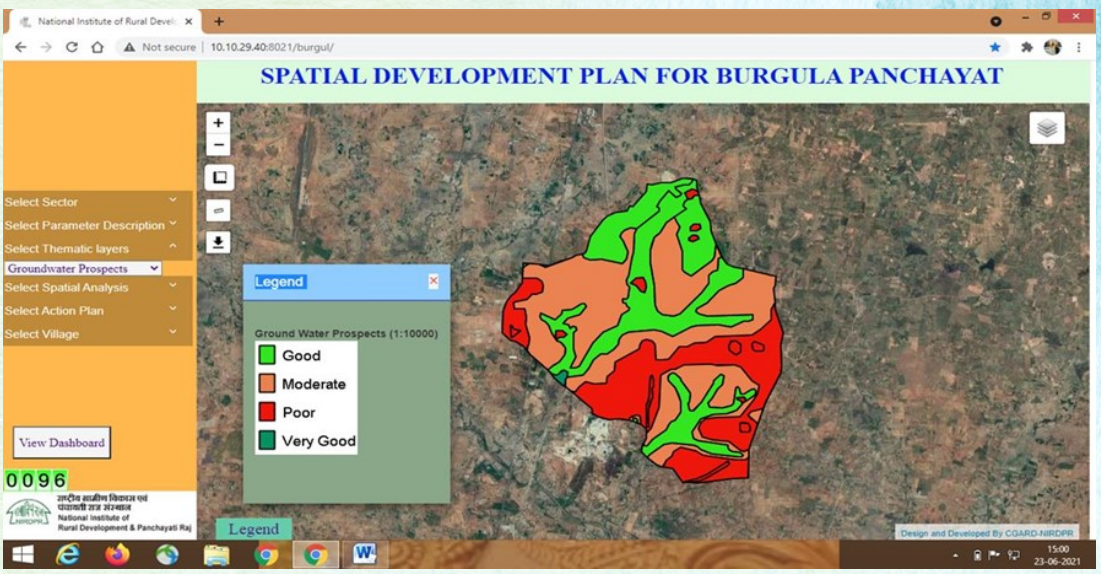

Figure 146: Groundwater Prospects Map of Burgula Panchayat

Land Use and Land Cover

Land cover indicates the physical land type, such as forest or open water, whereas land use documents show how people are using the land. The major land uses are cropland, fallow land, barren area, water bodies and built-up land. When compared to other practices, cropland is dominating. Hatcheries occupy the major space under industries.

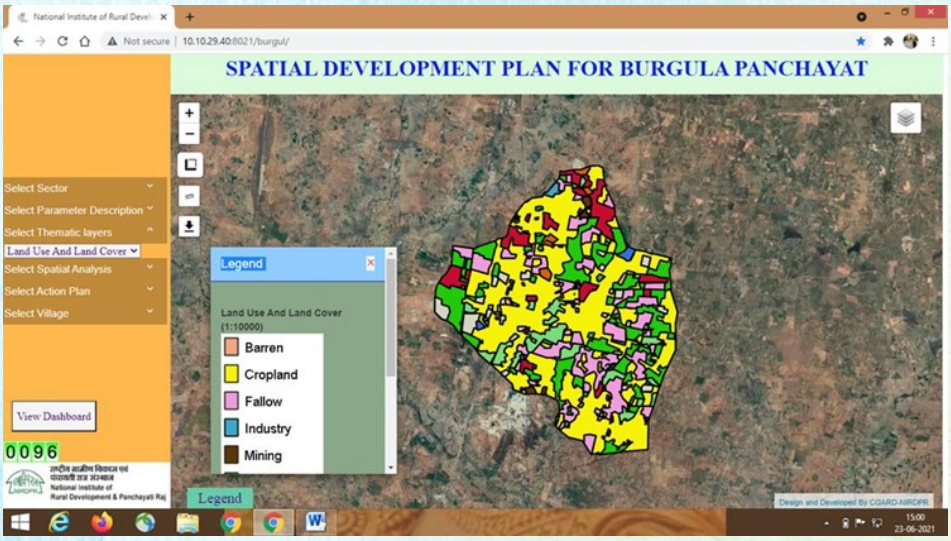

Figure 147: The Land-Use Map of Burgula Panchayat

MGNREGA Assets

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is a programme that focusses on the generation of wage employment and creation of sustainable and productive assets, assuring a sustained source of income for the rural poor. Efforts have been made over a period of time to create quality assets. The below maps show the assets created under MGNREGA in the study area. The major works implemented under this programme are with respect to drought proofing, individual land works, land development and rural sanitation. The information on existing assets will give an idea for future planning at the Gram Panchayat level. It will reduce the redundancy in proposed works and help in the proper allocation of resources.

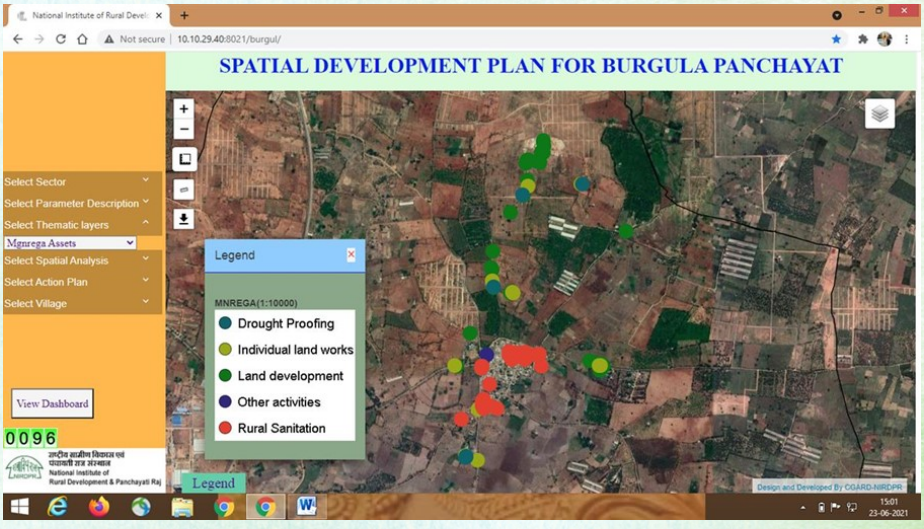

Figure 148: MGNREGA Assets Map of Burgula Panchayat

Roads

Rural roads facilitate better accessibility of services, promote the development of market centres, and provide an incentive to farmers to generate more marketable surplus. The rural road delivers fertilisers, pesticides, seeds and other agricultural inputs to farmers to improve production and productivity. A good rural road network would help transportation of marketable surplus efficiently and effectively to consumption centres and promote agro-businesses. The study area primarily has village roads and other district roads, as can be seen from the map below.

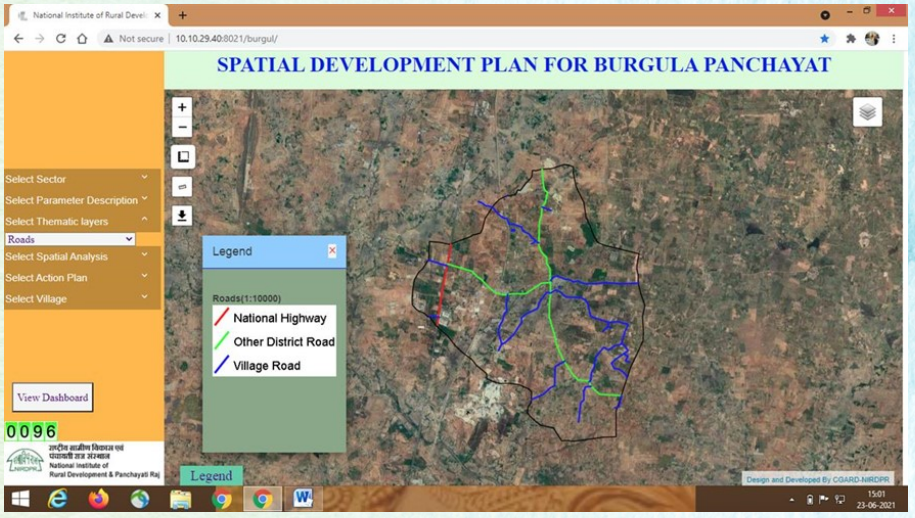

Figure 149: Road Network Map at Burgula Panchayat

Railway Line

In the study area, Burgula is the only railway station and only a 4.5-km-stretch is covered by railway line. The same is depicted in the map below.

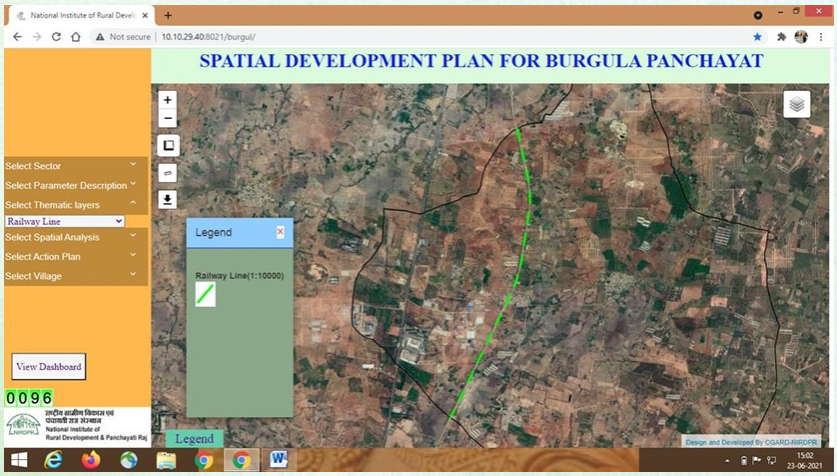

Figure 150: Rail Network Map of Burgula Panchayat

Settlements

There are 13 settlements, including nine ST-dominated ones, in the study area. The map below shows the location of the settlements.

Figure 151: Settlement Map of Burgula Panchayat

Built-up Growth

The map below shows the existence of newly built houses from 2002 to the present. This was prepared with the help of Google time series data. It will help assessing how old the building is.

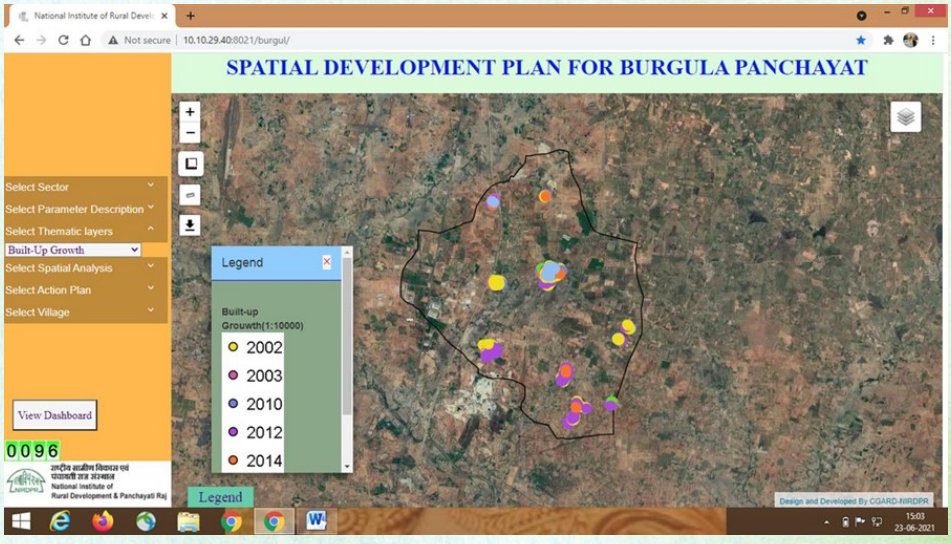

Figure 152: Settlement Growth Map of Burgula Panchayat

Watershed

A watershed is an area of land where the water drains off gets collected in the same place. These watershed maps, along with slope, soil and groundwater prospects, will give an idea of prioritising the water and soil conservation measures in the study area. There are seven micro watersheds present in the study. The micro watershed codes are also shown in the map below.

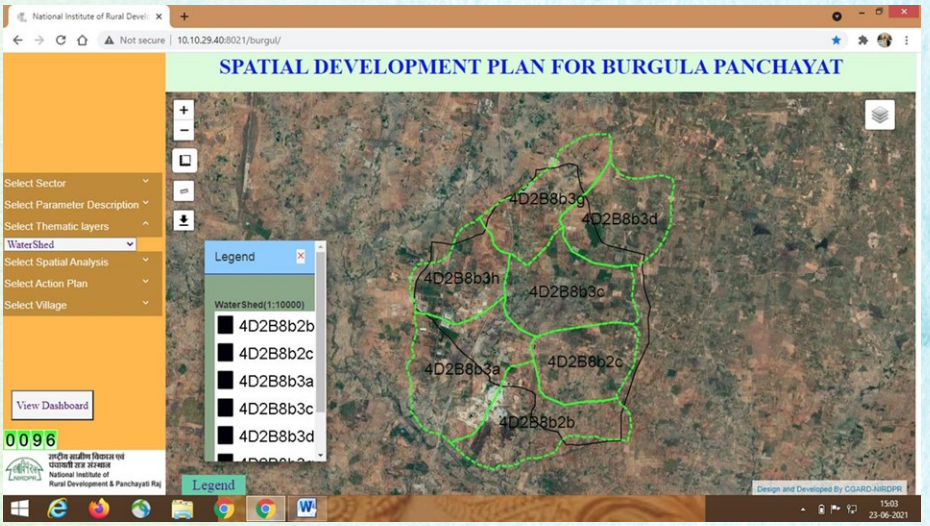

Figure 153: Watershed Map of Burgula Panchayat

Various thematic layers on the dashboard show land use and land cover in Burgula Panchayat. The villages primarily have croplands, followed by plantations and some barren lands. Various groundwater prospects can be seen in another thematic layer that shows that the groundwater recharge conditions are exceedingly poor to moderate in the study area. The good groundwater conditions are confined to valley fills in the study area. Another thematic layer shows MGNREGA assets created at Burgula Panchayat, followed by a layer showing community assets. These include drought proofing, individual land works, land development, assets created for rural sanitation, etc. It is drawn from the thematic map that a good number of assets have been created under the MGNREGA programme and people seem to be quite aware of the benefits drawn from the assets thus created.

Analytical Tools

The research team did Proximity Analysis with the help of buffering. It was done through spatial analysis for the following:

a) Primary School Service-Area 500 m

b) High School Service-Area 1 km

c) Primary health Centre Service-Area 3 km

Primary School Service

The thematic layer shows the coverage of each Primary School in each village of Burgula Panchayat. Under the Sarva Shiksha Abhiyan and Right to Education Act, all children aged 6 to 14 have to receive free and compulsory education. To have proper access to schools, norms allow for a Primary School to be within a radius of 3 km from a village, whereas a Middle School should be within a 5-km radius, and a High School has to be within a 10-km radius.

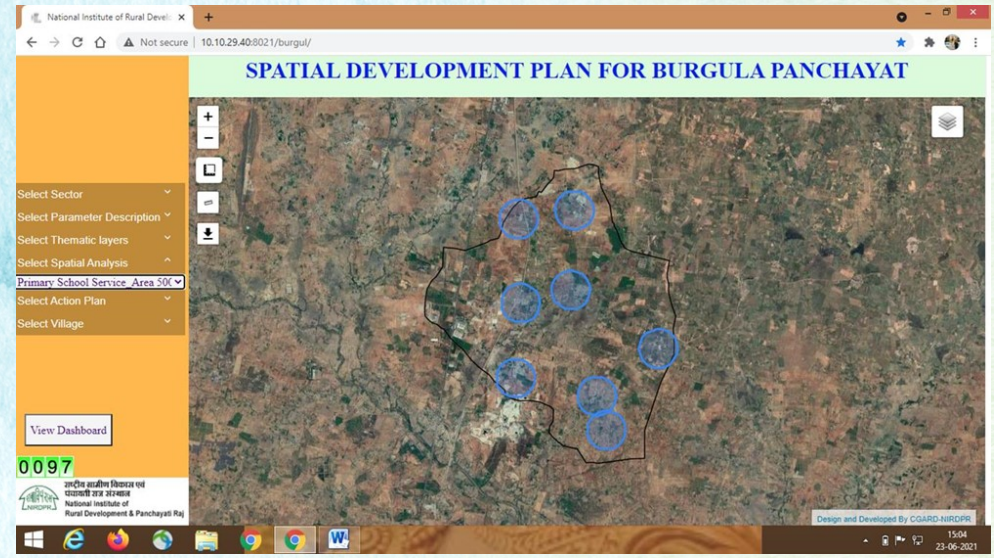

Figure 154: Primary School Service Area

Figure 155: High School Service Area

Primary Healthcare Service

Primary Health Centres (PHCs) cater to the medical requirements of the people in the rural areas. It provides accessible, affordable and available primary healthcare to people. As per norms, in plain areas, a PHC should be catering to an area with a population of 30,000. In Burgula cluster, the PHC and its services are sufficient, as per the norms.

Figure 156: Map Showing PHC and Its Coverage in Burgula Cluster

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Chapter 5: Proposed Action Plans for the Panchayat

Through this project, an attempt was made to understand the implementation and gaps of various development schemes in Burgula Panchayat. The research team was in constant touch with people of all villages in the Panchayat and made several visits to understand the situation at ground level. Ethnographic approach was used to map the assets available on ground. Further, maps were designed through satellite imagery and the data was corroborated. Meetings and detailed discussions with the ward members, Sarpanches, local youth and NGO workers and residents of the six villages revealed their different perspectives and needs.

The following were the assets proposed by the research team in consultation with the communities. The list includes various Natural Resource Management (NRM) assets such as community pit, check dam and reservation of tanks. Some Community Assets were also identified, and plots were earmarked for the construction of cc roads, dumping yard, Primary and High schools, residential houses, Mahila Bhavan, underground drainage, and cremation ground. Other assets included the construction of soak pit at an identified area and roads from the Tandas towards the main Panchayat area. The same has been discussed below.

1. NRM Assets

Figure 157: Suggested NRM Assets

Natural Resource Management (NRM) is the management of natural resources such as land, water, soil, plants and animals, with a particular focus on how management affects the quality of life for both

present and future generations. Discussions with the community people showed that they wanted demarcation of areas for community pits. Apart from that, renovation of existing tanks was suggested. The area faces a severe water crisis. If the existing tanks are renovated, the water scarcity can be dealt with in a better manner.

A site for construction of a check dam was also suggested.

2. Community Assets

During the continuous interactions with the community, it was observed that there were requirements for better cement concrete roads for connecting the villages. An area was identified that could be used as a dumping yard. This would prevent people from throwing the garbage on the roadside and help maintain a clean and green environment. Moreover, uninhabited areas were identified, and construction of houses was suggested on those plots. The Self-Help Group members had raised the need for Mahila Bhavan; subsequently, a plot was marked for its construction. The women in Burgula Panchayat are quite aware of their rights as the former Sarpanch was a female and ensured that all women were empowered to make their own decisions.

Figure 158: Suggested Areas/Plots for Community Assets

Apart from that, it was observed that there are Tandas around the main Burgula and Kasireddyguda villages. There are no primary schools and the existing schools are not fully functional. The children belonging to tribal communities cannot attend school for various reasons such as long distance, lack of proper connecting road, schools with congested classrooms, etc. As per the Right to Education Act, 2010, all children aged 6-14 years are eligible for free and compulsory education. This can be

implemented in schools that are inaccessible to the children. This will also decrease the dropout rate, and make the number of Out of School Children (OoSC) negligible. A High School has also been proposed for continuation of studies, as the children from remote areas find it hard to commute to the only High School near Burgula. Not only that, the only functioning High School is saturated in number, and another High School is definitely on demand.

The area also suffers from improper drainage system. This leads to sewage water spilling on the roadside and filling up small alleys. The resultant stench was becoming unbearable for the locals. Also it posed health hazards like infectious diseases. Keeping these issues in mind, it was proposed to have an underground drainage system in the Panchayat. It was shared with the research team that in some pockets, drains have been made, and they are connected to man holes, but the system is not functional. It was suggested that the system be re-furbished and made use of. Lastly, the community people expressed their desire for a cremation ground (Vaikunta Dhamam), and a probable site for creating the facility was identified.

3. Roads

Roads are an essential part of the development process. Better connectivity leads to better access and penetration. The inadequacy of roads at Burgula Panchayat is not hidden. There are no proper roads from the Tandas on the fringes. People walk on foot or use two-wheelers to reach the main market area, PHC or High School. Buses used to ply only on the main roads. Hence, a suggestion was made for the construction of three roads, namely from Chintaguda towards Burgula, from Kadiyala Kunta to Burgula and from Nerella Cheruvu to Burgula.

Figure 159: Suggested Roads for the Communities Living in Tandas

4. Other assets

Apart from the aforementioned assets, an area was marked for constructing soak pit in consultation with the community people.

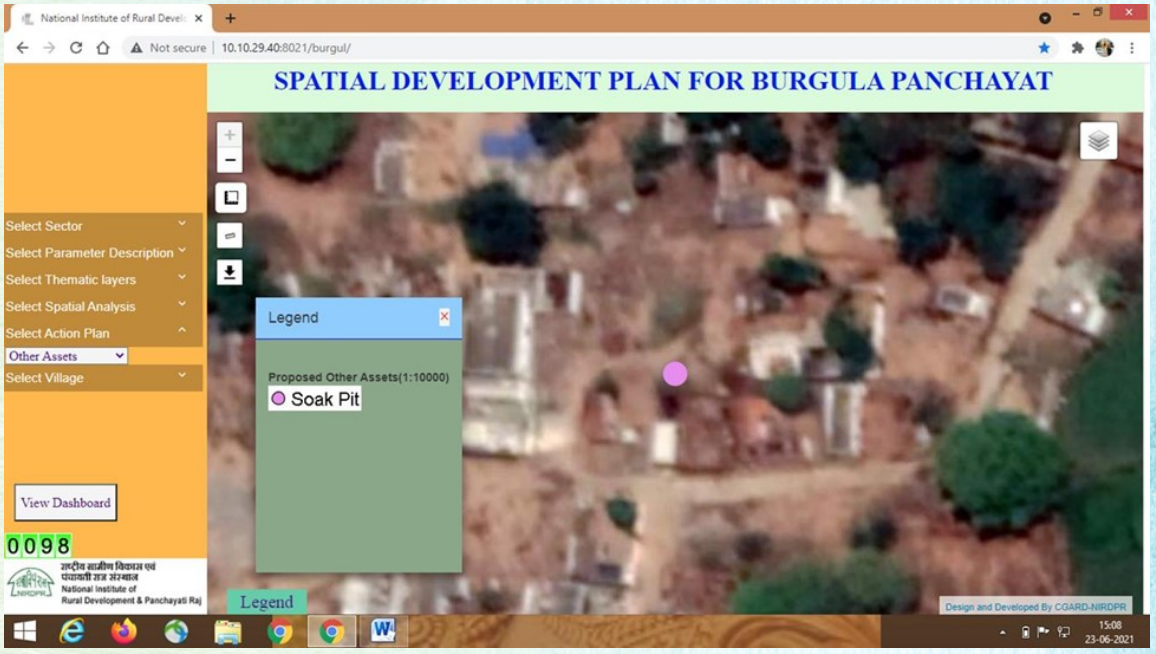

Figure 160: Area Marked for Construction of Soak Pit

Performance Monitoring Dashboard

Having mapped all the 29 sectors and 141 indicators and assets suggested by the community people and helping them with the assessment of the requirement, the research team corroborated all data and construed an interactive Dashboard for Performance Monitoring of all indicators. The authors came up with an interactive Performance Management dashboard that enables the users to check the pace of development at Burgula Panchayat. Open Data Kit was used to collect first-hand data, and subsequently, a database was created. This was corroborated by satellite imagery. The spatial maps helped in mapping the indicators. Various interactive pie charts show the distribution in relation to religion, community, ownership of houses, types of houses, bank account, ration card, etc. The dashboard enables the users, including the public and government functionaries, to monitor the development process related to all 141 indicators mentioned above. The data helps in projecting and planning, and allocation of resources in a better way. Moreover, the visual maps help the uninitiated to understand the pace of development and contribute further to the village development plan.

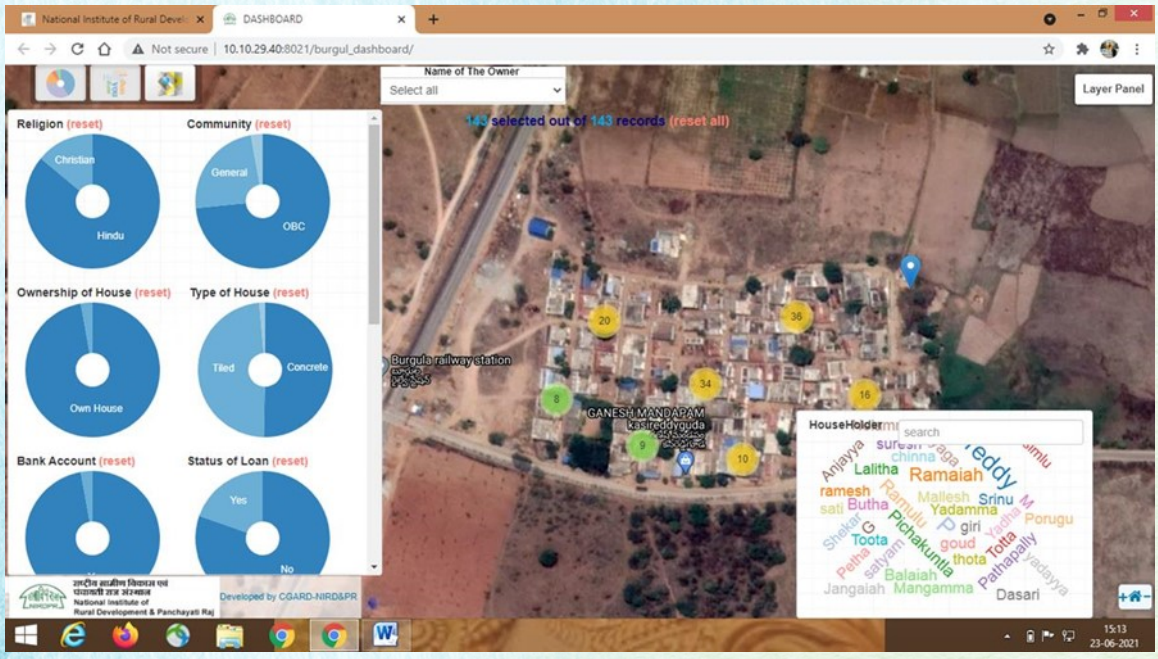

Figure 161: Interactive Performance Management Dashboard

Technical Specifications

This research proposed a web-based interface as an efficient visualisation method to graphically display the data collected from Burgula Cluster. The research team used advanced open source technologies to create a Web GIS application using Geoserver, Leaflet and PostgreSQL software. The data published in Geoserver was in the form of Web Map Services and Web Feature Services (WFS).

The Leaflet API is used for creating a cost-effective Web-GIS application, and is an open source JavaScript for displaying map services data in a web interface. Post-GIS is an extension of PostgreSQL, which is used to store spatial data in the database. The research team used QGIS Software for the preparation of geo-database.

This application developed by the research team illustrates basic web functionalities like measuring area, distance, toggle layer selection, pan, zoom, home, legend button, etc. Moreover, a dashboard has been made to visualise socio-economic data of households collected through Open Data Kit (ODK) forms and geo-tagged entities. This dashboard includes further functionalities like word cloud, toggle-based map, layer control panel, marker cluster, drop-down selection, disable and enable charts, etc.

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Chapter 6: Sociological Perspective of Development

Development is a very relative term. In a country with more than 69 per cent of the population living in rural areas and depending on sporadic rainfalls for their harvest, the fruits of development are far-fetched.

Perspectives of Development:

1. ***People's perspective:*** It contends that those who are not a part or choose not to be a part of the course of development, fall victims to the same. For example, the tribals, the Dalits, or the economically marginalised depend on nature for subsistence.

2. ***Developmentalist's view:*** It gives prime importance to the project of development, deems displacement as inevitable, intrinsic to and a precondition to the project of development. Compromise by giving compensation, conducting socio-economic studies to assess the damage, and preparing plans for the resettlement and rehabilitation of the community.

It is to be understood that the lens of development is coloured from the government side, and the actual picture on the ground is different. Hence, a reality check is required before planning any interventions for the rural masses.

Through this study, an attempt has been made to explore the outreach of various developmental interventions planned by the government. In most of the indicators under Mission Antyodaya, it is seen that the interventions/asset creation/benefits of the programme, etc., were confined to the main Panchayat area habited mainly by the well-off people. However, the fringes of the Panchayat area, wherein most of the Tandas or tribal hamlets are geographically placed, seem to be devoid of such benefits. This cross-disciplinary study was undertaken on the premise of exploring the Centre-Periphery model (dyad theory).

According to dyad theory in this context, the Centre-Periphery model is contextualised in the domain of development. It is argued that all development-related assets - be it a Primary Health Centre, an ATM, a High School, or banking services - are located or centred around the mainstream Panchayat area. There are proper roads, with buses and auto plying from the main highway. There is door-to-door tapped water facility. A water ATM is also installed in the centre. The beneficiaries are mostly the upper class/caste people living in surrounding areas. However, the Lambadas and other tribal communities, who have residence on the outskirts or fringes, are devoid of any such benefit.

From the sociological viewpoint, a philosophical point of departure is taken from Erving Goffman's Spoiled Identity (1963). In his book, *Stigma: Notes on the Management of Spoiled Identity* (1963), Erving Goffman uses the term "spoiled identity" to refer to an identity that causes a person to experience stigma. For Goffman, "stigma" describes the experience of moving through life with an attribute that

is deeply discrediting. This attribute divides people into those-who-are-normal and those-who-are-not, thereby making those-who-are-not less worthy. Spoiled identities include racial minority, ethnic minority, sexual orientation, gender, sex and religious identities, body size, and visible and invisible disabilities.

Through this study, the research team has attempted to reinstate that despite all government measures, the Tandas and other areas inhabited by tribals and people living below the poverty line, mostly the Lambadas, are way behind on many development indicators. It is seen that micro-level studies and mapping help in bringing out such nuances and help in focusing on pertinent issues while making development plans. In the case of Burgula Panchayat, it is seen that the Tandas, such as Nerella Cheruvua, Kadiyala Kunda and Kundel Kunta Tanda, do not have accessible roads. On the houses made on the fringes, even proper electricity connection and water tap connection are amiss. It is to be noted that these villages are habited by Lambadas, who belong to the scheduled tribe category. In other parts of the country, Lambadas are collectors of forest produce, hunter-gatherers, shifting cultivators, pastoralists and nomadic herders and artisans.

A Brief on Lambadas

Figure 162: Lambada Women Engaged in Embroidery Works

The Lambadas are the scheduled tribe inhabiting the State of Telangana and Andhra Pradesh. As per the 2011 census, the Lambada population in Telangana is 20,46,117, and they constitute the largest tribe in the State. They are also known as Sugalis and Banjaras. Thurston treats Lambada as a

synonym of Brinjari or Banjar, Sugali or Sukali. According to Thurston (1994), quotes Banjaras are found all over western and southern India; one of the principles of castes is known under the name of Labhani. The two names appeared under many variations such as Banjari, Vanjari, Brinjari, Lambhani, Kabana, Labana, Lambadi, and Lambad. Hutton (1951) also agrees with Thurstone and treats Lambada as a synonym of Banjara. Enthoven (1920) is of the opinion that Lamanis, Vanjaris, Banjaras, Banjaris, Brinjaris, Lamanas, Lambadis, Lambanas and Sugalis are one and the same. These scholars assume that the word 'Banjara' draws from the word 'vanachara', which means those who live and roam in the forests.

Lambadas are known to live in exclusive settlements of their own called Tandas, usually away from the main village, tenaciously maintaining their culture and ethnic identity. The traditional attire of the men comprises dhoti, upper garment and bright coloured turbans. Lehenga of coarse cotton prints, richly embroidered with several folds at the waist, are common among women. The Lambada tribe is divided into five phratries:

1. Bhukya (Rathod)
2. Vadthiya (Jadhav)
3. Chowhan
4. Pamar
5. Banoth

In this study, the Lambadas were found to be residing in Tandas, namely Kadiyala Kunta Tanda, Nerella Cheruvu and Kundel Kunta Tanda. It is observed that they have to ply to the main market area, or the PHC or the high school either on foot or on a two-wheeler (in case it is available) with great difficulty. A centralised, hierarchical and capital-intensive approach is seen in the planning and implementation of government interventions.

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Chapter 7: Discussion and Conclusion

GIS-based GPDP

It is seen that with the Fourteenth Finance Commission (FFC) laying more emphasis on providing financial stability and ensuring effective planning, preparation of participatory Gram Panchayat Development Plans (GPDPs) gained utmost importance. It is vital to bring more accountability and transparency in the process of preparing GPDP, which can be achieved by linking it with the Geographic Information System (GIS). The GPs prepare an annual development plan, and a considerable volume of resources are utilised to implement the plan. Such plans are prepared based on available databases or intuitively depending on the knowledge of the local area. There is a need for objectivity in the planning process by acquiring relevant data and planning at the GP level using geographic data for sustainable development. It enables the user to take better decisions based on geographical data.

Using Spatial Planning in local self-governance can ensure openness and accountability in the functioning of GPs. With the aid of GIS and satellite imagery, a detailed visual record of the projects can be maintained, which can be accessed anytime. Physical verification of the projects can be done by anybody, from anywhere anytime. GIS can increase the legitimacy and acceptability of the PRIs among its stakeholders (Guidelines for preparation of GPDP by MoPR, 2018).

In the study, the use of WebGIS portal will enable "Spatial Planning" at the grassroots level. The portal is designed to provide the information in spatial and non-spatial information. It includes information on various themes with high-resolution satellite imagery in the background. It gives detailed information regarding household amenities, and envisages time-effective and scientific planning through the involvement of the common public. In the long term, the result of the mapping exercise is a Dashboard which may be used to:

- *Target and plan budgets*
- *Design Policies, and*
- *Implement Initiatives more effectively*

Herein, a comparative chart of the development scenario exhibiting the performance of three leading indicators - Health, Education and Governance - with respect to the six villages in Burgula Panchayat, is presented in Table 9. As is evident from the matrix, three Tandas are yet to achieve quality indicators compared to the other three mainstream villages.

Table 9: Gram Panchayat-wise Comparison of Indicators

S. No.	Panchayat	Health	Education	Governance
1.	Burgula			
2.	Chintaguda			
3.	Kasireddyguda			
4.	Kadiyala Kunta Tanda			
5.	Kundel Kunta Tanda			
6.	Nerella Cheruvu			

Issues/Gap Areas Highlighted by Each GP

In continuation, it is observed by the research team that there were certain gap areas in the development scenario in Burgula Panchayat. Hence, the team suggested the Panchayat members to take up the following works in their GPDP and other planning interventions.

1. Roads
2. Soak Pit
3. Dumping yard

The same was shared with the Panchayat members on maps. The research team also suggested that fallow lands can be marked and turned into valuable resources. Another suggestion was the construction of BT road for the 4-km stretch from Burgula to Chintaguda to reach the Tanda.

Though youth from Burgula are graduates, they do not have adequate skills to earn a livelihood. We could connect them to DDU-GKY and RTP, and NIRDPR could act as an agent of change.

Through this study, the research team has made a rigorous attempt to map and demonstrate a visual dashboard of the 141 indicators of development list under Mission Antyodaya. The project highlights that with the aid of GIS and satellite imagery, a detailed visual record of the project can be maintained and accessed anytime. The stakeholders may view the planned, in-progress as well as completed works, which are spatially displayed for better assessment. The Decision Support system helps in better and efficient planning, and the visualisation enables the users to take better decisions based on geographical data. The usage of Spatial Planning in local governance can ensure openness and accountability in the functioning of Gram Panchayats.

Policy Advocacy

As earlier mentioned, this research aimed to map the existing resources, both natural and man-made and identify gap areas to suggest interventions. By using satellite imagery as well as an ethnographic approach, the study team could map and verify various assets in Burgula Cluster. However, certain policy interventions that originated during this study are listed below:

1. The new Panchayats should be given requisite budget to meet their expenses.
2. The Tandas or tribal hamlets should have equal access to resources such as PHC and banks at par with other villages.
3. People should be allowed to express their needs at Gram Sabhas, and accordingly, GPDP should be developed.
4. Focus should be on capacity building and leadership development for better development at the grassroots level.
5. Gender equality to be emphasised in Gram Panchayat elections.
6. Interactive dashboards may be created at Panchayat level for easy utilisation of the portal by PRI members to manage and plan socio-economic activities for the betterment of the local people.

The research team hopes that the stakeholders will make appropriate use of the dashboard and come up with effective and efficient planning for their Panchayat.

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Cover Design: V G Bhat

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