



PM GATI SHAKTI CHHATTISGARH

Compendium of Use Cases



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Use Case 1- Identification of Particularly Vulnerable Tribal Groups (PVTGs) hamlets with gap of Road Connectivity and Health Center

Project Brief:

Enables targeted identification of PVTGs hamlets lacking adequate health facilities and road infrastructure by overlaying data on tribal settlements, existing healthcare locations, terrain, and accessibility. The aim is to plan and develop social and basic amenities for tribal settlements.

Problem Statement:

Region of Interest: Orchha Tehsil, in Narayanpur district of Chhattisgarh,

Orchha Tehsil is a remote and forested area, one of India's least surveyed and most inaccessible zones. This area is predominantly inhabited by PVTGs, including the **Abujhmaria and Hill Maria tribes**, who face significant challenges **related to road connectivity and basic health facilities**.

Usage of PMGS SMP Plan:

- Integration of tribal habitation data with road and health infrastructure layers.
- Identification of spatial gaps using terrain analysis and accessibility modeling.
- Prioritization of road and health center development based on settlement density and criticality.

Selected **Area of Interest** in Orchha Tehsil, Narayanpur District for the Study on PVTG Hamlets with Road Connectivity Gaps, as visualized using the State Master Plan interface.

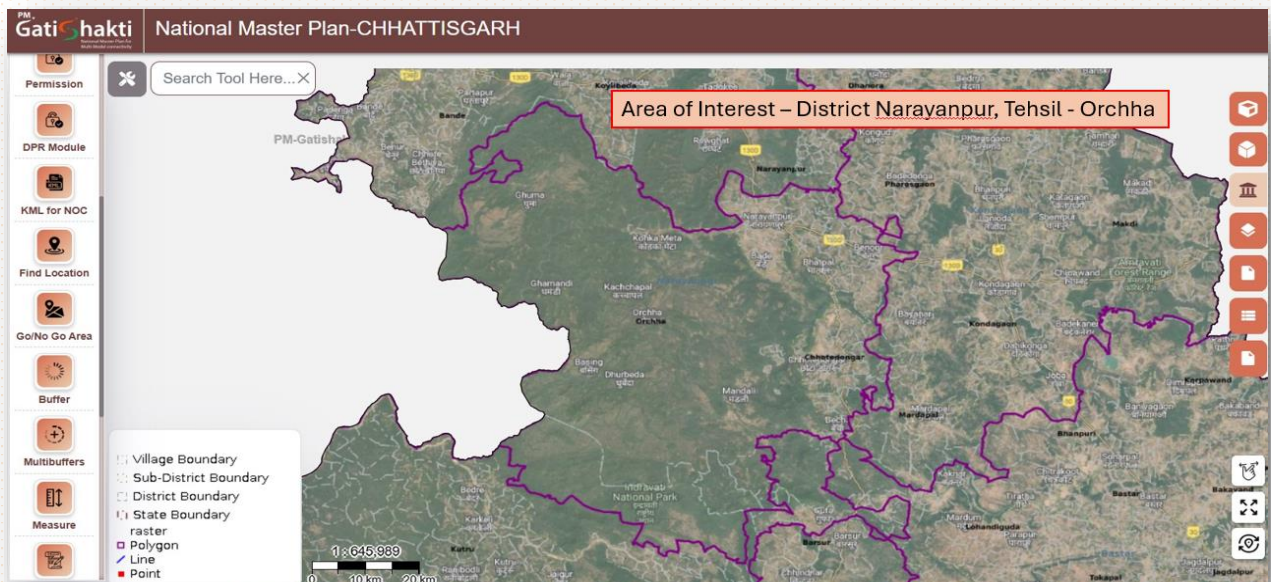


Fig 1: Area of Interest – Orchha Tehsil, Narayanpur District

Overlay of PVTG Hamlets and Pre-existing Health Centers using layers from the Tribal Department tab on the State Master Plan Portal, facilitating analysis of healthcare service gaps in tribal regions.

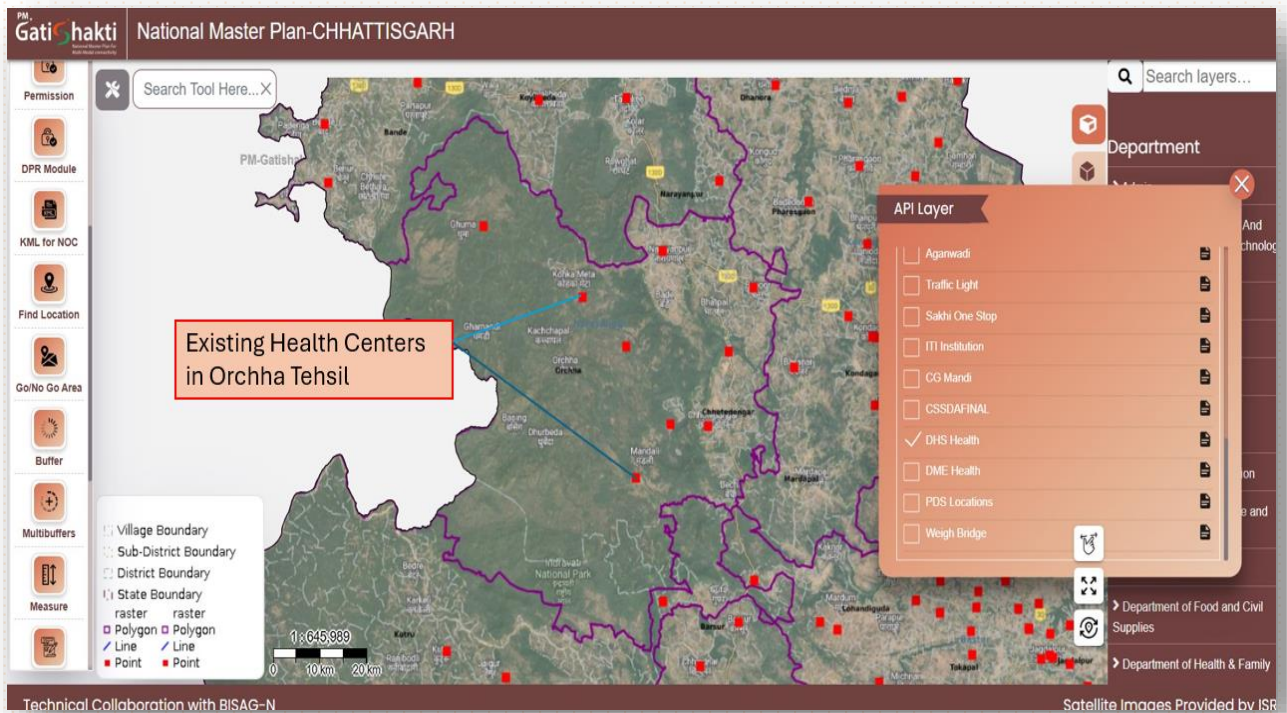


Fig 2: Existing Health Centre

Selection of Pre-existing Health Centres from the Department Tab on the State Master Plan Portal for Evaluating Healthcare Access Gaps in the selected Area of interest.

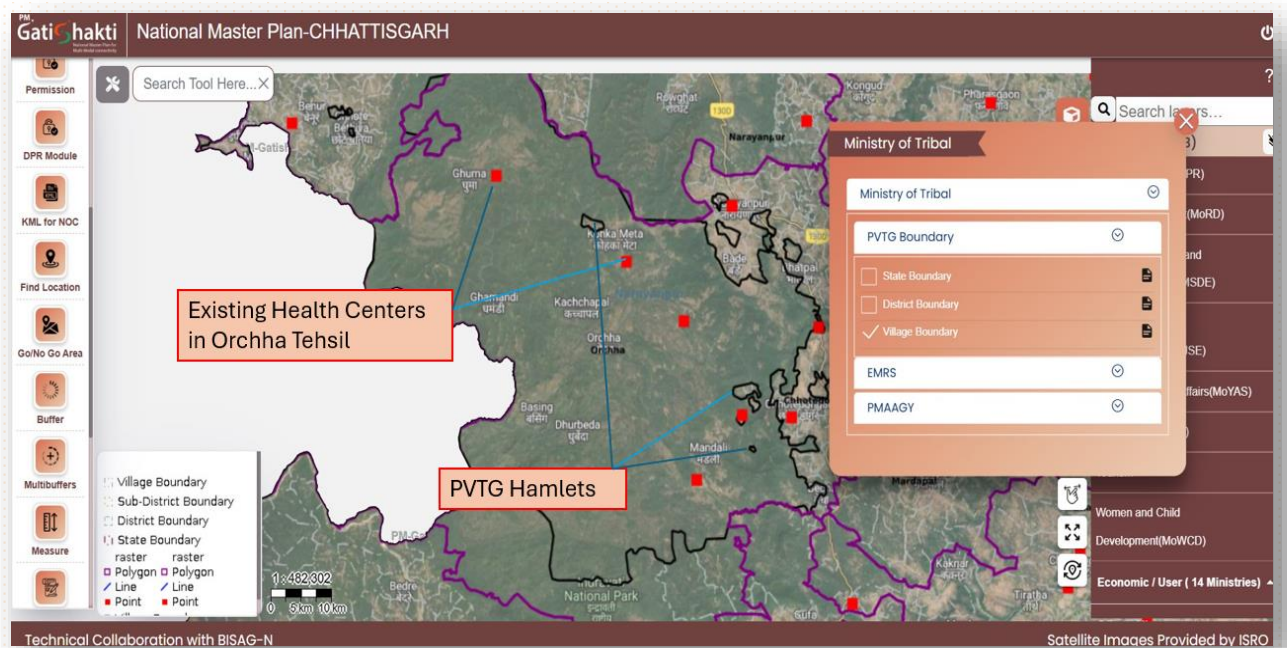


Fig 3: PVTG Hamlets and Existing Centres

A 2 km buffer created around Pre-existing Health Centres using the Buffer Tool on the State Master Plan Portal to assess proximity and service coverage for nearby PVTG hamlets.

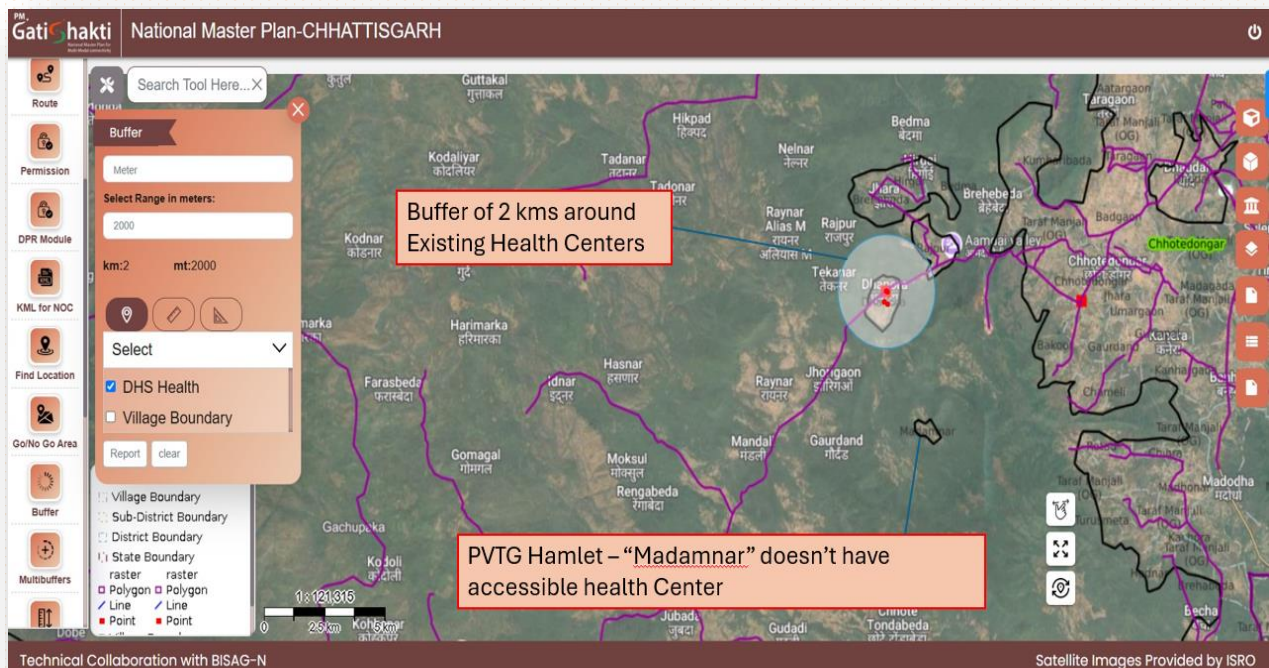


Fig 4: PVTG of Interest – Madamnar with no accessible Health Centre - 2 Km Buffer using Buffer tool

A 5 km buffer created around Pre-existing Health Centers using the Buffer Tool on the State Master Plan Portal to assess proximity and service coverage for nearby PVTG hamlets. The analysis identified Madamnar hamlet as falling outside the service radius, indicating a potential healthcare access gap. Overlaying the road network layer further visualized the accessibility challenges faced by the hamlet.

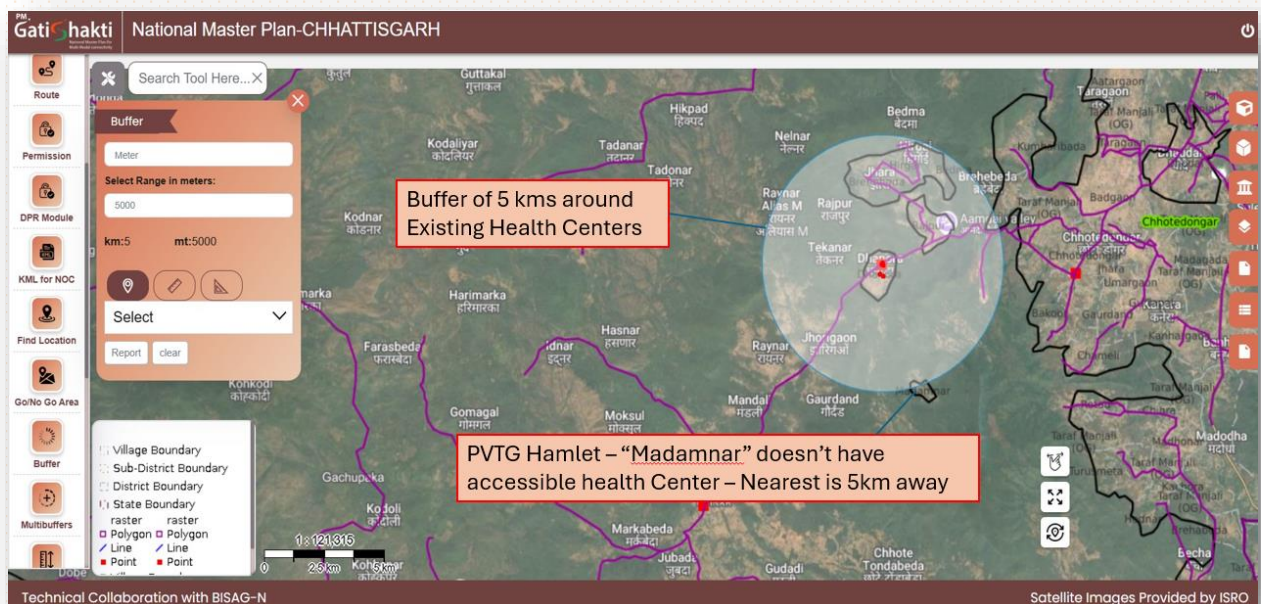


Fig 5: Madamnar PVTG is 5km away from nearest Health Centre -- 5 Km Buffer using Buffer tool.

Gap Analyzer Tool used to suggest appropriate routes for new road construction between Pre-existing Health Centres and unserved PVTG hamlets, aimed at enhancing connectivity and improving access to essential services.

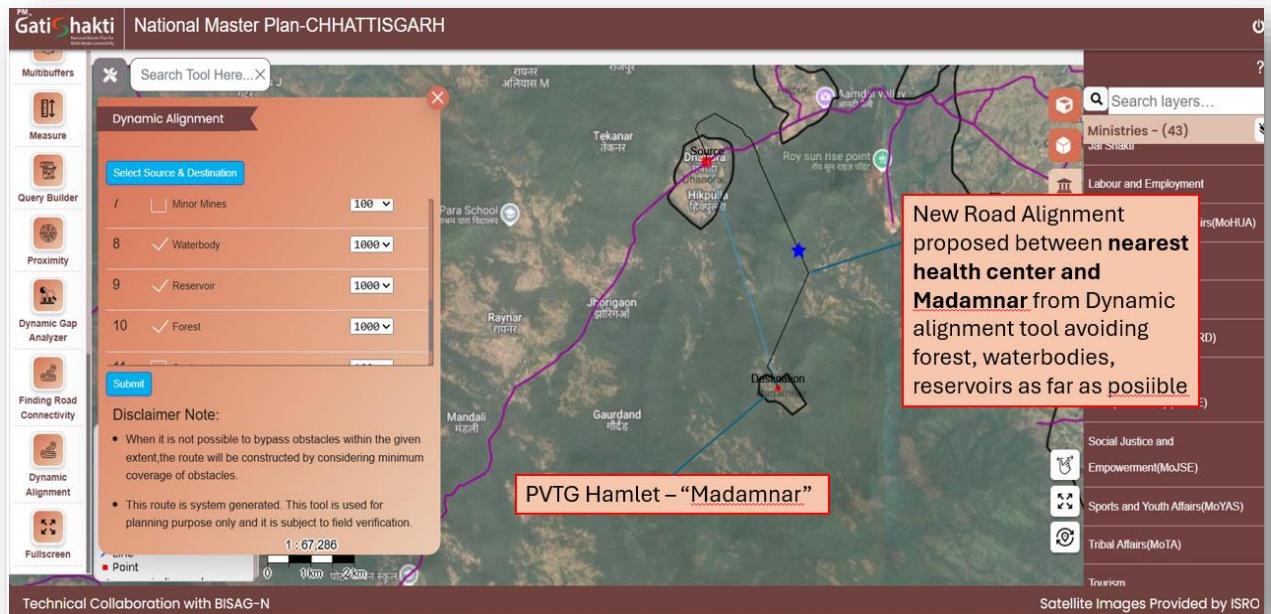


Fig 6: Using Dynamic alignment tool, Green field Road alignment is suggested between PVTG Madamnar and nearest health center avoiding Forest, Water Bodies, Reservoirs and sanctuaries.

Greenfield road alignment proposed using the Dynamic Alignment Tool between Madamnar PVTG hamlet and the nearest PMGSY road, strategically avoiding ecological and geographical constraints such as forests, water bodies, reservoirs, and protected areas.

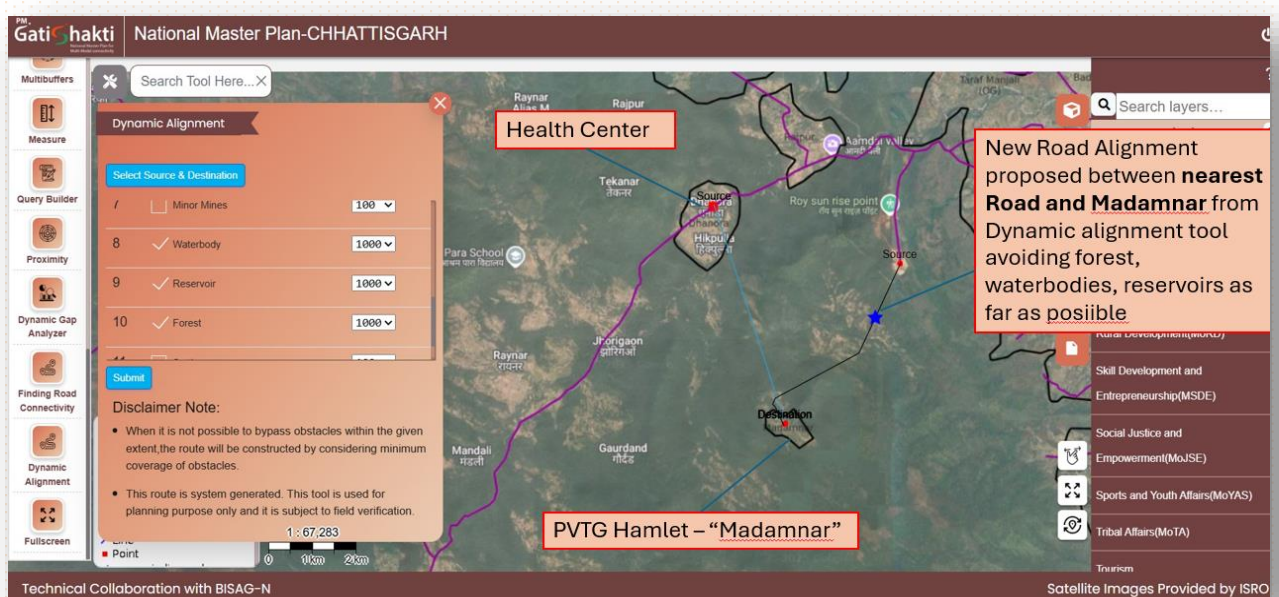


Fig 7: Using Dynamic alignment tool, green field Road alignment is suggested between PVTG Madamnar and nearest PMGSY Road avoiding Forest, Water Bodies, Reservoirs and sanctuaries

Expected Benefit:

- Improves road connectivity and healthcare access and emergency response.
- Enhances connectivity and market access, hence augmenting the employment and economy of State.
- Supports local businesses and increases income
- Reduction in time of planning of health care facilities, access to roads, and allocation of resources

Use Case 2- Identification of Anganwadis Without Last mile Road Connectivity in Bijapur District, Chhattisgarh

Project Brief:

Bijapur district in southern Chhattisgarh is marked by remote settlements and sparse road networks, posing challenges for service delivery, particularly to children and mothers through Anganwadi centers. Enhancing road connectivity to Anganwadi centers is crucial to ensure access to nutrition, education, and healthcare services for rural communities. A focused GIS-based study was carried out to identify Anganwadis lacking last-mile connectivity.

Problem Statement:

Anganwadi centers serve as critical community institutions for child development and maternal health in rural India. However, in Bijapur district, many Anganwadis are located far from existing road networks, hindering effective service delivery. Planning and executing targeted connectivity improvements are vital to strengthen the Anganwadi network and promote inclusive growth in rural areas.

Usage of PM Gati Shakti NMP (GIS Operation):

The *Finding Road Connectivity* tool on the PM GatiShakti platform was deployed for this analysis:

- **District:** Bijapur; **Block:** Bhairamgarh.
- Selected **Anganwadi** as the area of interest under habitation/amenities.
- Used the **Road Network (DRRP)** layer as the baseline road infrastructure.
- Applied a **buffer distance of 500 meters** to detect Anganwadi centers located beyond 500 meters from any existing road.
- Generated **downloadable reports in tabular format** for further micro-level intervention planning.

This GIS-based assessment provided a data-driven foundation for improving Anganwadi accessibility in the district.

The 'Finding Road Connectivity' tool on the National Master Portal enables identification of gap areas based on user-defined criteria, supporting targeted infrastructure planning for improved access to amenities. Using the tool, navigate to the area of interest.

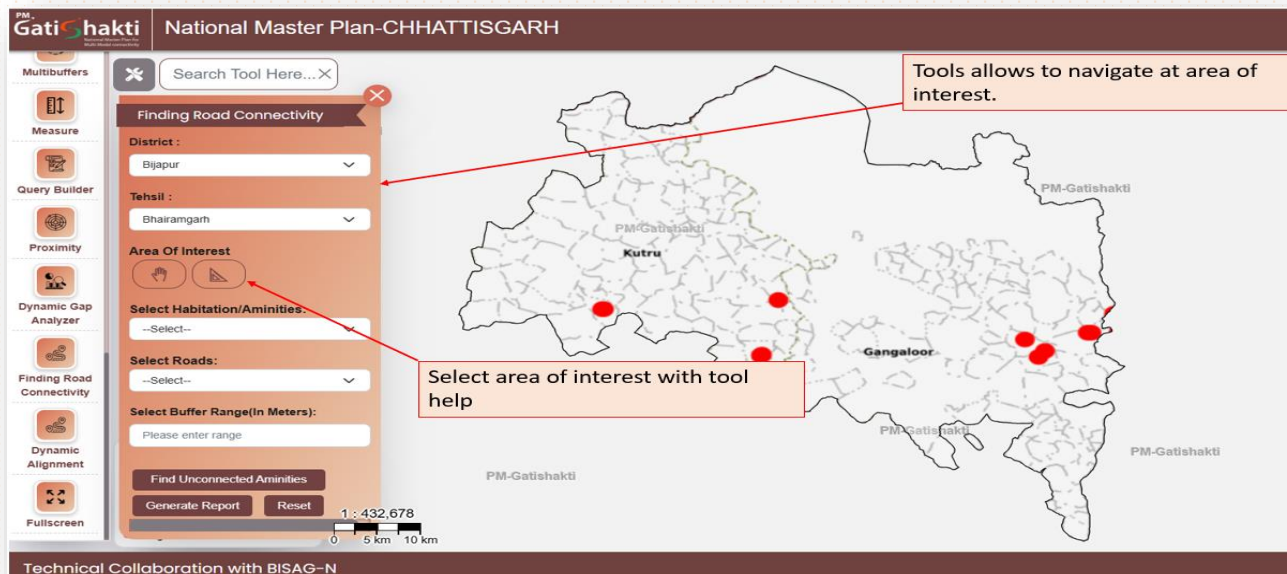


Fig 1: Area of Interest Bhairamgarh block from Bijapur district

Area of Interest in Bhairamgarh, Bijapur District selected using the Draw AOI Tool on the National Master Portal. Users can define the area by creating a polygon.

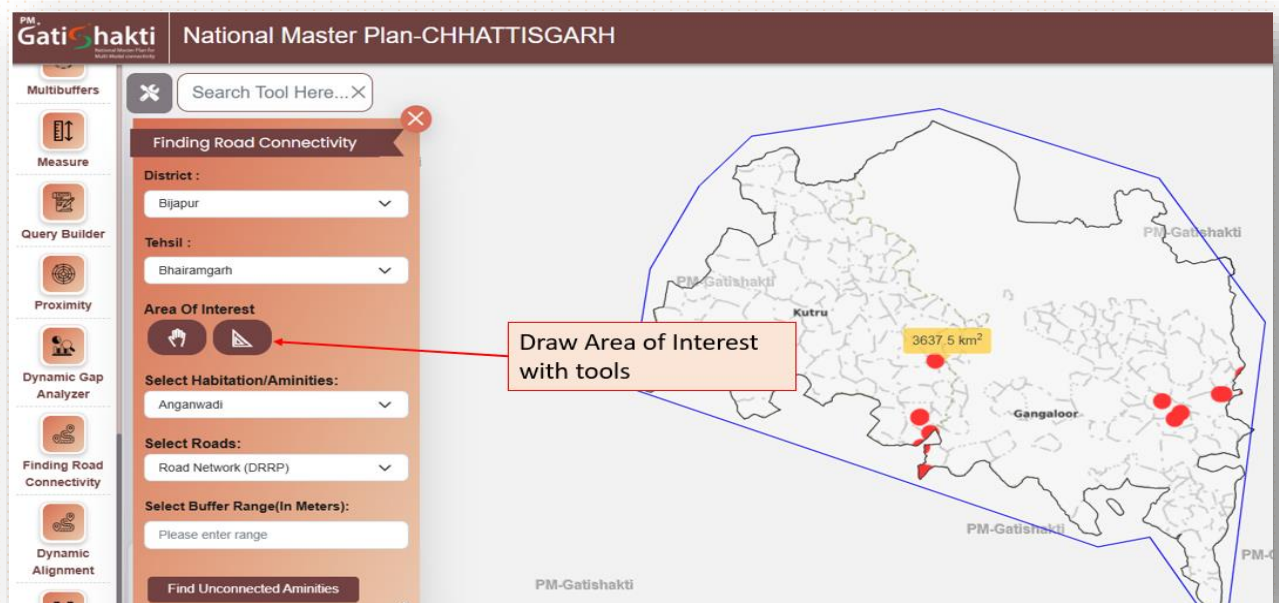


Fig 2: Selected area of Interest by Polygon

For Identification infrastructure gap, a buffer criterion of 500 meters applied to analyse proximity and connectivity to Anganwadi centres.

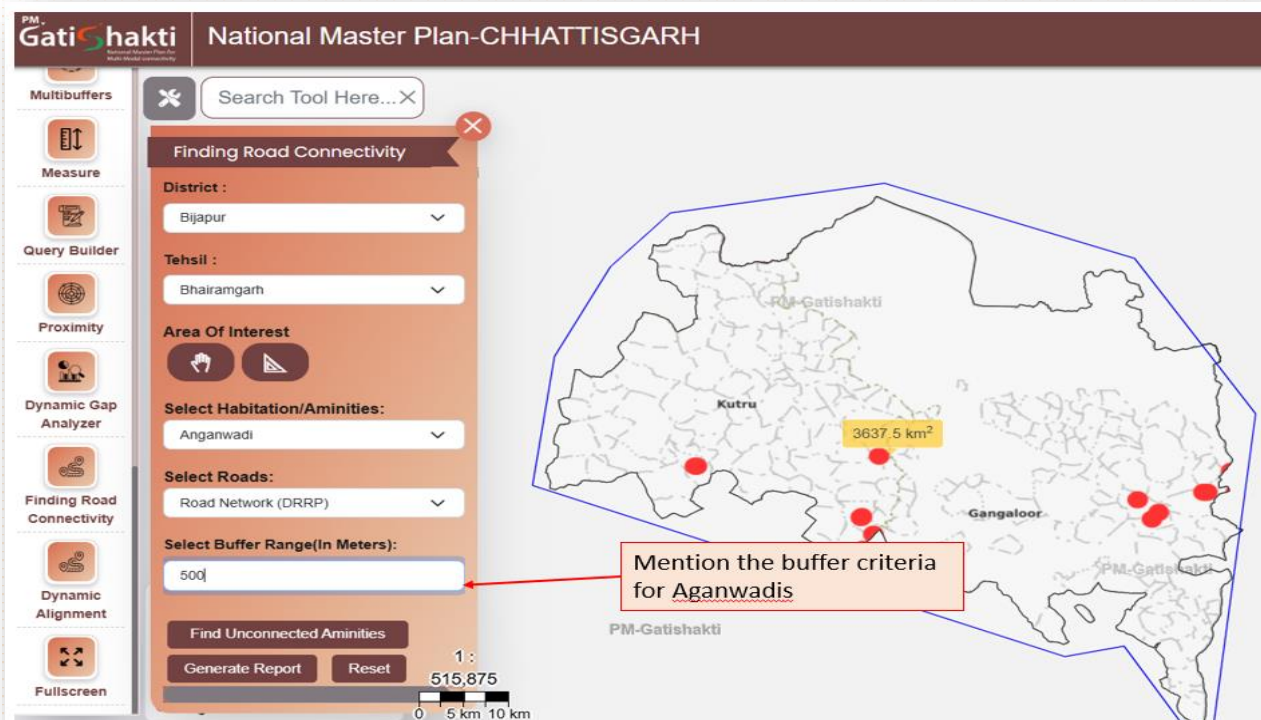


Fig 3: Existing Anganbadi in selected area

For analysing road connectivity to Anganwadi centres, the Anganwadi layer and PMGSY road layer must be selected from the "Select Habitation/Amenities Tab" under the 'Finding Road Connectivity' tool.

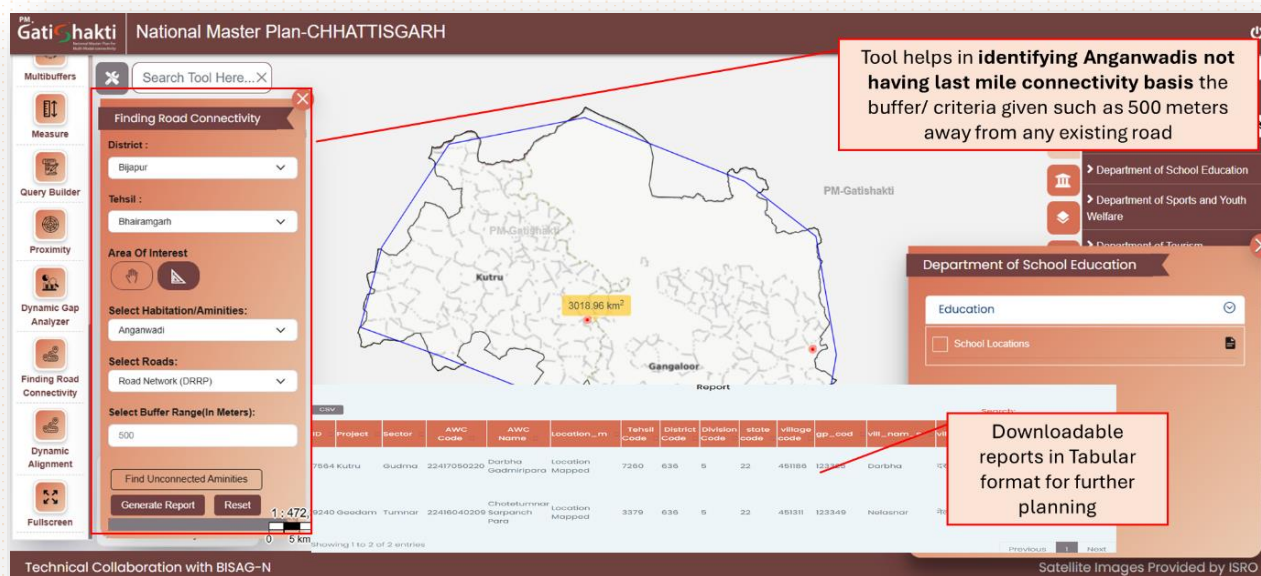


Fig 4: Identified unconnected Anganwadi Centres and compiled tabular report.

Expected Benefits:

- Enables **targeted infrastructure development** to connect Anganwadi centers efficiently.
- Strengthens **childcare and maternal health service delivery** through improved accessibility.
- Facilitates **data-driven decision making** and project prioritization.
- Enhances **social inclusion** by bridging infrastructure gaps in rural and tribal areas.
- Supports **early childhood development initiatives** by ensuring easy access to Anganwadi services.

Use Case 3- Identification of potential area for planning for new Park/Gardens locations

Project Brief:

Raigarh district, situated in the easternmost part of Chhattisgarh, features a diverse landscape ranging from forested plateaus in the north to open plains in the south. Leveraging this natural diversity, a targeted approach was adopted to identify potential areas for developing new parks and gardens. The aim is to enhance social infrastructure, promote urban liveability, and create green spaces that contribute to ecological balance and community well-being.

Problem Statement:

Raigarh district, with its evolving urban centres and expanding rural settlements, has significant scope for improving basic amenities such as parks and gardens. Despite the rich natural backdrop, there exists a gap in planned recreational spaces, especially in rapidly growing urban residential clusters. Strategically planning for parks and gardens will foster a healthier environment and improve the overall quality of life for residents.

Usage of PMGS SMP Plan:

The PM GatiShakti platform's *Dynamic Gap Analyser* tool was utilized to identify priority areas for park development:

- A buffer range of 5000 meters was applied to analyze settlement clusters.
- Villages with a population of over 2000 were selected based on demographic data.
- The tool automatically identified villages exceeding the population criteria but lacking existing park or garden infrastructure.
- Further, downloadable tabular reports were generated to facilitate micro-level planning and decision-making by local authorities.

Through this analytical approach, targeted interventions for green infrastructure development were effectively planned to address existing gaps

'Dynamic Gap Analyzer' tool on the National Master Plan Portal enables navigation to the selected Area of Interest. As part of the park accessibility analysis, the Park layer was activated from the "Directorate of Urban Administration" tab.

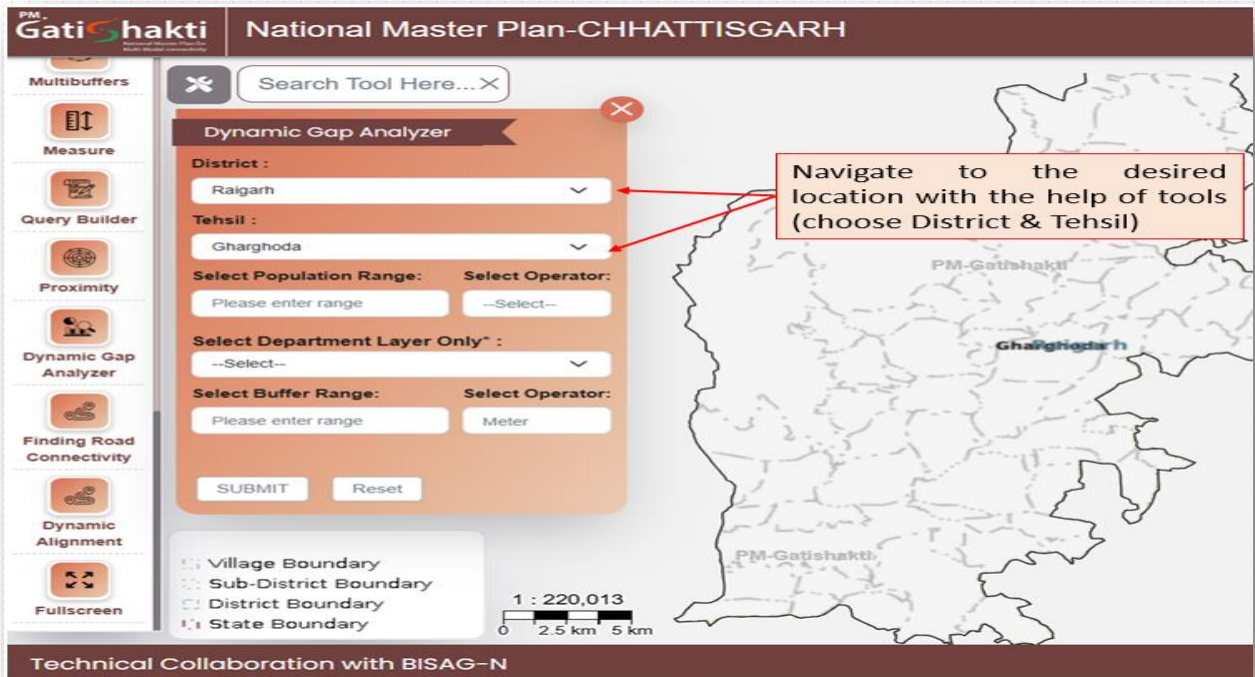


Fig 1: Area of Interest Gharghoda block from Raigarh district

For the analysis, Gharghoda block in Raigarh district was chosen to assess infrastructure gaps. Population criteria were set using the 'Select Population Range' option. Additionally, the Park/Garden layer was chosen from the 'Select Department Layer Only' tab under the "Dynamic Gap Analyzer tool" to identify underserved areas.

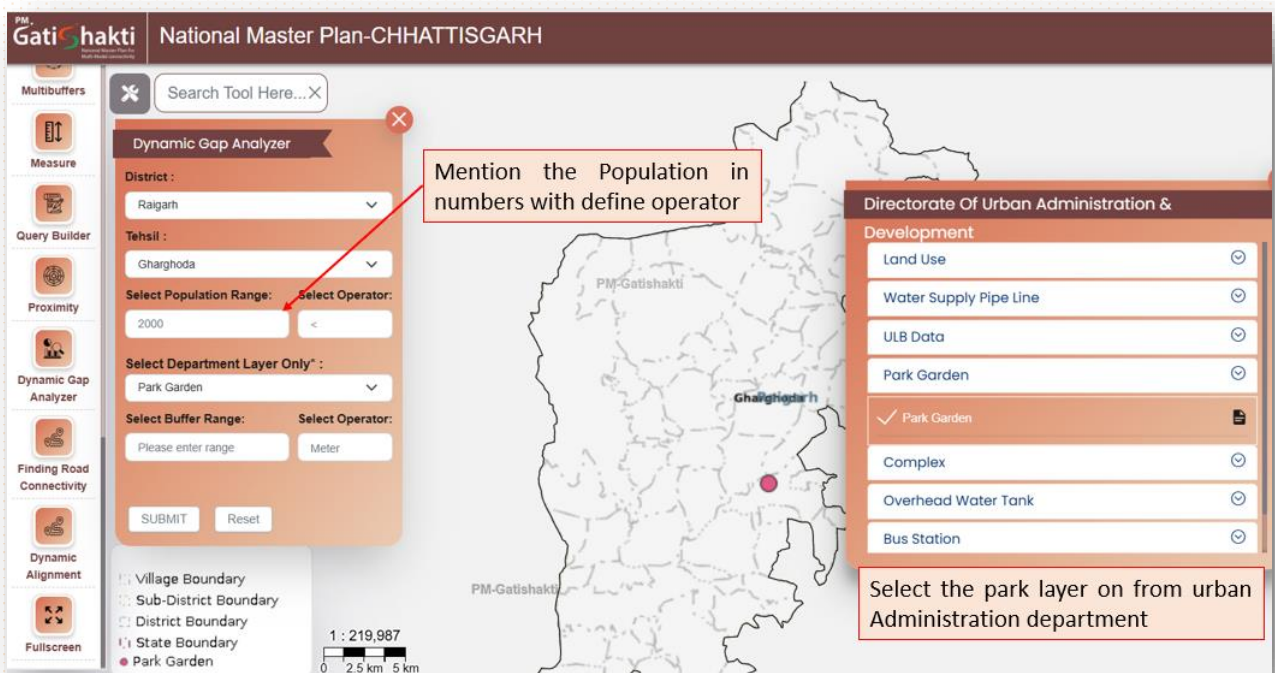


Fig 2: Identified unserved locations

A buffer range of 1000 meters was set as the criteria for existing parks using the tool. After configuring the parameters, the 'Submit' button was clicked to generate the output. The results displayed park accessibility gaps based on the defined criteria.

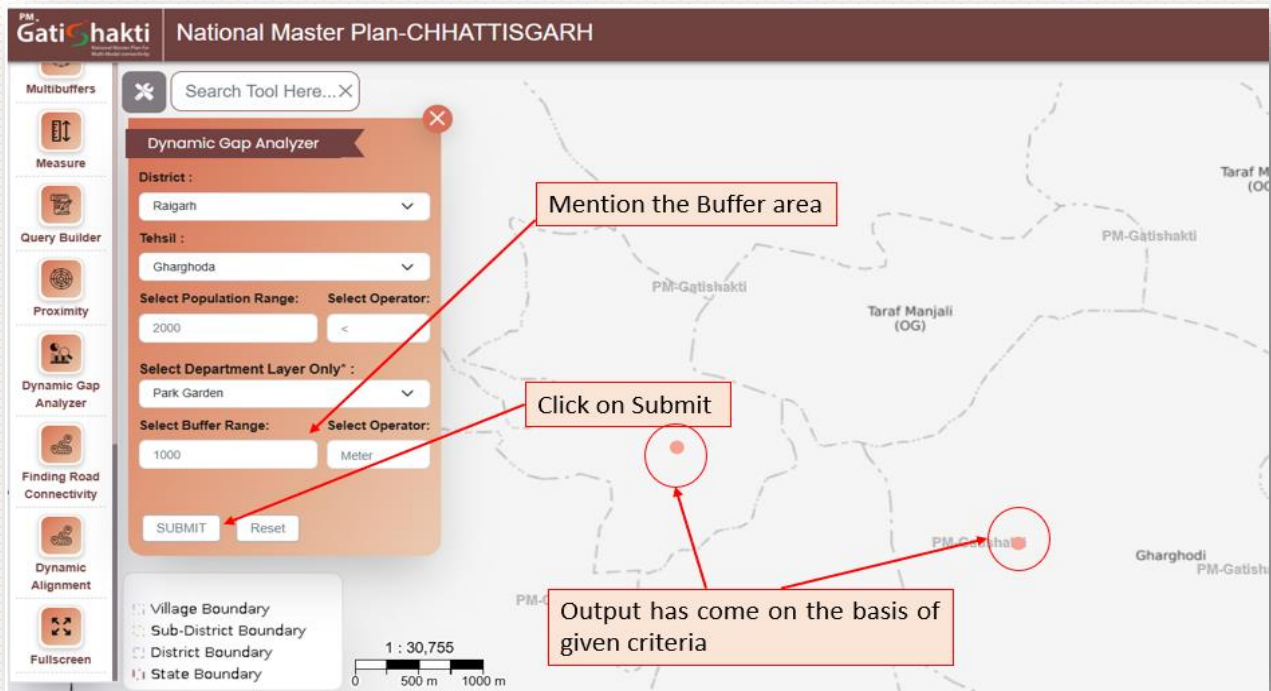


Fig 3: Existing Park location in Gharghoda block from Raigarh District

The output results were displayed within the selected area of interest. A detailed report was generated by clicking the 'Report' button under the Dynamic Gap Analyzer tool, providing insights into park accessibility gaps based on the defined criteria.

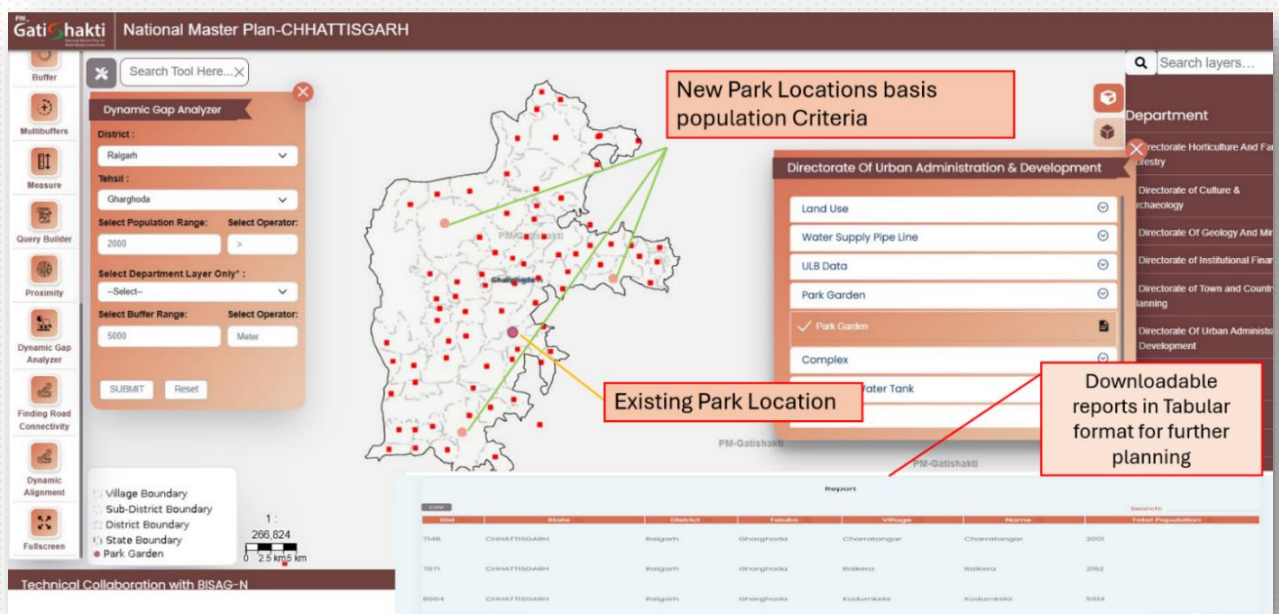


Fig 4: Existing Park locations with Identified new locations.

Expected Benefit:

- Enables data-driven planning for new parks and gardens aligned with population needs.
- Improves urban livability and ecological balance through the strategic development of green spaces.
- Promotes community well-being by ensuring equitable access to recreational amenities.
- Facilitates comprehensive social infrastructure development by addressing spatial gaps.
- Reduces planning time significantly by automating site identification using GIS-based tools.

Use Case 4- Identification of Unserved Villages for New District Health Services (DHS) in Bastar District, Chhattisgarh

Project Brief:

Bastar district, located in the southern region of Chhattisgarh, is characterized by a scattered settlement pattern and challenging terrain. Ensuring equitable access to healthcare services is critical for this tribal-dominated district. A focused initiative was undertaken to identify unserved villages that require the establishment of new District Health Centres (DHS) to strengthen healthcare accessibility in remote areas.

Problem Statement:

The vast geographical spread and dispersed population clusters in Bastar district create significant challenges in healthcare service delivery. Many villages remain underserved, located far from existing DHS facilities. Addressing this gap by scientifically identifying and planning new health centres is essential for promoting inclusive healthcare access and improving health outcomes in the district.

Usage of PMGS SMP Plan:

- The *Dynamic Gap Analyser* tool under the PM GatiShakti National Master Plan (NMP) was utilized to identify priority villages for healthcare interventions:
- **District:** Bastar; **Block:** Lohandiguda.
- A **population threshold of >1500 people** was applied to select villages with significant service demand.
- A **buffer range of 5 kilometers** was set around existing District Health Centers to detect villages located beyond this coverage radius.
- Villages fulfilling both criteria—population above 1500 and situated more than 5 km away from an existing DHS—were flagged as **unserved villages**.
- This approach enabled focused identification of healthcare infrastructure gaps using demographic and spatial data analytics.

Health Facility layer activated from the Department tab to visualize pre-existing Health facility centres. Bastar district has selected in the "Dynamic Gap Analyzer."

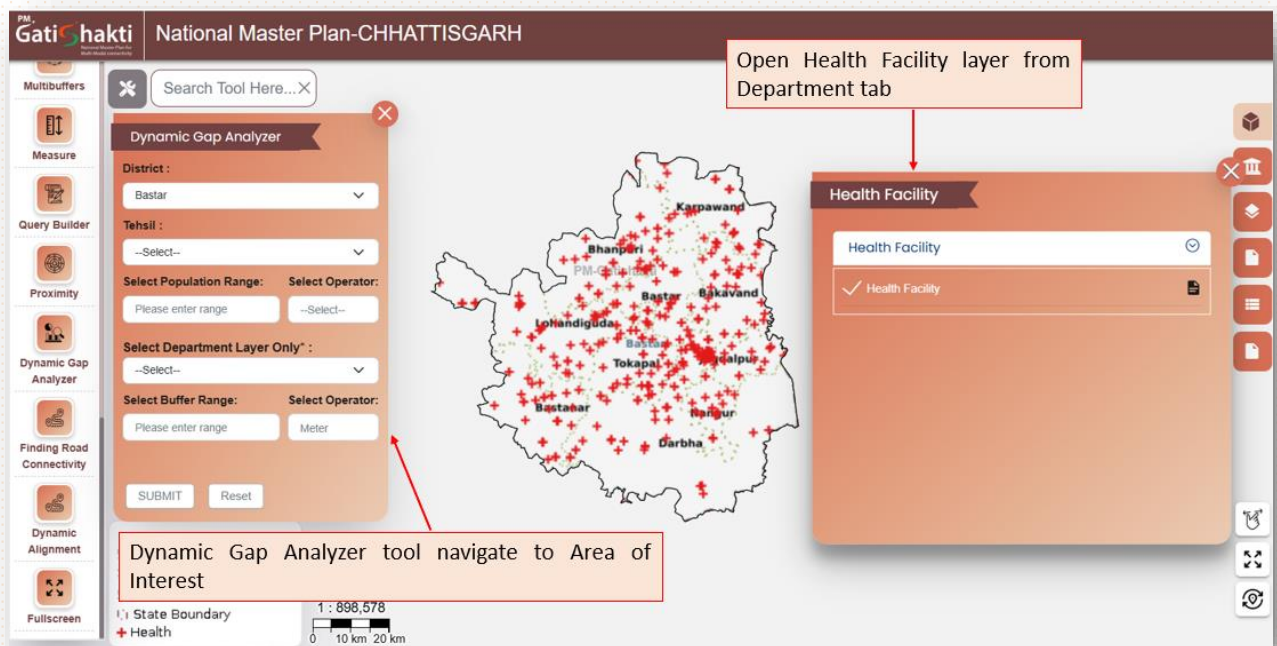


Fig 1: Existing Health facility in the area selected

To identify unserved villages in Lohandiguda block, District health centres and other health facilities has been considered. The tool allows to analyse on multi criteria such that Population Range, Existing Health centre & buffer range.

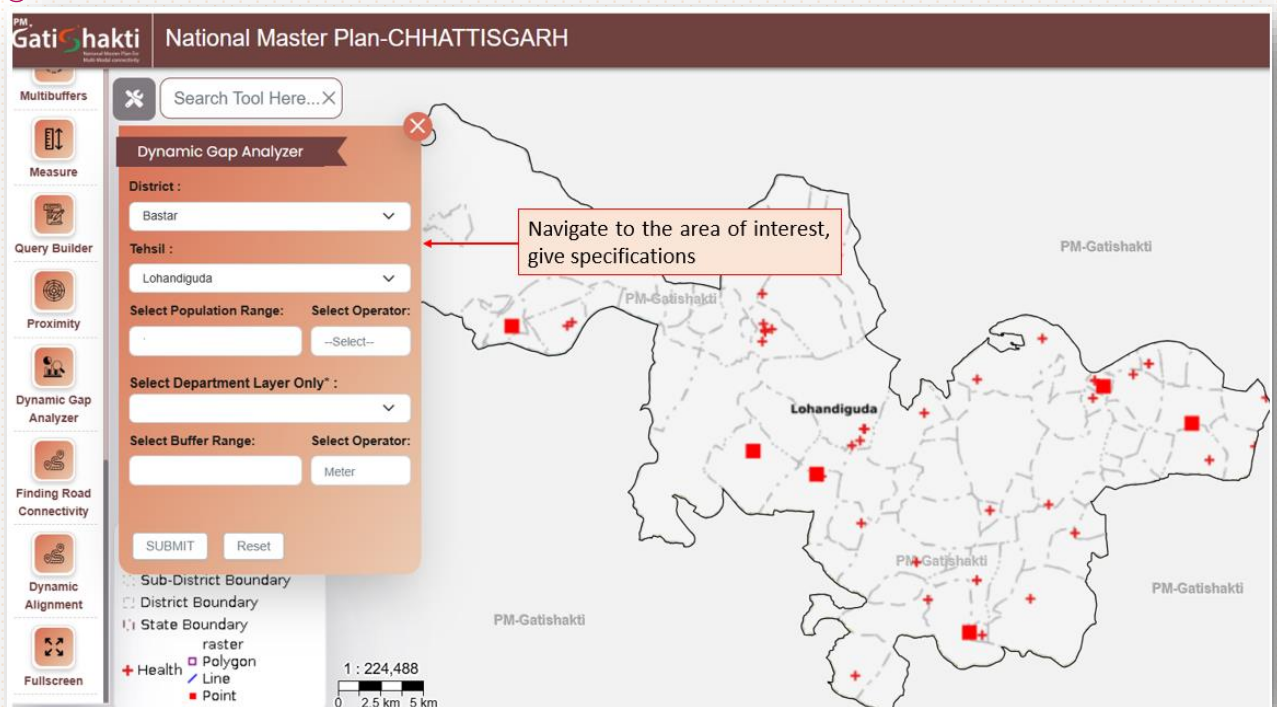


Fig 2: District Health Facility Centre the Lohandiguda block from Bastar District.

Gap analysis in health facility coverage conducted using population criteria and pre-existing District Health Centres selected via the 'Select Department Layer' tab under "Dynamic Gap Analyzer" tool. After given criteria the output locations appeared for visualization

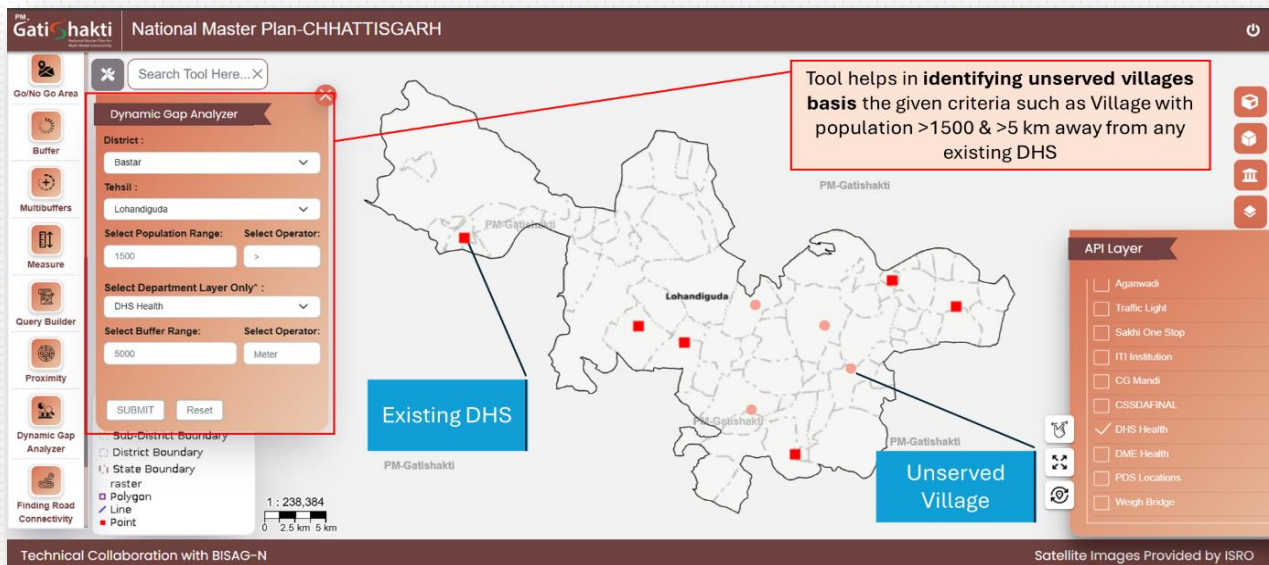


Fig 3: Existing District Health centres and unserved villages

The output result has been generated as point features, along with a detailed connectivity report. The red points in the image represent unserved village locations.

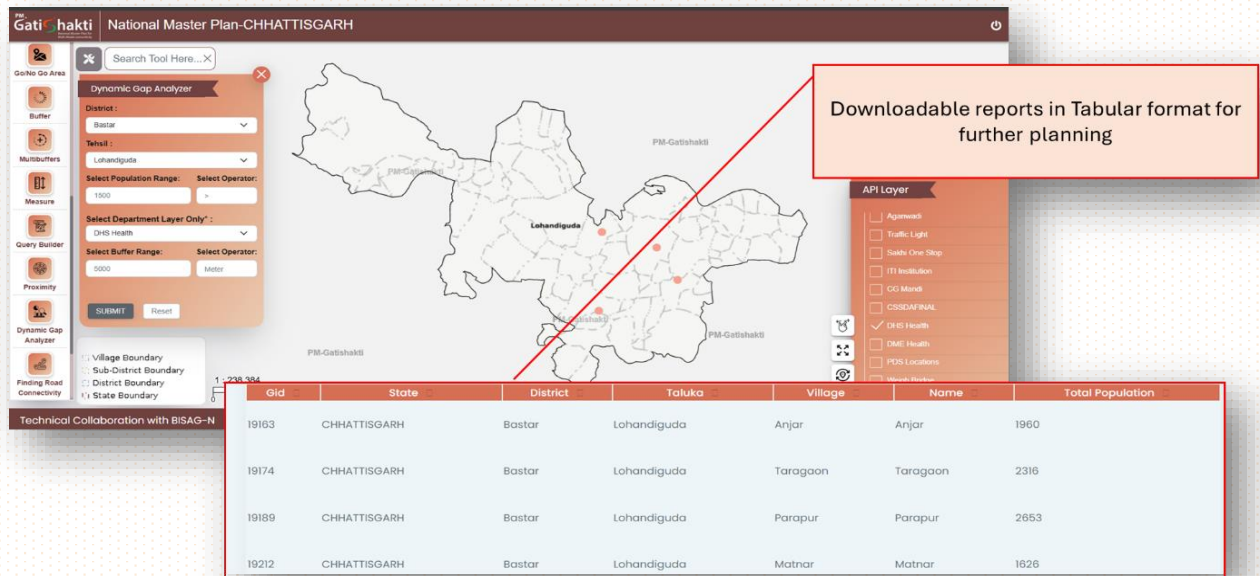


Fig 4: Functionality of downloading the report in tabular format

Use Case 5- Identification of Habitations Without Last Mile Road Connectivity in Bijapur District, Chhattisgarh

Project Brief:

Bijapur district, located in the southern tip of Chhattisgarh, faces significant challenges in providing robust infrastructure due to its difficult terrain and dispersed settlements. Strengthening road connectivity to remote habitations is crucial for improving accessibility, enabling social service delivery, and fostering inclusive development. A focused initiative was undertaken to identify habitations lacking adequate road connectivity.

Problem Statement:

The scattered habitation pattern across Bijapur district has resulted in several villages being disconnected from the main road network, limiting access to essential services. Addressing these last-mile connectivity gaps is critical for social, economic, and infrastructure development. Prioritizing road connectivity interventions will enhance mobility, accessibility to health and education services, and promote economic activities in remote areas.

Usage of PM GatiShakti NMP (GIS Operation):

The *Finding Road Connectivity* tool on the PM GatiShakti platform was used to systematically identify habitations needing road connectivity:

- **District:** Bijapur; **Block:** Bhairamgarh.
- Focused on **Habitation** as the area of interest.
- Selected **Road Network (DRRP)** as the existing road layer for analysis.
- A **buffer range of 1000 meters** was set to identify habitations located beyond 1 km from the nearest road.
- The tool generated **tabular reports** listing unconnected habitations for further targeted planning.

This GIS-based approach enabled data-driven prioritization of habitations requiring new road linkages.

Road connectivity analysis initiated by selecting the 'Finding Road Connectivity' tool, with Bhairamgarh block in Bijapur district designated as the area of interest.

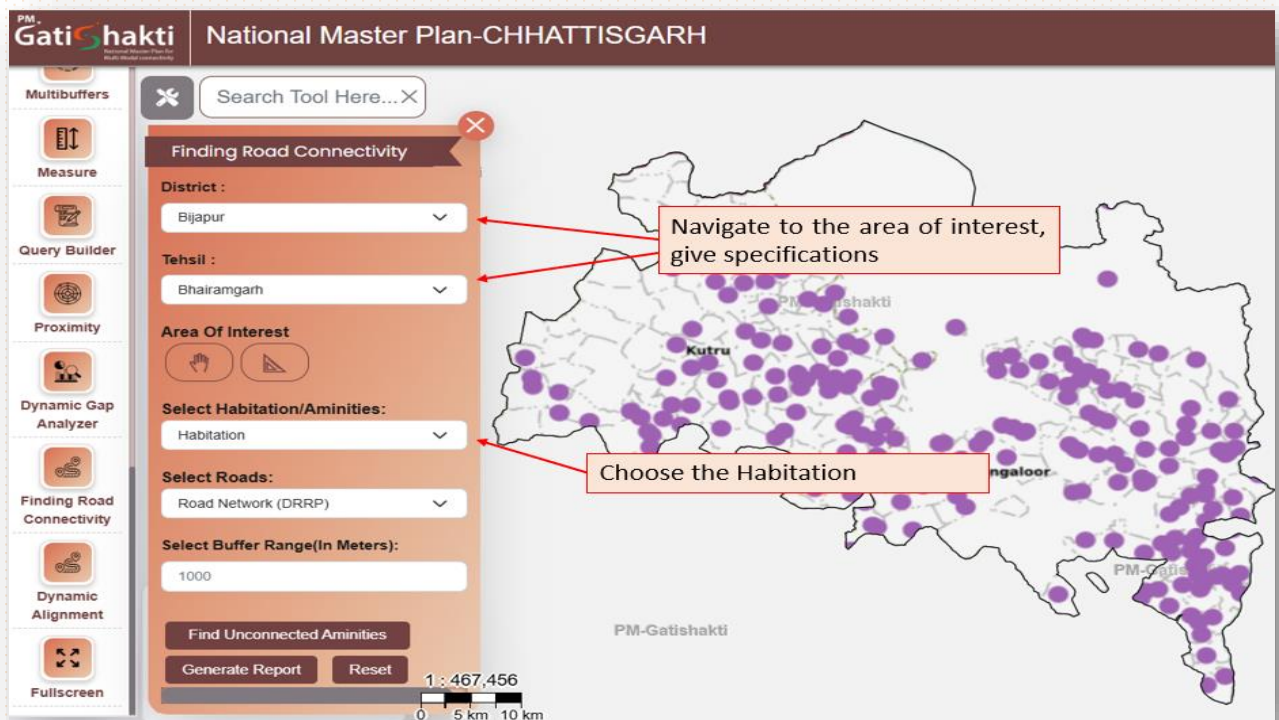


Fig 1: Habitations in the selected Area of Interest

Area of interest defined by drawing a polygon using the tool, with Habitation and Road layers provided as inputs. Also, buffer range specified in meters for road connectivity analysis.

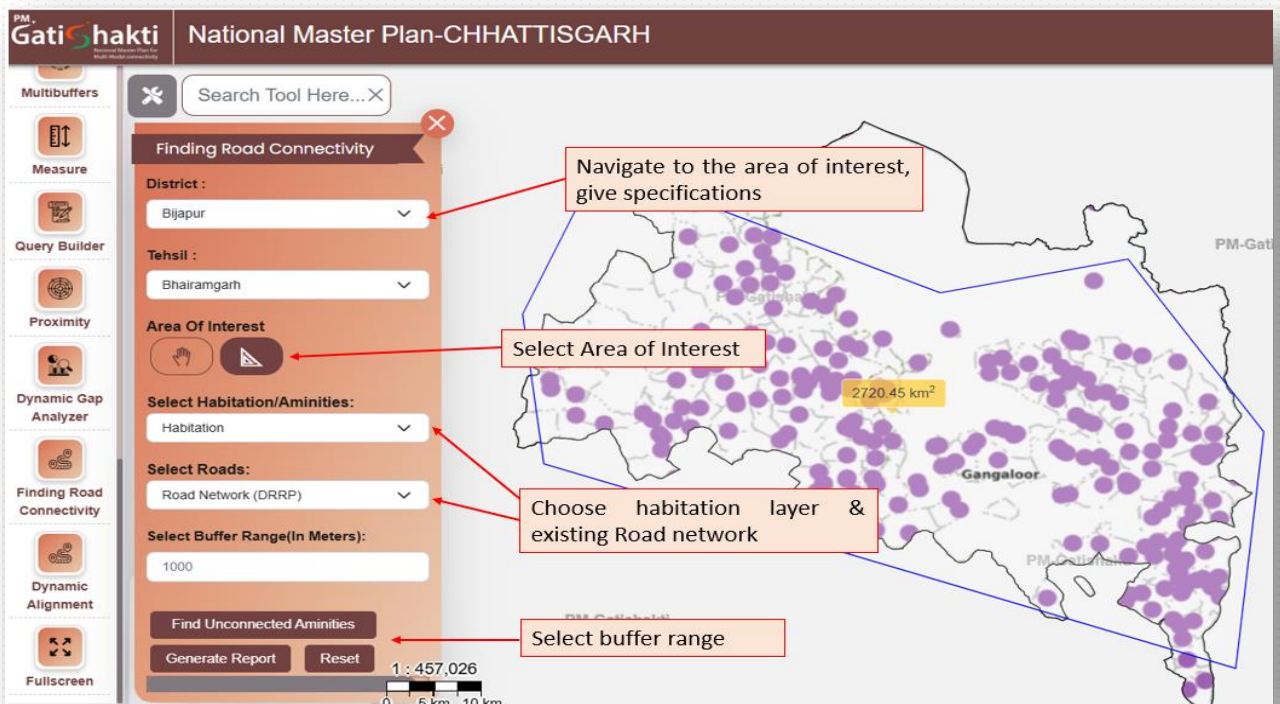


Fig 2: Set criteria in the tool with existing habitations

As Output, tool gives visualization highlights habitations located beyond 1000 meters from pre-existing roads, with a corresponding report generated for these underserved habitations.

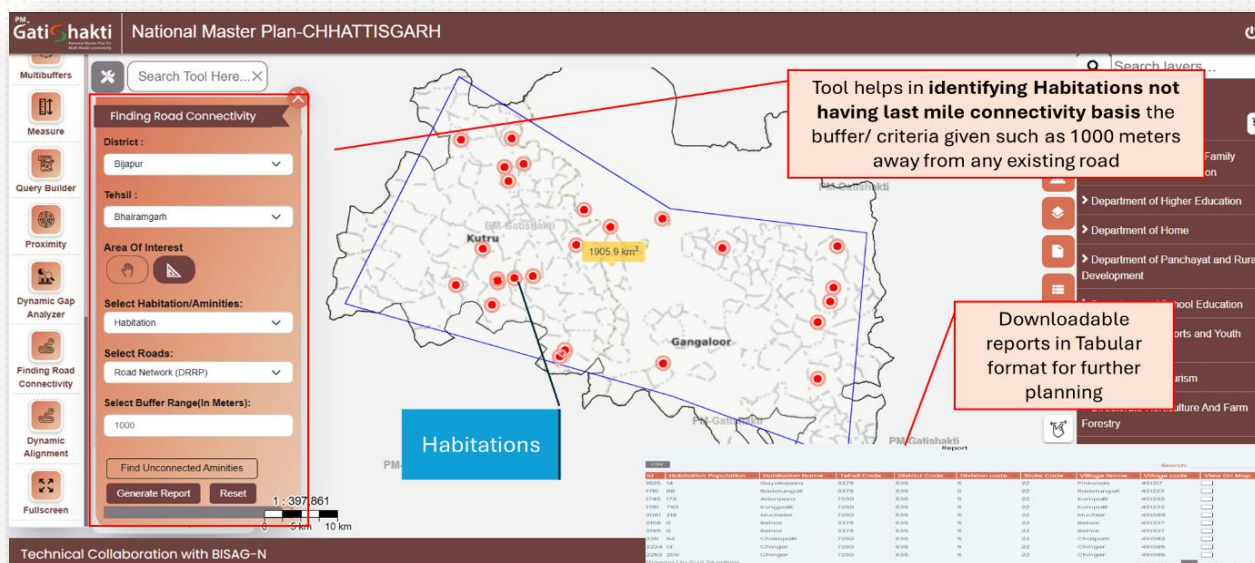


Fig 3: "Detailed Report on Unconnected Habitations" with visualization on SMP

Expected Benefit:

- Enables **targeted infrastructure planning** to address critical road connectivity gaps.
- Promotes **inclusive development** by linking remote habitations to essential services.
- Supports **efficient project planning** through GIS-enabled automated analysis and reporting.
- Improves **economic integration** of remote villages by enhancing market access and mobility.
- Facilitates **accelerated rural development** through strategic investments in road infrastructure.

Use Case 6- Identification of Gaps in Godown Infrastructure Around Premnagar, Chhattisgarh

Project Brief:

Premnagar, located in Surajpur District in northern Chhattisgarh, holds strategic importance for agricultural and food supply chain logistics. Ensuring optimal storage capacity within accessible distances is vital for minimizing post-harvest losses and improving distribution efficiency. A spatial analysis was carried out to identify gaps in godown infrastructure around Premnagar to support informed decision-making for new godown planning.

Problem Statement:

Efficient warehousing and godown facilities are critical for food security, especially in agriculture-dependent regions like Premnagar. However, preliminary observations revealed that certain key areas may lack adequate storage infrastructure within reasonable proximity. Systematic identification of such gaps is necessary to strengthen the supply chain, reduce logistical costs, and support farmers and traders in the region.

Usage of PM GatiShakti NMP (GIS Operation):

The *Dynamic Multi Buffer* tool on the PM GatiShakti platform was employed to perform gap analysis for godown locations:

- **Point of Interest:** Premnagar, Surajpur Dist.
- **Existing Layer:** Godown locations mapped under Chhattisgarh Warehousing Corporation Ltd.
- **Buffer Ranges:** 5 km, 10 km, and 15 km were drawn around Premnagar.
- The analysis showed that **no existing godowns** were present within the specified buffer distances from Premnagar.
- A **Multi Buffer Count Report** was generated for quick reference and planning.

This GIS-based analysis provided a clear identification of the gap in storage infrastructure around Premnagar.

Select the Dynamic Multi Buffer tool from the toolbar and choose the Pre-existing Godown list from the Department tab; all existing godowns are populated.

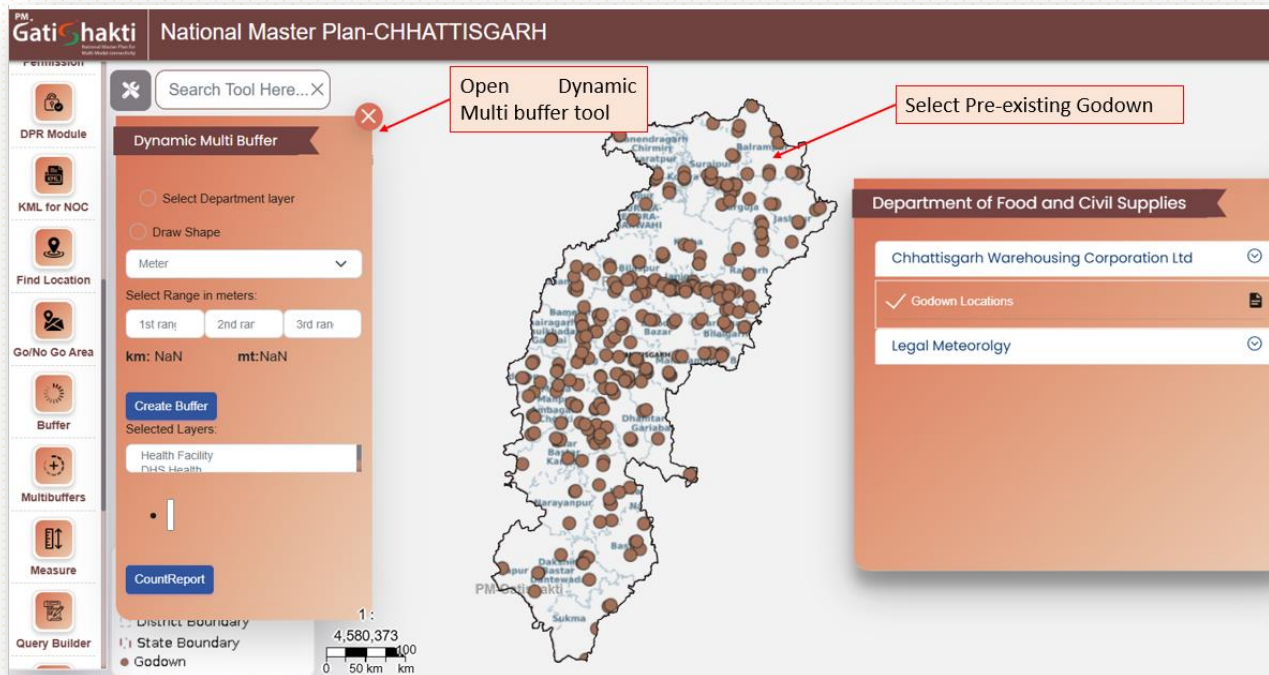


Fig 1: Existing Godown Locations in Chhattisagrh

Dynamic Multi Buffer tool enables selection of area of interest either through the Department layer or by manually drawing a shape, with buffer ranges of 5000, 10000, and 15,000 meters applied to the selected area.

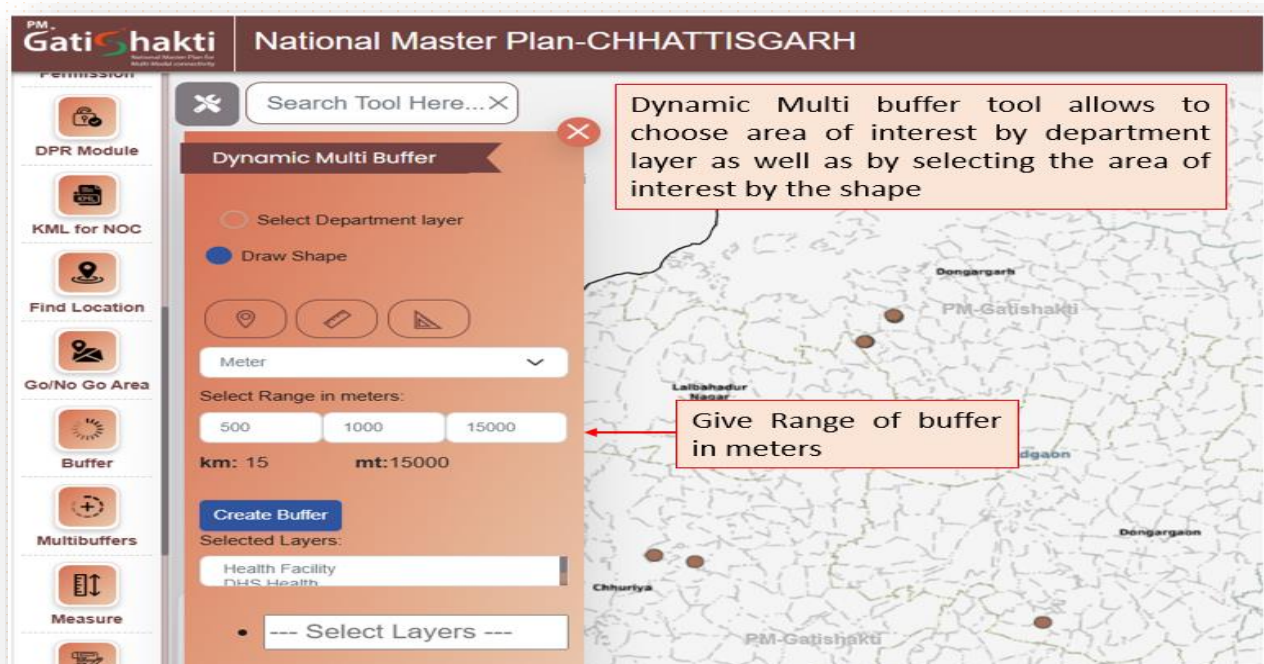


Fig 2: Set range of multi buffer with existing godown locations

As a result of the analysis, multi-buffer zones of 5 km, 10 km, and 15 km were created around the selected location, revealing that no godown exists within a 15 km radius.

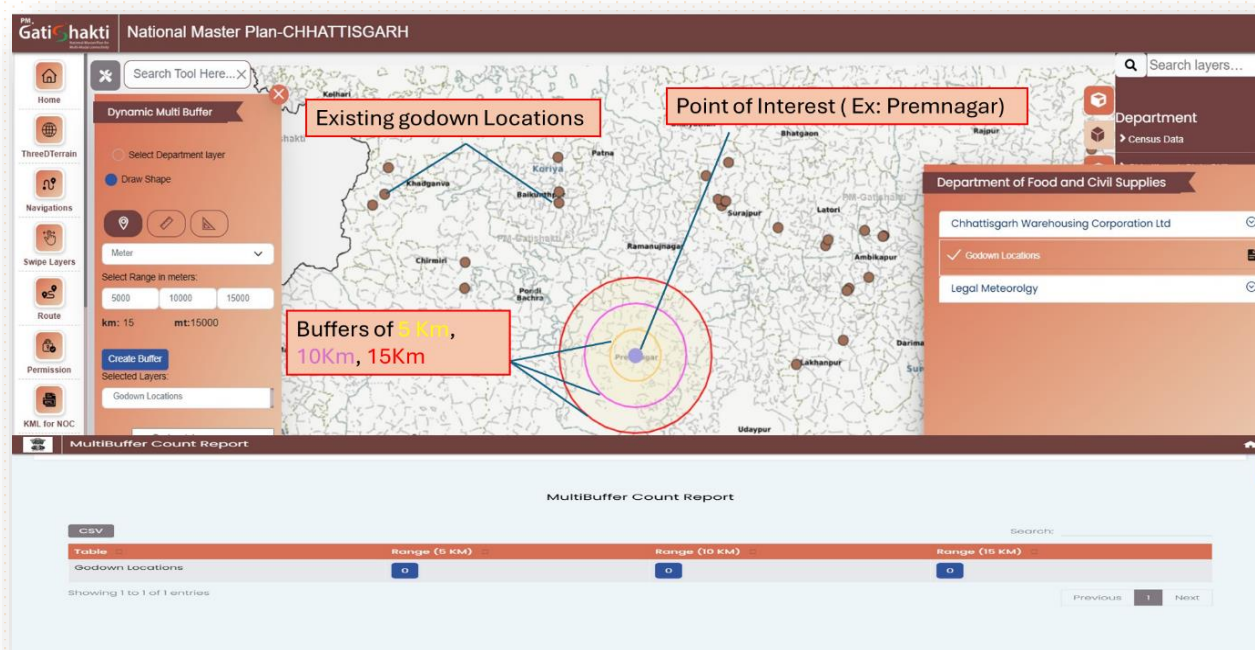


Fig 3: Multi Buffers around given point area with corresponding report

Expected Benefit:

- Enables **evidence-based planning** for establishing new godown facilities.
- Improves **supply chain efficiency** by reducing transportation time and costs.
- Strengthens **post-harvest management** and reduces storage-related crop losses.
- Supports **farmers and traders** through better access to warehousing infrastructure.
- Facilitates **infrastructure development planning** through spatial data-backed decision-making.

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