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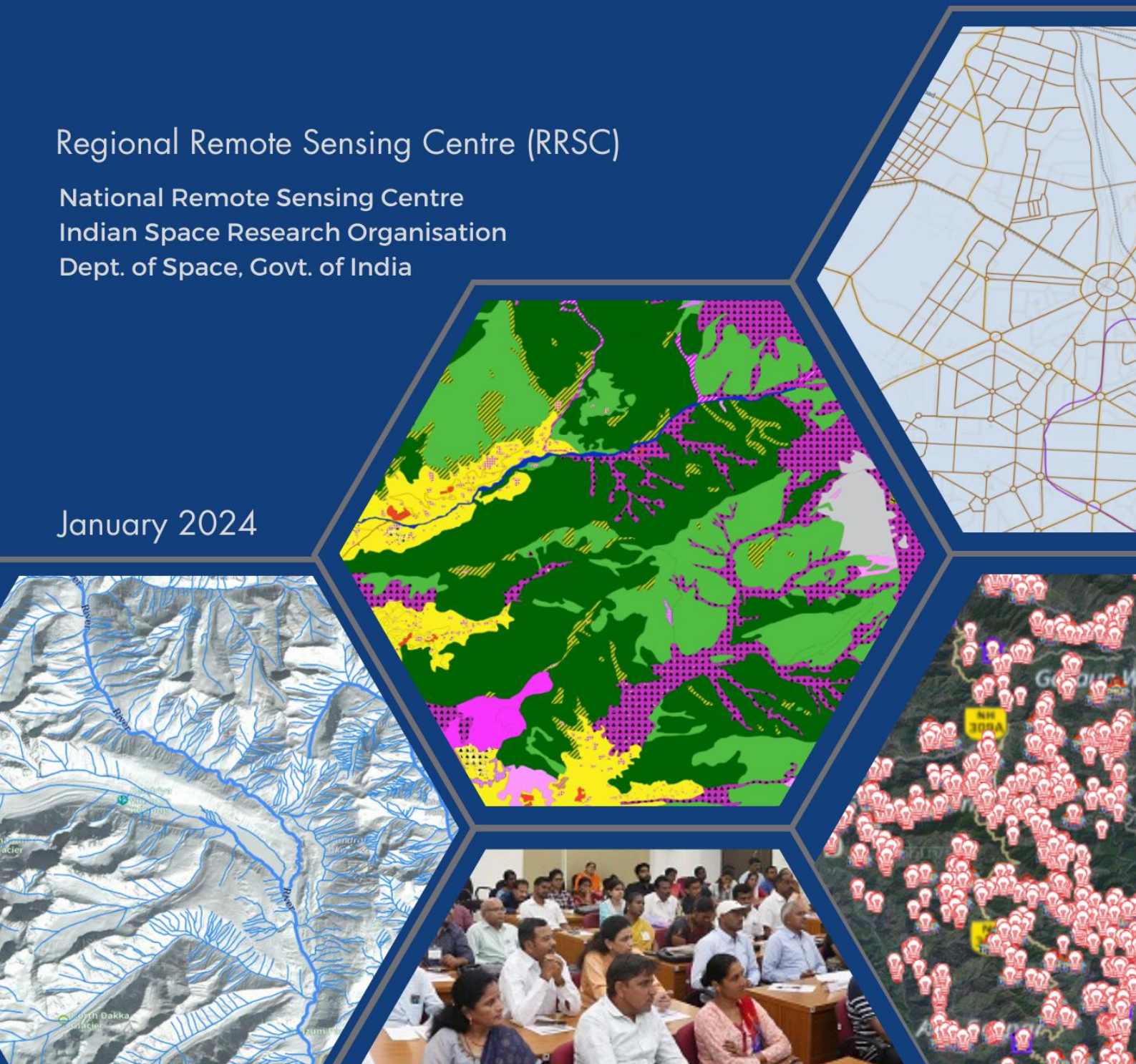
bhuvan-panchayat

USER MANUAL FOR BHUVAN PANCHAYAT

SPACE BASED INFORMATION SUPPORT FOR DECENTRALIZED PLANNING (SIS-DP)

Regional Remote Sensing Centre (RRSC)

National Remote Sensing Centre
Indian Space Research Organisation
Dept. of Space, Govt. of India



January 2024

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This user manual provides comprehensive guidance for navigating and utilizing the Bhuvan Panchayat Portal. Users will find detailed, step-by-step instructions on how to effectively utilize the portal's features and functionalities. This document aims to simplify the user experience and assist users in unlocking the full potential of the Bhuvan Panchayat Portal.

Key Terms: Web portal, User manual & GIS functionalities</td></tr>
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TABLE OF CONTENTS

1. INTRODUCTION

1.1 About SISDP:

Space Based Information Support for Decentralized Planning (SIS-DP) Project has been initiated by National Remote Sensing Centre (NRSC) of ISRO under the aegis of National Natural Resources Management System (NNRMS) and is being jointly executed by National Remote Sensing Centre and State Remote Sensing Centres of the country.

Decentralized Planning is defined as a type of planning where local organisations and institutions formulate, adopt, execute actions and supervise the plan without interference by the central body.In rural India, decentralized planning and Panchayati Raj institutions(PRIs) go hand in hand.Developmental planning must happen at the grassroots level associating the people, through their representative institution - the Panchayati Raj

To have framework for spatial planning for villages and to ensure overall integrated development SIS-DP Project has been conceived.

Aim of SIS-DP is to Empower State Administration/ PR institutions in use of Space based input for Developmental Planning.

SISDP-U project has achieved a major milestone of completing thematic data mapping updates for entire country at 1:10k scale. The project lead by Regional Centres, NRSC with active contribution of 27 state partner institutions, is a major initiative by NNRMS-ISRO for generation and updation of thematic data i.e. Land Use Land Cover, Drainage, Rail and Road and settlements layers for entire country. Present thematic data is well structured to support Panchayat level planning providing Level IV classification with 89 classes for LULC

SISDP-U Phase II State wise mosaic data for entire India (100% of coverage with total of 766 districts) are hosted as OGC WMS services along with new style schema supporting level IV classification. A total of 1.5 TB of thematic database of different layers and time periods are now hosted online for visualisation and supporting planning tools on Bhuvan Panchayat. The thematic data are shared with multiple Ministries, Academia and Research like IIT Kanpur, DAE etc apart from open to public. Data & Services are also integrated as mashups into Gramanchitra and Matrubhoomi portals of NIC. Data downloads for public is now activated through Bhuvan services.

1.2 Overview

The SISDP portal (https://bhuvanpanchayat.nrsc.gov.in) serves as the central hub for accessing critical information, data, and resources related to the SISDP project (Figure 1). It is connected to the Bhuvan Panchayat Portal which is a comprehensive online platform designed to empower Panchayati Raj Institutions (PRIs) and stakeholders with geospatial data and spatial planning tools for decentralized planning and governance.

Figure 1 Snapshot of SISDP landing page

1.3 Key Features of the SISDP Portal

- **SISDP Project Information:** The portal provides detailed information about the SISDP project, including its objectives, and its significance in supporting decentralized planning and governance. Users can gain a comprehensive understanding of the project's mission and goals.
- **Products and Services:** Users can gain insights into a variety of geospatial products and services available under the SISDP project.
- **Bhuvan Panchayat Integration:** The SISDP Portal seamlessly integrates with Bhuvan Panchayat, a dedicated Geoportal that allows users to explore and analyze geospatial data with ease. It provides access to a wide range of geospatial information, maps, and tools for effective planning at Panchayat level.
- **Data Download Portal Link:** For users who require specific datasets, the portal is linked to a dedicated Data Download Dashboard. Users can find and download the data they need for planning, governance, research or any other activities.
- **Gallery Section:** The portal features a Gallery section showcasing event photos and visual resources related to the SISDP project. This section provides users with a visual insight into the project's activities and achievements.

- **News and Updates:** Stay informed about the latest developments in the SISDP project through the News section. Users can access news articles, announcements, and updates related to the project's progress and initiatives.

2. NAVIGATING THE PORTAL

2.1 Navigation Bar

The navigation bar serves as your gateway to different sections of the SISDP Portal, providing a user-friendly way to explore its diverse features and information. It consists of six menu options (Figure 2), each uniquely designed to cater to specific aspects of the portal. By clicking on a menu item, users can effortlessly navigate to the corresponding section of the webpage. Here's a brief overview of each menu option:

Figure 2 Navigation bar

- **Home:**
  Clicking on the "Home" menu item will lead you to the main landing page. Here, you'll find an image slider showcasing essential data products, quick link cards for easy access to key sections, a photo gallery capturing recent events, the latest updates on the project, and an Atlas section featuring thematic maps.
- **About:**
  Click on "About" to gain a deeper understanding of the project's mission. The "About" section provides comprehensive information about the SISDP project, covering its goals, objectives, project team members, focal points, and partner institutions.
- **Services:**
  Click on "Services" to explore thematic data products. Additionally, find a link to the Data Download Portal to download specific datasets. This section also features a QGIS WMS link icon, allowing users to connect to the SISDP WMS link in QGIS.
- **Planning Tools:**
  The "Planning Tools" section introduces two essential tools: the Land Resources Development Plan Tool and the Water Resources Development Plan Tool. Click on this menu item to discover how these tools facilitate effective planning at the grassroots level.

- **Success Stories:**
  Click on "Success Stories" to access case studies and learn about the positive impact of the project on various initiatives. This section showcases successful projects that leveraged SISDP data.
- **Atlas:**
  Click on "Atlas" to gain deeper insights into the project's spatial aspects. Atlas section provides a visual narrative of the SISDP project through our dedicated Atlas. Thematic maps and snapshots in the atlas offer a visual representation of the SISDP project's geographical dynamics.

2.2 Quick link cards

The Quick Link Cards section consists of four cards (Figure 3) for the ease of user access:

- **Card 1 : Bhuvan Panchayat**
  This card seamlessly integrates with the Bhuvan Panchayat Geoportal, enabling users to explore and analyze a wide range of geospatial information, maps, and tools for effective planning. Detailed discussion of Bhuvan-Panchayat portal is done in section 5.
- **Card 2: Products & Services**
  The second card directs users to the Data Products and Services section, providing a quick overview of SISDP products.
- **Card 3: Planning tools**
  The third card takes users to the Planning Tools section of the SISDP webpage.
- **Card 4: Data Download**
  This card allows users to visit the Data Download Portal directly. By using their Bhuvan login credentials, users can download data directly.

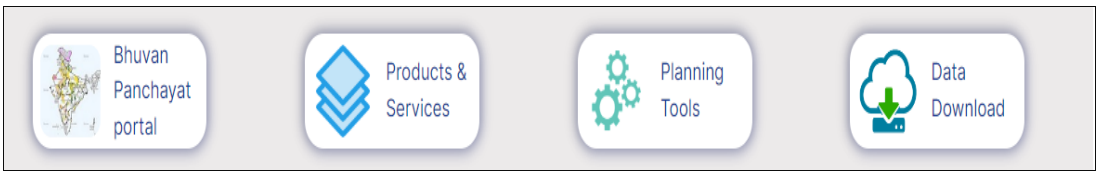


Figure 3 Quick link cards

These quick link cards are designed to streamline user navigation, providing convenient shortcuts to key sections of the SISDP Portal.

3. SECTIONS IN BHUVAN PANCHAYAT PORTAL

3.1 Landing Page

- **Image Slider:** Our dynamic image slider showcases the diverse data products of the SISDP project. Simply slide through captivating visuals, providing a comprehensive overview of the SISDP project's data products.
- **Quick Link Cards:** Utilize our user-friendly Quick Link Cards for swift access to essential information. Each card serves as a direct link to a specific section, ensuring you navigate with ease.
- **Photo Gallery:** Immerse yourself in the vibrancy of our project events with our captivating Photo Gallery. Gain a visual perspective on ongoing activities and achievements. Each image tells a story of the SISDP project's dynamic journey.
- **Latest Updates:** Stay current with the SISDP project's progress through the Latest Updates section. Here, you'll find news and developments that keep you informed about the project's recent activities.
- **Map Slider:** Delve into the thematic maps of the SISDP project within our dedicated Atlas Section. Here, you can explore geospatial insights and gain a comprehensive understanding of the thematic data in the SISDP project. It's your visual guide to the geographical dynamics of the project.

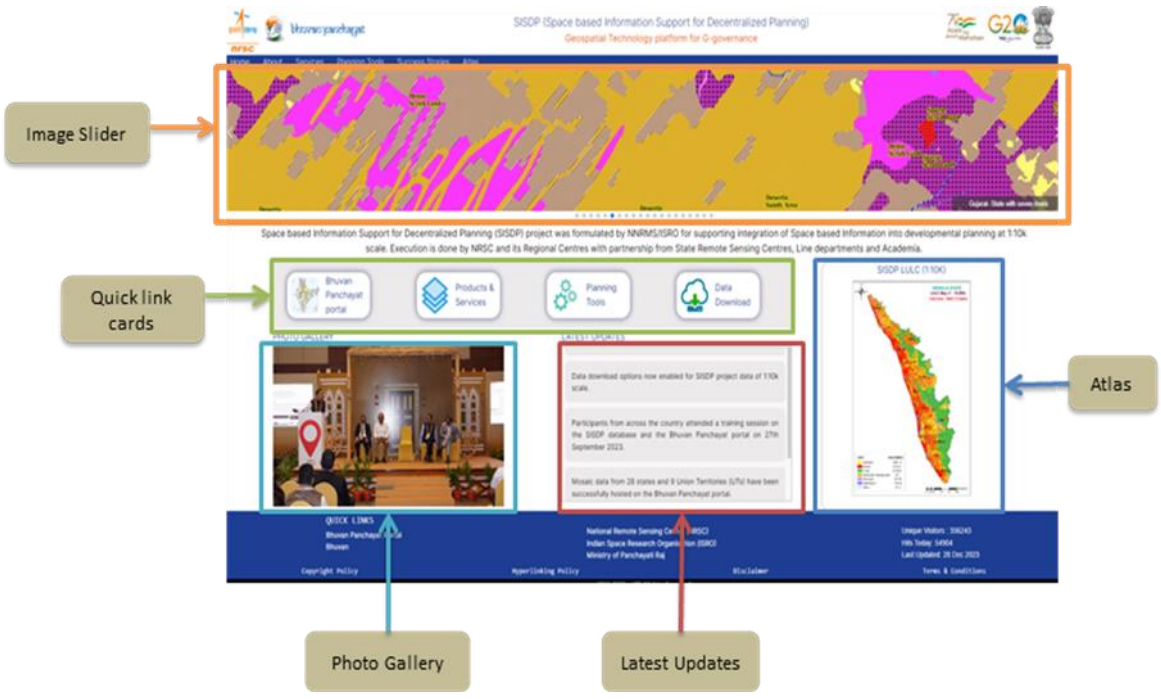


Figure 4 Sections in SISDP Landing Page

3.2 About

- **Project Overview:** This section provides an in-depth overview of the project's mission and how it contributes to decentralized planning. Explore the formation, goals, and objectives that define the SISDP project (Figure 5).

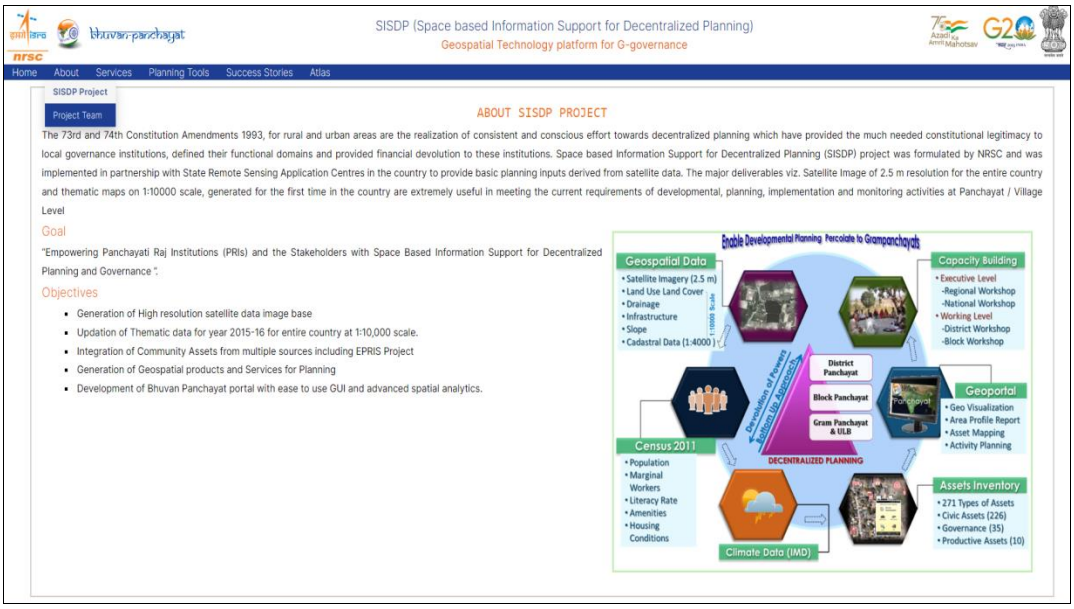


Figure 5 SISDP overview Tab

- **Project Team:** Meet the dedicated individuals powering the SISDP project (Figure 6).
- **Focal Points:** Gain insights into the key focal points that drive the SISDP project.
- **Partner Institutions:** Explore our collaborative network of partner institutions that play a crucial role in contributing to the thematic datasets of the SISDP project.

Figure 6 Project Team Tab

3.3 Services

- **Data Products:** This section provides information on various geospatial data products of SISDP project, including Land Use and Land Cover (LULC), Drainage, Infrastructure and Settlements. Refer to Figure 7 for a visual representation.
- **Data Download Portal:** A link to Data Download Portal is provided in this section for users to download specific datasets from SISDP Phase II Thematic datasets. Simply click on the provided link to access and download the data you need for your planning, research and governance activities. Detailed steps for downloading data are outlined in Section 4.1.

Figure 7 Products & Services section

- **WMS Services:** Discover the Web Map Service (WMS) provided by SISDP for all thematic layers. Users can seamlessly integrate the WMS link into their projects, ensuring access to real-time and accurate geospatial data. Additionally, a QGIS WMS link is available for users to visualize SISDP geospatial data directly within the QGIS software. Find the procedure to connect WMS in QGIS provided in Section 4.2.

3.4 Planning Tools

Explore the "Planning Tools" section to gain valuable insights into two essential tools integrated into the Bhuvan Panchayat Portal: the Land Resources Development Plan (LRDP) Tool and the Water Resources Development Plan (WRDP) Tool. These planning tools are designed to empower users in the effective planning and management of land and water resources at the grassroots level.

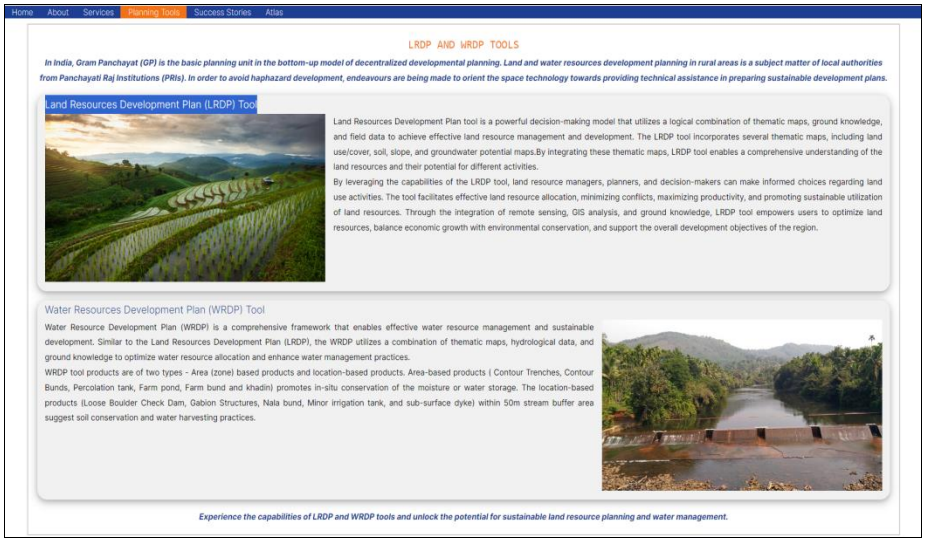


Figure 8 Planning Tools Section

3.5 Success Stories

In the "Success Stories" section, we showcase a selection of projects that have leveraged SISDP data and planning tools for resource management and spatial planning activities. These success stories provide real-world examples of how our geospatial insights have made a positive impact on various initiatives.

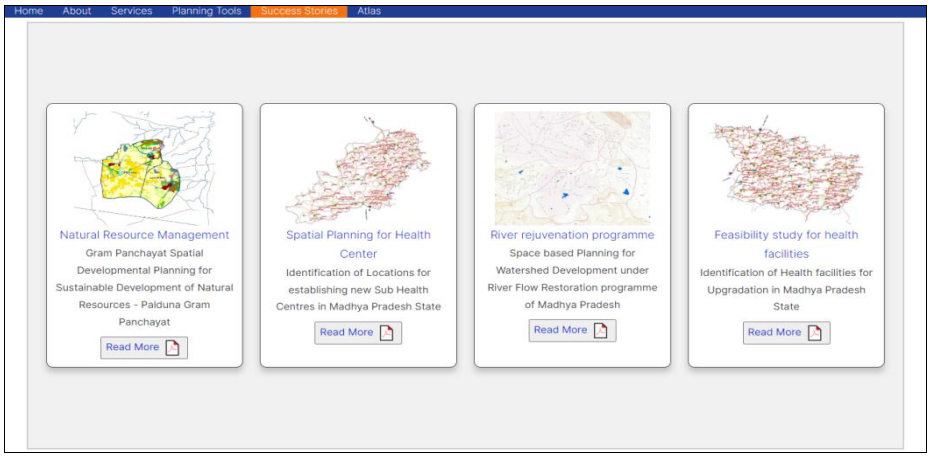


Figure 9 Success Stories section

3.6 Atlas

Navigate through the Atlas section to gain deeper insights into the spatial aspects of the SISDP project. Thematic maps and snapshots in the atlas provide a vivid representation of the geographical dynamics of the SISDP project.

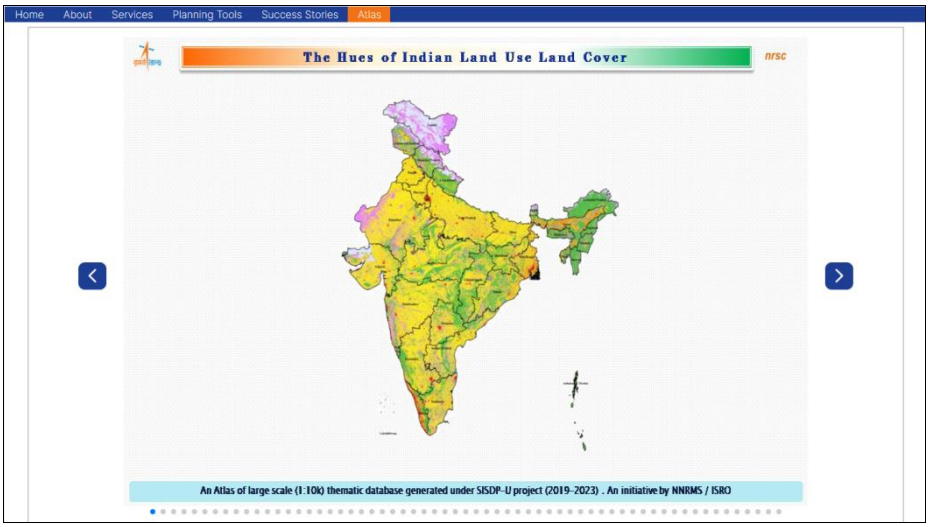


Figure 10 Atlas Section

4. DATA DOWNLOAD

4.1 Data download in Shapefile format

Follow the steps below to download SISDP Phase-II data using Bhuvan login credentials.

- Click “Data Download” card (Highlighted in Figure 11) on the SISDP Homepage (https://bhuvanpanchayat.nrsc.gov.in). Another way to navigate to the data download dashboard is by clicking on the "Data Download” button in the Services section. In either case, users can access the SISDP data download dashboard.

Figure 11 Data download Quick link

- Bhuvan Single Sign on Page appears. Login to the data download portal using Bhuvan login credentials. If user doesn’t have an account on Bhuvan, they can create a new account and then login to the portal. On successful login, the Data download dashboard appears (Figure 12).

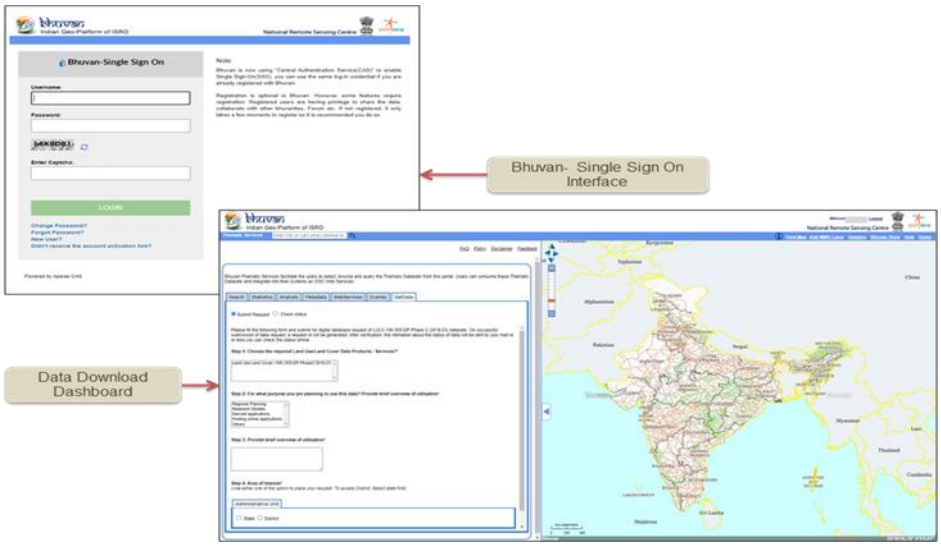


Figure 12 Snapshots of Bhuvan sign-on interface and Data download page

- Navigate to GetData section, fill in the required data , select the Area of Interest and click Submit. Figure 13 shows a sample input for downloading data.

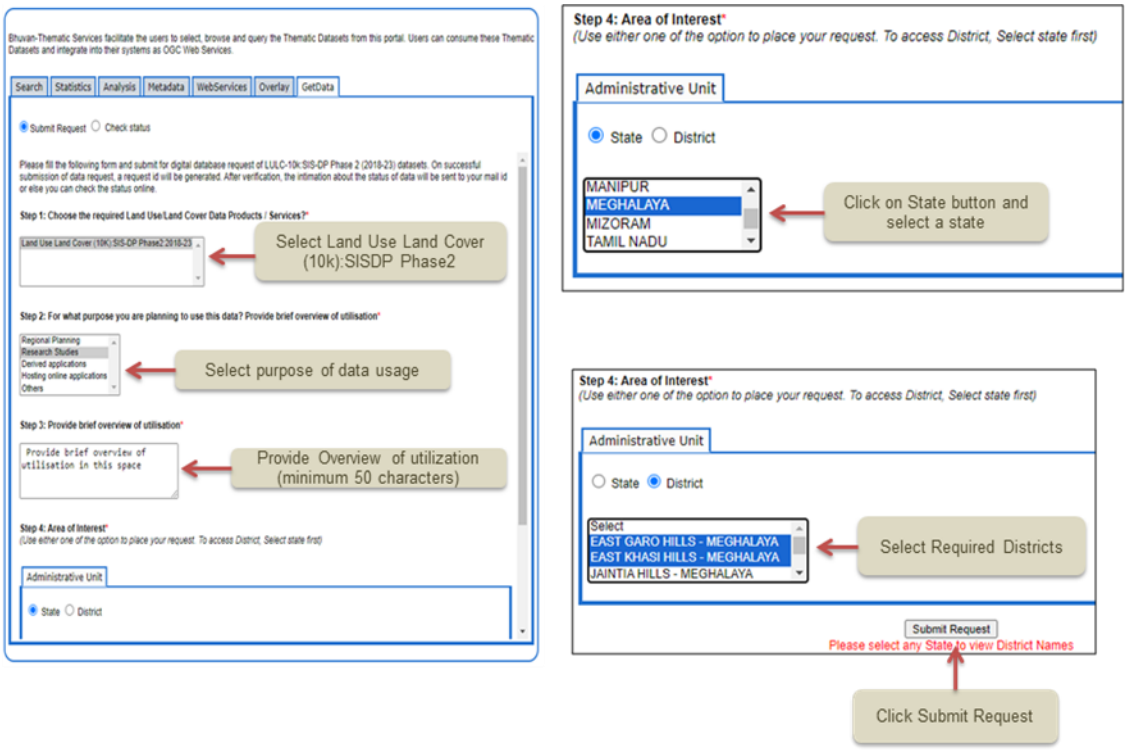


Figure 13 GetData section

- Once the request is submitted, a Request ID is generated (Figure 14). Click on the Check Status button to know the status of the request using the request ID (Figure 15).

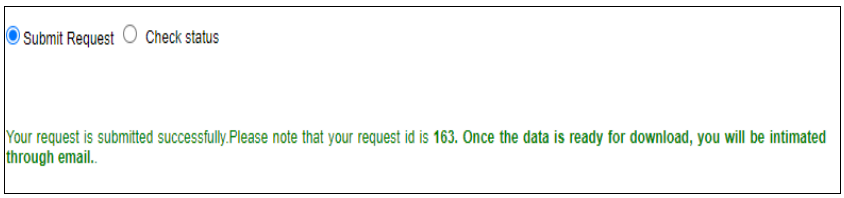


Figure 14 Request ID generation

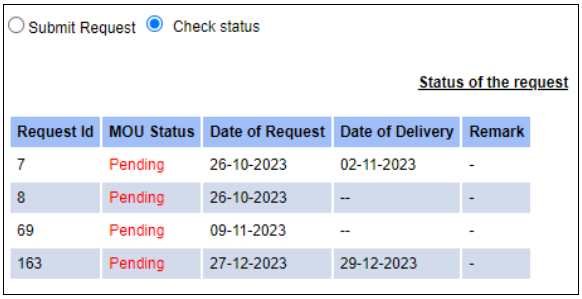


Figure 15 Status of the request

- Once data is ready for download, you will receive an email as shown in Figure 16. Click on the link in the mail and data download will start.

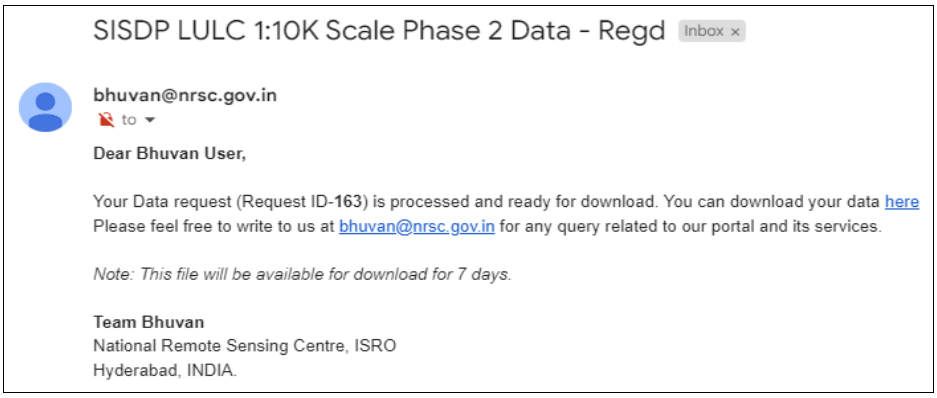


Figure 16 Data Download Mail

4.2 Using WMS Service

- In the SISDP Homepage, navigate to the Services section and click on QGIS WMS link button, highlighted in Figure 17. WMS link is copied to clipboard and a popup appears.

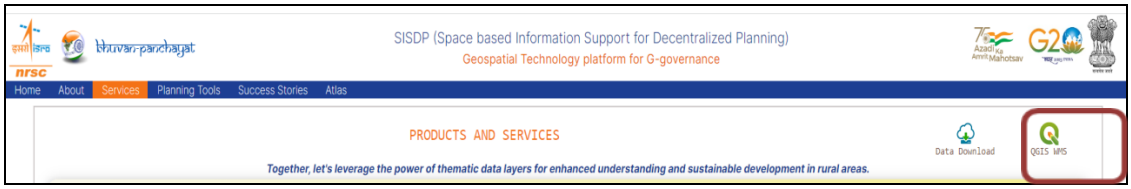


Figure 17

- Open QGIS and navigate to the Data source Manager. Select WMS/WMTS option and click New (shown in Figure 18) to create a new WMS connection.

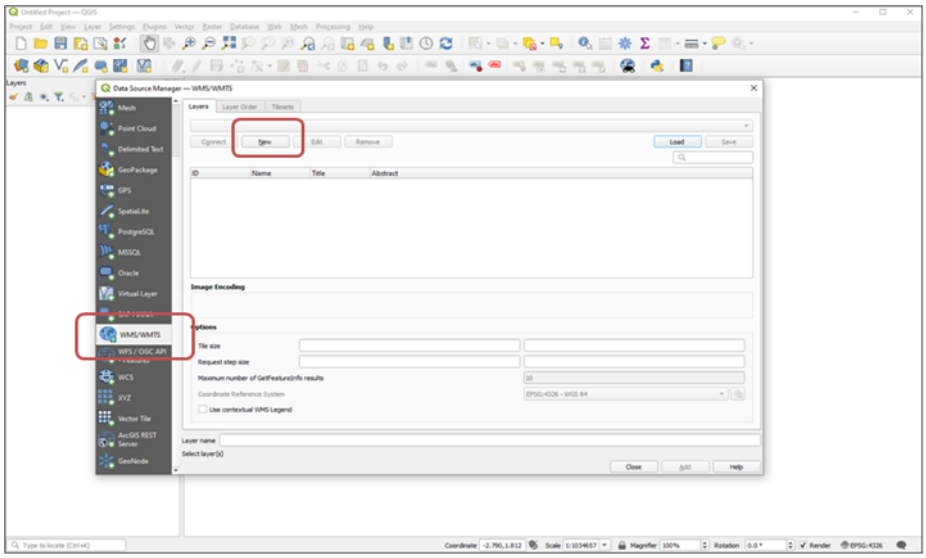


Figure 18 Data Source Manager in QGIS

- Provide a name for the connection and paste the URL copied form website (Figure 19). Click Ok.

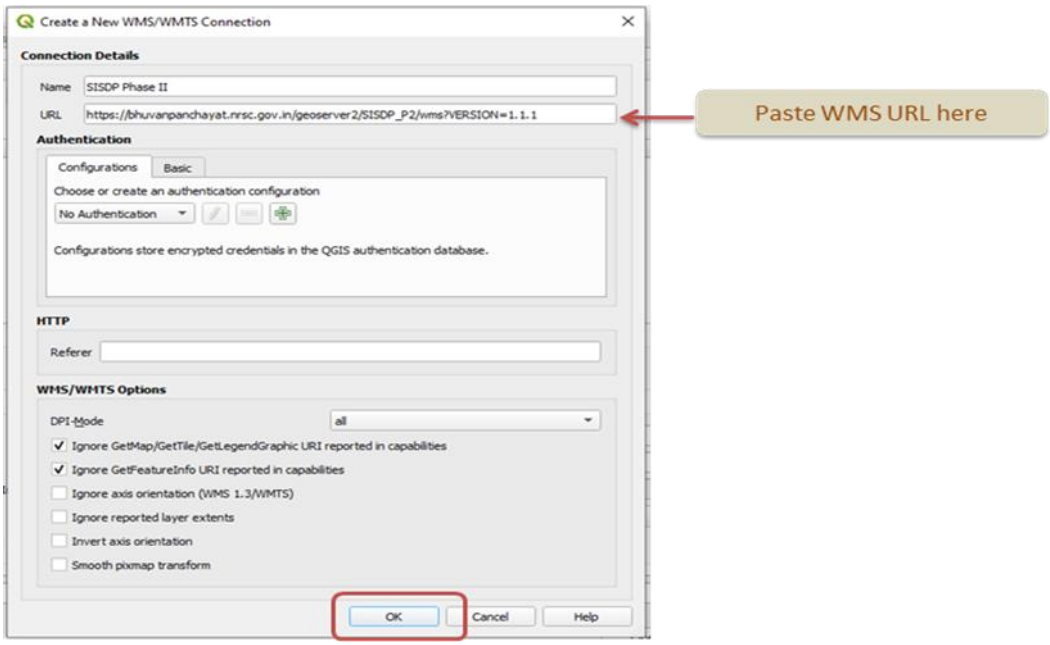


Figure 19 WMS/WMTs Connection window

- Click Connect and a list of WMS layers from SISDP Phase II appears. Select the desired layer and click add as shown in Figure20.

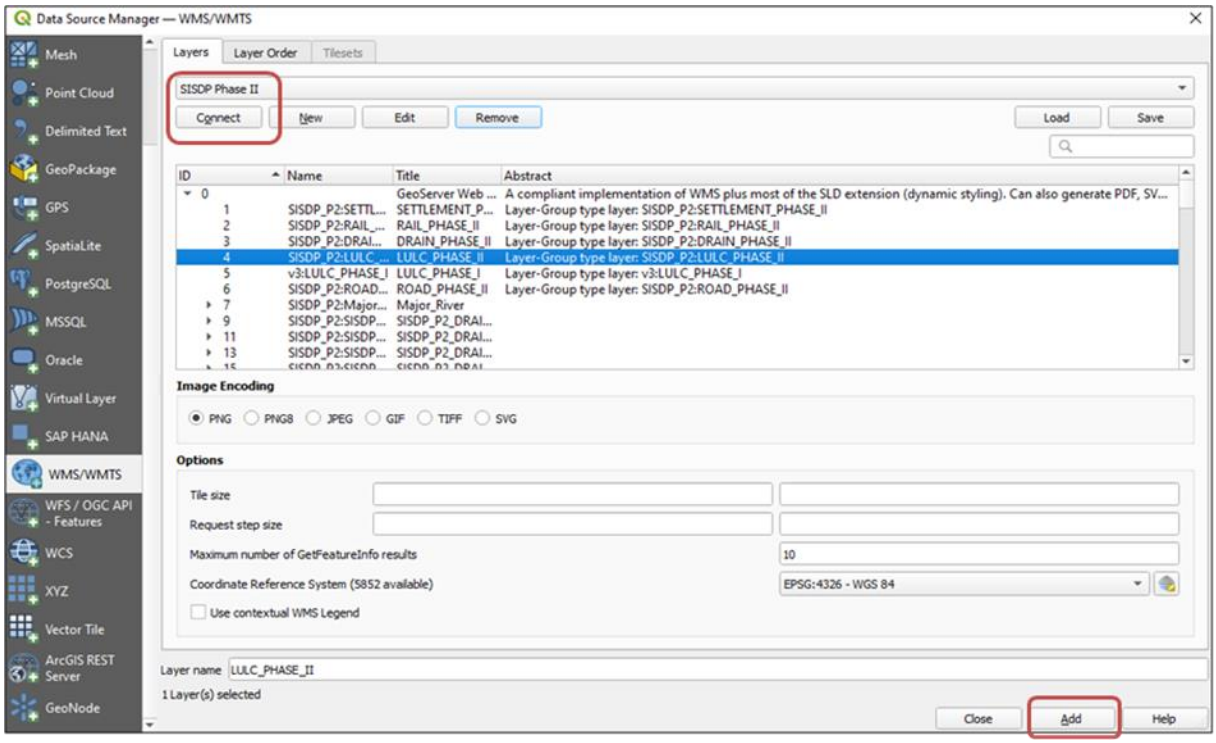


Figure 20 SISDP WMS Connection

- Selected WMS layer is added to QGIS Map pane as shown in Figure 21.

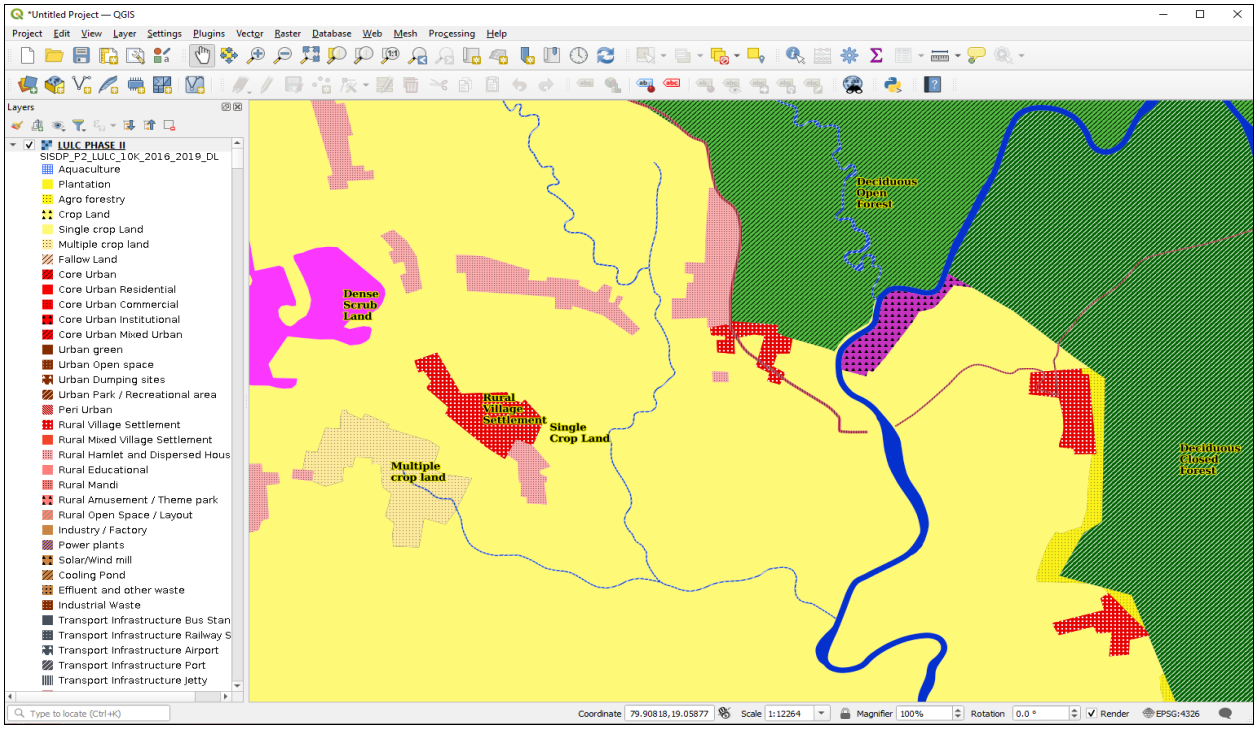


Figure 21 SISDP WMS data loaded in QGIS

5. BHUVANPANCHAYAT PORTAL

5.1 Geo-Visualisation

It refers to the use of visual elements and techniques to represent and communicate information related to geographic or spatial data. It involves the creation of visual representations of data that have a spatial component, such as maps, charts, graphs, and other graphical displays. Geospatial data, which includes information about the Earth's surface and its features, is a key component in geovisualization

5.1.1 Usage Overview

To access the Bhuvan Panchayat version 3 portal user has to access the **https://bhuvan-panchayat3.nrsc.gov.in** using any web browser. Figure 22 shows the homepage of the Bhuvan Panchayat portal.

Go to https://bhuvan-panchayat3.nrsc.gov.in

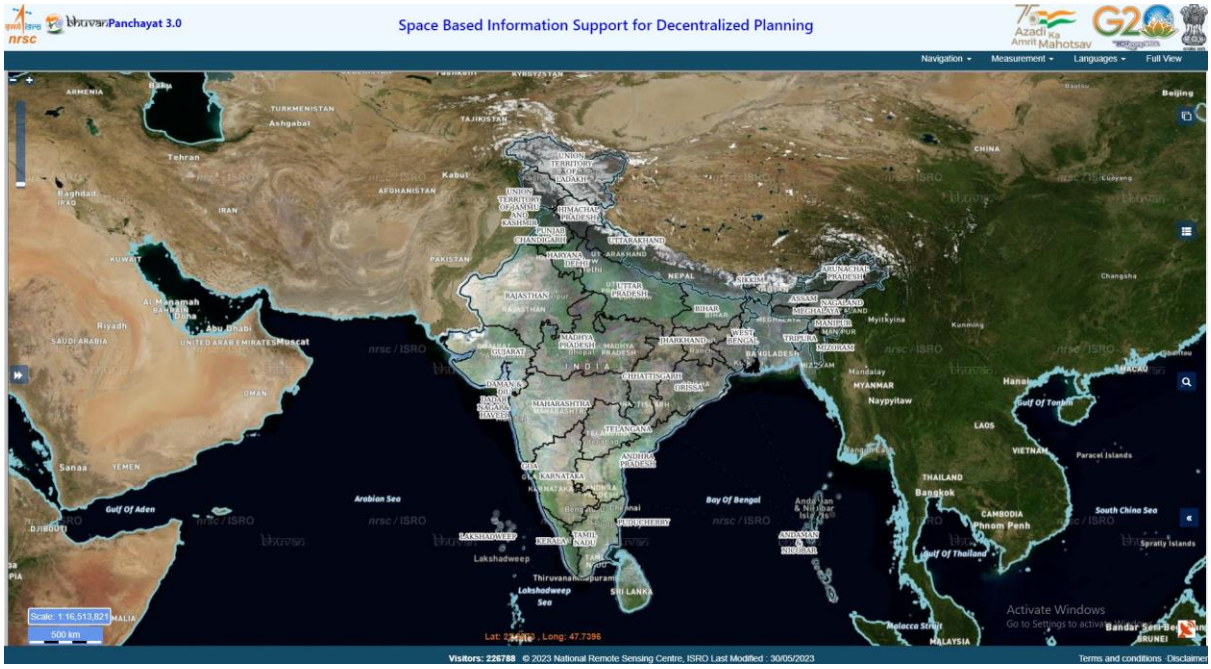


Figure 22 Bhuvan Panchayat 3.0 Homepage

Figure 22 shows the home page of portal. The portal is having four sections Accordion, Map, Header and Footer. By default when portal is opened only three sections Map, Header and Footer gets displayed to access accordion user need to click on accordion button as shown in below Figure.

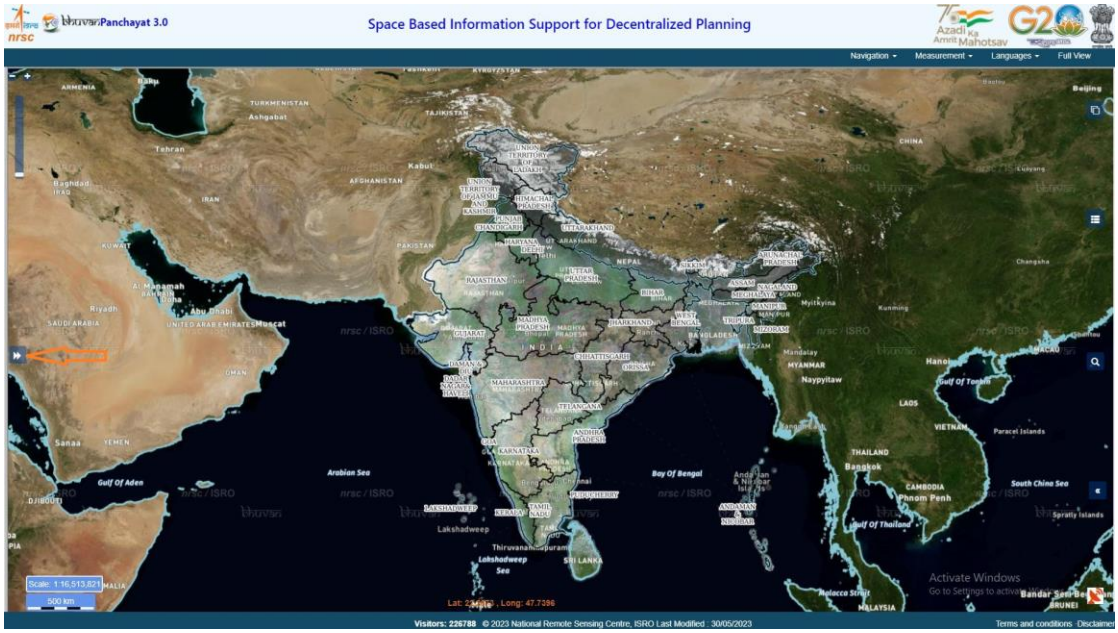


Figure 22.1 Accessing the Accordian

After accessing the accordion button user can use various options available in it such as Area Selection,Geospatial Layers,FeatureInfo,Area Profile,Download profile report,Plan an Activity, Assest mapping and Visualization,Metadata,GPSDP,GPDI,Feedback,Usermanual,Contact us. First and foremorest is Area selection we start with it and other sections are discussed at differerent chapters.

I. Area Selection:

Area selection module, user can select the panchayat/area for which he wants to visualise the data. User has to select the state, district, block & panchayat and press submit, as shown in Figure 23.

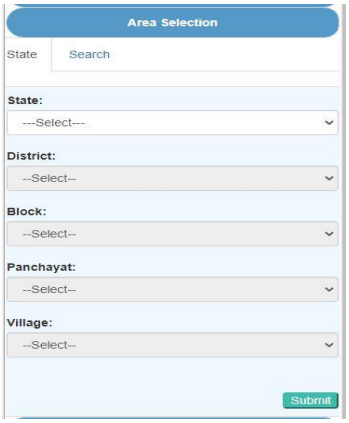


Figure 23 Area Selection

For example:

-Select State: Assam -
Select District: Nagaon
-Select Block: Roha

-Select Panchayat:DakshinJagial
-Click **Submit**

Press of submit, process the request and navigates to that particular area as shown in Figure 24.

Figure 24: Search area on GIS Viewer

II. Area selection using Search tool:

Area selection can also be done using the search tool, where the user can provide location/area in the search toolbox. Place name matching to the input provided get populated as shown in Figure 25.

Figure 25: Area selection using search tool

For example:
-Select
Place: Assam

-We can see the list of places select the
required place. -Click **Submit**

- To search other areas further, click **Clear** and proceed.

III. Navigation Tools:

For ease of using the portal different tools has been developed and integrated onto the GIS viewer. Figure 26 A, B & C shows the zoom box, zoom in, zoom out tools of navigation toolbox.

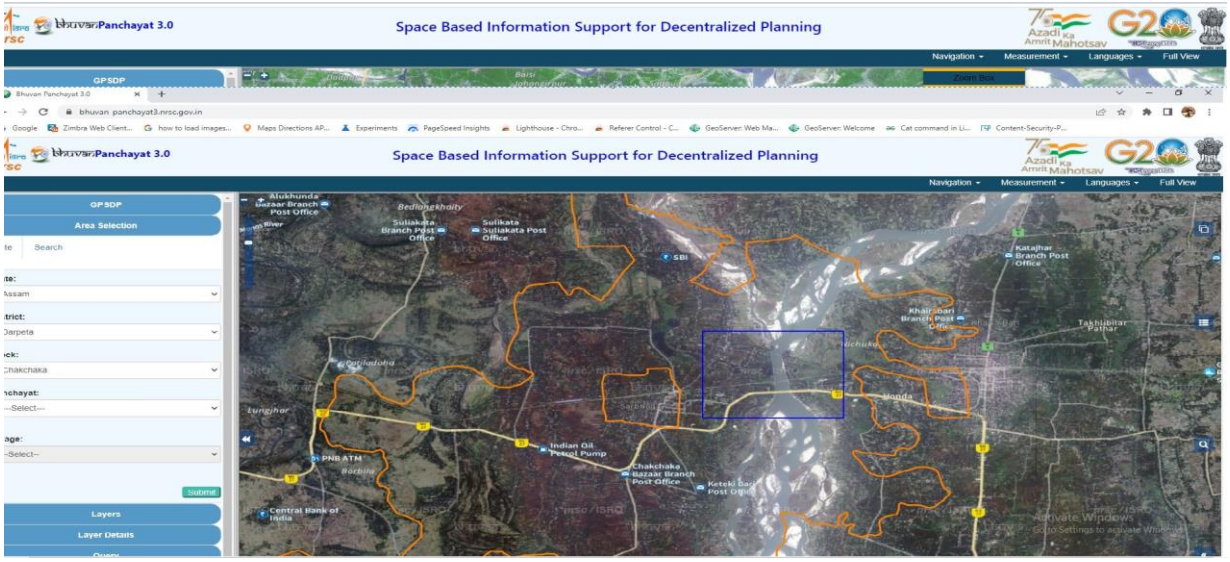


Figure 26 :A Zoom box tool

Zoom Box will enable the user to zoom to a place with the help of rectangle drawn on the map and the result will cover only those places falling in the rectangle.

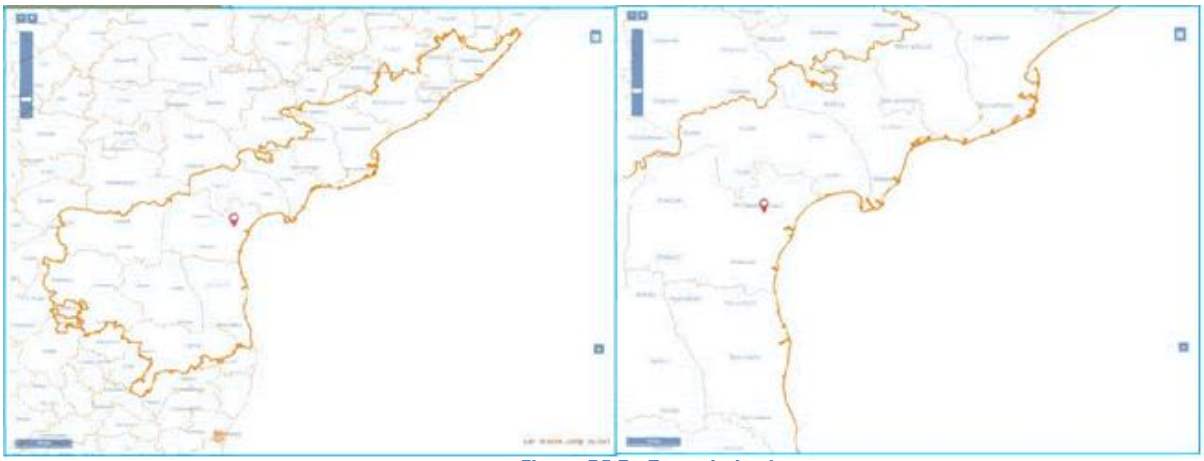


Figure 26 B : Zoom in tool

Zoom In will enable the user to zoom in to one next zoom level.

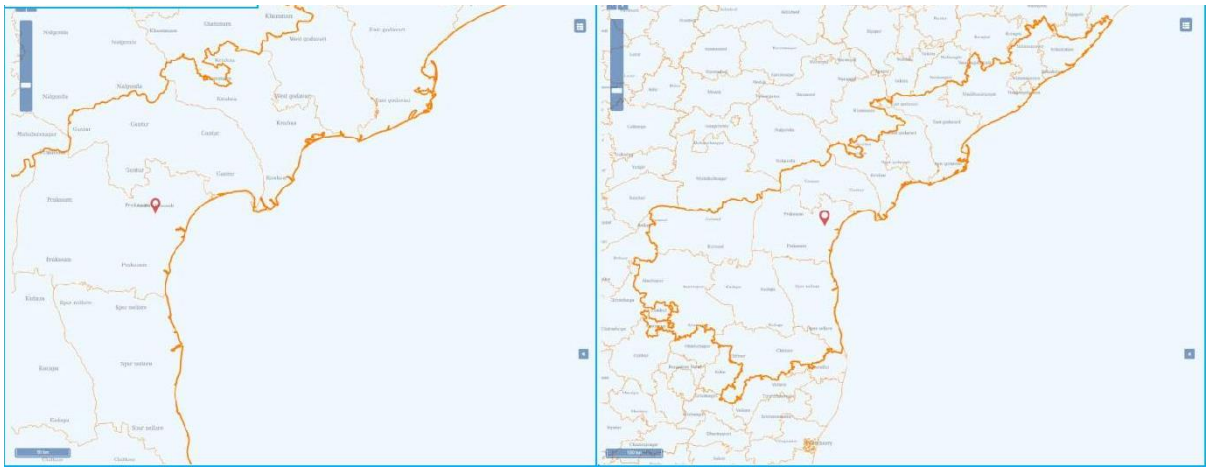


Figure 26 C : Zoom out tool

Zoom Out will enable the user to zoom out to one previous zoom level.

IV. Measurement Tools:

Measurement toolbox incorporated to measure distance and area on the map as shown in Figure 27 A, B & C

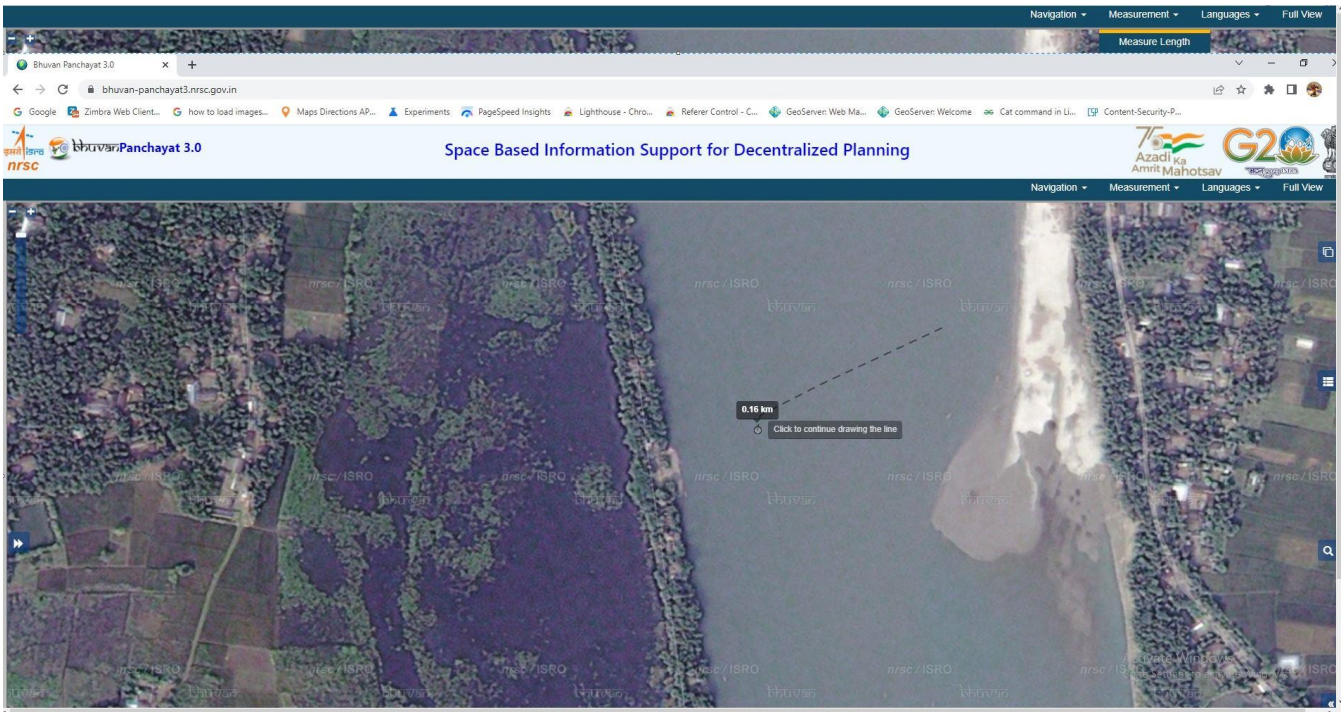


Figure 27 A : Distance tool

Measure Length will enable the user to measure the length of a particular asset (road track) or a water body (like river) and give the result in metric units.

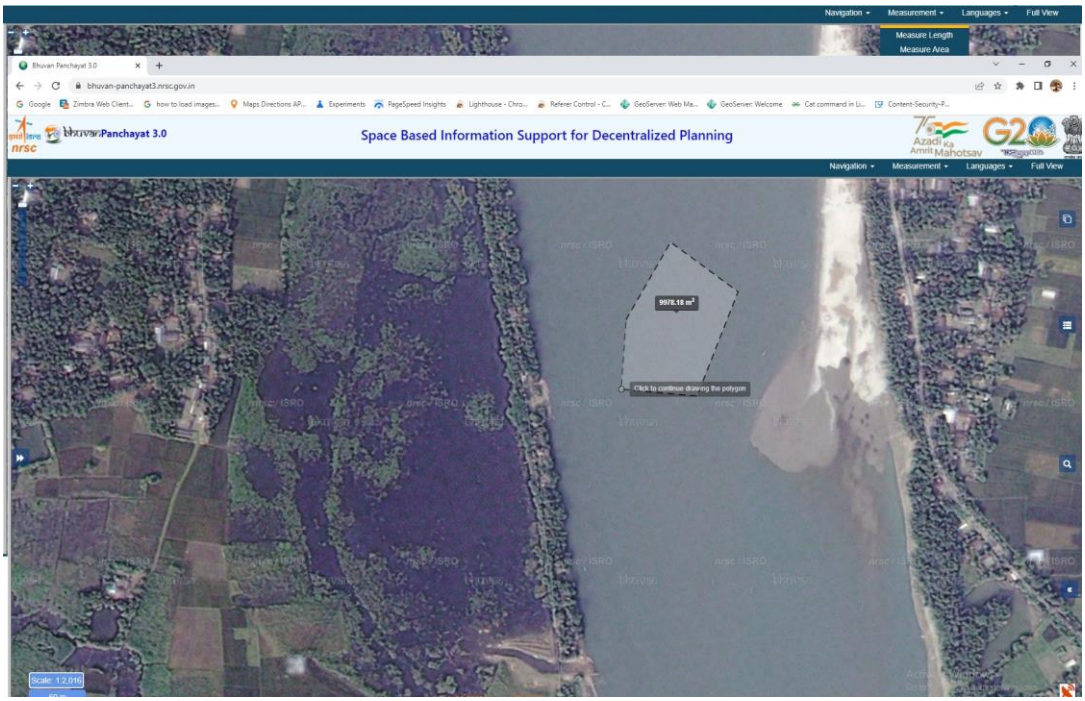


Figure 27 B : Measure tool

Measure Area will enable the user to measure the area of a particular polygon drawn on the map and give the result in metric units and is useful in getting the area of cadastral polygon.

Figure 27 C : Clear tool

Clear will enable the user to clear on the map overlays and will render the map to its previous state.

V. Languages:

User can select the language of his choice from available 8 languages as shown in Figure 28.

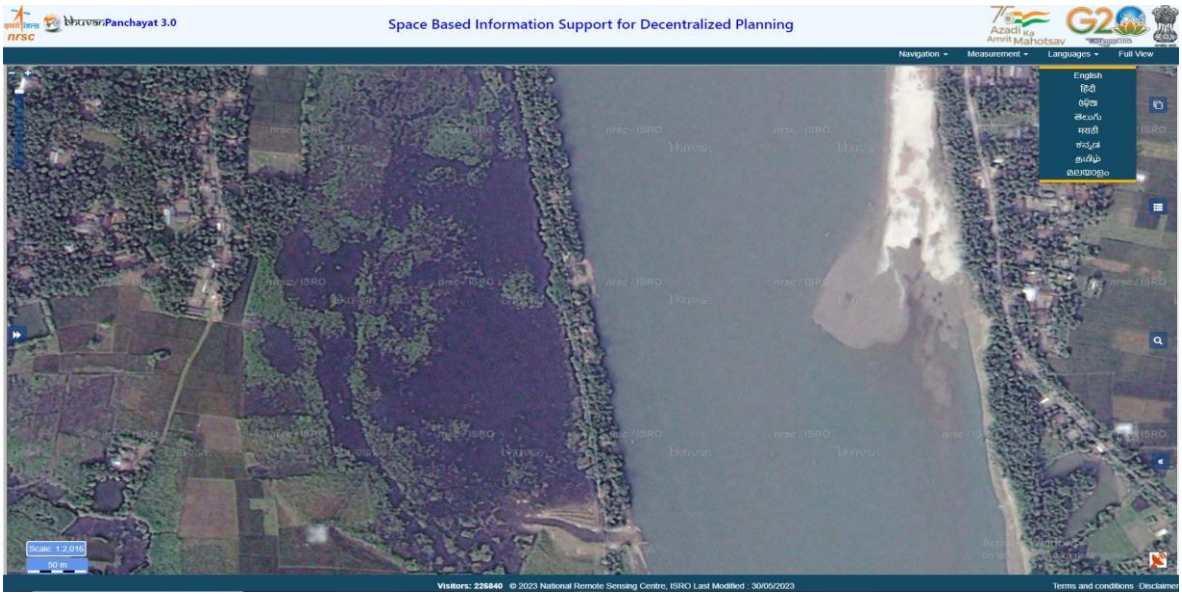


Figure 28 :Language selection

Languages option is available to enable the user to visualise the portal in the regional language for better understandability and flow. This will encourage the users to freely visit the site and help in developmental activities across the states.

5.1.2 Data Availability

This section presents a comprehensive overview of the diverse data offerings within the Bhuvan Panchayat portal:

i. **Satellite Imagery:**
- Users can delve into high-resolution satellite imagery courtesy of NRSC Bhuvan. This includes recent high-resolution satellite imagery, data from 2016-17, Carto-2S, and imagery from 2009-10. MMI layers, encompassing both point data and base map data, further enrich the available information.

ii. **Administrative Boundaries:**
- Users have the flexibility to access data categorized by state, district, block, panchayat, and village. Additionally, administrative data at the cadastral level is also accessible.

iii. **Constituencies:**
- In the constituencies section, users can explore layers representing both assembly and parliament constituencies.

iv. **Infrastructure:**
- The infrastructure category provides access to road and rail data from SISDP Phase I and I

v. **Hydrology:**
- Users interested in hydrological data can access information related to watersheds and microwatersheds.

vi. **Thematic Layers:**
- This section offers access to thematic layers, including LULC (Land Use/Land Cover) Phase I & II data, Settlement Phase I & II data, Drainage Phase I & II data, and rivers data.

vii. **Assets:**
- The Assets section enables users to access information on amenities spanning across the entire country.

viii. **Profile:**
- In the Profile section, users can explore various profiles such as Gram Panchayat and regional profiles.

This comprehensive array of data ensures that users can explore and analyze information ranging from geographic features and administrative divisions to infrastructure, hydrology, thematic layers, assets, and specific profiles, providing a holistic understanding of the region and its characteristics.

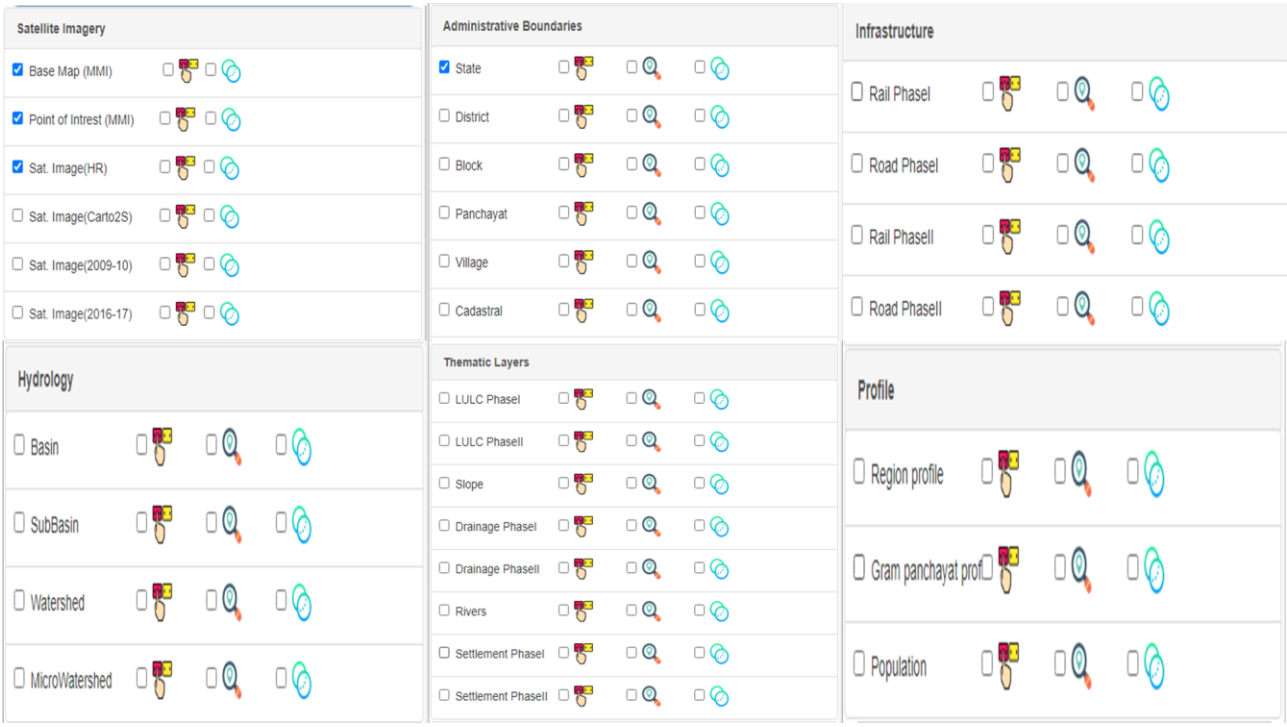


Figure 29: Data Availability in Bhuvan Panchayat

5.2 Tools and Utilities

5.2.1 LAYER Widget:

Provision to add and integrate different base layers on the map viewer is available. Figure 30 shows enabling & overlaying of different layers of the selected area i.e., DakshinJagial, Roha, Nagaon, Assam.

I. In layers enable satellite layer**:**

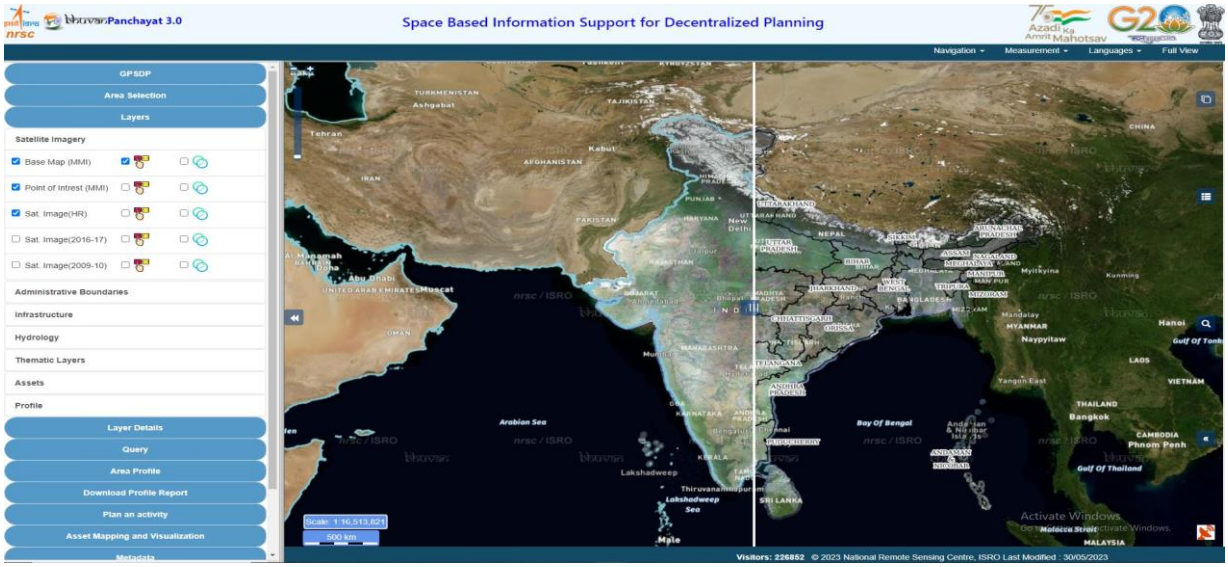


Figure 30: Multiple layers of an area on map viewer

- Enable Transparency: We can also set the intensity of Transparency of the layer.
- Enable Swipe: Swipe feature is available for better way of comparison for each and every layer.

II. In layers enable all Administrative boundaries: Figure 31 shows enabling admin layers.

Figure 31: Administrative layers on map viewer

- After enabling click on the top right corner of the screen for the legend of the enabled layers.

Note: Click Refresh button on the legend column on enable of each and every new layer.

III. In layers enable all Infrastructure layers: Figure 32 A , B&C shows infrastructure layers.

Figure 32 A: Infrastructure layers on to map viewer

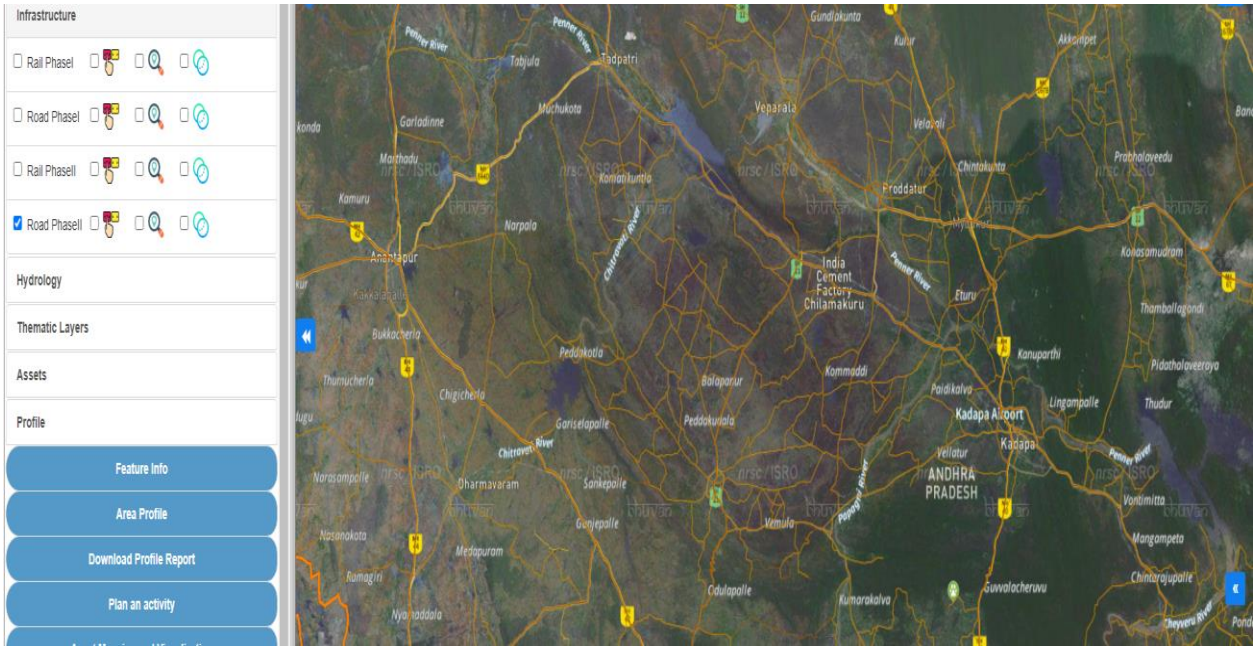
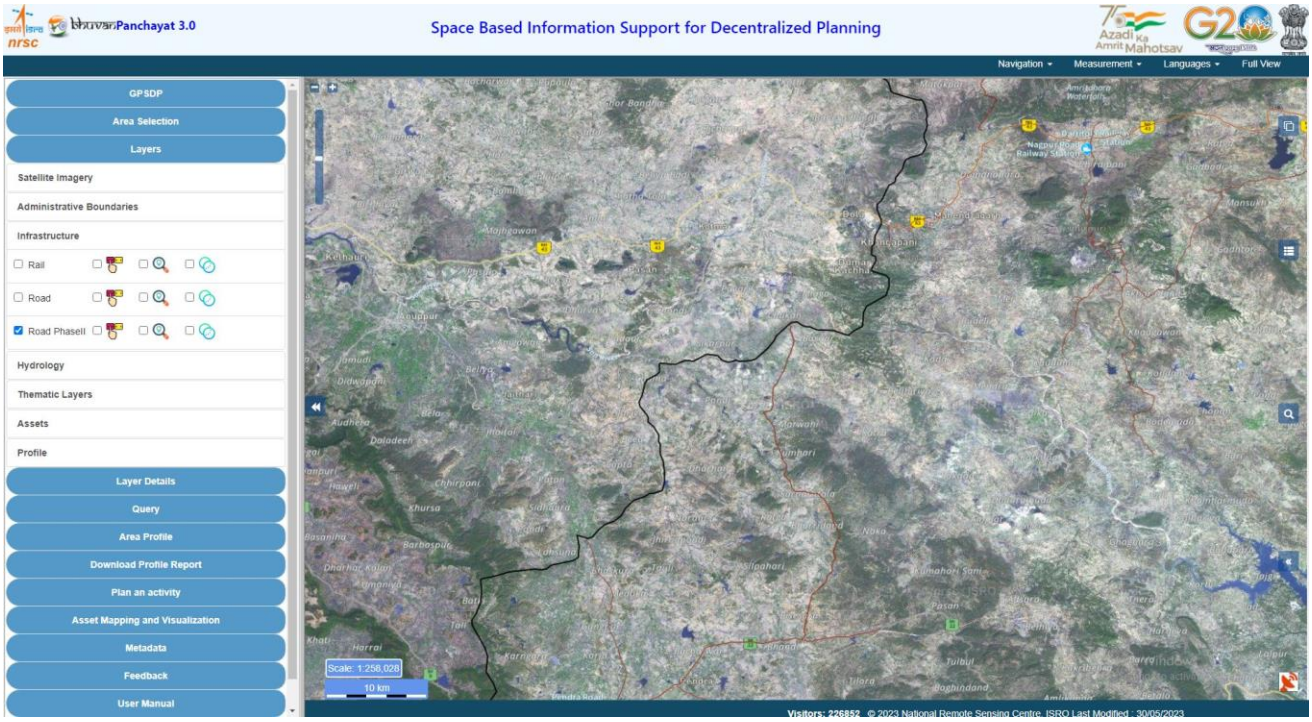


Figure 32 B :Infrastructure layers(Rail/Road) on to map viewer



IV. In layers go to thematic layers:

a) LULC: LULC layers can be enabled on to map as shown in Figure 33.

- Enable LULC layer in Thematic

Figure 33: Selection of LULC layer for overlaying

On overlay of the layer:

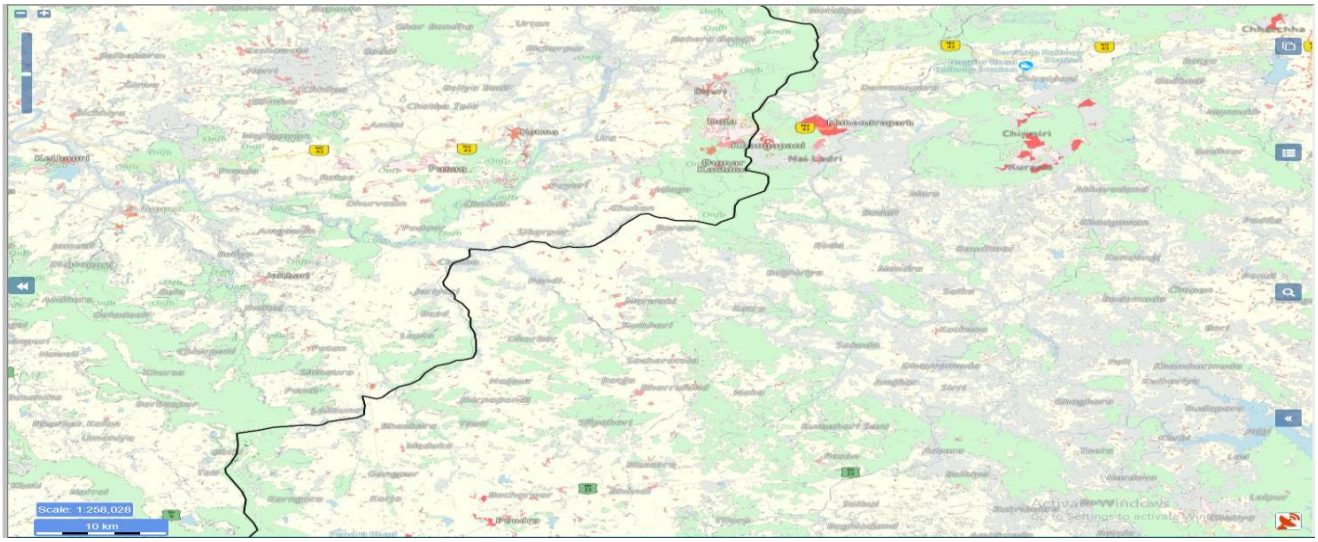


Figure 34 : Overlaying of LULC layers on to the map

Similarly we can overlay LULC-Phase-II data

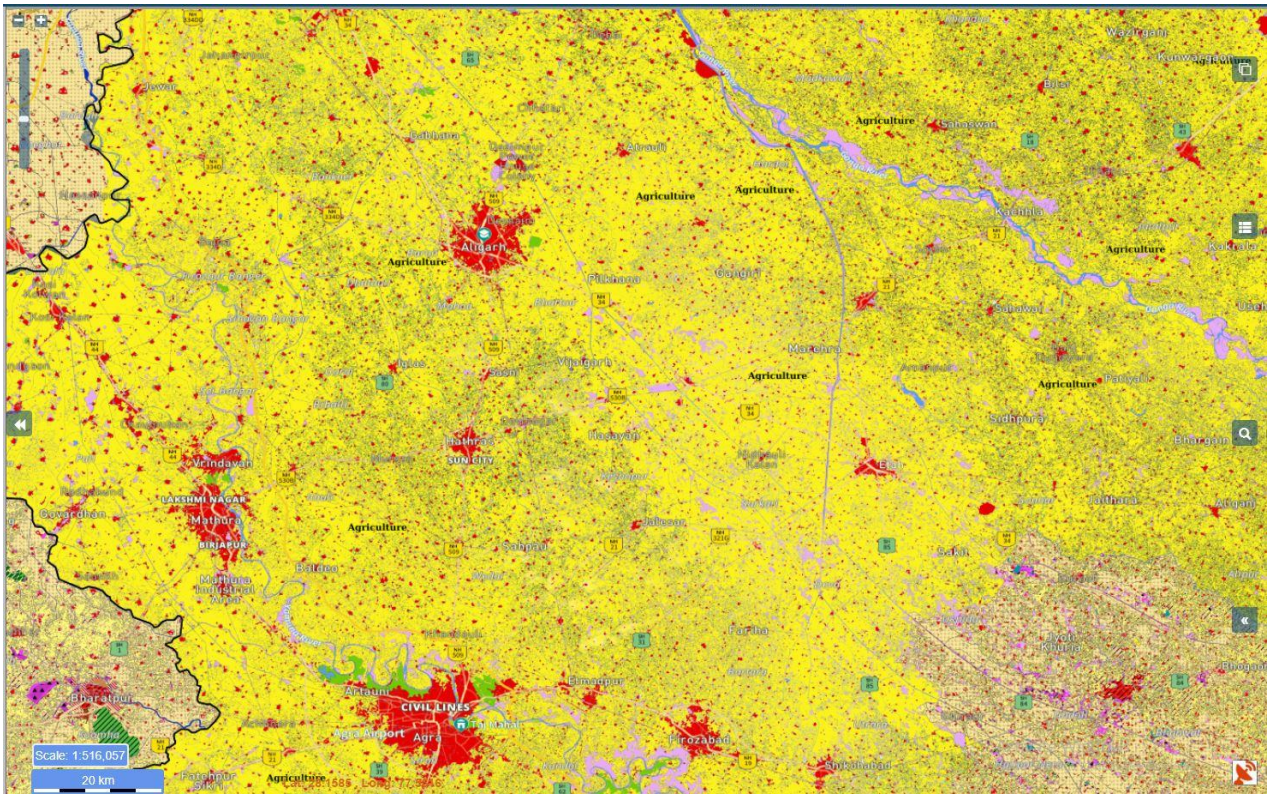
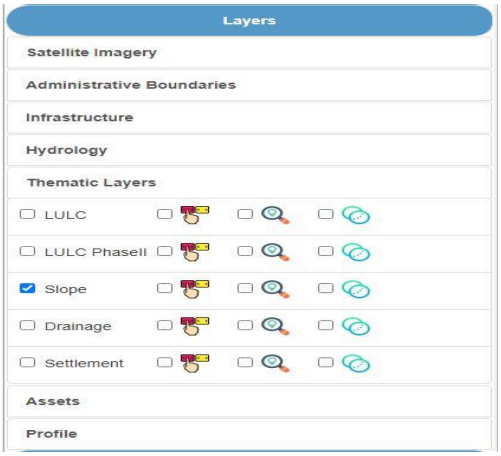


Figure 34 A : Overlaying of LULC Phase-II data on to the map

b) SLOPE: Slope layers can be overlaid onto map as shown in Figure 35.



- Enable SLOPE layer in Thematic

On overlay of the layer:

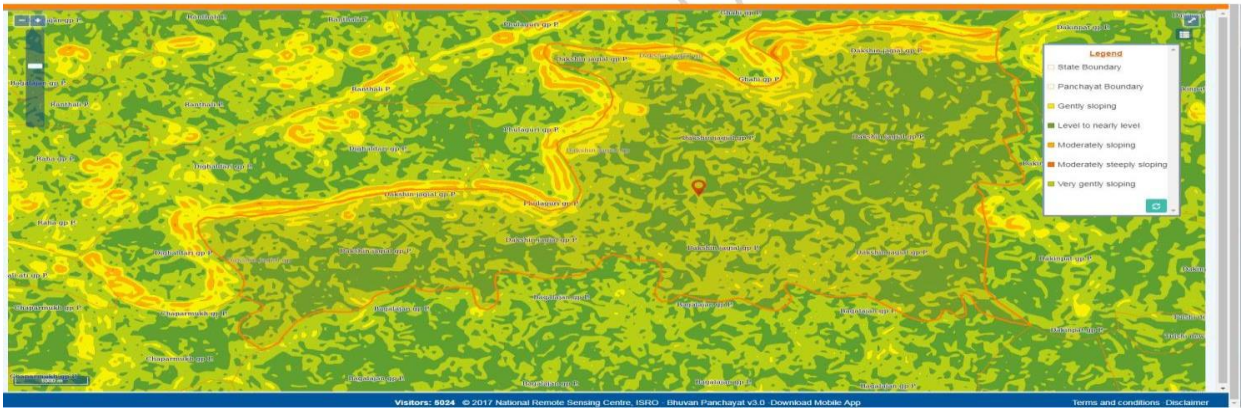
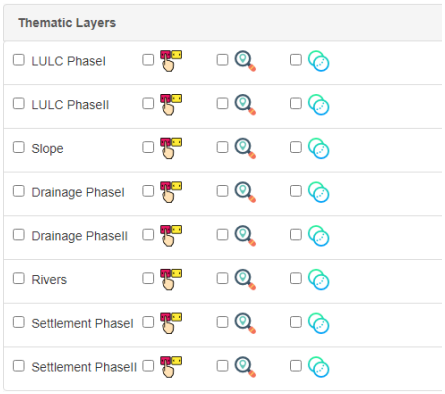


Figure 35 : Overlaying of SLOPE layers on to the map

C) DRAINAGE: Drainage layers can be overlaid onto map as shown in Figure 36.

- Enable DRAINAGE layer in Thematic
-



On overlay of the layer

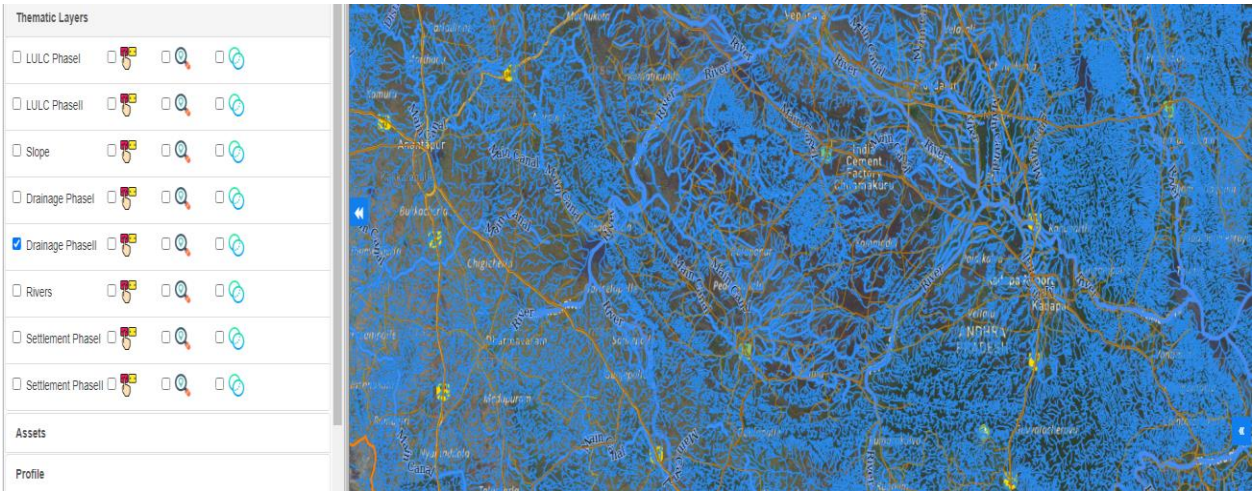
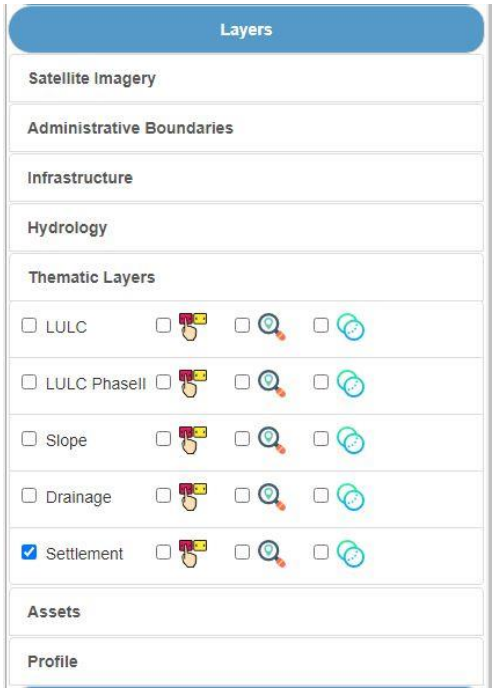


Figure 36: Overlaying of DRAINAGE layers on to the map

c) SETTLEMENT: Settlements layers can be overlaid onto map as shown in Figure 37



- Enable SETTLEMENT layer in Thematic layer

Figure 37:Enabling Settlement option

On overlay of the layer:

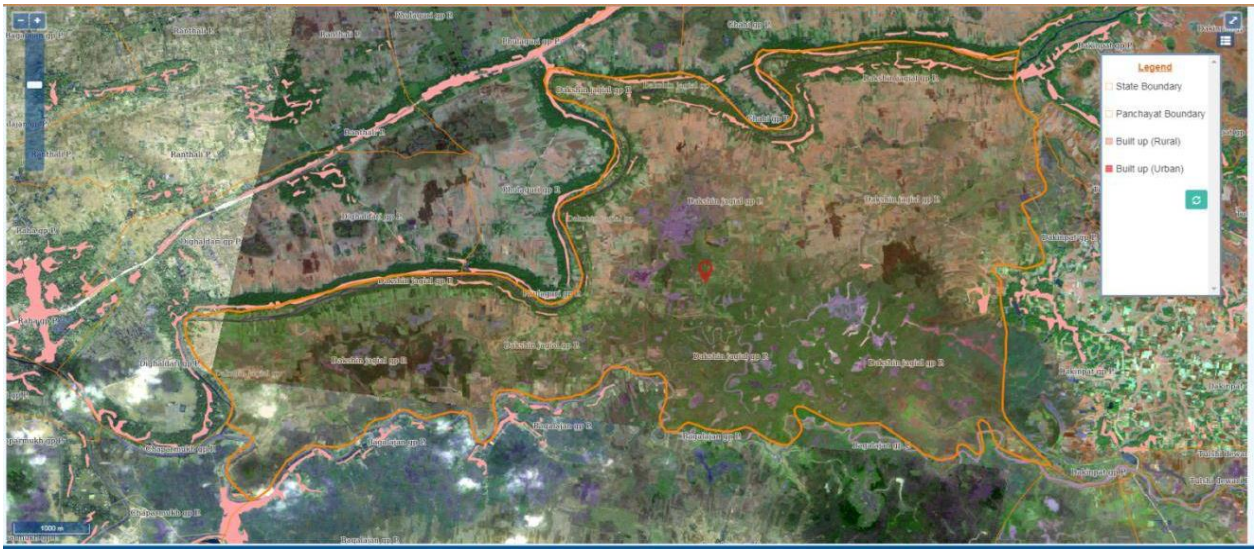


Figure 38: Overlaying of Settlements layers on to the map

V. In layers enable all Assets layers: Figure 39 shows all assets layer on to map.

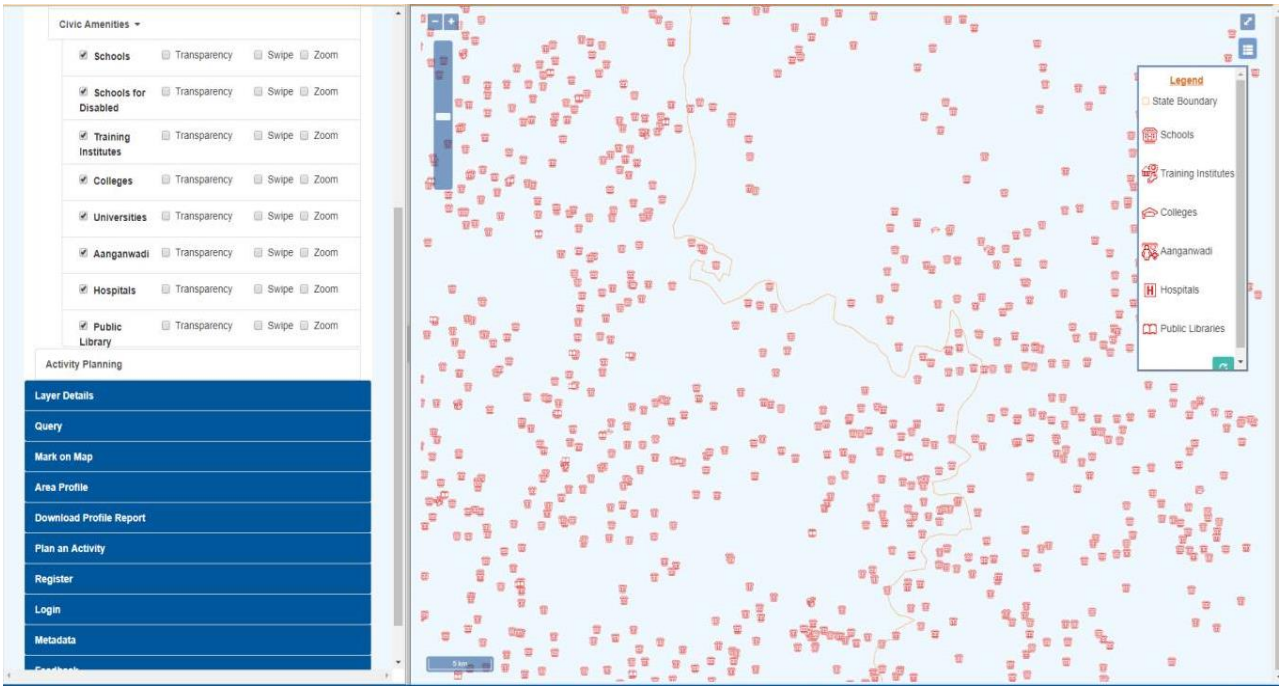


Figure 39: Overlaying of all Assets layers on to the map

5.2.2 Swipe/Transparency/Zoom out:

In this section we will discuss about Swipe/Transparency/Zoom out functionalities

1. Swipe:
   - The Swipe functionality in geospatial applications allows users to interactively compare two different layers or time periods. By swiping across the screen, users can reveal or hide specific layers, enabling a side-by-side visual comparison. This feature is particularly useful for identifying changes in land cover, infrastructure development, or any other spatial variations.

2. Transparency:
   - Transparency, in the context of geospatial data visualization, refers to the degree to which underlying map layers are visible. Users can adjust the transparency of a layer to overlay it on top of another while maintaining visibility of both. This feature is beneficial for analyzing spatial relationships, as it allows users to see how different layers interact without completely obscuring one another.

3. Zoom Out:
   - Zooming out is a fundamental navigation feature in geospatial applications. It allows users to view a broader area on the map, providing context and a more comprehensive understanding of the spatial layout. Zooming out is particularly valuable when users need to explore relationships and patterns across larger geographic extents.

In summary, these functionalities enhance the user experience and analytical capabilities in geospatial data visualization. Swipe facilitates direct visual comparisons, transparency enables the simultaneous display of multiple layers, and zooming out provides a broader perspective for a more holistic understanding of spatial data. These features empower users to extract meaningful insights from complex geospatial information.

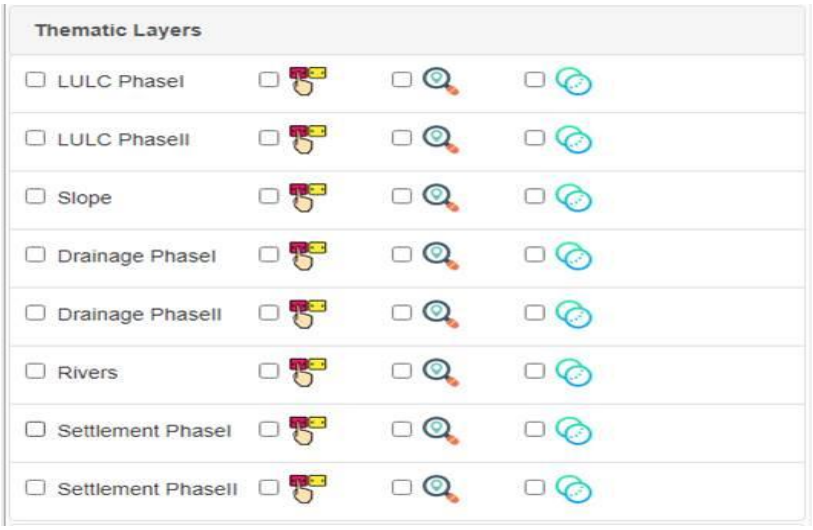


Figure 40 : Swipe/Transparency/Zoom out functionalities

5.2.3. Search Widget:

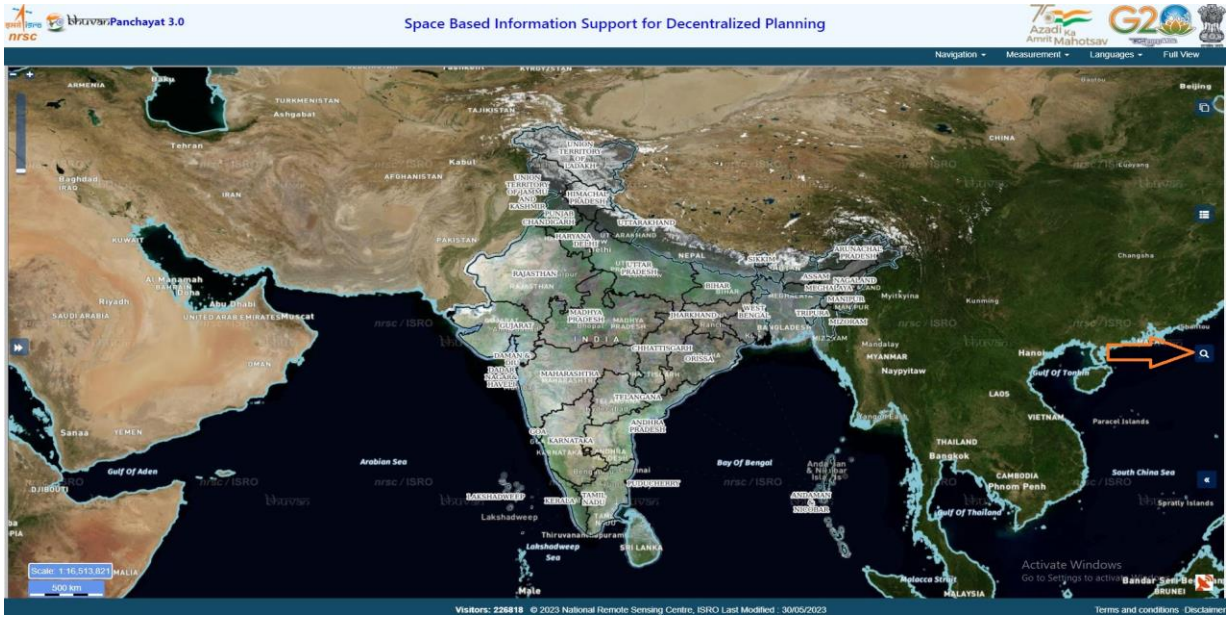


Figure 41: Search widget

This search option works same as "Search" option discussed earlier. Once the portal is opened user can directly go to search option and make use of it as shown in Figure41.

5.2.4. Scale:

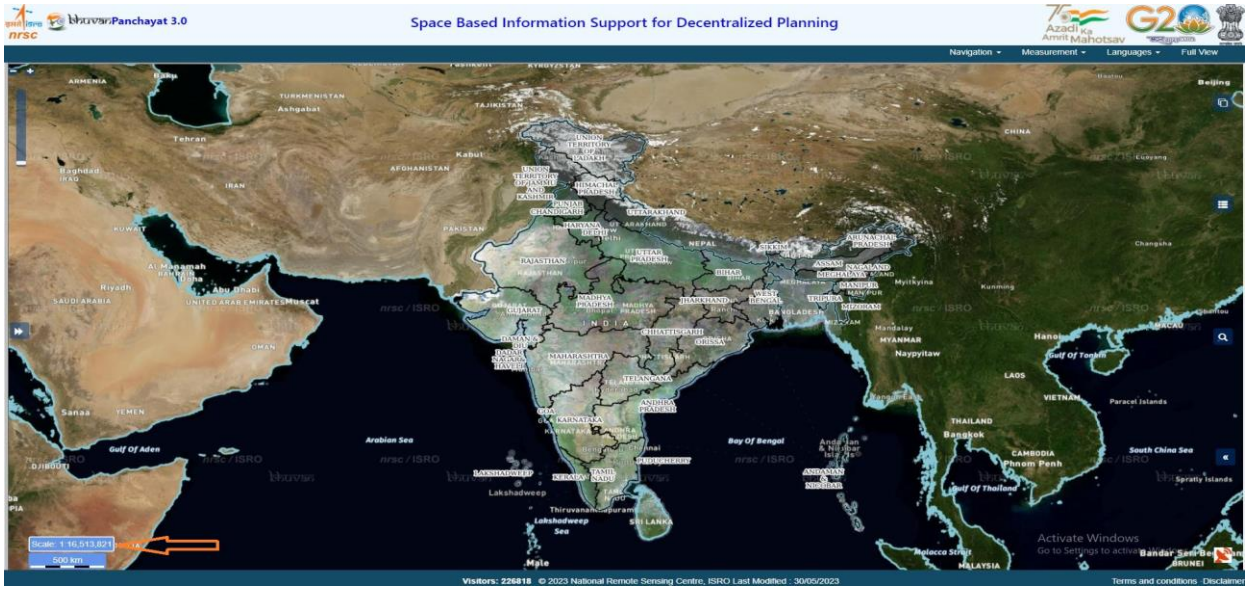


Figure 42:Scale

Located at the bottom left side of the interface, this option provides users with the current scale of view. It serves as a useful reference point, allowing users to understand the level of detail and zoom level of their current view as shown in Figure42. Specifically, for the SISDP Phase-II Roads data, the legend associated with it dynamically adapts and updates based on the scale displayed.

5.2.5. Scale Bar:

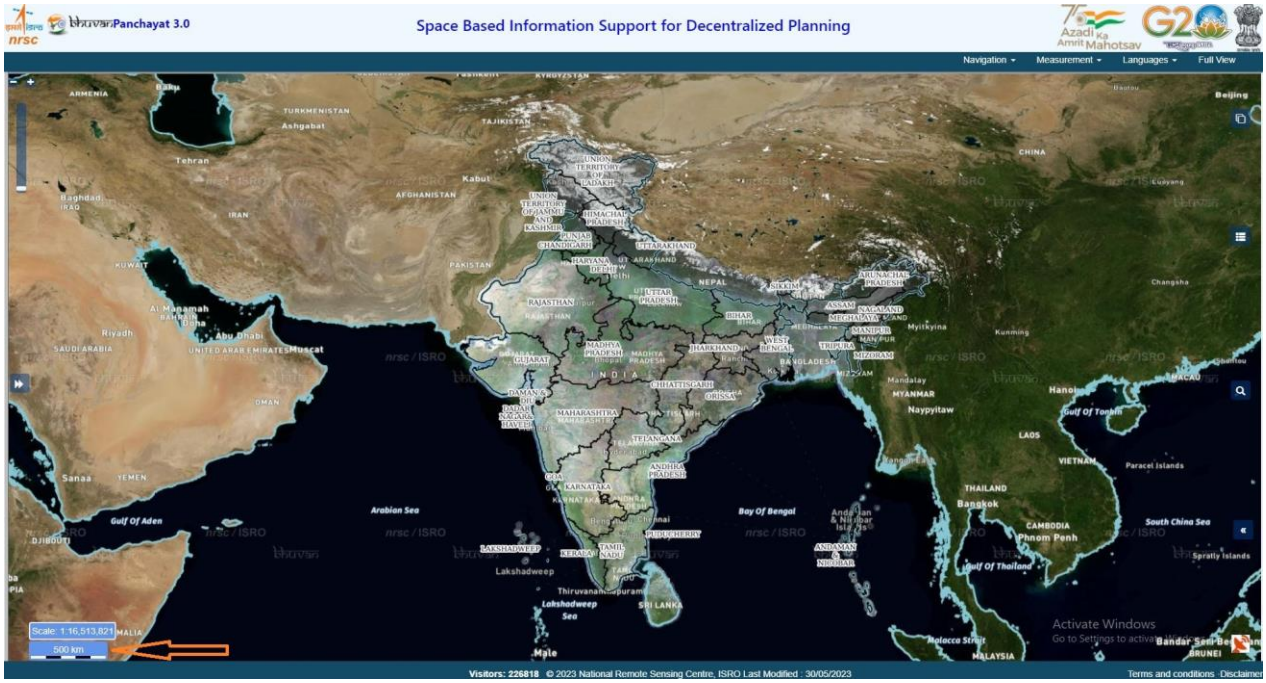


Figure 43 :Scale Bar

The scale bar in your portal provides a visual representation of distance or scale. It helps users accurately estimate distances on the map or spatial display, aiding in understanding the relative scale of features as shown in Figure43.

5.3 Advanced Tools:

5.3.1 Layers Widget:

Figure 44: Layers widget

Introducing a new option that significantly improves user accessibility of portal. When selecting this option, users gain access to Baselayers comprising satellite data and MMI data. Furthermore, users can interact with administrative boundaries to view different boundary types. Moving beyond Baselayers and Administrative boundaries, users can delve into Thematic layers, which provide valuable insights into land use and land cover (LULC), slope, drainage, and other relevant information. Lastly, the infrastructure option enables users to visualize road and rail networks specific to SISDP data as shown in Figure 44.

5.3.2.Feature Info:

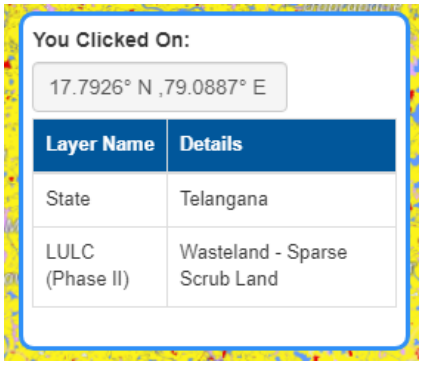


Figure 45: Feature Info

-Click on the map at any point on the map

User will be able to get all the layer details which are enabled in the layers module as shown in Figure 45.

5.3.3 AREA PROFILE:

Click on **Area Profile Module**:

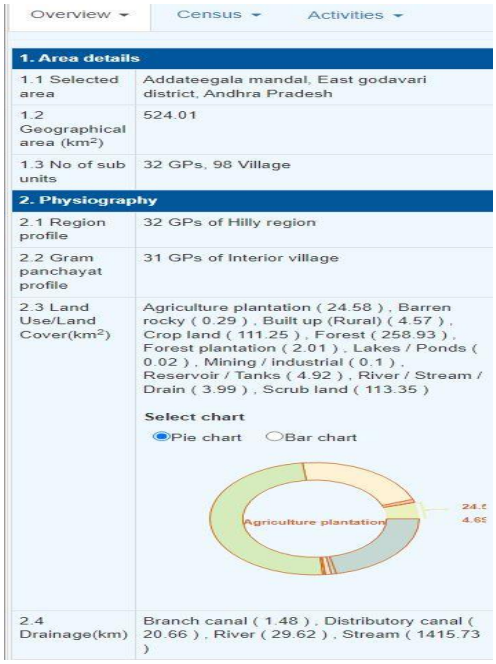


Figure 46 :Area profile module

- Initially on click of the module Overview is shown, as shown in Figure 46.

-Click on **Overview** Dropdown and select the remaining features such as Weather Details, Sarpanch details and Gramsabha meetings.

Overview:

Figure 47 :Weather details

I. On select of **Weather Details**:

- Select Parameter: **Temperature**

- Select Frequency: **Annual**

- Select Year: **2014-15**

- Click **Show Chart**. Select desired version of the chart, as shown in Figure 47.

II. On select of **Sarpanch / Pradhan / JillaPramukh Details**:

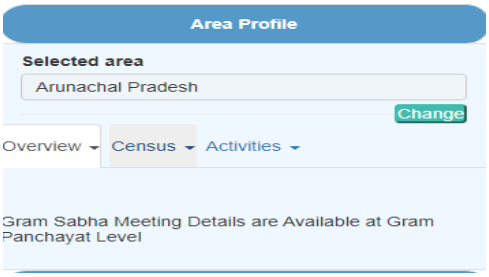


Figure 48 :Sarpanch / Pradhan / JillaPramukh Details

- Information about the sarpanch & Pradhan will be listed as shown in Figure 48. Presently services are disable for this functionality.

III. On select of **GramSabha Meetings**:

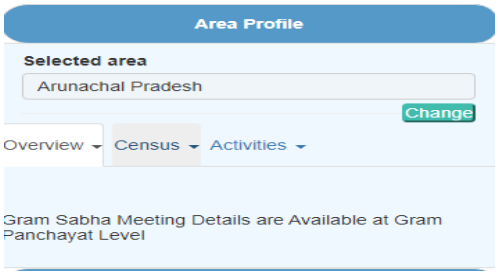


Figure 49 :Gram sabha meeting Details

-Information about the gramsabha meetings will be listed as shown in Figure 49. Presently the services are disables for this module.

Click on Census:

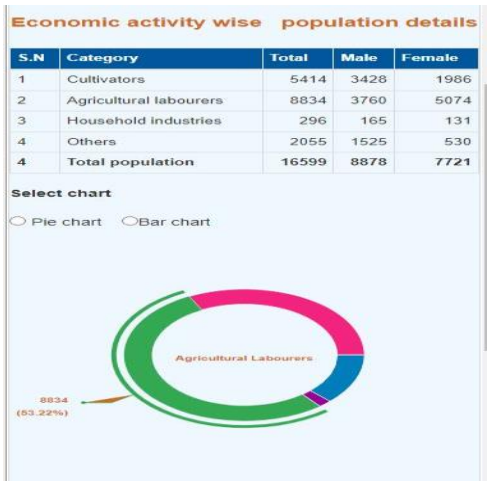
I. On select of **Demographic Data**:

- All the demographic details are displayed in the form of table.

- For graphical representation select Parameter and choose desired type of representation of charts, as shown in Figure 50.

Figure 50 :Chart representation of demographic data

II. On select of **Economic Activity Wise**:



-Select **Parameter.** Select Distribution of Main Workers Population, as shown in Figure 51.

Figure 51 : Chart representation of economic activity wise data

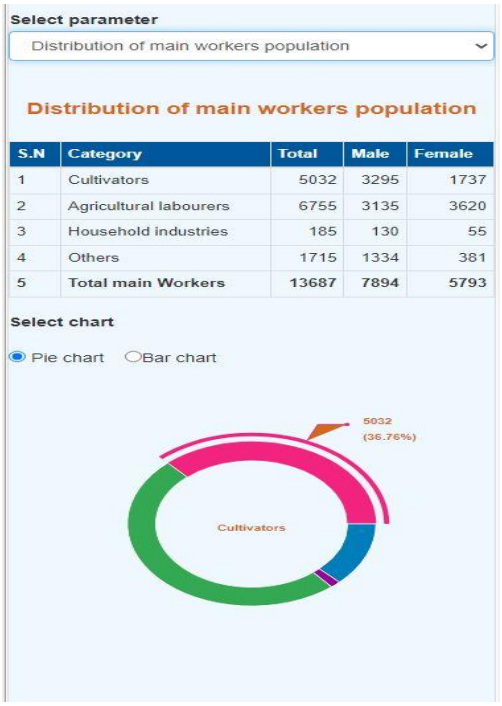


Figure 52: Representation of data on charts

-For graphical representation choose desired type of representation of charts, as shown in Figure 52.

III. On select of **Amenities**:

Figure 53: Details of Amenities information

- All the available amenities will be listed in the form of tabular form present in that particular area, as shown in Figure 53

IV. On select of **Housing Details**:

Household details by condition

S.N	Residential houses	Percentage
1	Good	68.4
2	Liveable	26.3
3	Dilapidated	4.3

Household details by ownership status

S.N	Ownership status	Percentage
1	Owned	94.3
2	Rented	4.8
3	Others	0.9

Household details by main source of lighting

S.N	Source of lighting	Percentage
1	Electricity	88.5
2	Kerosene	10.6
3	Solar	0.1
4	Other oil	0.5
5	Any other	0
6	No lighting	0.4

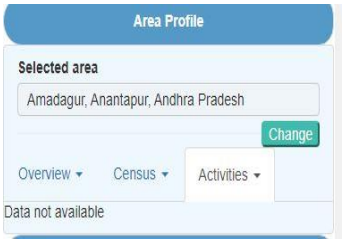
Household details by availability of kitchen facility

S.N	Kitchen facility	Percentage
1	Cooking inside house	70.9
2	Has kitchen	30.7
3	Does not have kitchen	40.2

- All the housing details based on different categorisations such as condition, ownership status etc.., for the selected area is displayed in the form of tabular form, as shown in Figure 54.

Figure 54 : Housing details

Click on Activities:



Here on select of activities following fields appear and on click of every field a tabular form representation of data is displayed for the respective fields, as shown in Figure 55.

- Suggestions
- Plans
- Approved plans
- Rejected Plans
- Ongoing Activity
- Completed Activity

Figure 55 :Activities details

For the selected Panchayat there is no data available under all the above-mentioned fields.

5.3.4 DOWNLOAD PROFILE REPORT:

User can download the profile report as shown in Figure 56 & Figure 57.

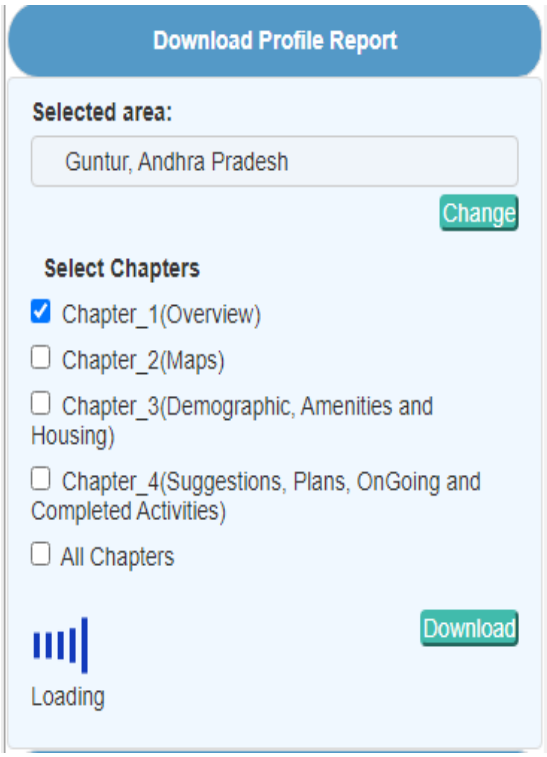


Figure 56: Profile report generation

Click on Download Profile Report:

- Select **All Chapters**

- Click **Download**

- **Click on that link** the report gets generated in the new window.

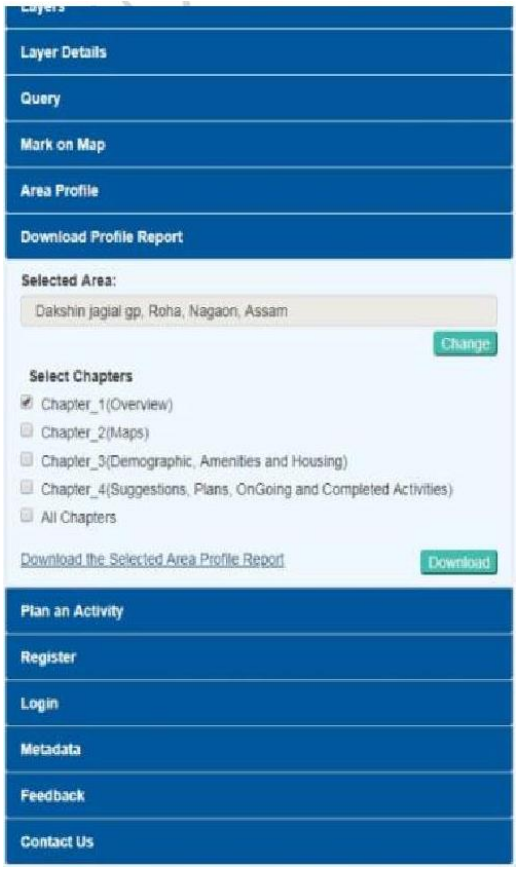


Figure 57 : Profile report download

5.3.5 PLAN AN ACTIVITY:

Using this Module user can generate draft plan for the following Activities, as on June 11, 2018.

1. **Land Resources Development Plan (LRDP)**
   a) Reclamation of Culturable Wasteland
   b) Soil Conservation Practices

2. **Water Resources Development Plan (WRDP)**
   c) Ground Water Recharge Structures
   d) Rejuvenation of Ponds / Tanks (Surface Water bodies)

3. **Community Assets Need Assessment**

   e) Schools

Steps for Spatial Planning:
Go to https://bhuvan-panchayat3.nrsc.gov.in/
I. LRDP: Reclamation of Culturable Wasteland
Select the theme as land resource development as shown in Figure 58.

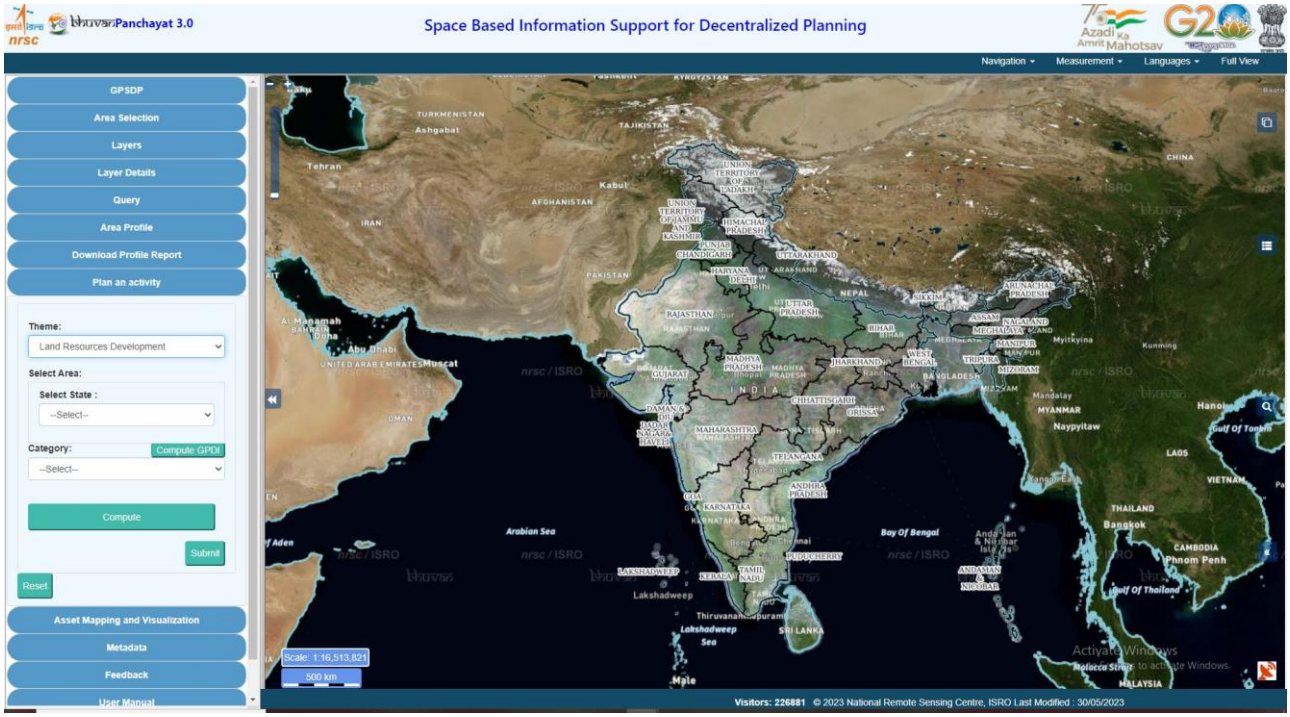


Figure 58 : Select LRDP theme

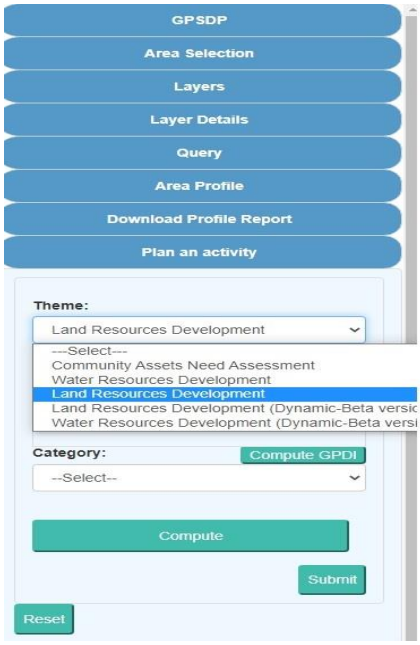


Figure 59 : Select LRDP theme

Select Plan an activity

Select theme: Land Resources Development as shown in Figure 59.

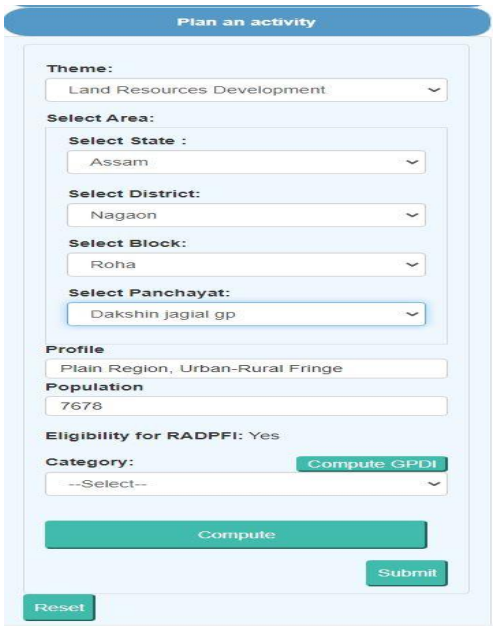


Figure 60 :Activity planning for Dakshin Jagial panchayat

-Select State: Assam -Select District: Nagaon - Select Block: Roha

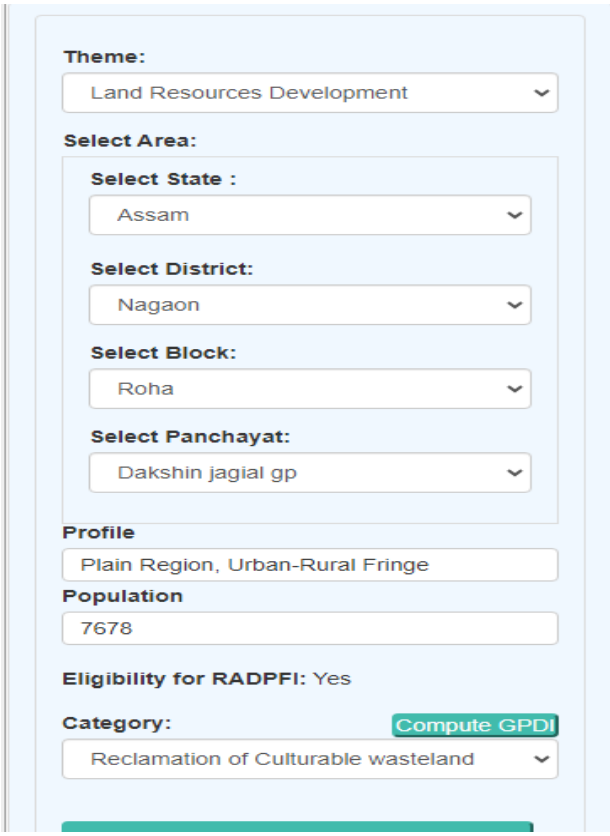
-Select Panchayat: Dakshin Jagial

-Population appears if available in the database -GP with Population > 1000 is eligible for RADPFI, as shown in Figure 60.

-Select Category: Reclamation of Culturable Wasteland

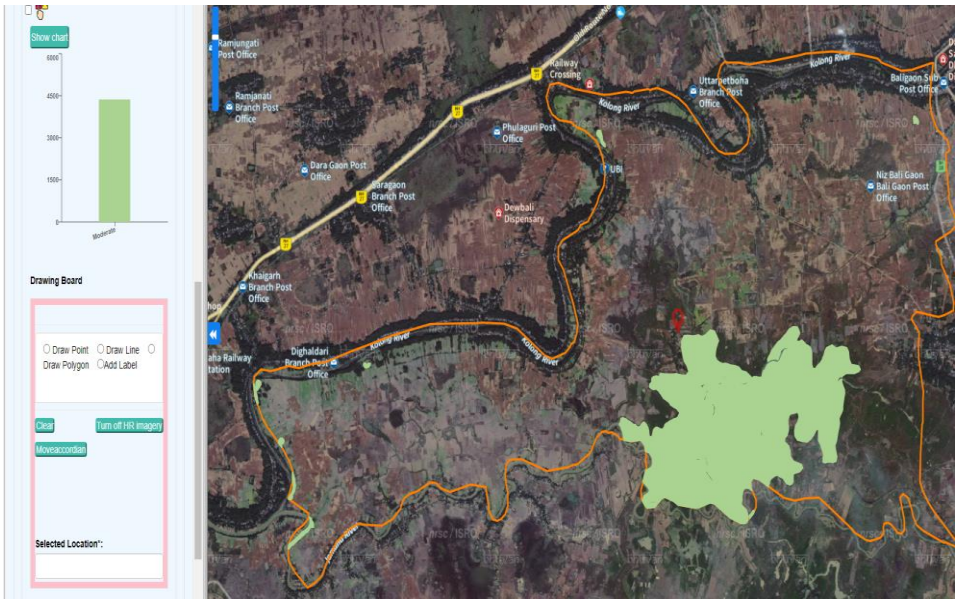
ick **Compute** as shown in Figure 61

Figure 61: Computation of Reclamation of cultural wasteland



- Show Probable Location Button Appears - Click **Show Probable Location** Button, as shown in Figure 62.

Figure 62 :Probable location estimation



-The Wasteland Location suitable for Reclamation will be shown in the map as shown in Figure 63

Figure 63 :Suitable wasteland locations

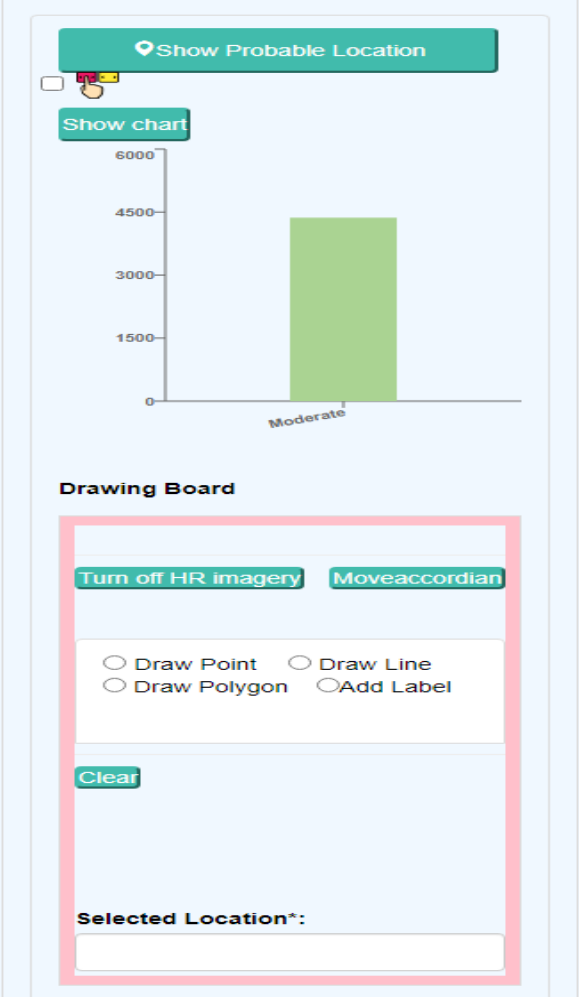


Figure 64 : Graphical representation of measurements

-For Detailed Results click on the **Show Chart Button**

-Bar Chart along with measurement can be seen as shown in Figure 64

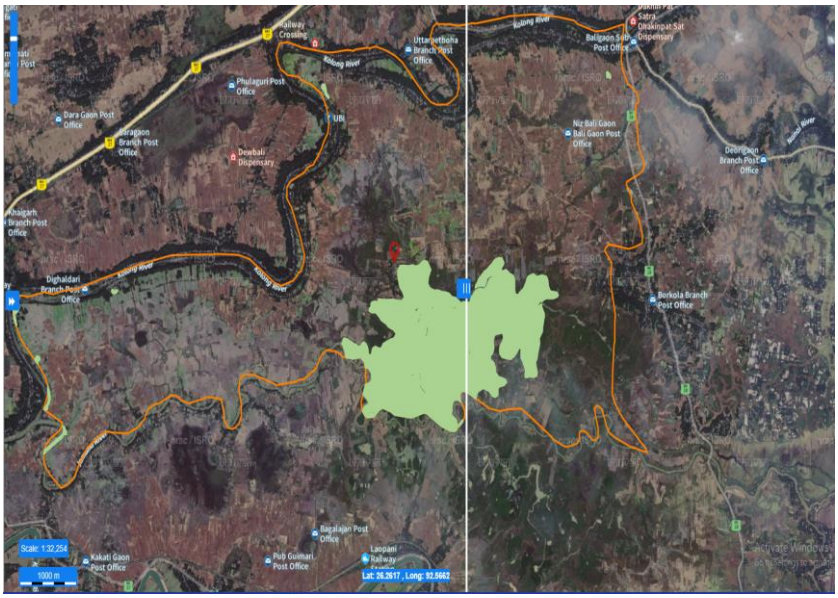


Figure 65: Swipe tool for result analysis

- Swipe Tool can be used by checking to swipe and see the satellite imagery behind the result as shown in Figure 65

The Suitable locations are shown in the map. User shall select the location to reclaim by drawing polygon / line /point. The coordinates of the location will be shown in the text box.

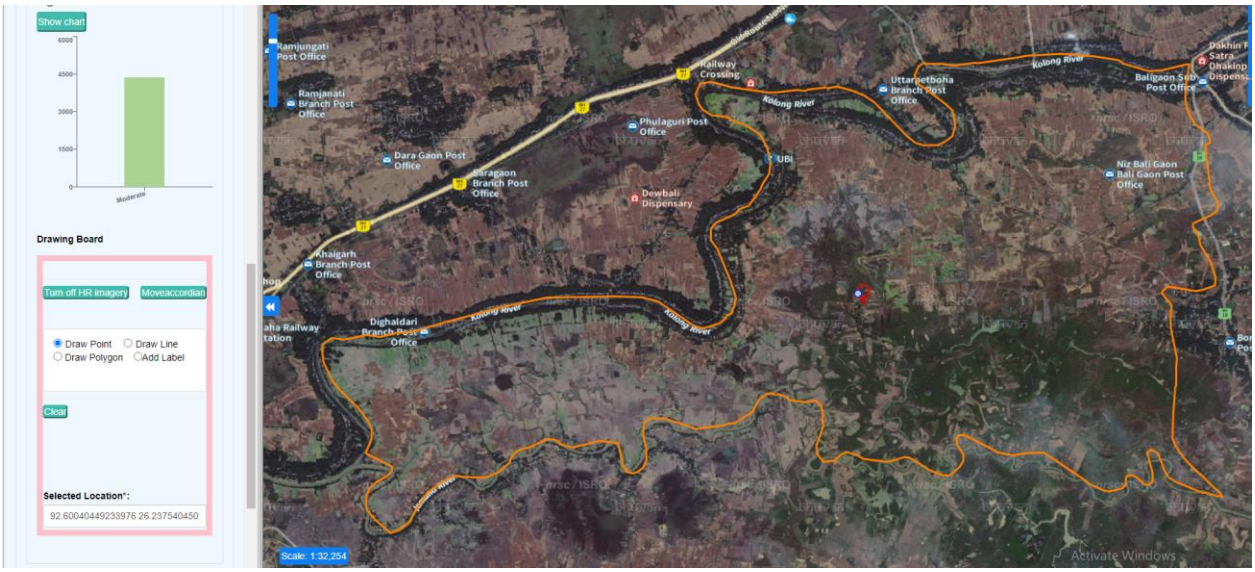


Figure 66 :Saving plan in database

Click **Submit** Button to Save the Plan to Database, as shown in Figure 66

II. LRDP: Soil Conservation

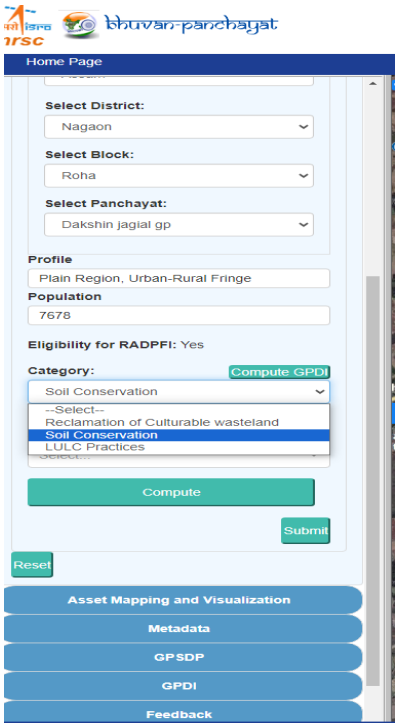


Figure 67 : Soil conservation category

Select Category: Soil Conservation, as shown in Figure 67

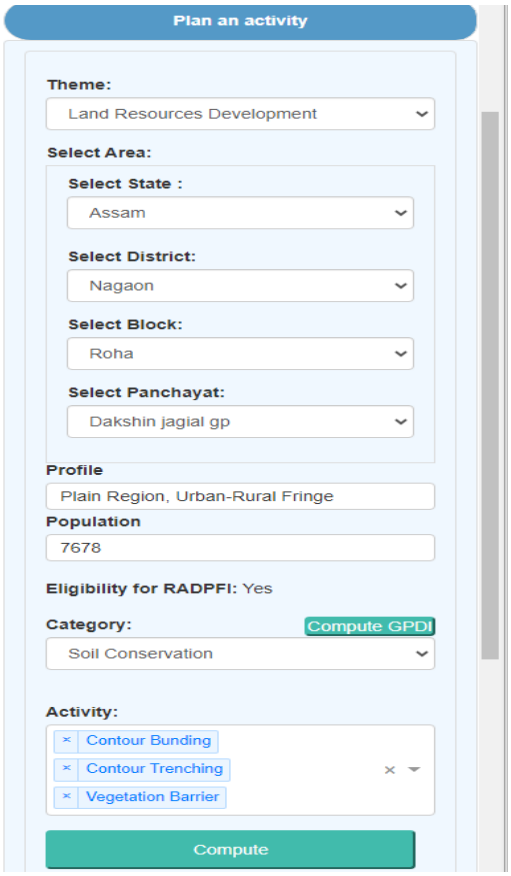


Figure 68 :Multiple selection of activities

Select Activity: Select the activities to plan. E.G. Contour Bunding, Contour Trenching etc. More than one activity selection is enabled as shown in Figure 68.

Click Compute. **Show Erosion Zones** Button and **Show Soil Conservation Measures** Button will appear as shown in Figure 69.

Show Erosion Zones Button is a toggle Button. Click Again to **Remove the Erosion Zones**.

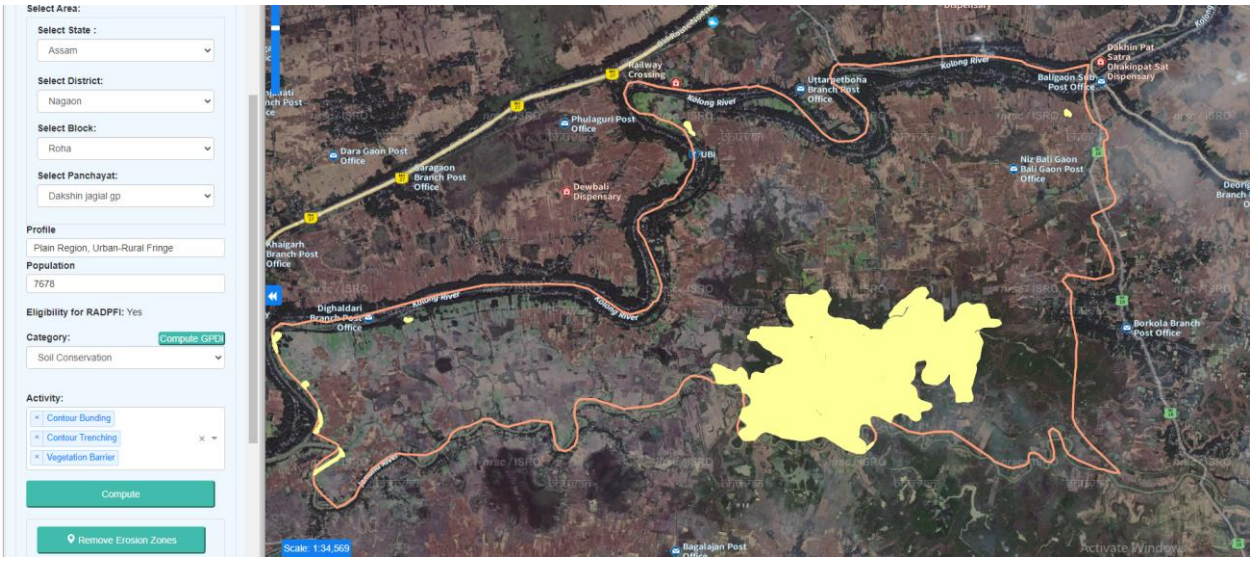
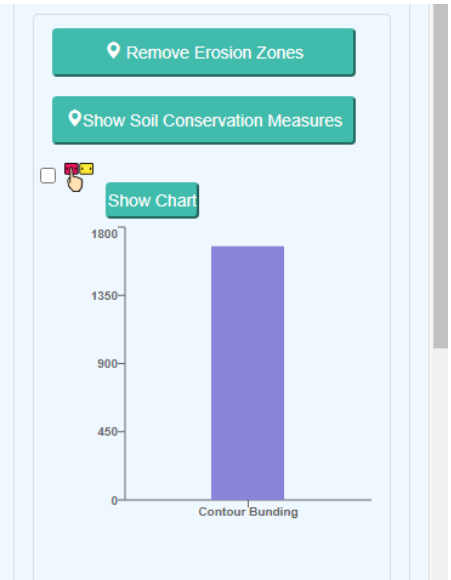


Figure 69 :Soil erosion results on map viewer

Click **Show Soil Conservation Measures** to view the suitable location on the map , as shown in Figure 70.

Figure 70 : Soil conservation measures on map.



-For Detailed Results click on the **Show Chart** Button -Bar Chart along with measurement can be seen as shown in Figure 71.

Figure 71: Soil conservation results on charts

Click **Submit** Button to Save the Plan to Database as shown in Figure 72

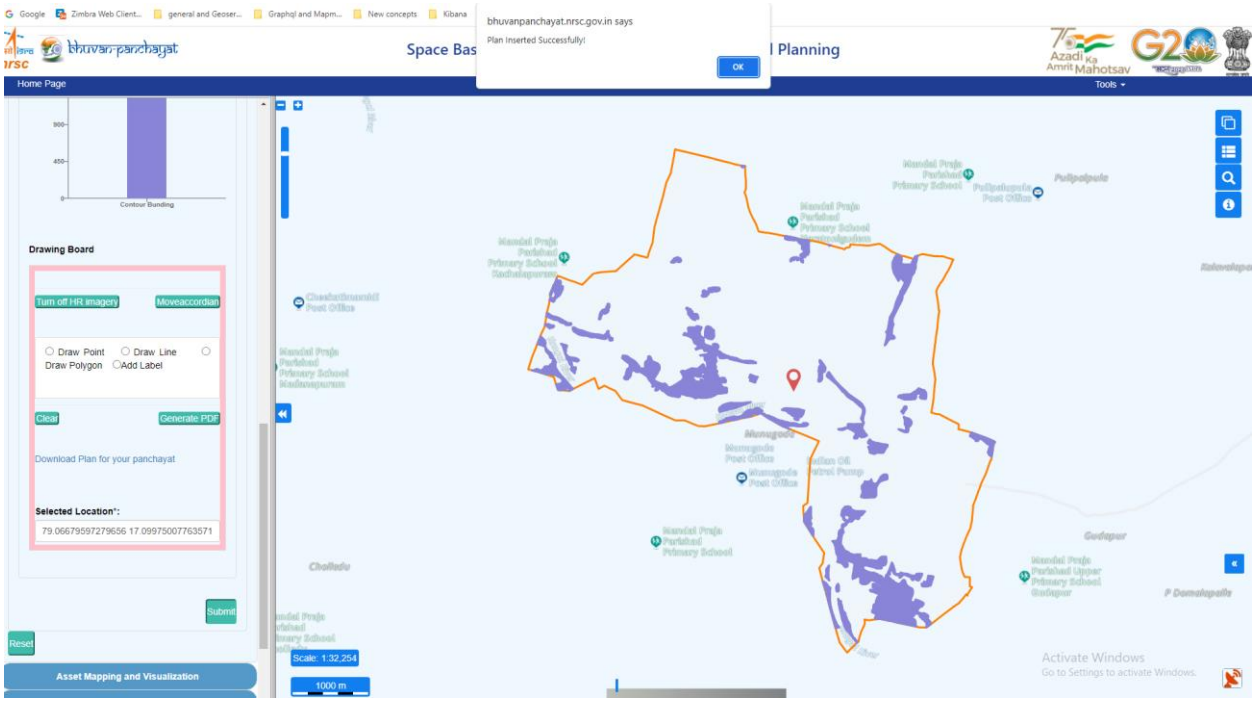
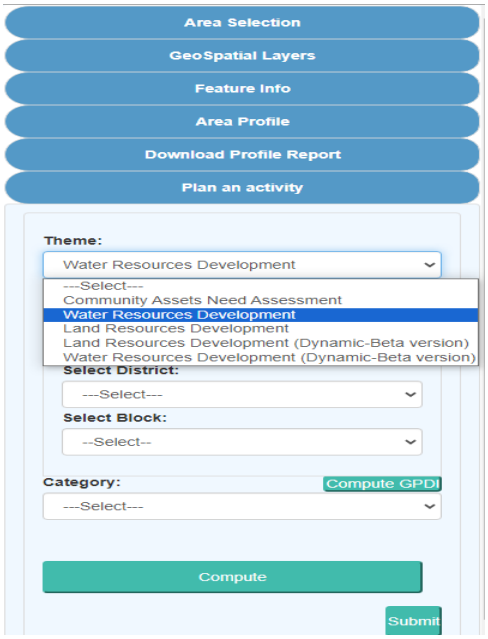


Figure 72 : Development plan insertion in database.

III WRDP: Rejuvenation of Ponds / Tanks (Surface Water bodies)



Select theme. Select Water Resources Development as shown in Figure 73

Figure 73: WRD plan selection

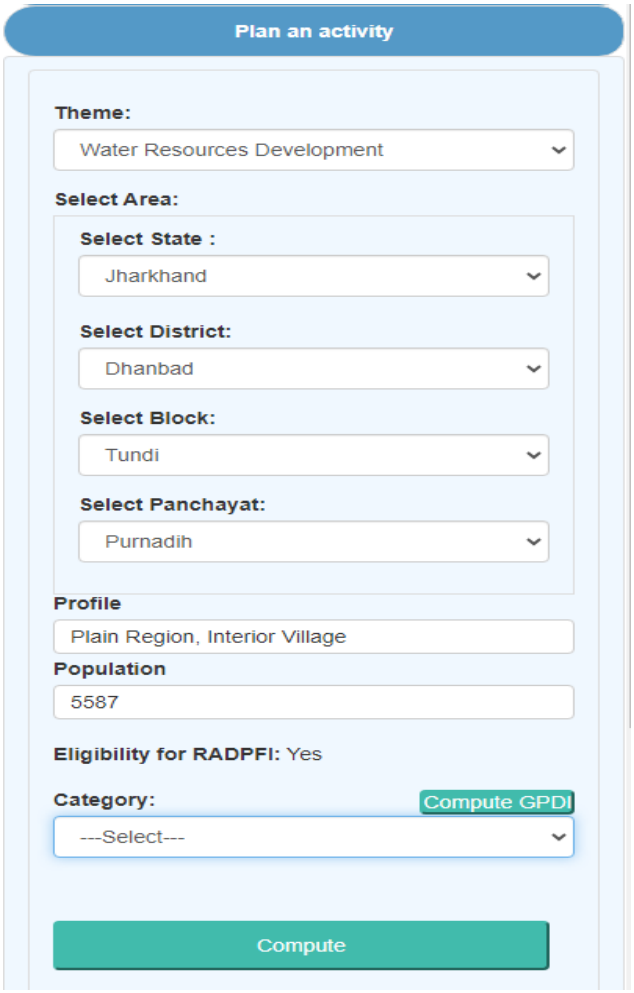


Figure 74: selection of WRD

-Select State: Jharkand

-Select District: Dhanbad -
Select Block: Tundi -
Select Panchayat: Purnadih

-Population if available in the database appears -GP with Population > 1000 is eligible for RADPFI , as shown in Figure 74.

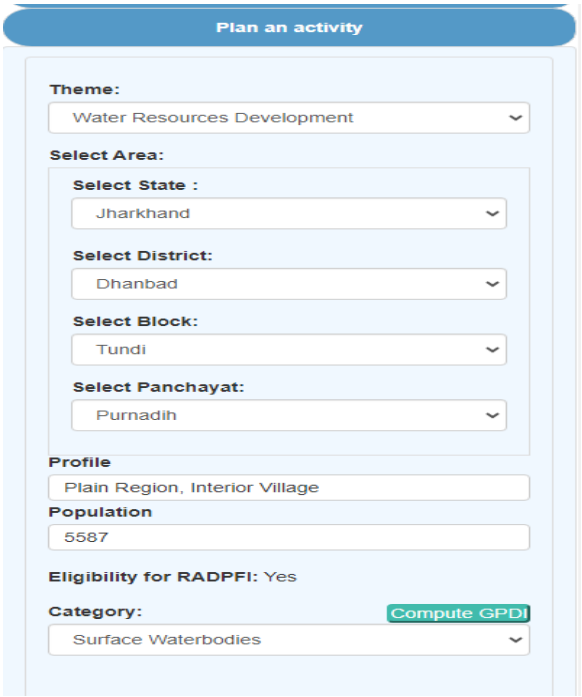
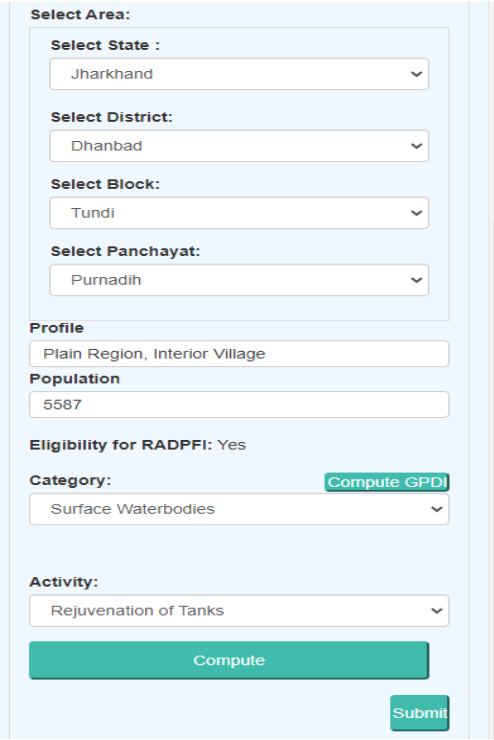


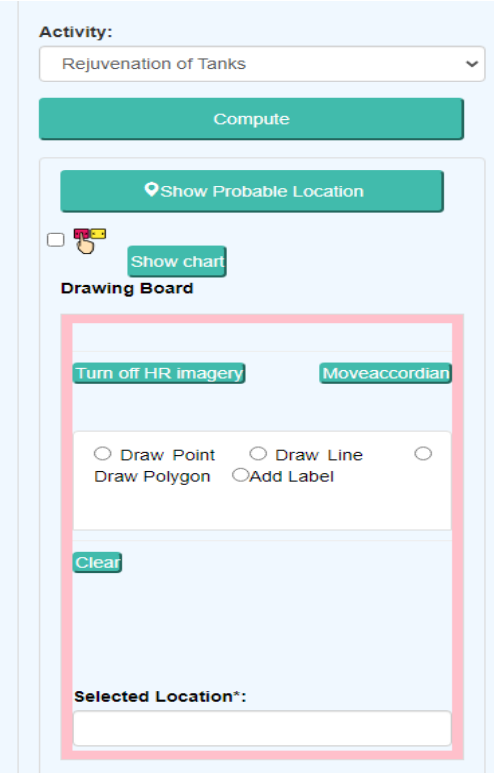
Figure 75 : Surface water bodies activity selection

Select Category: Surface Water Bodies, as shown in Figure 75



-Select Activity: Rejuvenation of tanks - Click Compute as shown in Figure 76

Figure 76: Rejuvenation of tanks selection

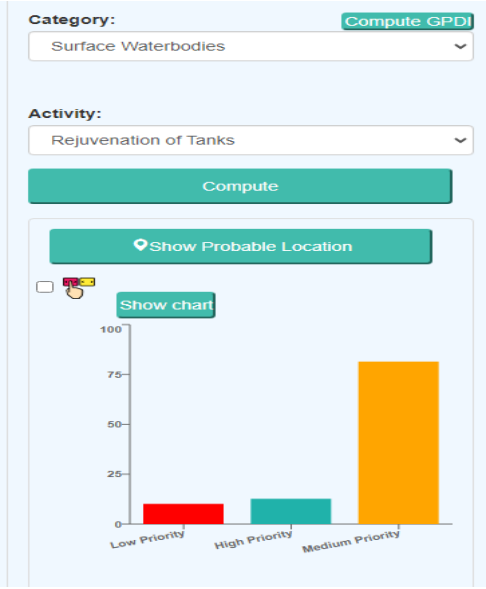


-Click **Show Probable Location,** as shown in Figure 77.

Figure 77: Show probable location calculation for rejuvenation of tanks

Suitable Tanks to be taken up for Rejuvenation is shown in the Map as shown in Figure 78:

Figure 78: Suitable locations for rejuvenation of tanks for a given area



-For Detailed Results click on the **Show Chart** Button

-Bar Chart along with measurement can be seen for High priority, Medium Priority and Low Priority zones as shown in Figure 79

Figure 79: Graphical representation of probable zones

Click **Submit** Button to Save the Plan to Database, as shown in Figure 80

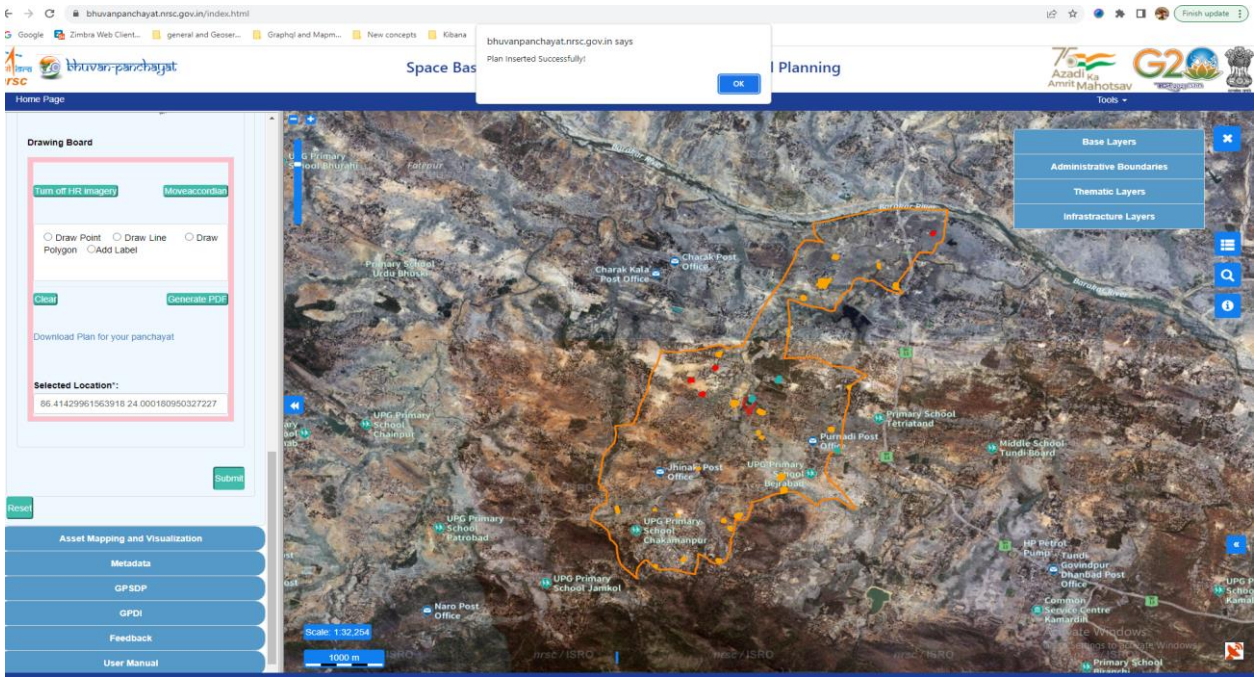
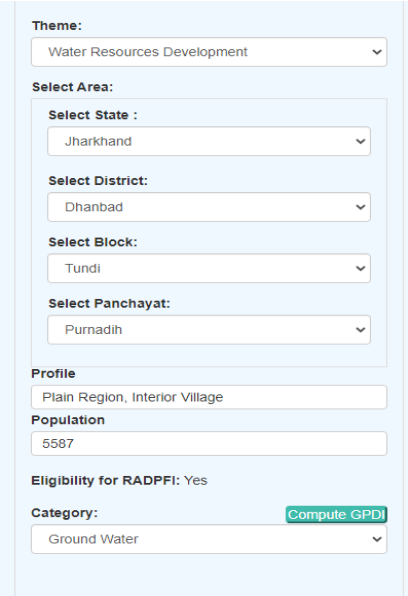


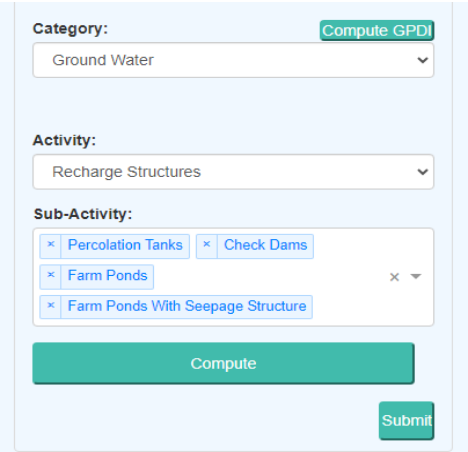
Figure 80: Organisation of activity plan in database

IV WRDP: Recharge Structures (Ground Water)



-Select Category: Ground water, as shown in Figure 81.

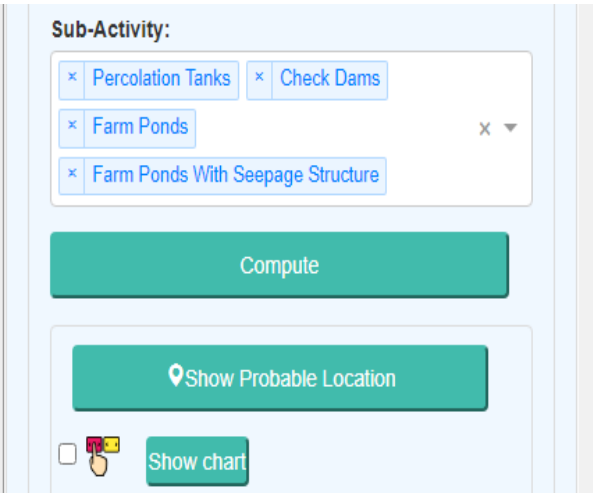
Figure 81: Recharge structures selection



-Select Activity: Recharge Structures

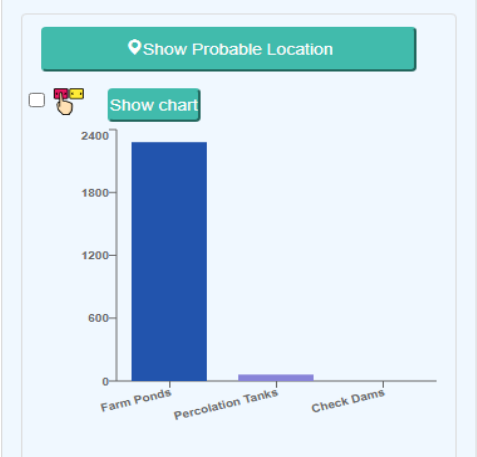
-Select Sub Activity: Percolation Tanks, Check dams, Farm Ponds etc as shown in Figure 82.

Figure 82: Activity & sub activity selection for recharge structures



Click **Compute** . **Show Probable Location** button appears, as shown in Figure 83.

Figure 83: Form for recharge structure computation



For Detailed Results click on the **Show Chart** Button

Bar Chart along with measurement can be seen, as shown in Figure 84

Figure 84 ;Graphical representation of recharge structures result

Click **Show Probable Location** button. Suitable Locations for Percolation Tanks, Check dams, Farm Ponds etc are shown in the map in Figure 85.

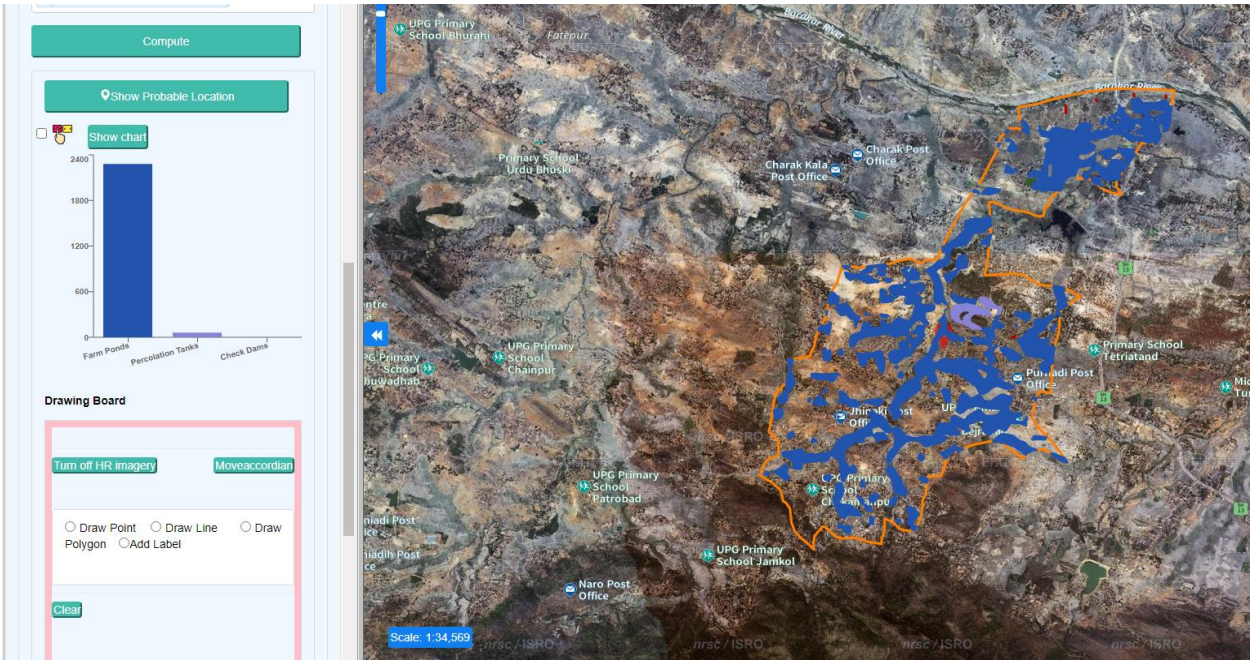


Figure 85: Probable location of Percolation Tanks, Check dams, Farm Ponds on map

Click **Submit** Button to Save the Plan to Database, as shown in Figure 86.

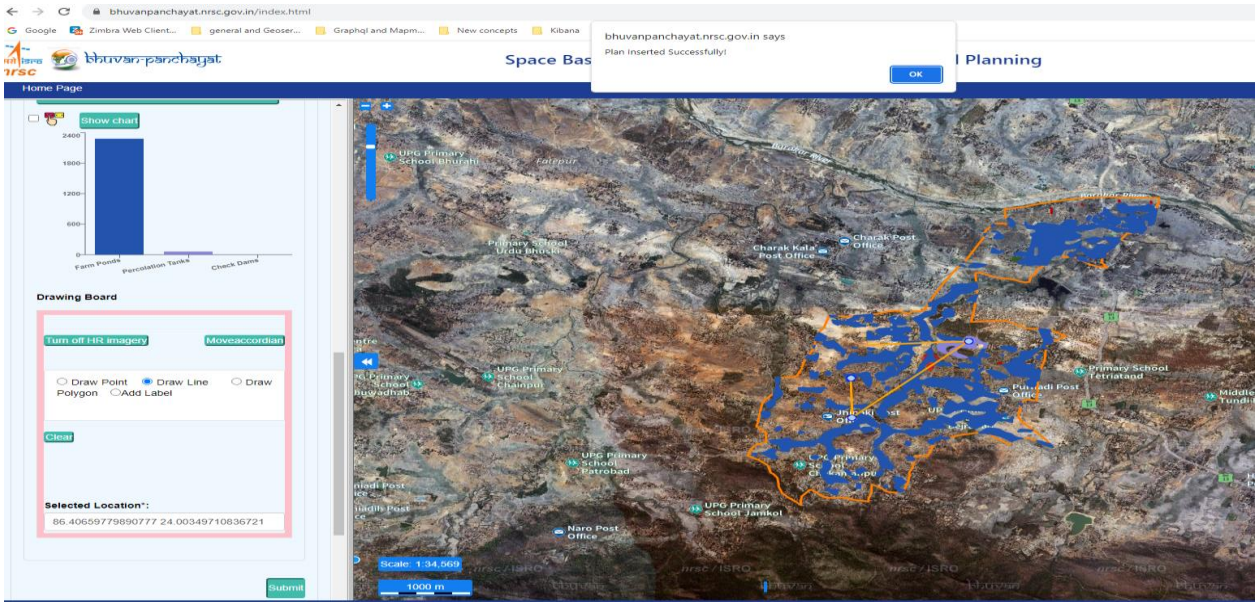


Figure 86 :Activity plan organisation in database

V Community Assets Need Assessment: Construction of New Schools

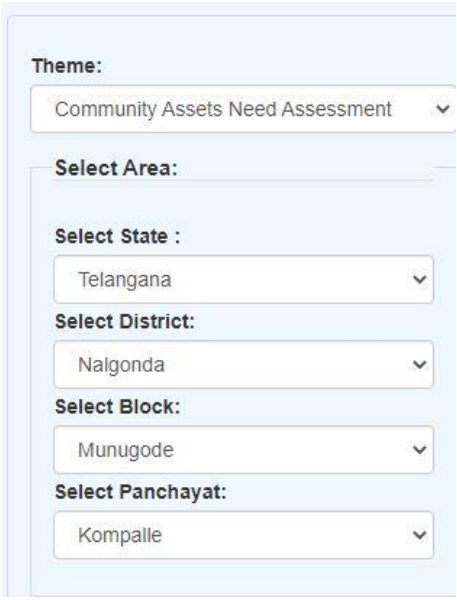


Figure 87 :Select community assets from theme

Select theme. Select Community Assets Need Assessment, as shown in Figure 87.

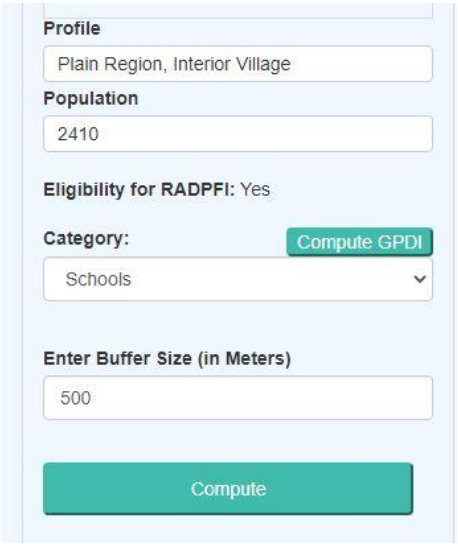


Figure 88 :Query shell

-Select State: Telangana
-Select District: Nalgonda -Select Block: Munugode Select Panchayat: Kompalle

-Population if available in the database appears

-GP with Population > 1000 is eligible for RADPFI , as shown in Figure 88

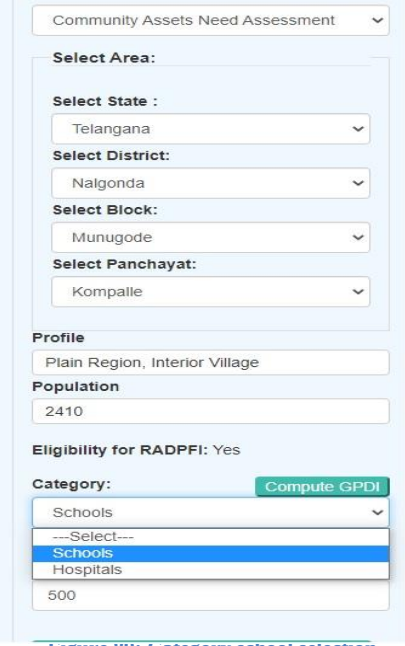


Figure 89: Category school selection

Select Category: Schools, as shown in Figure 89.

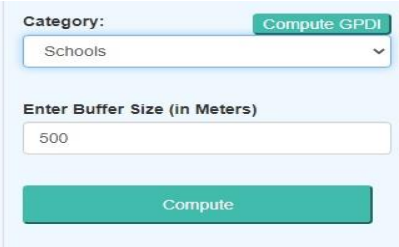


Figure 90: Computation module

-Enter Buffer Size (in Meters): 500m -Click Compute as shown in Figure 90.

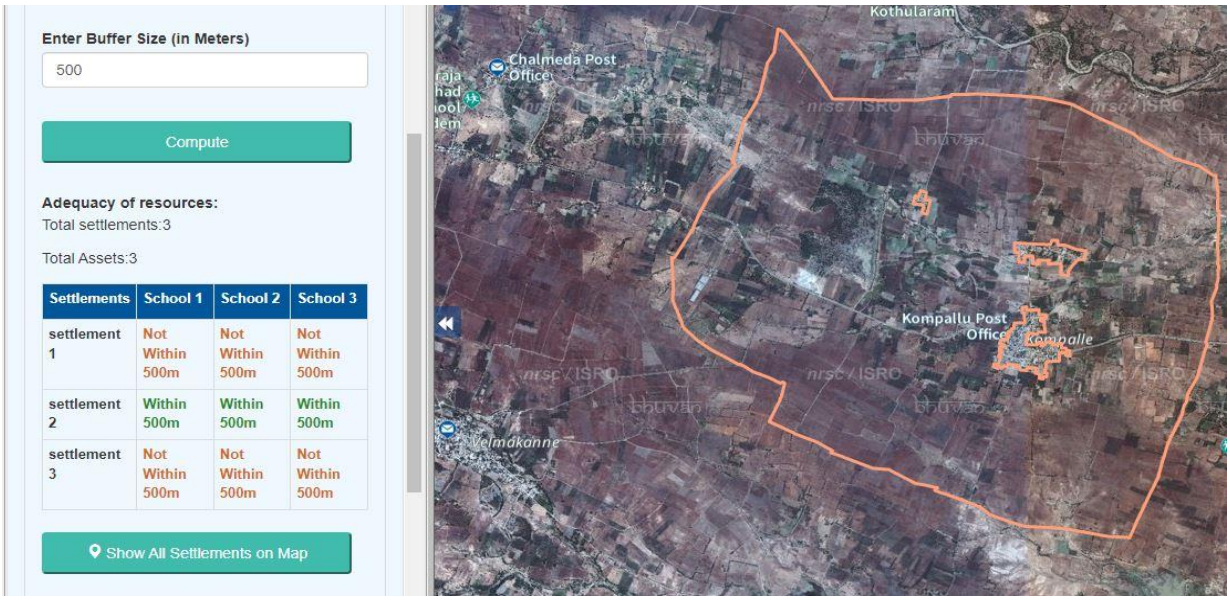
Note: 500 meters as per RADPFI guidelines

Figure 90A: Recommendations in tabular format

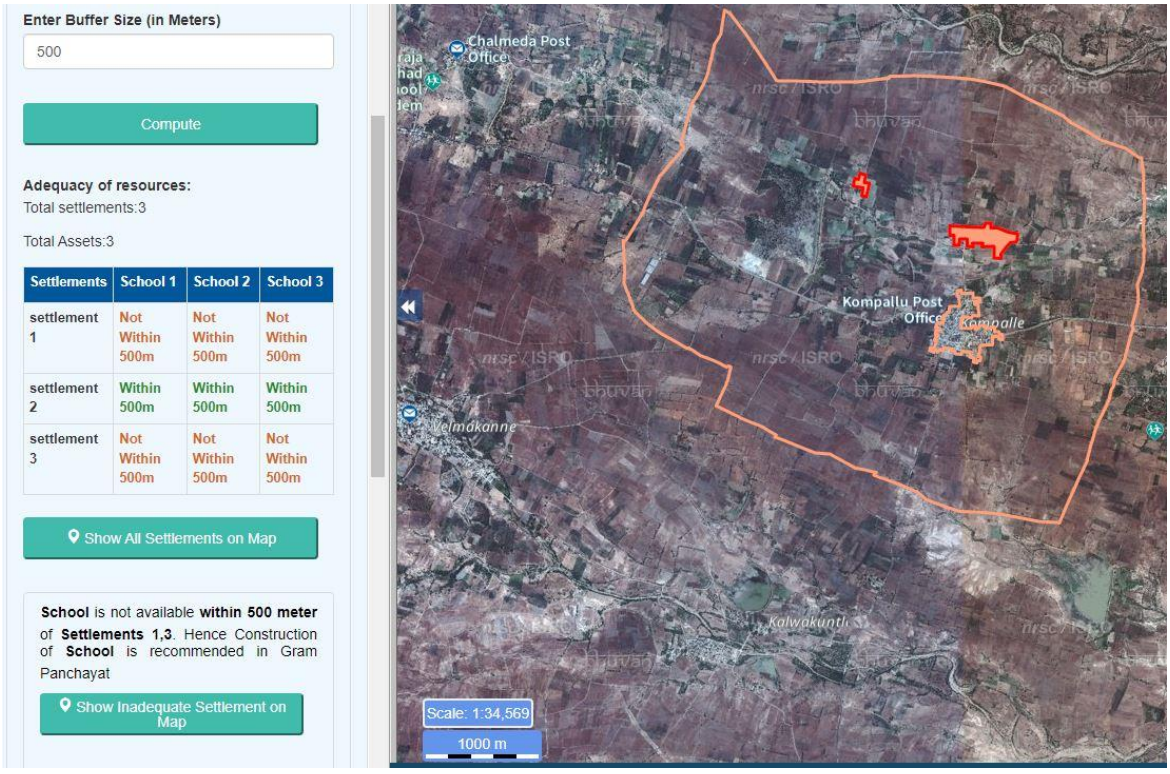
-A table appears with all the available settlements as rows and schools (assets) as columns .

- Recommendations are provided in the textbox as shown in Figure 90A.

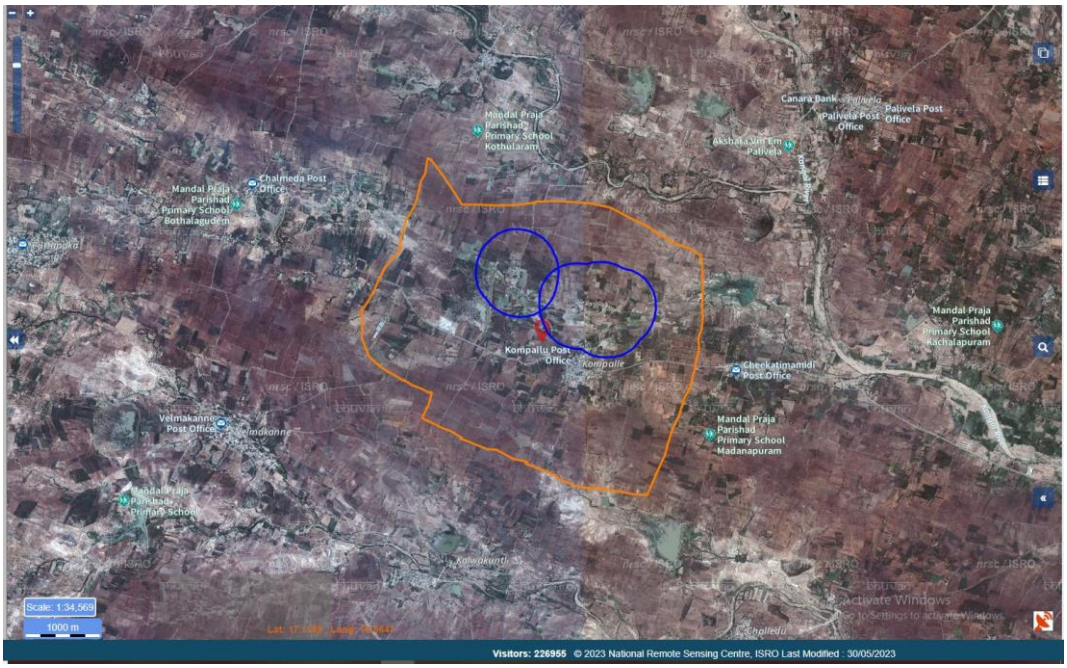
Click **Show All Settlements** on Map button as shown in Figure 91.



Click "**Show Inadequate Settlements on Map** button" to view the settlements which not having adequate resources, as shown in Figure 92.



Click on "**Show Probable Location** button" to view the suitable location to construct new school, as shown in Figure 93.



-Select the desired location by using the drawing board. The Chosen location should be within the probable location (Highlighted in Blue)
-Click **Submit** Button to Save the Plan to Database, as shown in Figure 94.

Figure 94 :Organisation of school plan in database

5.4 Domain Specific Utilities:

5.4.1 GPSDP

Gram Panchayat Spatial Development Planning (GPSDP) framework, a comprehensive tool designed for effective panchayat planning. Utilizing data gathered from household surveys conducted across 35 Gram Panchayats (GPs), the system offers a robust foundation for informed decision-making in community development.

The GPSDP framework encompasses a dedicated module for GP planning, providing stakeholders with access to critical data layers, including Land Use and Land Cover (LULC) information and high-resolution Drainage data (1:10k). This feature empowers decision-makers to visualize and analyze spatial data, fostering a deeper understanding of the local landscape and its potential for development.

The cornerstone of the system is the completed Household survey, which serves as a comprehensive resource for demographic, economic, and social indicators. By harnessing the insights derived from these surveys, stakeholders can tailor development plans to address specific community needs, ensuring a targeted and inclusive approach.

Furthermore, the GPSDP framework introduces an innovative GP plan option, enabling users to seamlessly integrate and align their development strategies with the spatial data available. This interactive feature enhances the overall planning process, allowing stakeholders to make informed decisions based on the geographical context of their respective Gram Panchayats.

This paper highlights the significance of the GPSDP framework as a transformative tool for Gram Panchayat planning. By amalgamating household survey data with advanced spatial visualization capabilities, the system facilitates a participatory and data-driven approach to community development. The GPSDP framework stands as a testament to the potential of technology in empowering local governance and fostering sustainable growth in rural communities.

Steps for Accessing the GPSDP Module:
To access the GPSDP module, click on the accordion button located on the left side of the interface. Once selected, the GPSDP module will be visible, allowing users to view and engage with the Gram Panchayat Spatial Development Planning features. This simple and intuitive approach ensures that users can easily navigate and utilize the functionalities offered by the GPSDP module within the Bhuvan Panchayat portal as shown in Figure 95.

Figure 95: Viewing the GPSDP in portal

In the GPSDP module, three options are available: Dashboard, View, and GP plan.

- Dashboard:

This option is utilized for filtering the available data based on criteria selected by the user. The Dashboard feature allows users to customize and refine their view of the data according to specific parameters or preferences as shown in Figure 96.

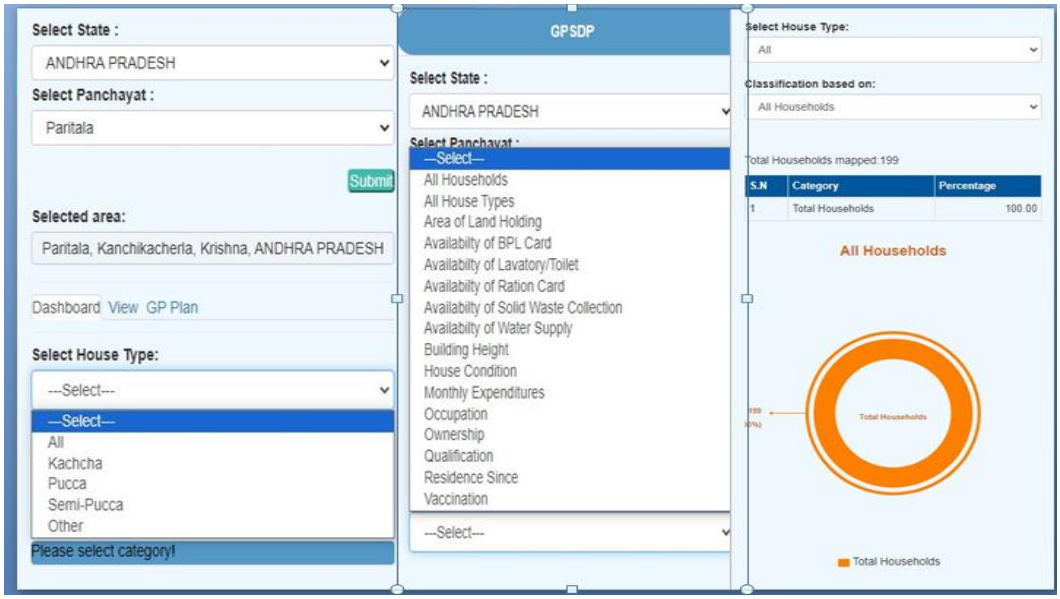


Figure 96: Filtering the data for GPSDP

View:

This option serves the purpose of viewing household data. Users can access detailed household information by simply clicking on this option. It provides a user-friendly and accessible means of exploring and understanding the data related to households within the GPSDP module as shown in Figure 97.

Figure 97 : Viewing the household survey data on portal

Download PDF Option:
This feature enables users to download the data in PDF format. By selecting this option, users can obtain a portable and easily shareable version of the data.

GP Plan:
In the GP Plan tab, users can overlay Land Use and Land Cover (LULC) data or Drainage data (1:10k) onto the selected Gram Panchayat map. This functionality empowers users to plan various activities based on the visualized data. Additionally, the Export option within this tab allows users to convert the map image (JPG) to PDF format, providing a convenient means for future reference and sharing as shown in Figure 98.

Figure 98: Overlaying of LULC/Drainage data on selected panchayat

5.4.2:GPDI

The Gram Panchayat Development Index (GPDI) is a significant feature within the system, aimed at providing users with a comprehensive understanding of development at the grassroots level. Upon accessing this option, users are seamlessly navigated to a dedicated pagehttps://bhuvanpanchayat.nrsc.gov.in/gpsdp/index.html, where a wealth of data for 35 Gram Panchayats is made available.

Users have the capability to overlay various layers, including Crop, Contour, WRD Plan, LRD Plan, Soil Depth, Soil Texture, Drainage, Geomorphology, Settlement, Rail, Road, Land Use/Land Cover (LULC), Digital Elevation Model (DEM), Ground Quality, and High-Resolution Data on the selected Gram Panchayat. This overlay functionality empowers users to visualize and analyze the intersection of different data layers, facilitating a nuanced understanding of the local landscape as shown in Figure 99.

Furthermore, the section provides maps such as Bhuvan Satellite Data and OpenStreetMap (OSM), offering additional contextual information for the selected Gram Panchayat.

To gauge the overall development scenario, users can access indices including Socio-Economic Index, Health Index, Education Index, and Overall Development Index specific to the chosen Gram Panchayat. These indices serve as valuable tools for assessing and comparing the developmental aspects of different regions, aiding in informed decision-making and policy planning as shown in Figure 100.

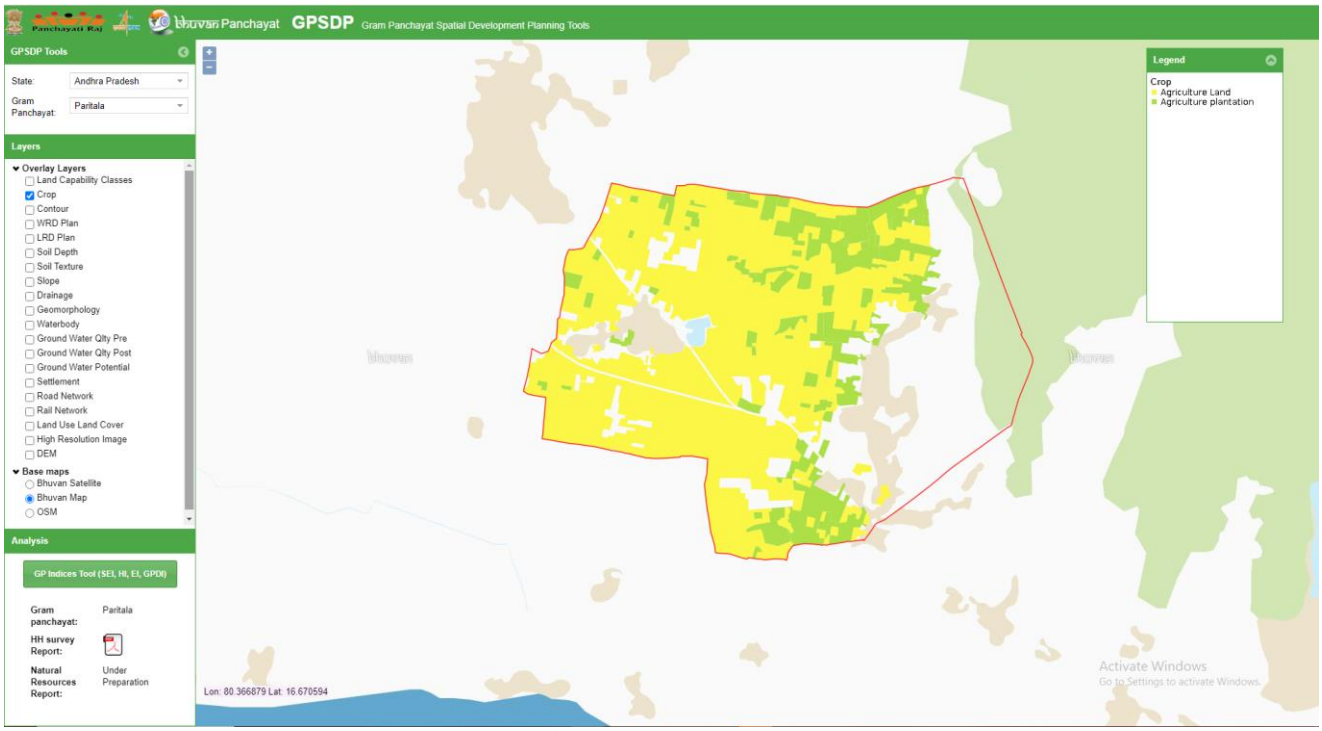


Figure 99: Overlaying of crop data on selected panchayat

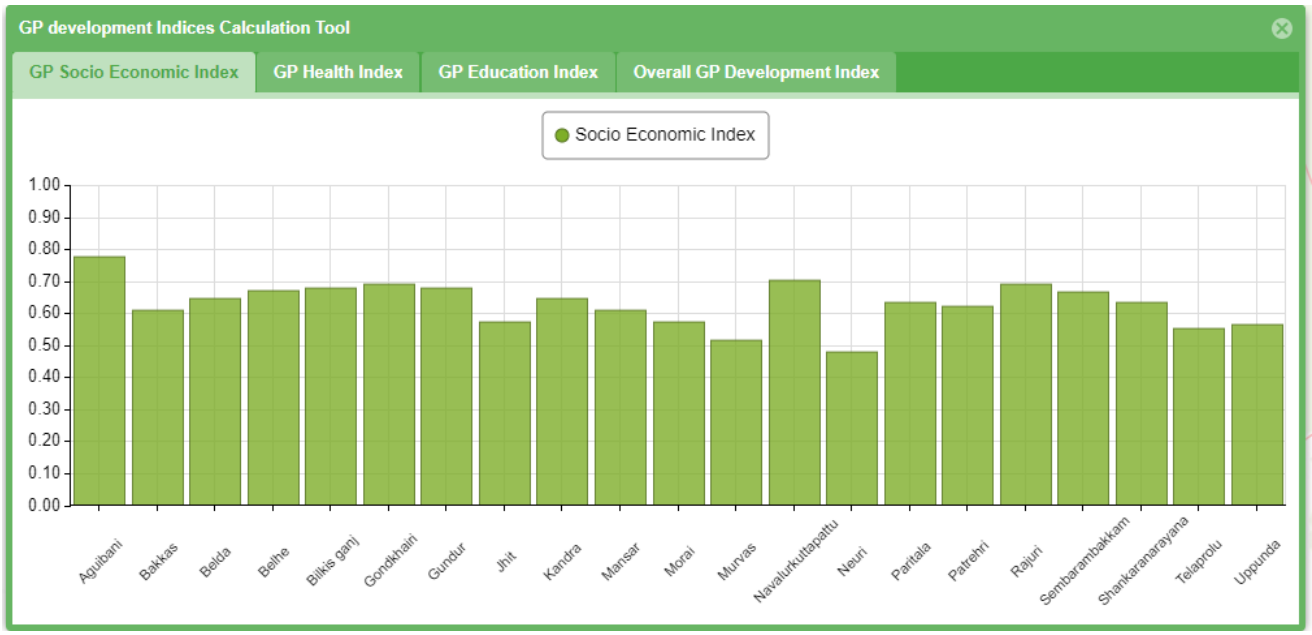


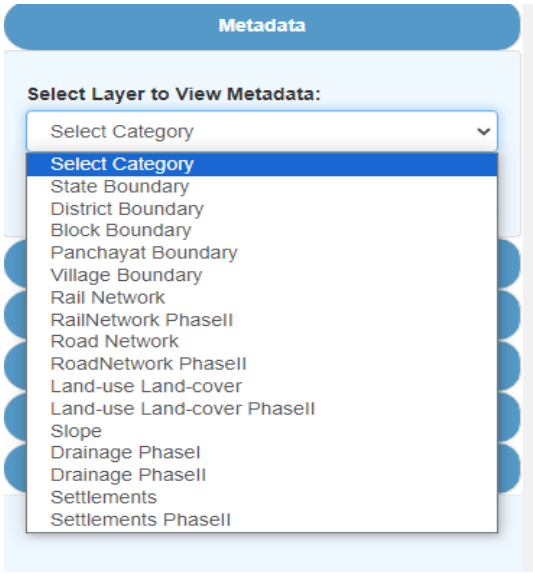
Figure 100: Viewing the Indices data

5.5 Others:

In this section we discuss about Metadata, Feedback and Contact Us

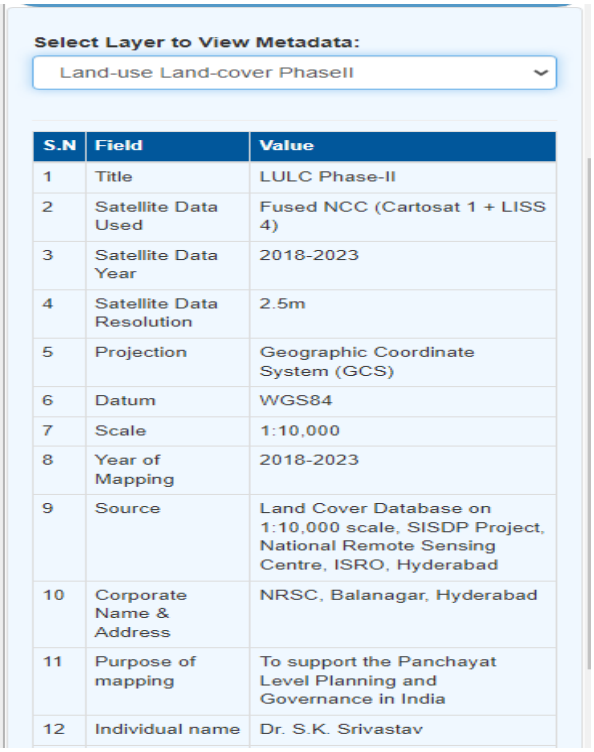
5.5.1. METADATA:

Go to **Metadata module**.



- Select **Layer to view Metadata**, as shown in Figure 101.
- Selecting **District Boundary**.
- Metadata will be visible as shown in Figure 102 & 103.

Figure 101: Layers to view metadata



S.N	Field	Value
1	Title	LULC Phase-II
2	Satellite Data Used	Fused NCC (Cartosat 1 + LISS 4)
3	Satellite Data Year	2018-2023
4	Satellite Data Resolution	2.5m
5	Projection	Geographic Coordinate System (GCS)
6	Datum	WGS84
7	Scale	1:10,000
8	Year of Mapping	2018-2023
9	Source	Land Cover Database on 1:10,000 scale, SISDP Project, National Remote Sensing Centre, ISRO, Hyderabad
10	Corporate Name & Address	NRSC, Balanagar, Hyderabad
11	Purpose of mapping	To support the Panchayat Level Planning and Governance in India
12	Individual name	Dr. S.K. Srivastav

Figure 102: Metadata

13	Organisation name	NRSC
14	Position name	Project Director
15	Address	RRSC, NRSC ISRO, Hyderabad, Telangana-500037,India
16	Level of Classification	4
17	Classes	Level 1 with 7 classes,Level 2 with 27 classes,Level 3 with 41 classes,Level 4 with 89 classes
18	Geometry type	Polygon
19	Key words	10k, Bhuvan-Panchayat, Land Cover, SIS-DP, NRSC,ISRO

Figure 103: Metadata contd

5.5.2. FEEDBACK

Go to **Feedback module.**

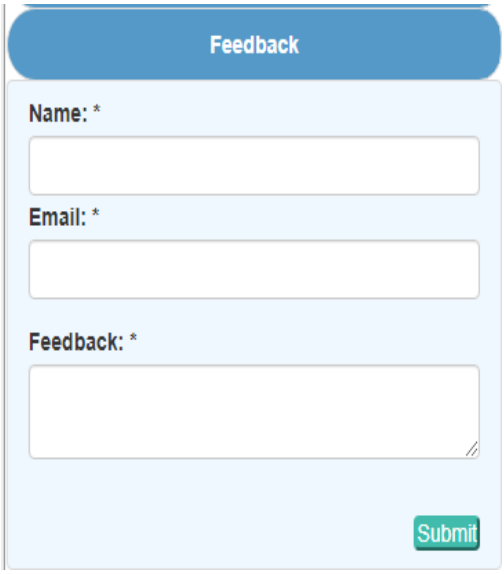


Figure 104: Feedback Module

- Fill all the required fields to leave the feedback.
- Personalisation option is also given for better understanding of the mentioned feedback -Click **Submit**, as shown in Figure 104.

5.5.3. CONTACT US

Go to Contact Us module.

Figure 105: Contact us

- Contact Information is mentioned as shown in Figure 105.