

PMGSY Rural Connectivity Datasets (PRCD22)

Context, Current Use and Future

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PMGSY Rural Connectivity Datasets

- 1. Roads
- 2. Habitations
- 3. Rural Infrastructure
- 4. PMGSY-III Proposals
- 5. Block Boundary
- 6. Location Master Data

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https://geosadak-pmgsy.nic.in/opendata/

Home /PMGSY National GIS - Open Data

📩 PMGSY



Roads

- Collected as part of District Rural Road Plans as early as 2001
- Earlier excel/tabular entry; GIS digitization started in 2015
- Many roads were not found, new roads were added, lengths differed, duplicates, multipart etc. Some of these problems still persist.
- 25,00,000+ km being released
- Live database we wish to continuously work on improving the data and updating the release from time to time
- Digitized by each state separately either using in-house teams, local remote sensing centers or private GIS firms
- Standardization in attributes and topological checks conducted by C-DAC Pune
- Coverage and quality varies to an extent across each state.

Attributes

Attribute	Remarks	Example
ER_ID	Unique identifier for a Road	1670176
STATE_ID	Linked to Location Master	4
DISTRICT_I	Linked to Location Master	385
BLOCK_ID	Linked Location Master	1038
DRRP_ROAD_	Road Number in our database	RR(VR)L185
RoadCatego	Village Road, MDR, SH, NH etc	RR(VR)
RoadName	Generally, to via	Lakhimpur to Kaithpara
RoadOwner	Department that manages the road.	PWD







What's a habitation?

• Village/ Habitation

The unit for this Programme is a **habitation** and not a revenue village or Panchayat. A habitation is a cluster of dwellings, in an area, the location of which does not change over time. Desam, Dhanis, Tolas, Majras, Hamlets etc. are commonly used terminology to describe the habitations. The population of all habitations within a radius of 500m (1.5 km of path distance in case of hills) may be clubbed together for the purpose of determining the population size. This **cluster approach** would enable provision of connectivity to a large number of habitations, particularly in the hill/ mountainous areas.







Habitations

- Collected as part of District Rural Road Plans as early as 2001
- Earlier excel/tabular entry; GIS digitization started in 2015
- 10,00,000+ GIS points
- Live database we wish to continuously work on improving the data and updating the release from time to time
- Digitized by each state separately either using in-house teams, local remote sensing centers or private GIS firms
- Standardization in attributes and topological checks conducted by C-DAC Pune
- Coverage and quality varies to an extent across each state.

Attributes

Attribute	Remarks	
STATE_ID	Linked to Location Master	4
DISTRICT_I	Linked to Location Master	385
BLOCK_ID	Linked Location Master	1038
HAB_ID	Linked to Habitation Dataset	356099
HAB_NAME	Name of the Habitation	Barninari Pub
TOT_POPULA	Population in 2011 as estimated by the field engineer	850



Rural Infrastructure

- Collected starting 2019 for the purpose of PMGSY-III
- Using in-house GEOPMGSY mobile app
- Clicking geo-tagged pictures of Educational, Health, Agro facilities as mentioned in PMGSY-III Guidelines
- 7,70,000+ facilities collected
- Field engineers, contracted staff etc were used for the data collection.
- Fixed period exercise: Inventory was frozen before proceeding with selection of roads. This data will largely not update for any state.
- Interpretations of facility definitions etc were left to the states to decide
- Generally only government infrastructure was taken but some states included private infrastructure too.

Earlier FAQs: http://omms.nic.in/Home/PMGSYRuralDataset/

Attributes

Attribute	Remarks	Example
STATE_ID	Linked to Location Master	4
DISTRICT_I	Linked to Location Master	385
BLOCK_ID	Linked Location Master	1038
HAB_ID	Linked to Habitation Dataset	356099
FACILITY_I	Unique ID for each facility	899053
FAC_DESC	Name of the Facility as entered by the surveyor	Ghoruabaha Pathar Bus Stand
FAC_CATEGO	Larger category of the facility being released	Transport/Admin
FAC_SUBCAT	Facility sub-category (Eg. Bus stand).	Bus Stand

Will be added shortly.



PMGSY-III

"Task of connecting all eligible habitations with an all-weather road has been substantially completed, with the target date brought forward to March, 2019 from March 2022. It is now time to strengthen and widen its ambit further to include major link routes which connect habitations to agricultural and rural markets (GrAMs), high secondary schools and hospitals. Prime Minister Gram Sadak Yojana Phase III will include such linkages"

- Hon Union Finance Minister, Budget Speech, 2018

Key document is PMGSY-III Guidelines: <u>https://pmgsy.nic.in/sites/default/files/PMGSY_III_guidelines.pdf</u>

PMGSY-III Proposals

- 1,25,000 km is the overall target split across states
- 70,000+ km sanctioned (OMMAS)
- Significant portion of proposed alignments are digitzed on GeoSADAK
- GIS Alignments of Proposals sanctioned before launch of GeoSADAK is in progress
- Proposals are drawn by Field Engineers or GIS officers in SRRDA on GeoSADAK portal [click and trace]











Pradhan Mantri Gram Sadak Yojana (PMGSY) was launched by the Government of India to provide connectivity to unconnected habitations in order to provide continuing access to economic and social services thus increasing the agricultural incomes, employment and other tion PMGSY-III envisages consolidation of the existing Rural Road Network launched with the

Attributes

Attribute	Remarks	Example
STATE_ID	Linked to Location Master	4
DISTRICT_I	Linked to Location Master	385
BLOCK_ID	Linked Location Master	1038
HAB_ID	Linked to Habitation Dataset	356099
MRL_ID	Unique ID to link with OMMAS information	244300
CN_CODE	Unique ID to link with OMMAS information	657081
PROPOSED_L	Length of the Proposed Road	3.00
WORK_NAME	Name of the Proposed Work	MRL10-Jaysagar to Bartola No.1
IMS_YEAR	FY in which this work is sanctioned	2020
IMS_BATCH	FY against which this work is sanctioned	1

Additional information is also available on public reports in OMMAS for joining but we'll add important information here too based on feedback These are only sanctioned proposals, doesn't mean construction would have started (tendering etc)

open bata		
	🛃 Master Data	1 Inf
ect State	~	Please

Location Master Data

- Master data for State_ID, District_ID and Block_ID in the shapefiles
- Not to be considered as India's latest or official administrative division dataset
- This dataset lags the actual administrative splits on the ground because of the effort involved in moving existing processes on the IT system to new geographies
- This dataset provides location information regarding the remaining shapefiles

STATE_ID	STATE_NAME	DISTRICT_ID	DISTRICT_NAME	BLOCK_ID	BLOCK_NAME
2	Andhra Pradesh	528	Srikakulam	2225	Hiramandalam

Current Uses of Data

Trace Maps

Multi-objective transport planning algorithm

Basic Principle

Each habitation should have access to nearest school, hospital, market and administrative buildings

• Identify nearest facilities of every kind and draw the route from the habitation to each of the facilities

Eg. Routes from Habitation A to nearest high school, hospital, agricultural market etc

- 22 such routes for every habitation termed as its routes of fundamental access
- Repeat it for 1 million habitations ie 22 million fundamental routes
- Identify the roads which are part of these 22 million routes and calculate importance based on the destination facilities and population of habitation using the route

[Paper] Algorithmic Rural Road Planning in India: Constrained Capacities and Choices in Public Sector





Inputs:

Geo-tagged facilities Habitation & rural road shapefiles **Outputs** Trace Map PDF Trace Rank CSV





Open Call

- Researchers, Civil Society, Students, Startups, GIS Industry
- Explore different innovative uses of these datasets
- Establish feedback loop so that we are able to improve the datasets we've released
- Feedback on attributes, data quality, missing data etc welcome
- While PMGSY engineers will update the data, how do we incorporate civil feedback on data back into our database with necessary checks and balances?

Geo-tagging Galore

- Many scheme are requesting geo-tagged photographs to be collected at the point of delivery
- SBM toilets, PMAY-G houses, Ujjwala, NREGA assets etc.
- If we combine PMGSY habitations with NREGA assets, you can get both micro and macro sense of how welfare is being distributed







- Spatial Queries (buffers etc)
- Joining things based on lat-long versus MIS
- Service Area Analysis (how far are services to each habitation)
- QGIS, Google Earth Engine, GeoPandas
- <u>https://www.qgistutorials.com/en/</u>
- <u>https://spatialthoughts.com/</u>



Caution

- In many states, villages have been marked as habitations
 - You'll get only one point per village
- Population entered can be wrong or double counted
- Many habitations may now be in urban
- Facilities aren't exhaustive and fixed in time (wouldn't rely on it to make service delivery claims)
- If you are researching a scheme, worth writing to them or visiting their office once. Almost all the data has heavy context and assumptions behind them and can't be taken as-is.

Gratitude

- Field Engineers on the ground who've travelled 100s of kilometers to geotag various assets for PMGSY-III
- GIS professionals across states who've painstakingly cleaned and created habitation and road datasets
- State ITNOs who led the digitization efforts in the state and embraced GIS even though it's a different field altogether.
- C-DAC, Pune for standardizing, checking quality and curating the datasets nationally

Getting Started

1. Download QGIS

(https://www.qgis.org/en/site/forusers/download.html)

2. Download PMGSY Datasets (<u>https://geosadak-pmgsy.nic.in/opendata/</u>)



Thank You