

# Geospatial Technologies for Decentralised Planning and Governance

Empowering Institutions and Stakeholders for Spatial Planning

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Project Director, SIS-DP

Chief General Manager, RC, NRSC

# National Remote Sensing Centre (NRSC)



Main campus  
at Hyderabad

**New Shadnagar Facility**  
Multi-mission Data  
Reception, Archival,  
Processing and  
Dissemination



## Regional Remote Sensing Centres

South

West

East

center



Bangalore



Jodhpur

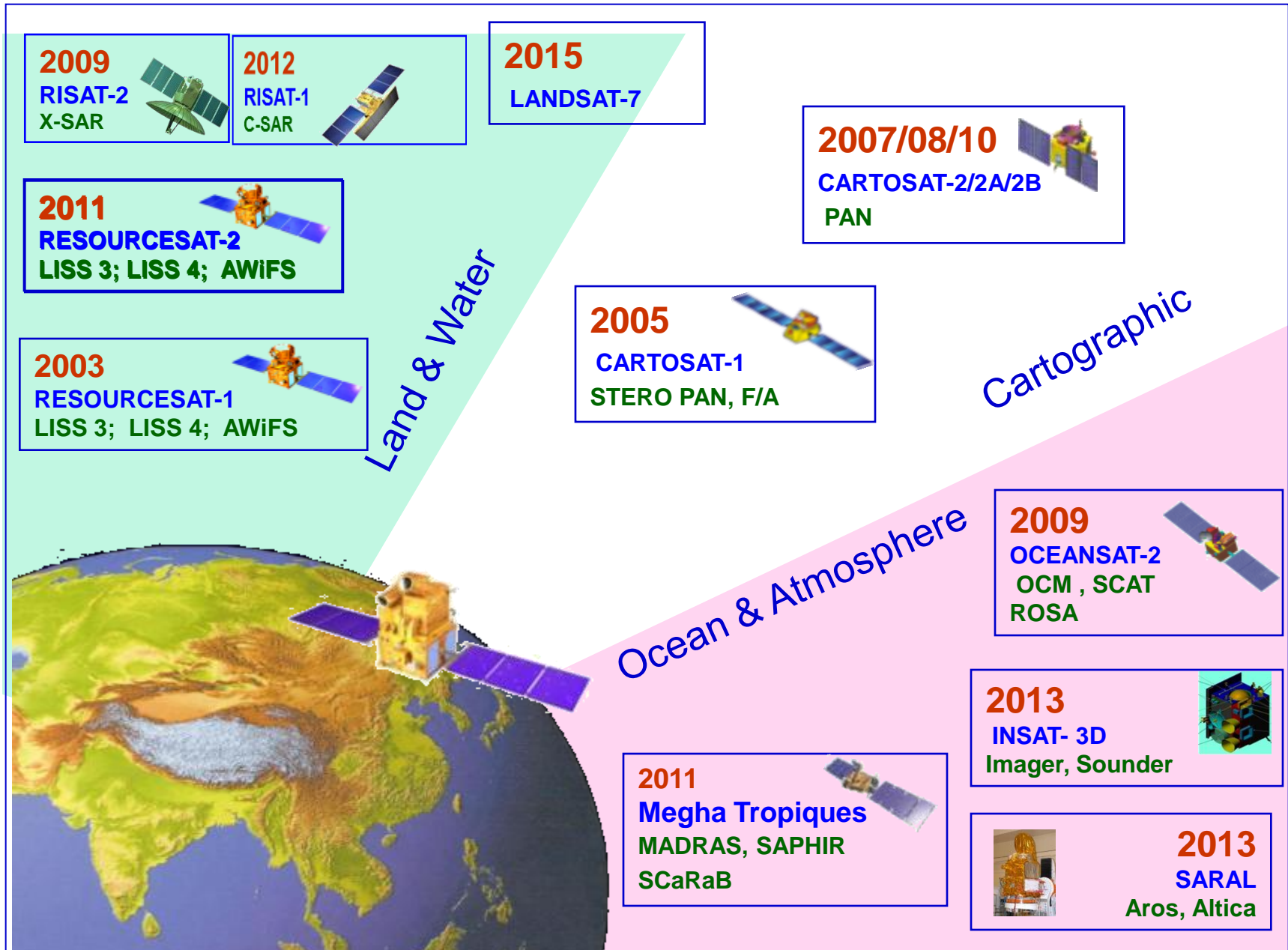


Kharagpur



Nagpur

# Currently operational EO missions



## ***Future Missions:***

**Cartosat-2C/2D/2E**

**Cartosat-3, 3A & 3B - Sub meter PAN, Mx & IR**

**RISATs: RISAT-1A & 1B, 2A**

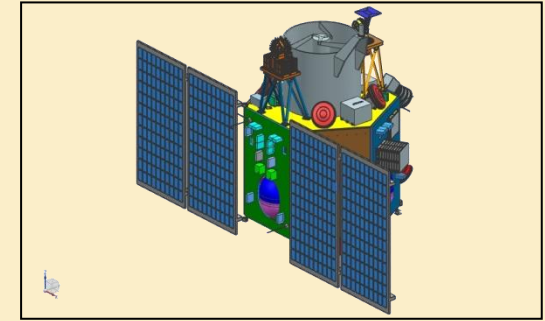
**NISAR**

**GISats : HR Missions from Geo orbit**

# ***Cartosat-2C /2D/2E***

## ➤ **Payloads :**

- ✓ **PAN** camera with a **resolution of 0.64m**
- ✓ **4 Band MX** camera with a **resolution of 2.0m**
- ✓ Experimental Event Monitoring Camera

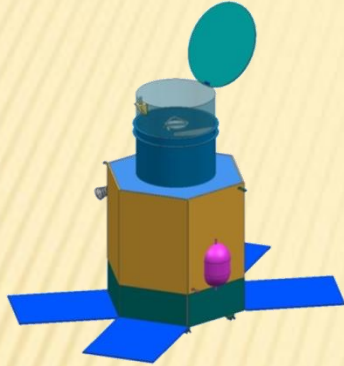


## ➤ **Data handling :**

- ✓ DWT based data compression, High Bit rate data formatter with encoder, NUC, AES Encryption
- ✓ Compression Ratio :Nominal MX 1: 4.5 and Pan 1:4.5 (selectable)
- ✓ PAN payload data rate 2342 Mbps
- ✓ MX payload data rate 1464 Mbps
- ✓ Onboard storage capacity 300GbX2nos
- ✓ Data transmission rate: X- Band 320Mbps

# ***Cartosat-3***

***Planned for Launch in 2018***



- 0.25 meters GSD in Pan
- 1 meter GSD in Mx with four bands
- Swath : ~ 16 km

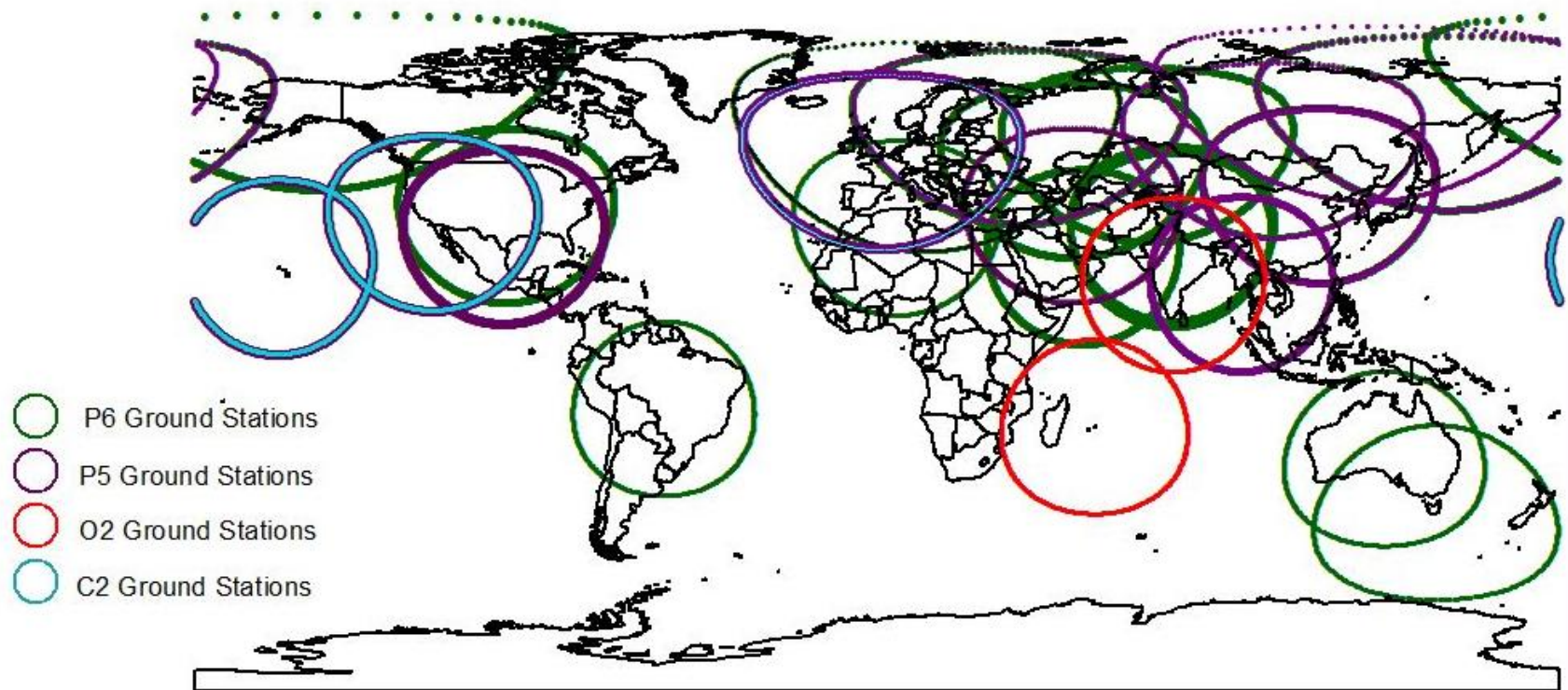
- **Advanced HR Payload with focusing mechanism**
- **High rate data Acq., compression, storage and transmission (Ka band)**
- **Fiber-optic gyro**
- **High accuracy Star trackers (~3arc-sec)**
- **The Lithium-ion batteries**
- **Control Moment Gyro technology**
- **10.30 am local time at ~450 km altitude**

# Data Reception at NRSC- history

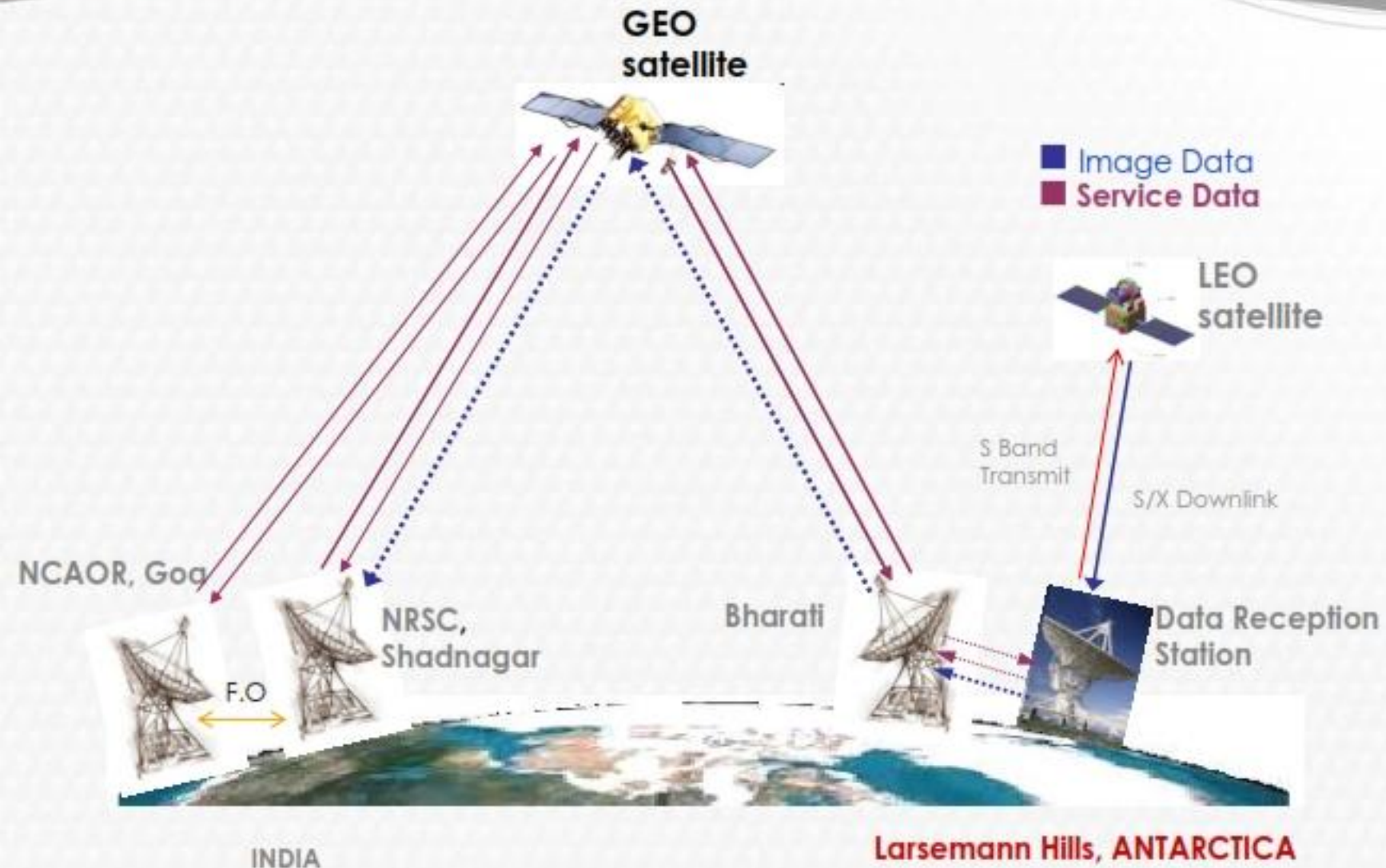
YEAR	L-1&2 MSS	L-2MSS	L-3MSS	L-4MSS	L-5MSS	L-5TM	SPOT-1	NOAA	IRS-1A	IRS-1B	ERS-1/2	IRS-P2	IRS-1C	IRS-P3	IRS-1D	IRS-P4	MODIS	IRS-P6	IRS-P5	IRS-C2	Oceansat -2	RESOUR CESAT-2	RISAT-1
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2015								2015										2015	2015	2015	2015	2015	2015

1025  
TB

# IRS INTERNATIONAL GROUND STATIONS



# INDIAN POLAR GROUND STATION AT ANTARCTICA



# Societal Applications

# Application Projects in Diversified areas

## Agriculture & Soils



- Crop Production Forecast
- Saline/ Sodic Soils mapping
- Agro-Met Services & Disaster Surveillance (pest, floods, drought)
- Horticulture development

SC-A

## Bio Resources & Environment



- Forest Cover & Type mapping
- Wetland Inventory & Conservation plans
- Biodiversity Characterization
- Desertification Status mapping
- Coastal, Mangroves, Coral related
- Snow & Glacier studies

SC-B

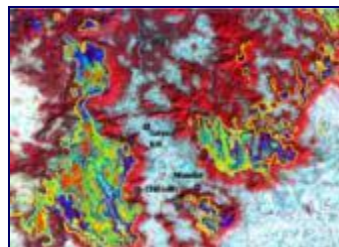
## Cartography



- GCP Library for IRS Data correction
- Large Scale Mapping
- Topo-map updation - Satellite-based
- Digital Elevation Model (Carto-DEM)
- Cadastral Level mapping

SC-C

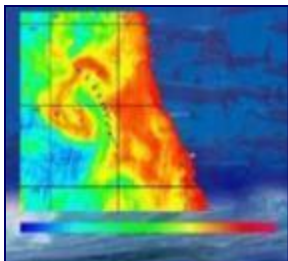
## Geology & Mineral Resources



- Landslide Hazard Zonation
- Mineral/ Oil Exploration, Mining Areas,
- Seismo-tectonic Studies
- Engineering & Geo-Environmental studies

SC-G

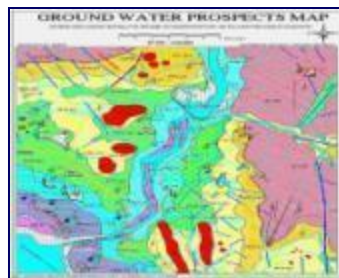
## Ocean and Meteorology



- Ocean Primary Productivity
- Ocean State Forecast (OSF)
- Storm Surge Modeling
- Regional Weather prediction
- Tropical Cyclones & Mesoscale studies
- Extended Range Monsoon Prediction

SC-O&M

## Rural Development

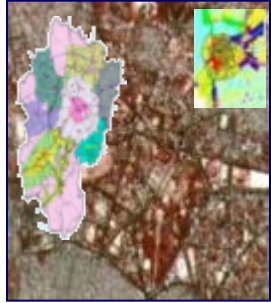


- National Drinking Water Mission
- Wastelands Mapping/ Updation
- Watershed Development & Monitoring
- Land Records Modernization Plan

SC- R

# Application Projects in Diversified areas

## Urban Development



- Urban Sprawl Mapping of Major Cities
- Master/ Structure Plans
- Comprehensive Dev. Plans (CDP) of selected Cities/ Towns
- Base Map generation for Towns
- National Urban Information System

**SC-U**

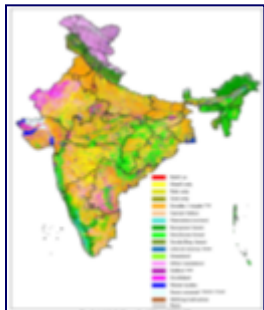
## Water Resources



- Irrigation Infrastructure assessment
- Water Resources Information System
- Command Area/ Irrigation Performance Evaluation
- Snow-melt Run-off Estimation
- Reservoir Capacity Evaluation
- Site Selection for Hydro-Power

**SC-W**

## NR Census



- Periodic Inventory of Natural Resources under NR Census Programme:
- Land use/ Land Cover, Soil, Geomorphology, Wetland, Land degradation, Snow & Glaciers, Vegetation

**NRC**

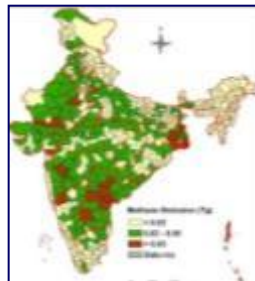
## Disaster Management Support



- Operationally addressing various natural disasters like Flood, Cyclone, Drought, Landslide, Earthquake and Forest Fire
- R&D Studies on Early warning Systems, Decision Support Tools

**DMS**

## Climate Change Studies



- Mapping the indicators, Monitoring the agents and Modelling the Impact
- Characterisation of climate variables (Land, Atmosphere & Oceans)
- Methane Emission, Timberline study, LU LC Change dynamics, etc.

**NICES**



# **SMARAC *Applications***

## **GeoSpatial Decision Support System for Ease of Doing Business**

Inventory & Site Mng. Plans for Heritage Sites and Monuments of National Importance



**Total Monuments Nos: 3658    Inventory :3227 (88%)**

**Site Mng. Plans:1900 (52%)    Validation of Mng. Plans: 2.5%**



# SMARAC Applications

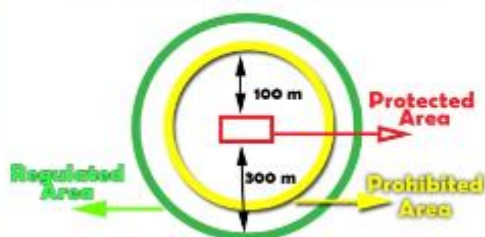
## GeoSpatial Decision Support System for Ease of Doing Business

### G2G Application – Smart SMARAC App. For Site Management Plan

Satellite Data



Site Management Plan



Site Management Zones

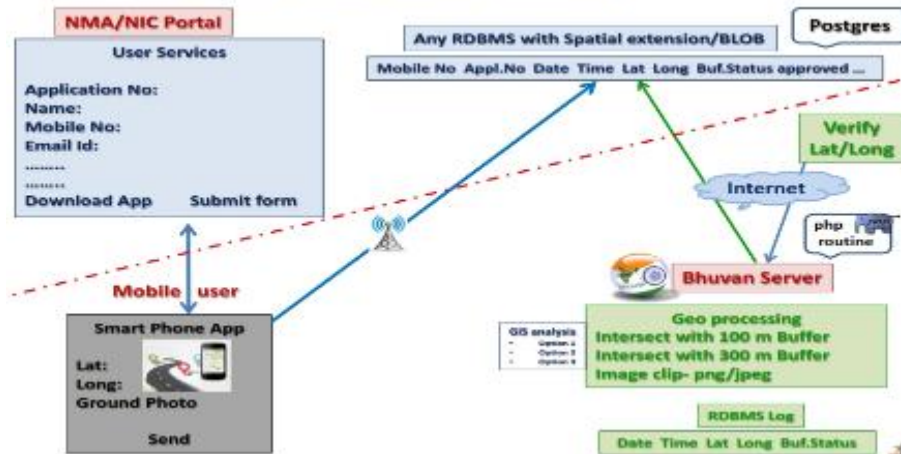


3D Model



### G2C Application – Smart Citizen App.

Online Citizen request processing



Sample Outputs

PROXIMITY ANALYSIS

Application No:

Mobile No:

Survey Date:

Survey Time:

Lat:

Long:

Details about Surveyed Point

Name of the Monument: Group of temples on the north side of the lake

Within a distance of (Meters): 100

Monument number: CH0005

Locality: Badami

Country: Bagmati

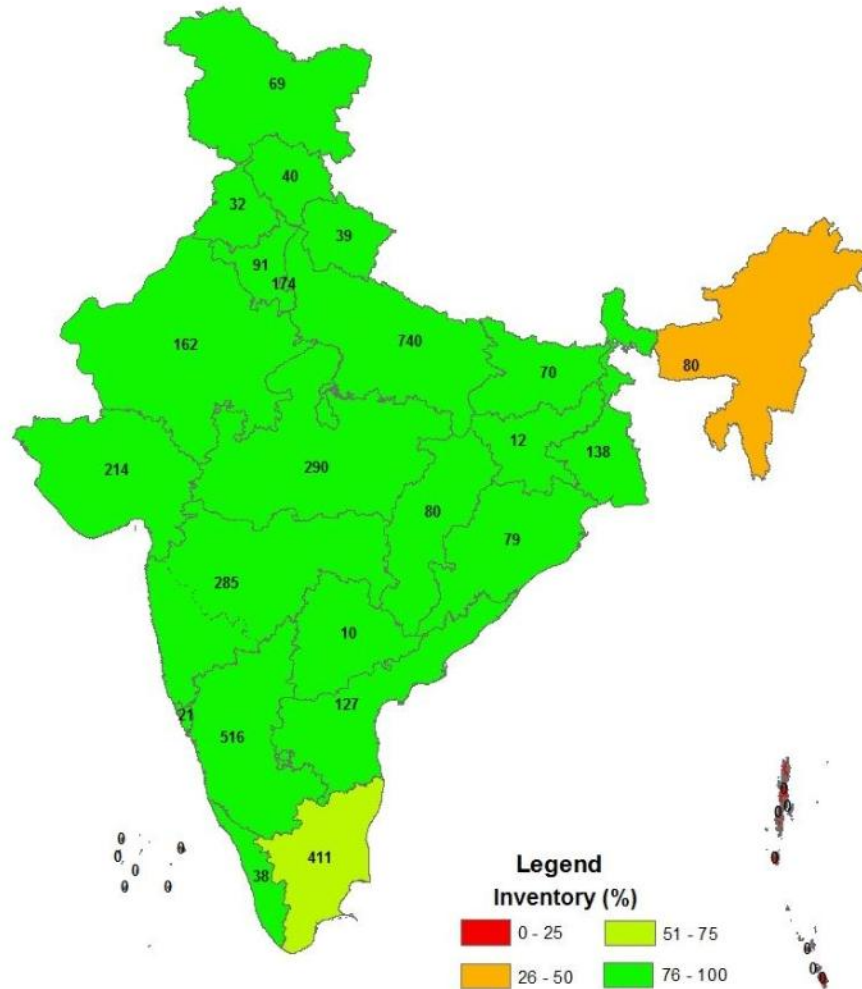
Proximity Analysis

Map Display

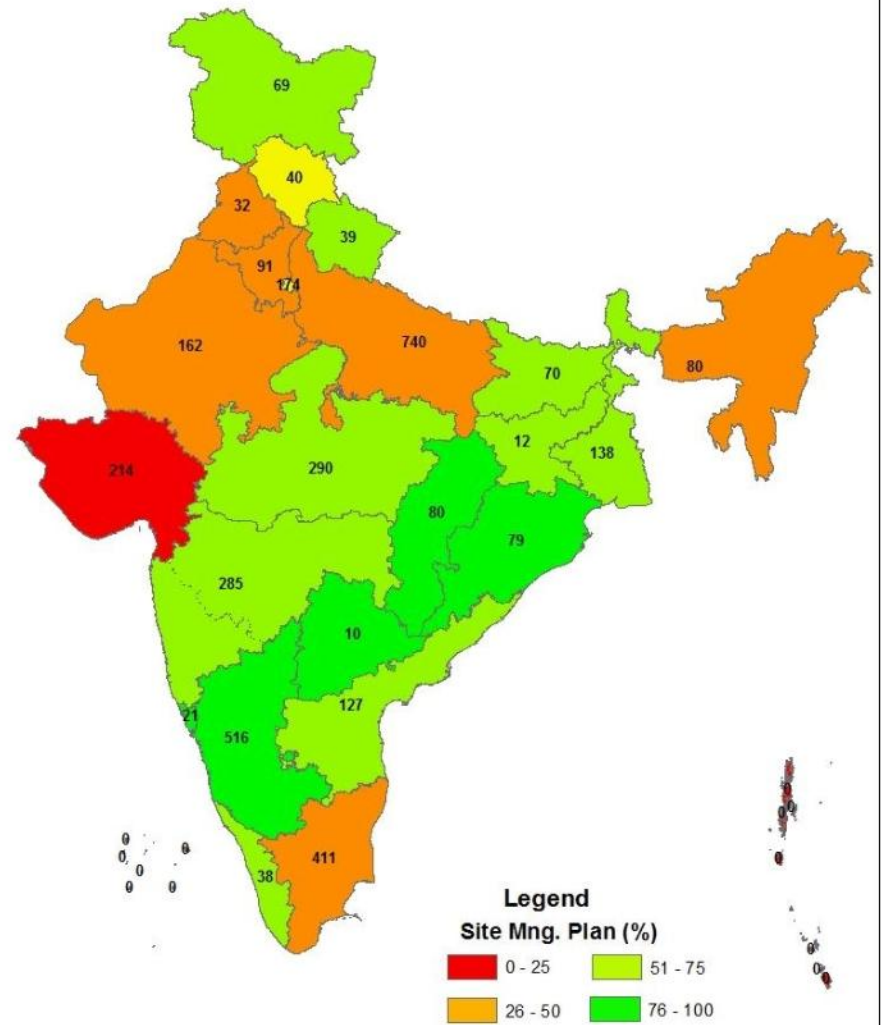


# State wise Breakup of Work accomplished

Status of All India Inventory of Sites & Monuments of National Importance



All India Status of Site Mng. Plan Preparation for Monuments of National Importance



# Department of Posts

## Bhuvan Portal – Department of Posts



- Geo-spatial Inventory of Post offices
- Monitoring Postal delivery services & Postal Van Track and beat map refinement
- Total number of Post-offices mapped: 1,33,628 (08-01-16)

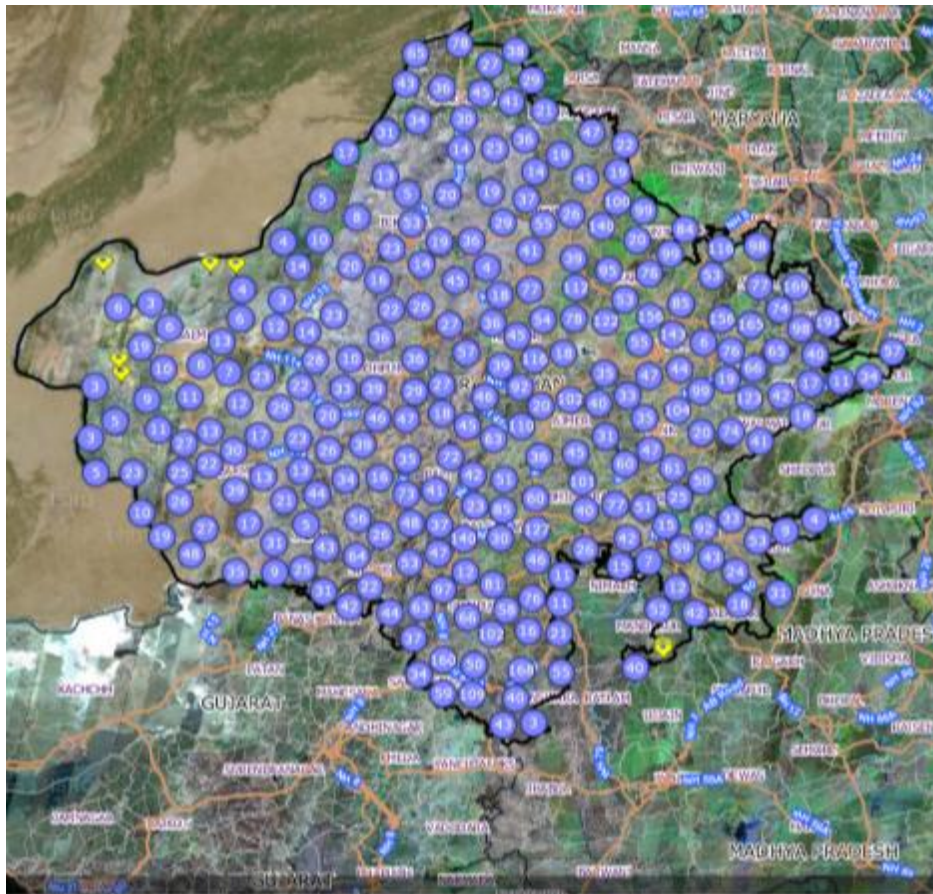
# Department of Posts (Mo C & IT) – 2/7

## Mobile Application to collect the data



# Department of Posts (Mo C & IT) – 4/7

## Inventory of Post Office Locations and Attributes



**Rajasthan – 11,429 (08-01-16)**



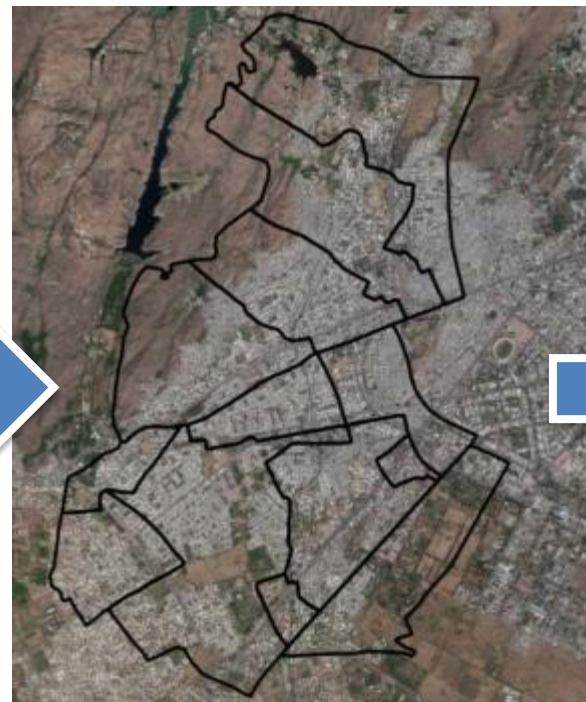
**Karnataka – 10,006 (08-01-16)**

# Department of Posts (Mo C & IT) – 5/7

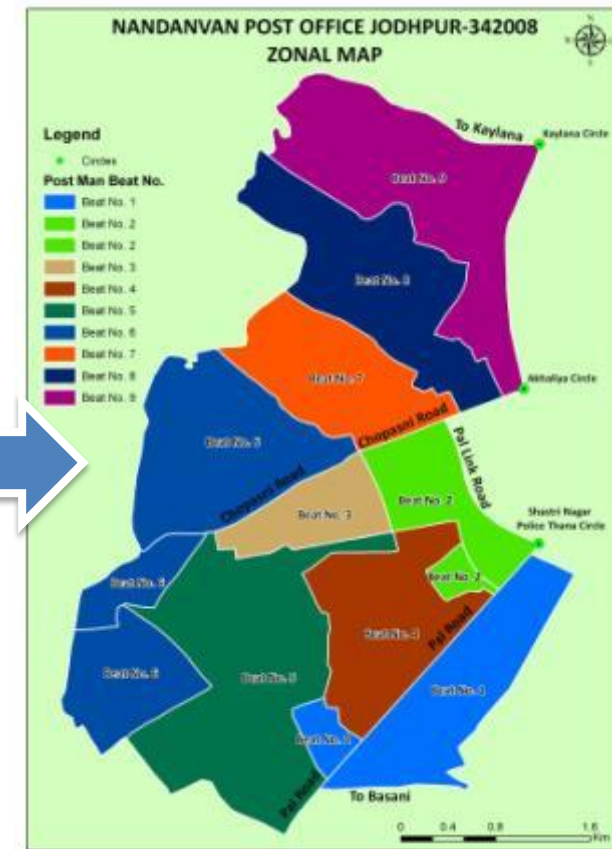
## Refinement of beat-map sketches using HRSI/Infrastructure details



Beat Boundaries sketch



Refinement using HRSI/Maps



Final GIS Map of Beat areas

# Department of Posts

## *Way Forward*

- **Completion of Post Office Inventory**
- **Development/Testing of mobile app for post man/van delivery services**
- **Beat map Refinement – Rural**
  - Integration of village boundaries
  - Procurement of details
  - Finalization of beat boundaries
  - Validation and Updation
- **Beat map Refinement – Urban**
  - Refinement of beat boundaries using HRSI/Road layers
  - Pilot study completed in Jodhpur town
  - Capacity Building of Postal department officials

# National Level Inventory and Monitoring of Plantations

## Horticultural Plantations (CHAMAN)

### Objectives:

- Area assessment and production forecasting of major horticultural crops in selected districts in peninsular India
- Geospatial Applications for Horticultural Development and Management Planning
- Detailed scientific field level studies for developing technology for crop identification, yield modelling and disease assessment

**User Agency:** MNCFC, Ministry of agriculture

**Satellite data** Resourcesat LISS-IV and Cartosat-1

**Plantations Type** Mango, Banana and citrus

**Study Area:** The Project at national level covers 3 fruit crops(mango, banana, citrus), 3 vegetable crops(potato, onion and tomato) and 1 spice crop(chillies) in about 100+ districts of 12 states

**Future Scope** Based on the results study will be extended to National level.

**Deliverables** Horticultural crop map  
District-wise crop acreage estimation.

## Commercial Plantations

### Objectives:

- Inventory of commercial plantations for generation plantation map of the country
- Site-suitability analysis for extension of plantations for expansion of area under commercial plantation crops
- Generation of MIS package and Interface with Bhuvan geoportal for easy accessibility of information

**User Agency** Ministry of Commerce

**Satellite data** Resourcesat LISS-IV and Cartosat-1

**Plantations Type** Rubber, Coffee and Tea

**Study Area:** **Coffee:** (Karnataka, Kerala & Tamilnadu).  
**Tea** ( Phase-1 in Assam & West Bengal completed. Phase-2 initiated for Karnataka Tamilnadu and Kerala)  
**Rubber** ( Tripura completed)

**Future Scope** Based on the results study will be extended to National level.

**Deliverables** Taluq-wise crop acreage estimates  
MIS package for visualization and querying

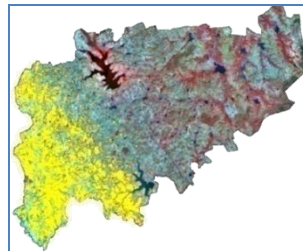
Citrus



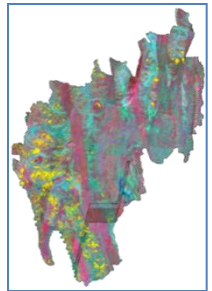
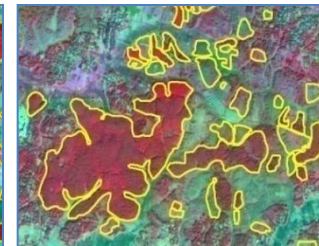
Banana



Coffee



Rubber



# Space Based Information Support for Decentralized Planning (SIS-DP)

## Goal:

**Empowering the Panchayati Raj Institutions (PRIs) and the Stakeholders with Space Based Information Support for Decentralized Planning and Governance in the country.**

### Objective 1

To generate and provide '**Satellite Image Maps**' for the entire country as base for decentralized planning.

*(High resolution, true color, Ortho-rectified, merged satellite data products)*

### Objective 2

To prepare **thematic & base layers on 1:10000** scale using 'Satellite Image Maps', slope classes maps and Cadastral maps vectorization & geo-referencing

### Objective 3

To **create databank**: comprising of 'Satellite Image Maps', thematic and base maps, slope class maps; and organize census data, climate data, cadastral maps, stakeholder's data and available legacy thematic & base data on GIS platform.

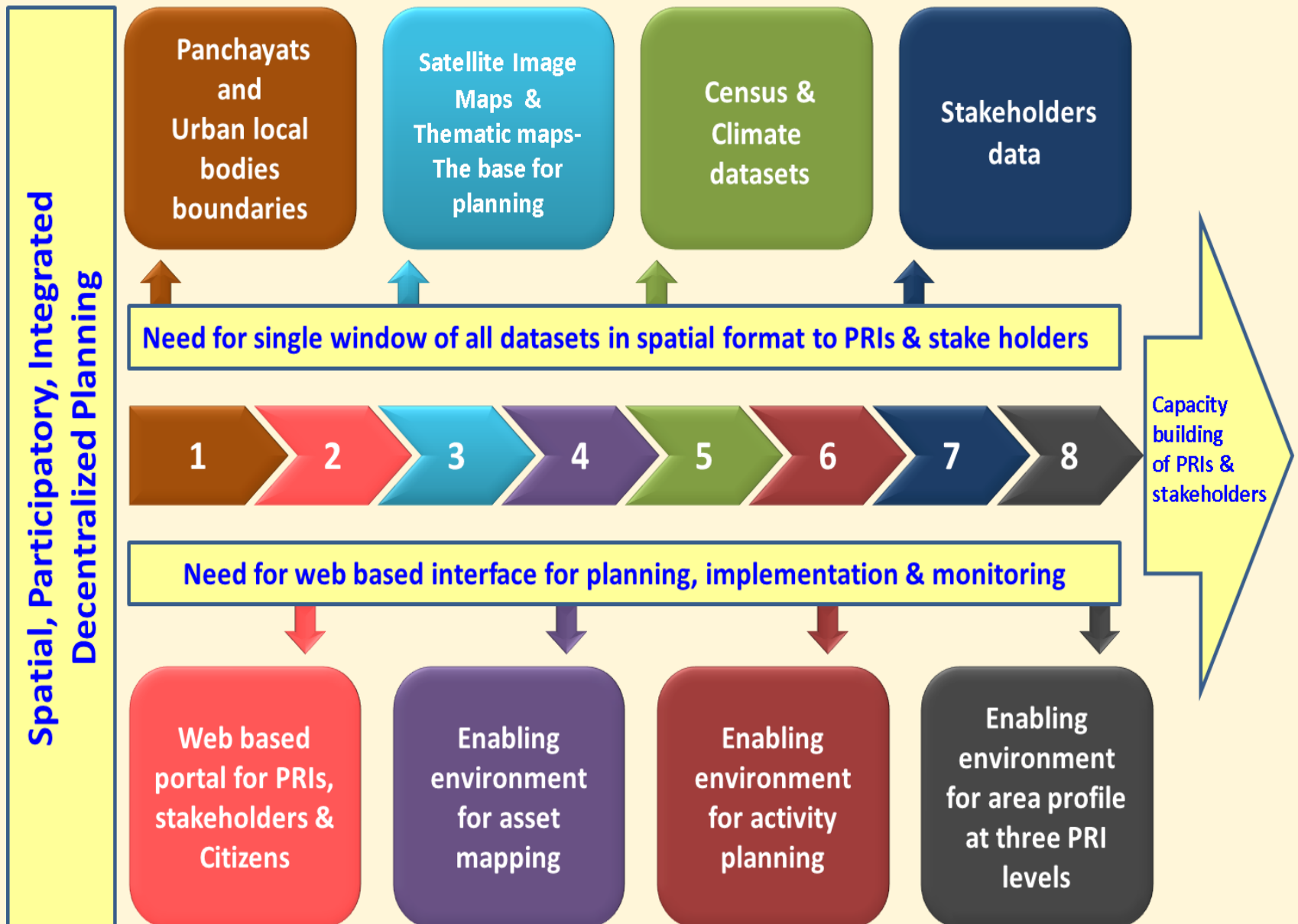
### Objective 4

To develop comprehensive **web portal** as per PRIs & stakeholders needs for decentralized planning, governance, outreach to the citizens and data dissemination.

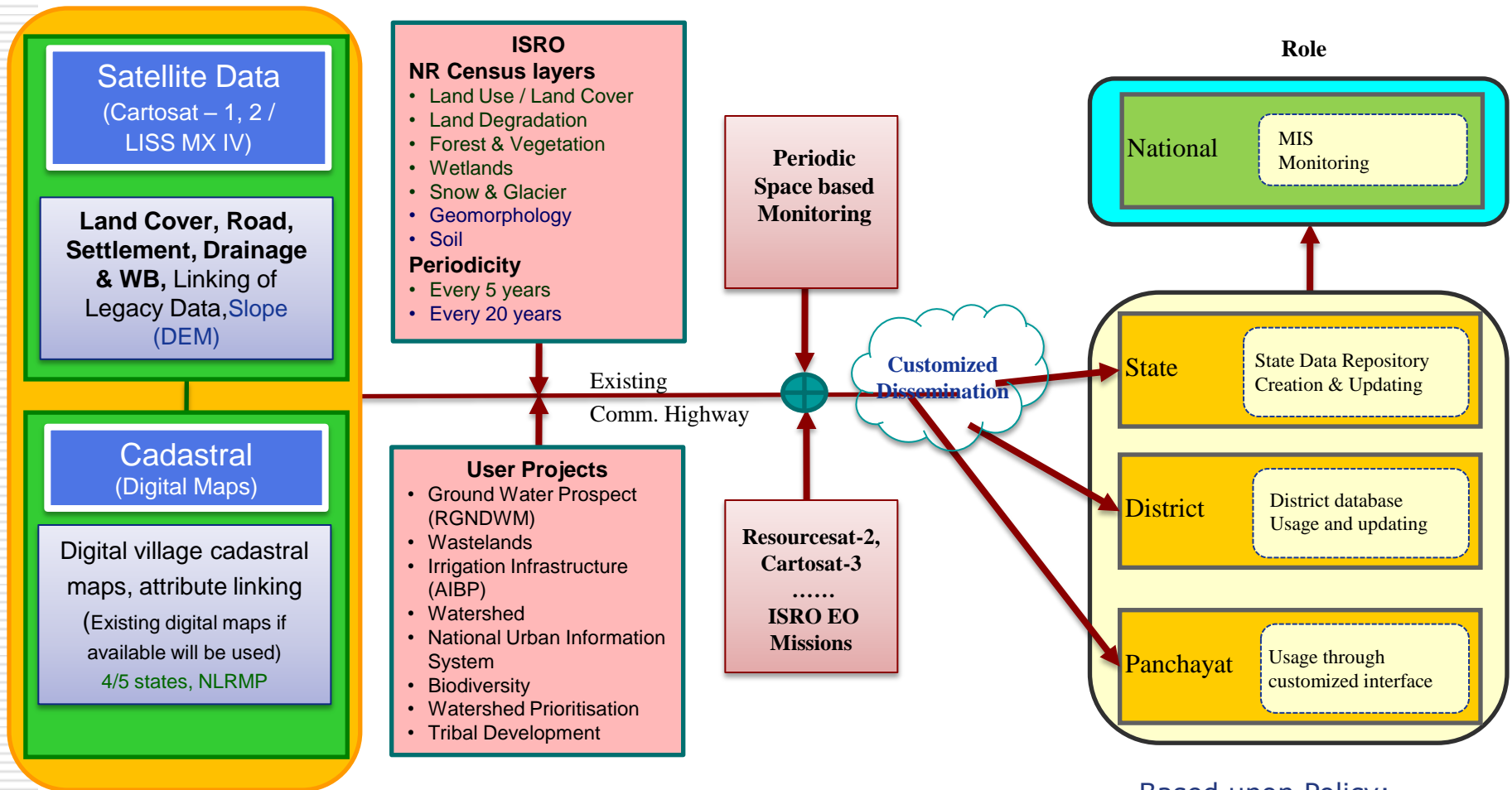
### Objective 5

To **build Capacity** of PRIs & stakeholders for the use of Space Based Information in Decentralized planning and governance.

# THE CURRENT REQUIREMENTS: DATA & ENABLING ENVIRONMENT



# SIS- DP



Based upon Policy:  
G2G, G2C

New  
(1:10K)

Existing/ongoing  
(1:50K)

Assured Continuity

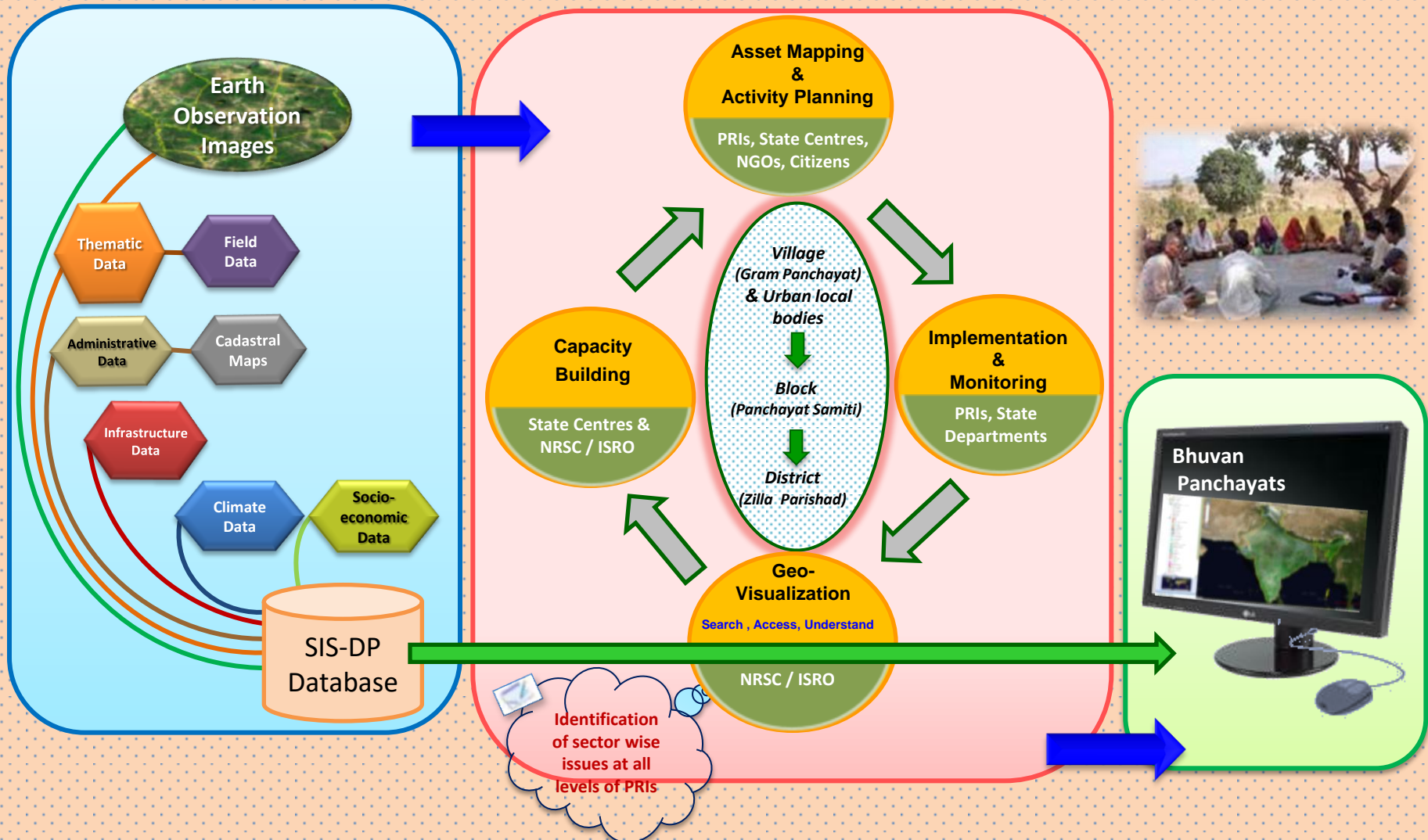
New

# SIS-DP Conceptual Framework

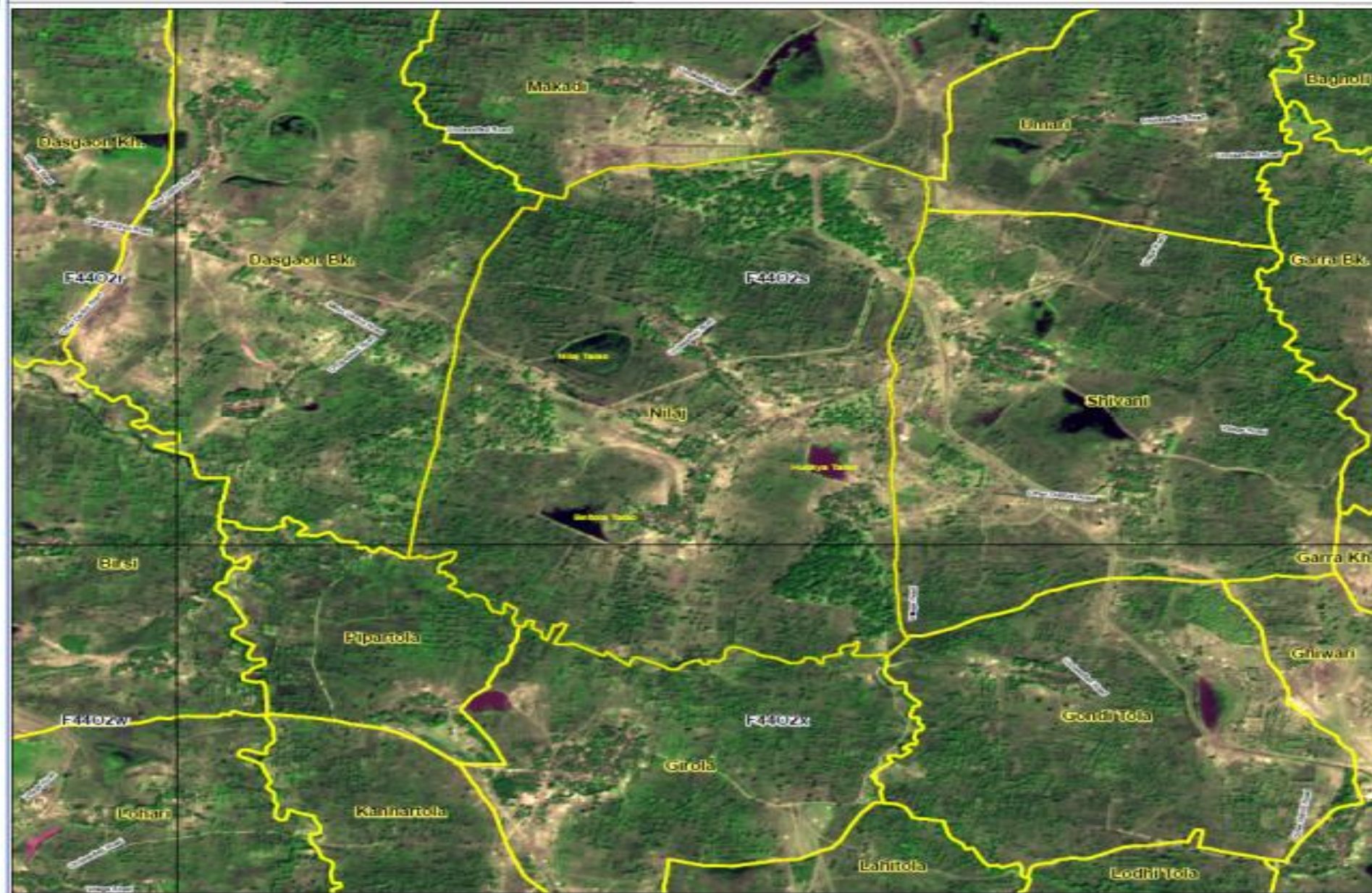
**1. Database Generation and Organization**  
Spatial & non spatial data  
NRSC & States Centres / partners

**2. Enabling Environment for PRI's**  
Web Based System for PRI's – Four modules  
NRSC / ISRO

**3. Outreach**  
PRI's & Citizens  
NRSC & States Centres /partners



# Satellite Image of Gram Panchayat - NILAJ

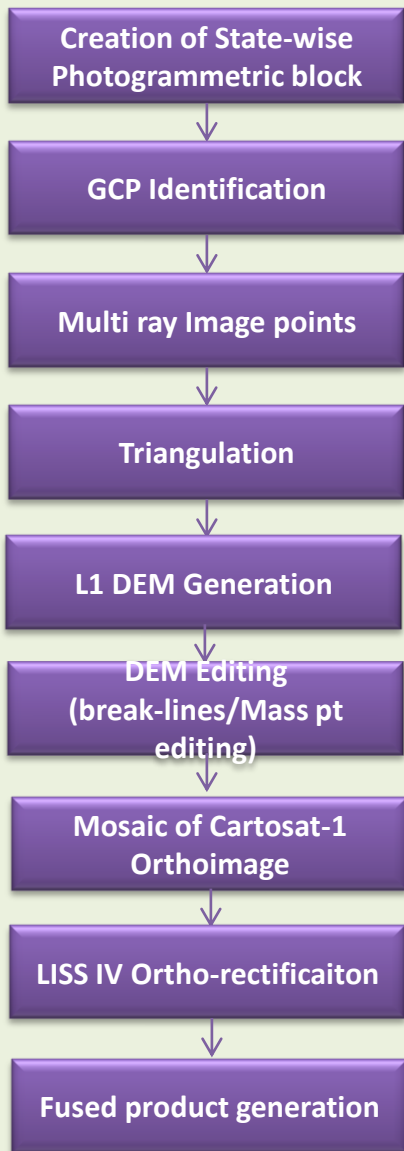


Satellite Data Information:

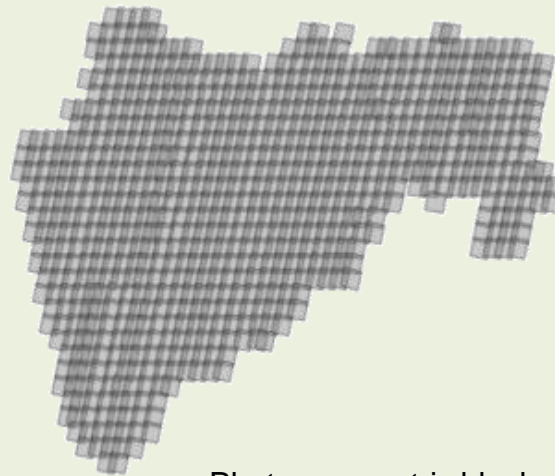
The satellite image is an ortho-rectified geocoded natural color product generated by process of merging CARTOSAT-1 PAN (2.5m) and RESOURCESAT-1 LISS IV(5.8m)

# STATE-WISE DEM / ORTHO-IMAGE GENERATION – METHODOLOGY & STATUS

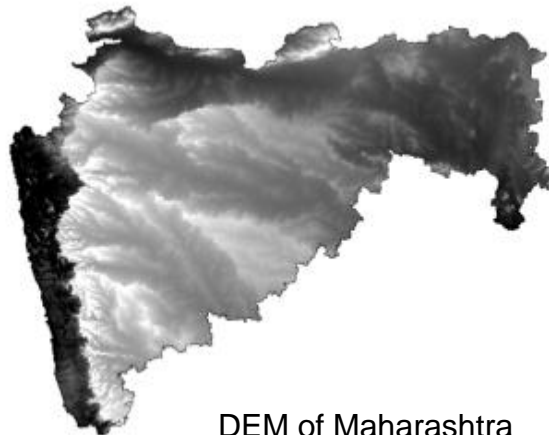
## Methodology



## DEM Generation



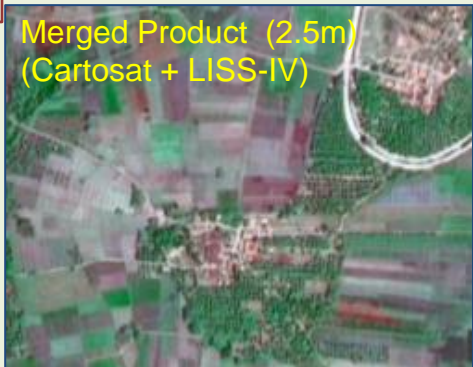
Photogrammetric block  
Maharashtra



DEM of Maharashtra

CartoSAT-1 stereo pairs > 11,000  
ResourceSAT-1 scenes > 12,000  
ResourceSAT-2 scenes > 500

## Satellite Data Products



Cartosat Ortho (2.5m)

LISS-IV Ortho (5.8m)

Merged Product (2.5m)  
(Cartosat + LISS-IV)

## STATUS OF DATA PROCESSING

No of states / UT	% completed
States (29) / UT's (7)	100



भारत  
Panchayats

National Remote Sensing Centre

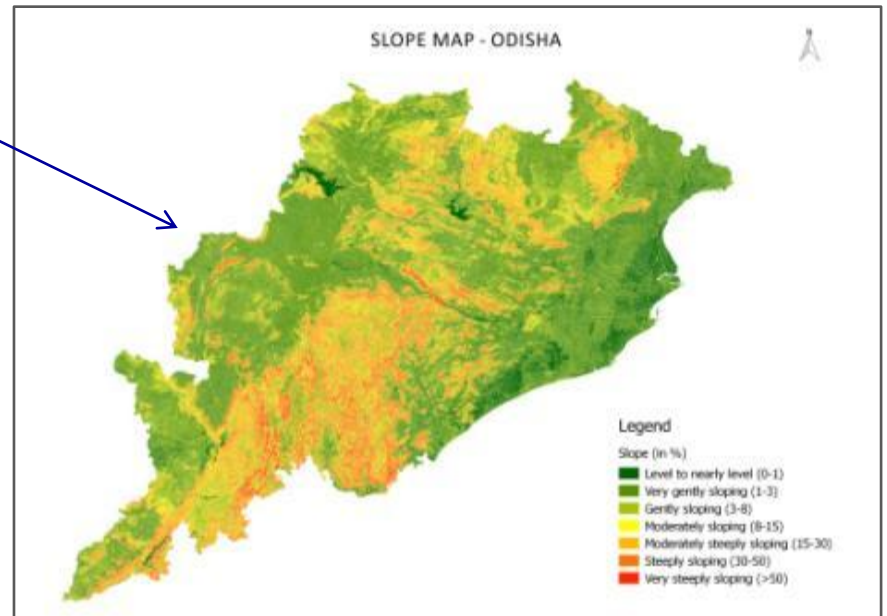
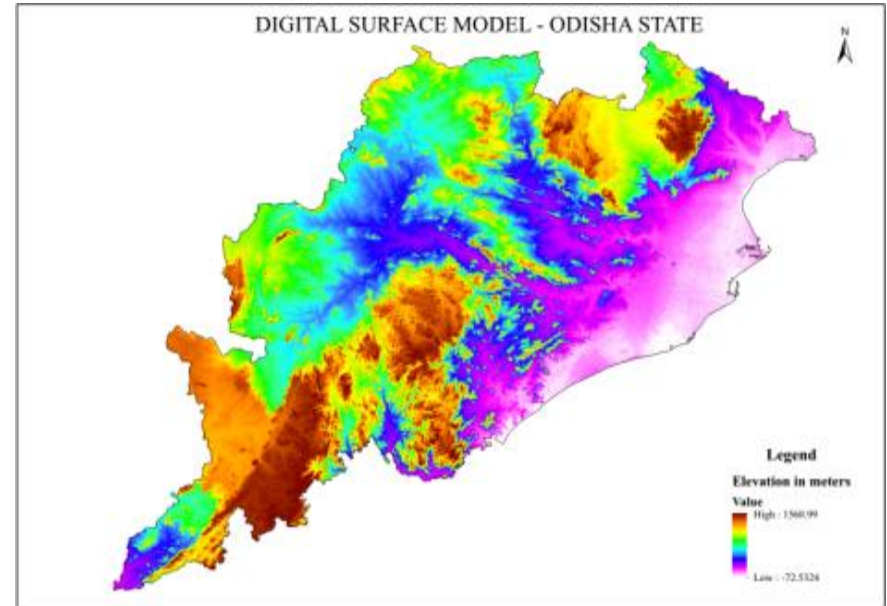
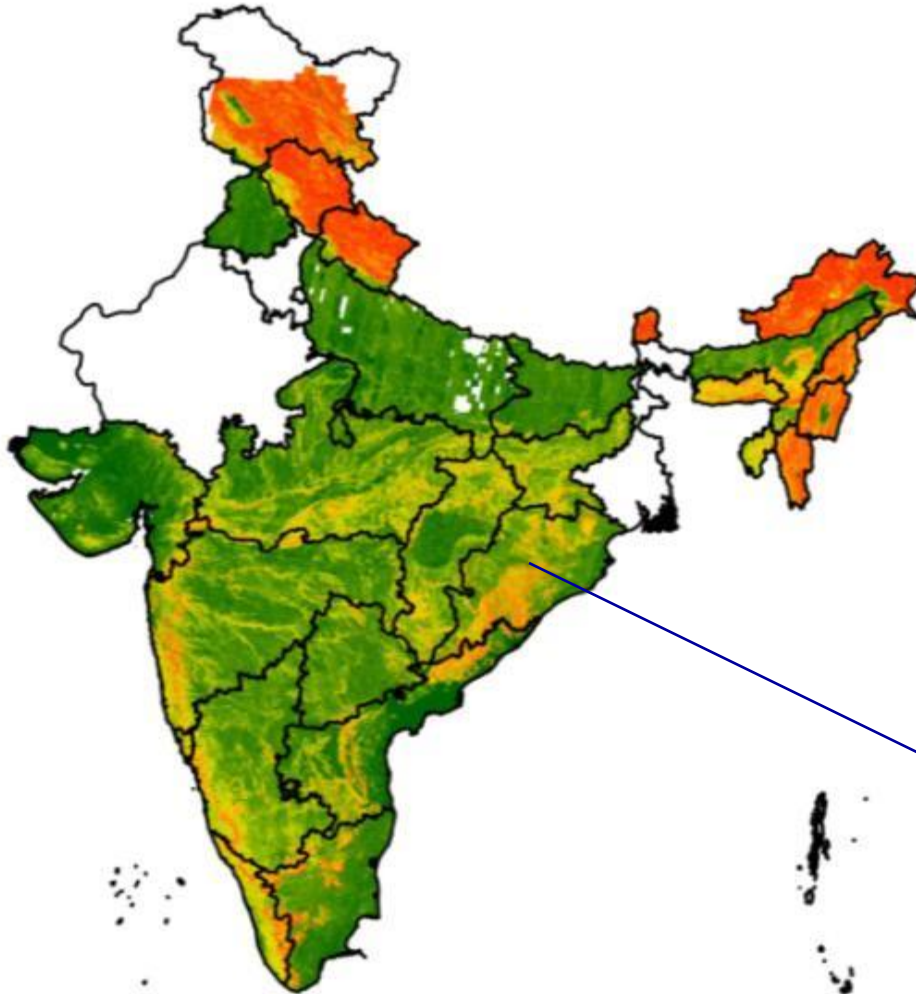
# Status of archival of Thematic Mapping at 1:10k



S.No.	State	No. of Districts	LULC	Road	Railway	Drainage
1	Andhra Pradesh	13	13	13	13	13
2	Arunachal Pradesh	17	17	17	NA	12
3	Assam	27	27	27	27	27
4	Bihar	38	38	38	38	38
5	Chattisgarh	27	22	19	14	27
6	Gujarat	33	33	33	33	33
7	Goa	2	0	2	2	2
8	Haryana	21	21	21	19	21
9	Himachal Pradesh	12	9	4	4	4
10	Jharkhand	24	11	24	24	0
11	Jammu and Kashmir	22	13	13	6	8
12	Karnataka	30	30	30	30	30
13	Kerala	14	14	14	11	11
14	Maharashtra	36	35	35	35	24
15	Madhya Pradesh	51	51	51	51	51
16	Meghalaya	11	11	11	NA	11
17	Mizoram	8	8	8	NA	8
18	Manipur	9	9	9	NA	9
19	Odisha	30	30	30	30	30
20	Punjab	22	22	22	22	22
21	Rajasthan	33	32	32	29	32
22	Sikkim	4	4	4	NA	4
23	Tripura	8	0	0	0	0
24	Nagaland	11	0	11	NA	11
25	Tamilnadu	32	32	32	32	32
26	Telangana	10	10	10	10	10
27	Uttar Pradesh	75	75	75	75	75
28	Uttarakhand	13	13	13	5	13
29	West Bengal	20	20	20	20	20
30	Chandigarh	1	1	1	1	1
31	Delhi	11	11	11	11	11
32	Dadar & Nagar Haveli	1	1	1	NA	1
33	Daman & Diu	2	2	2	NA	2
34	Puducherry	4	4	4	3	4
35	Lakshdweep	1	1	0	NA	0
36	Andaman Nicobar	3	3	0	NA	0
	<b>Total</b>	<b>676</b>	<b>643</b> (95%)	<b>637</b> (94%)	<b>598</b> (90%)	<b>629</b> (93%)



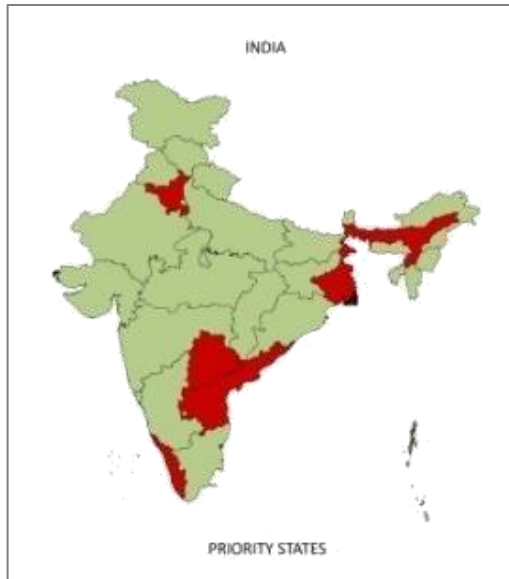
# SLOPE CATEGORY – ARCHIVAL STATUS



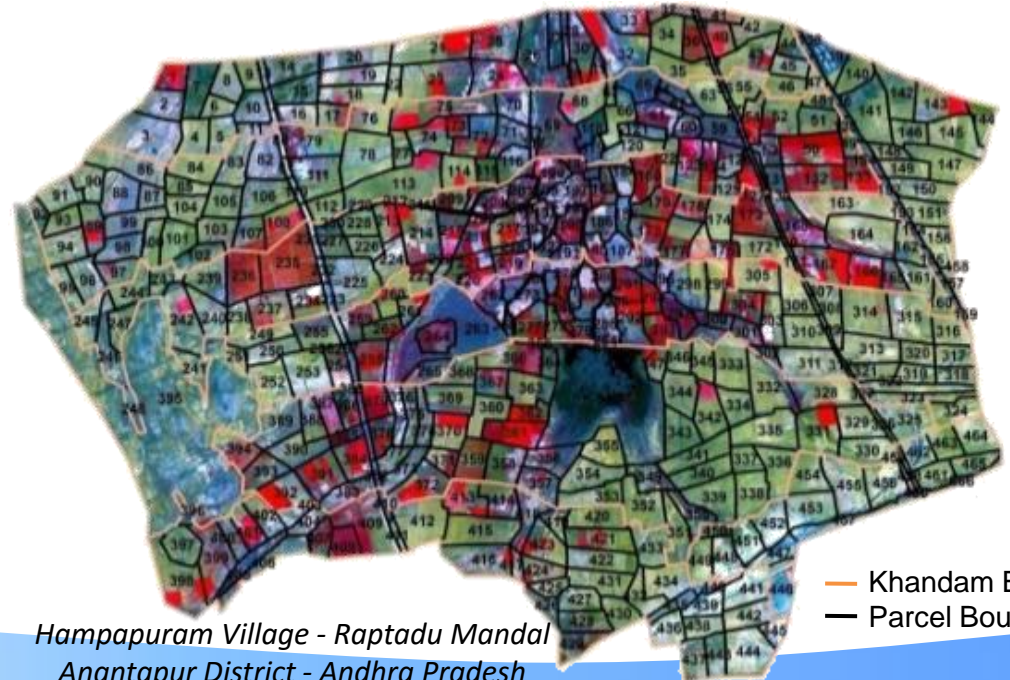
## Legend (In %)

Level to nearly level (0-1)	Moderately steeply sloping (15-30)
Very gently sloping (1-3)	Steeply sloping (30-50)
Gently sloping (3-8)	Very steeply sloping (>50)
Moderately sloping (8-15)	

# CADASTRAL OVERLAY STATUS



STATE	Number of Villages – Total	Number of Villages – Overlaid	Percentage of Villages
Andhra Pradesh	17385	12580	72.36
Assam	21225	18409	86.73
Haryana	7094	7030	99.09
Kerala	1593	1092	68.55
Telangana	10932	9350	85.53
West Bengal	4028 / 40203	2500	62.06
<b>TOTAL</b>	<b>62229</b>	<b>50961</b>	<b>81.89</b>



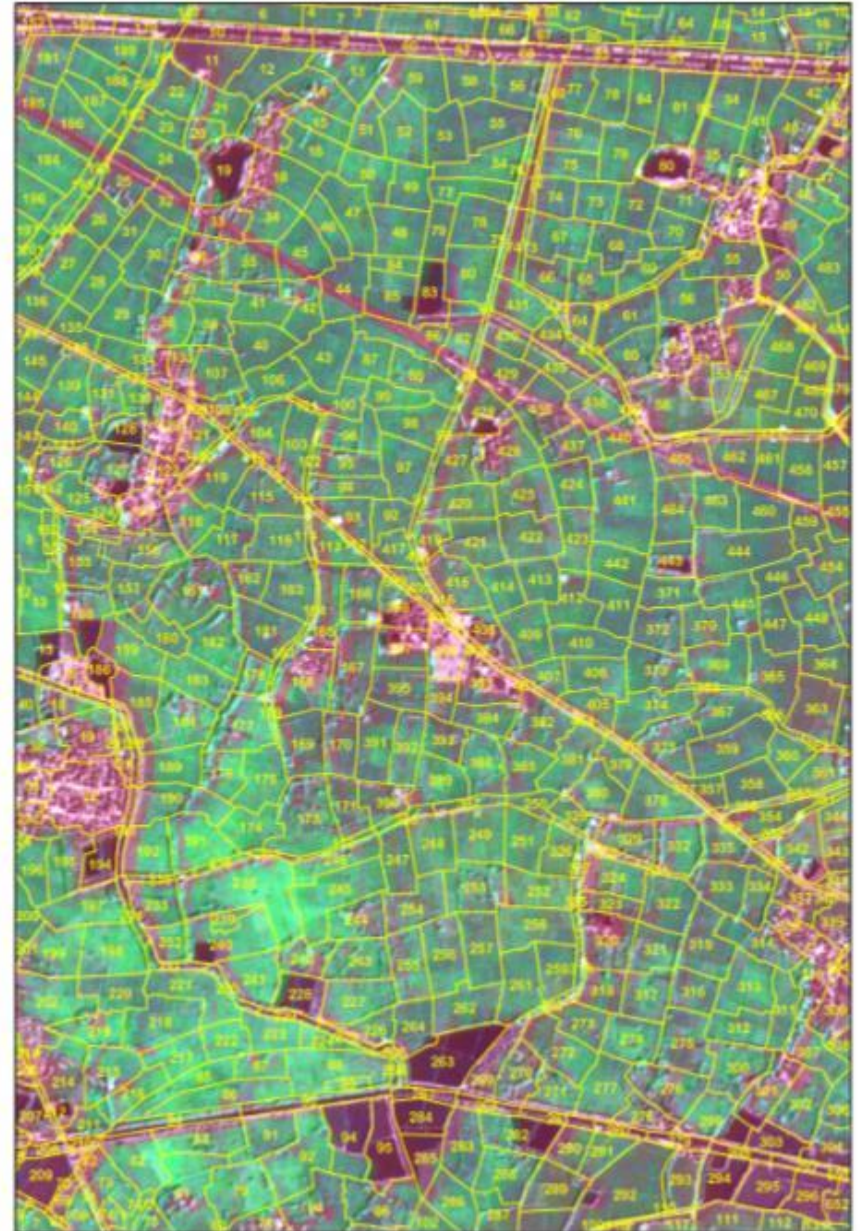
Hampapuram Village - Raptadu Mandal  
Anantapur District - Andhra Pradesh

# CADASTRAL OVERLAY – Andhra Pradesh

Cadastral Overlay - Andhra Pradesh Krishna District



Cadastral Overlay - Andhra Pradesh East Godavari District



# CADASTRAL OVERLAY – Telangana

Cadastral Overlay - Telangana Warangal District

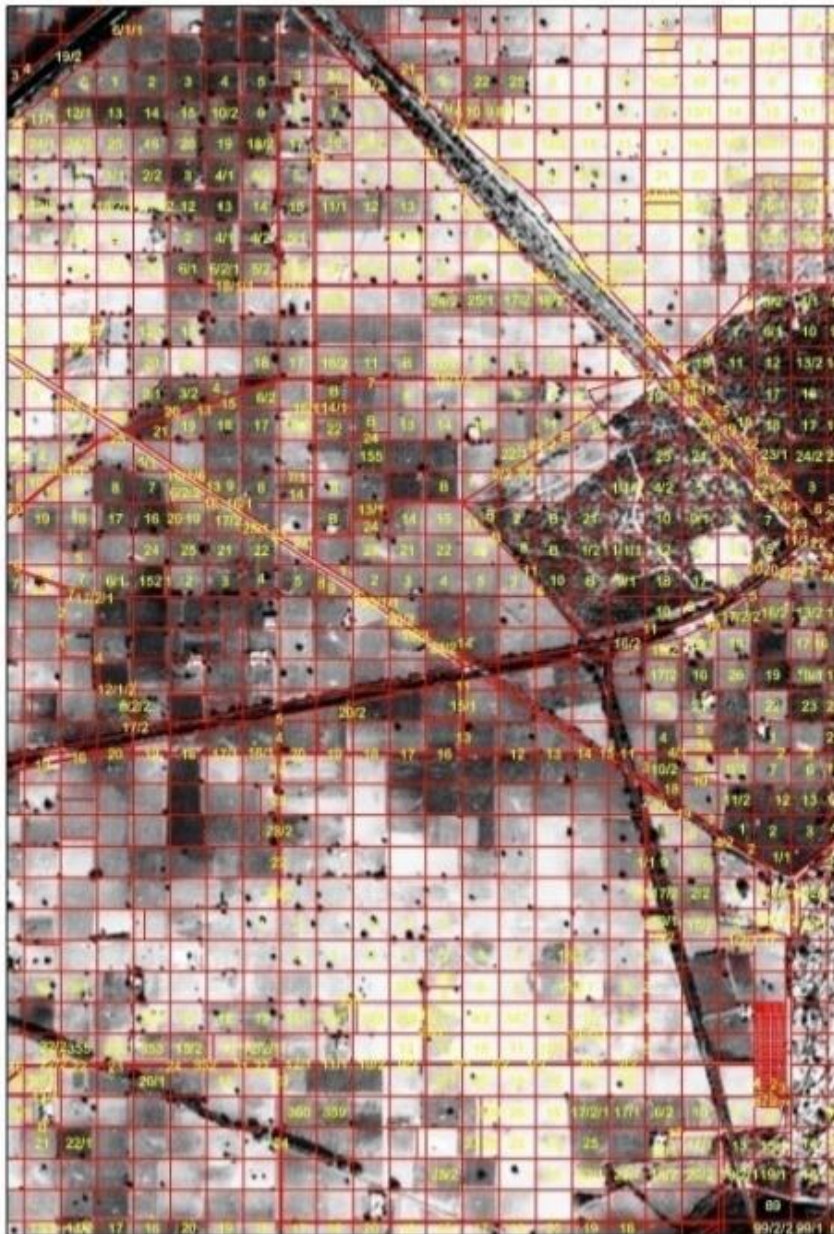


Cadastral Overlay - Telangana Adilabad District

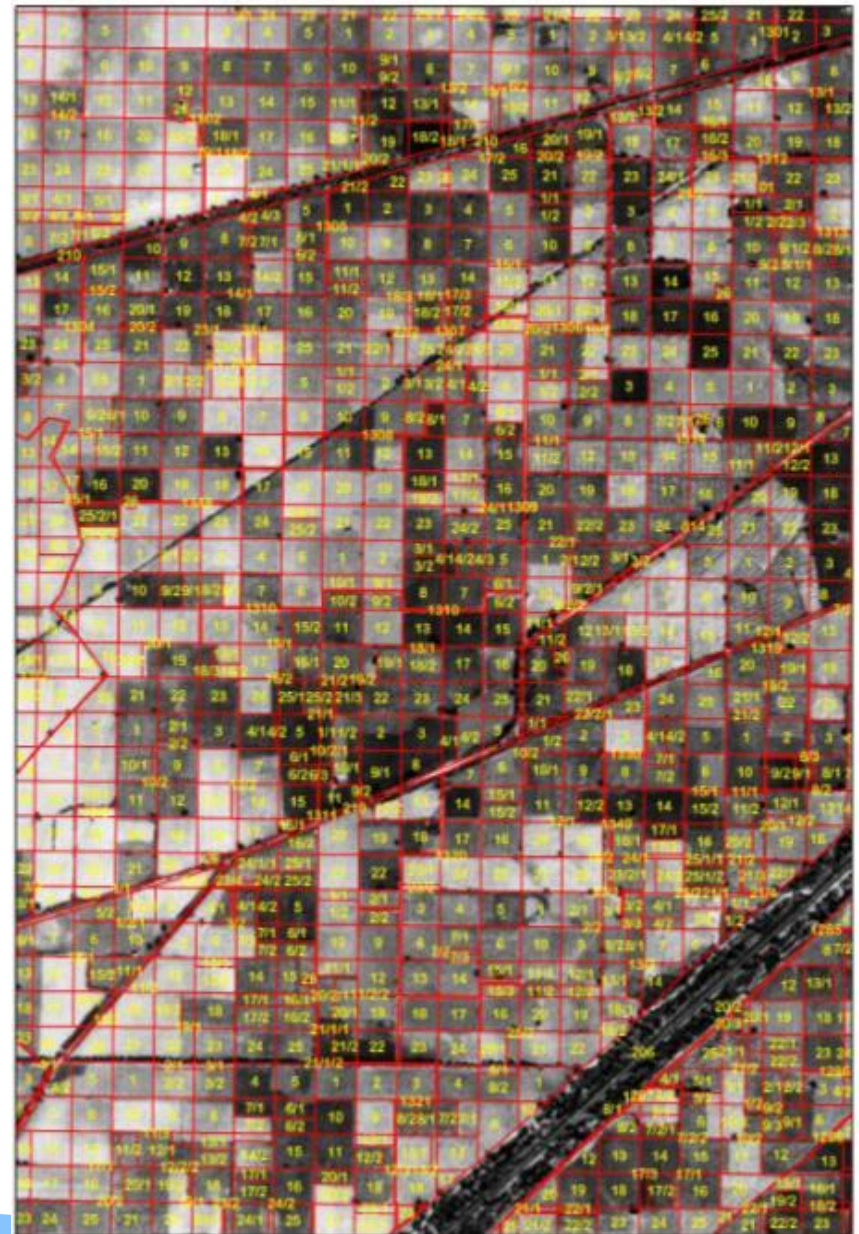


# CADASTRAL OVERLAY – Haryana

Cadastral Overlay - Haryana : Fatehabad District



Cadastral Overlay - Haryana : Gurgaon District

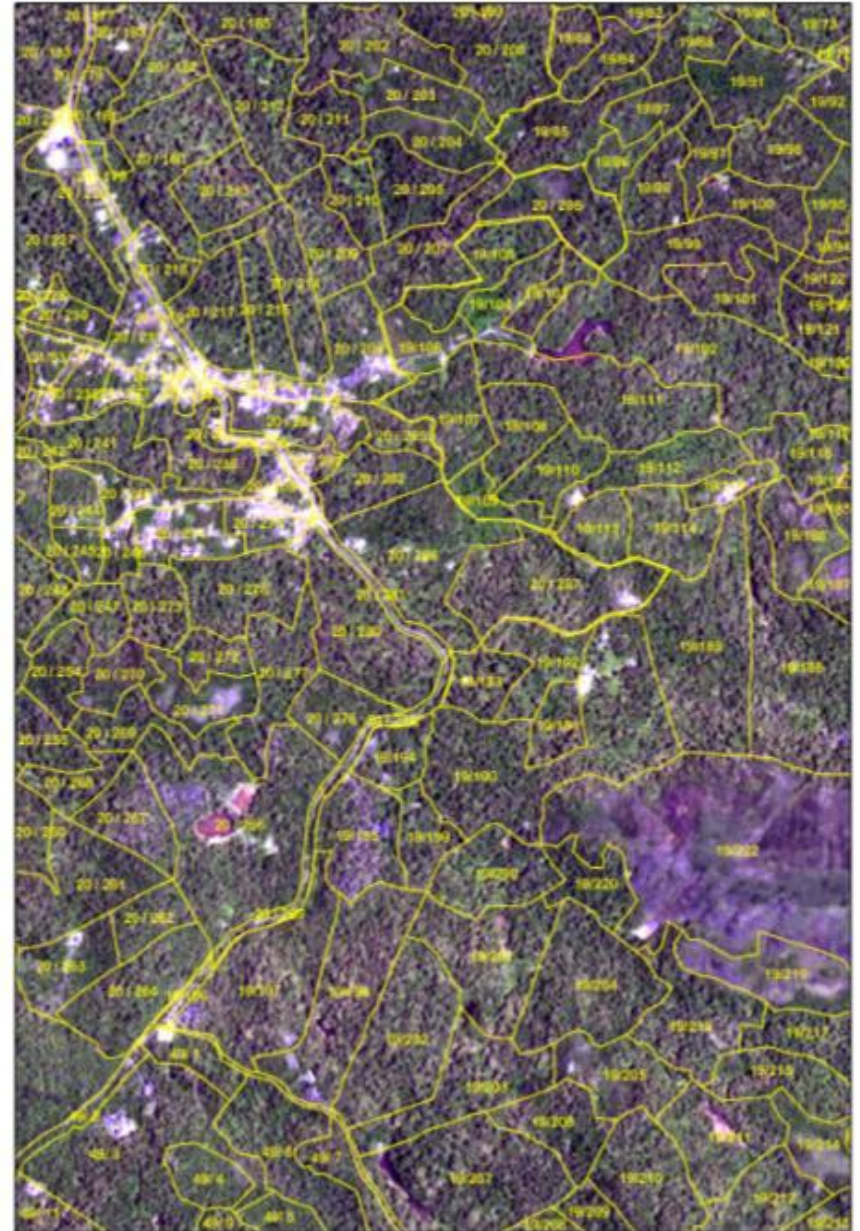


# CADASTRAL OVERLAY – Kerala

Cadastral Overlay - Kerala: Alappuzha District

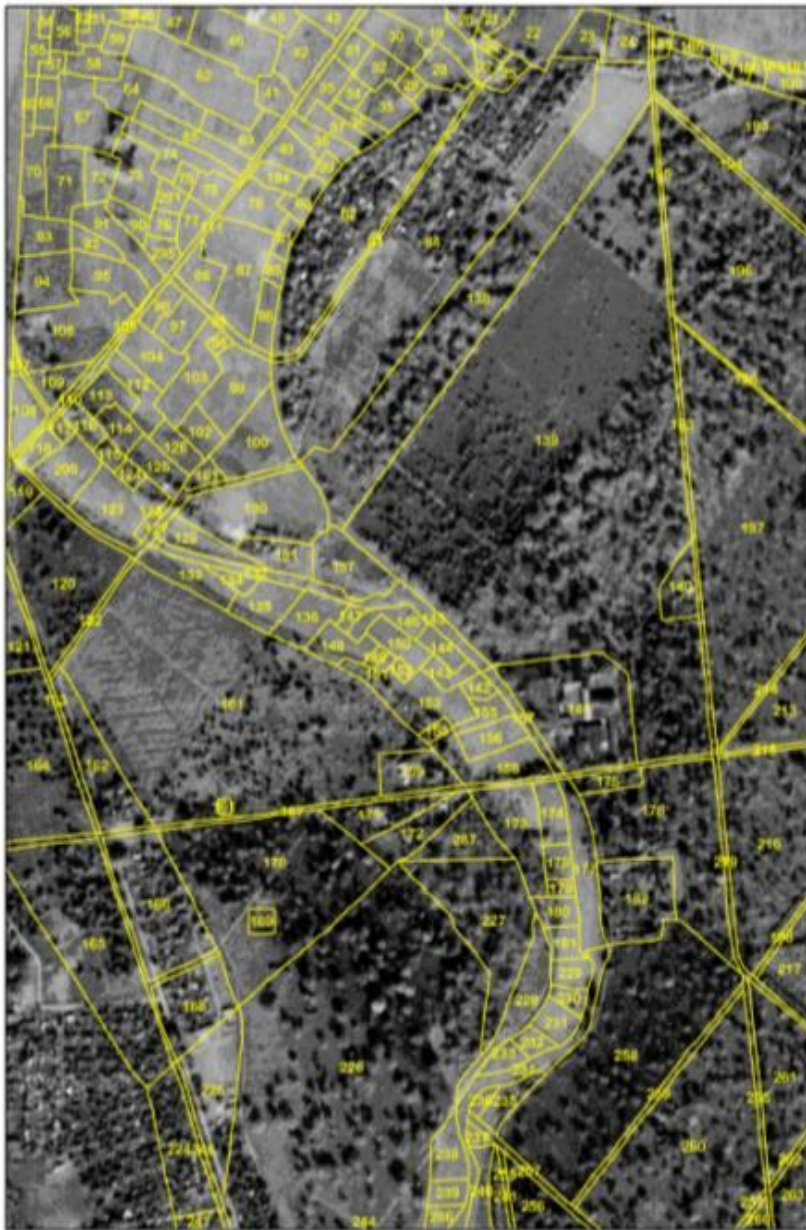


Cadastral Overlay - Kerala: Idukki District

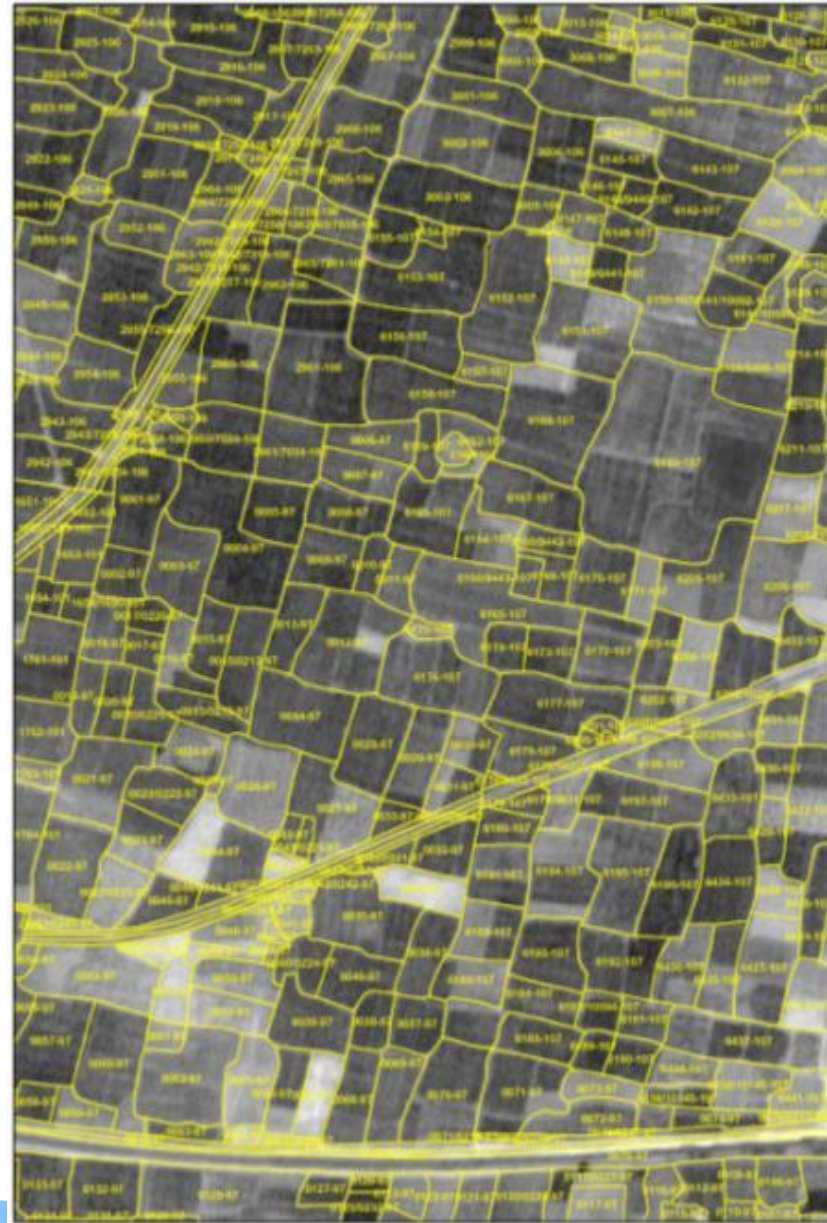


# CADASTRAL OVERLAY – Assam and West Bengal

Cadastral Overlay - Assam : Sonitpur District



Cadastral Overlay - West Bengal : Birbhum District







भूवन

# Panchayat Portal

Space Based Information Support for Decentralized Planning (SIS-DP)

**Bhuvan Panchayats**  
Space Based Information Support for Decentralised Planning

Welcome Guest | [Login / Register](#) | [A-](#) [A](#) [A+](#) | English |   **nrsc** भारतीय अन्वेषण

[Home](#) | [SISDP](#) | [Area Selection](#) | [Area Profile Report](#) | [Asset Mapping](#) | [Activity Planning](#) | [Implementation & Monitoring](#) | [Download](#) | [Share Views](#)

[Navigation](#) | [Personalization](#) | [Linked View](#) | [Full Screen](#) | [Help](#) |

**Layers**

- ☐ SATELLITE IMAGES
- ☒ ELEVATION DATA
  - ☐ DEM Layer
  - ☐ Hill Shade View
- ☒ ADMINISTRATIVE BOUNDARIES
  - ☒ State
  - ☒ District
  - ☒ Tehsil
  - ☒ Panchayat
  - ☒ Village
- ☒ INFRASTRUCTURE
  - ☐ Rail
  - ☐ Road
  - ☐ Waterways
  - ☐ Canal
- ☒ WRP STRUCTURES
  - ☐ Dams
  - ☐ Barrage/Weir/Anicut
- ☒ VILLAGE CADASTRAL MAPS
  - ☐ Cadastral Maps
- ☒ HYDROLOGICAL BOUNDARIES
  - ☐ Basin
  - ☐ Sub-Basin
  - ☐ Watershed
  - ☐ Micro-Watershed
- ☒ THEMATIC DATA
  - ☐ Land Use & Land Cover
  - ☐ Surface Water Bodies
  - ☐ Drainage Network

**Reference Map Viewer** | **Map Viewer**

Scale = 1 : 14M Lon: 93.79, Lat: 32.07

[Visitor no](#) | [Disclaimer](#) | [Sitemap](#) | [Feedback](#) | [Contact us](#) | [Last Updated](#)

<http://bhuvan-panchayat.nrsc.gov.in/>

# Enabling Environment – Bhuvan Panchayat Portal



## MODULES

- Area selection
- Area Profile Report
- Asset Mapping
- Activity Planning
- Implementation & Monitoring
- Download Reports

## FEATURES

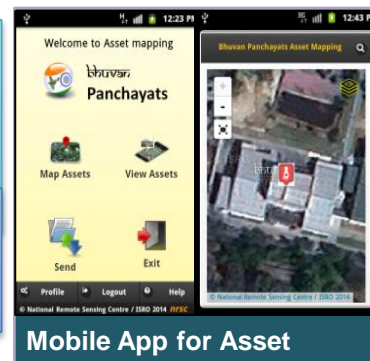
- Planning window for citizens & PRI
- Inventory of Assets across the Nation
- Planning option from 17 CSS and other Schemes
- Dissemination of spatial & non-spatial information

## Integration of schemes:

- Saansad Aadarsh Gram Yojana (SAANJHI)
- Backward Regions Grant Fund

## Bhuvan Panchayat Portal Release :

- Ver 1.0 released on March 2014
- Ver 2.0 released on November 2014



Mobile App for Asset



Cadastral Map of **Jayapur Panchayat** Overlaid on High Resolution Satellite Image (2.5m)



Assets Mapped through Mobile app for **Jayapur Panchayat, Varanasi**

adopted by Prime Minister **Shri Narendra Modi** under **SAANJHI**

# Classification of SIS-DP Assets

## Asset Summary

Groups: 5

Subgroups: 25

Asset-Groups: 73

Assets : 281

## Asset Classes

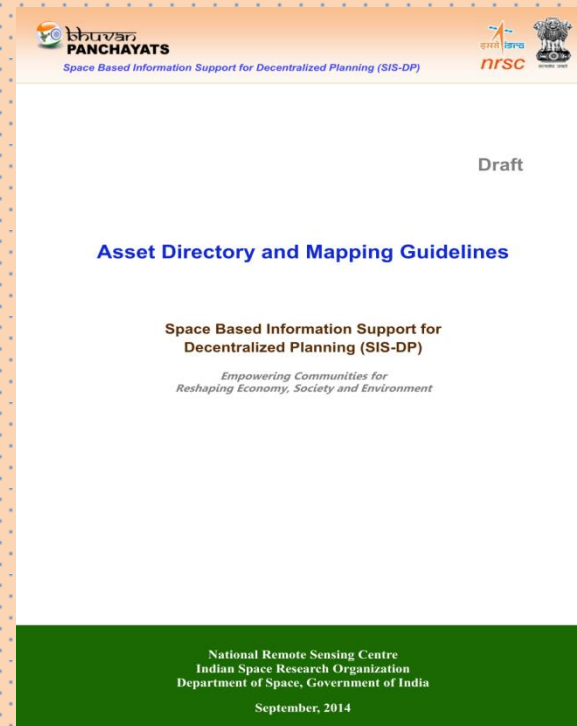
Civic Amenities/Infrastructure Assets: 46 Asset Groups

Governance Assets: 7 Asset Groups

Productive Assets: 9 Asset Groups

Human Resources and Livestock Assets: 2 Asset Groups

Natural Resources Assets: 8 Asset Groups





# Area Profile and Resource Inventory

**This information provides an overview of an area under eight heads:**

1. Identification details
2. Major Issues and Constraints in the area
3. Priorities of the area
4. Ongoing Projects
5. Village & Town Directory: 2011
6. House Listing & Housing Census Schedule: 2011
7. Assets - Natural resource assets, Productive assets, Civic amenities /Infrastructure, Human resource & livestock assets, Governance assets
8. Mapping of Vulnerable areas / Groups / Assets

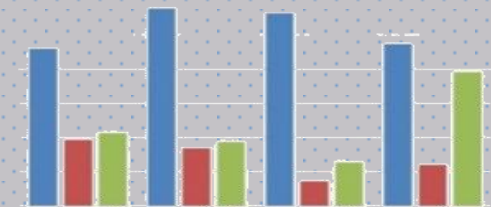
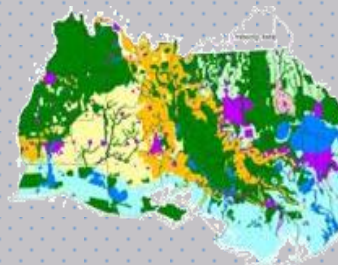
**The Area Profile and Resource Inventory provides a snapshot of the area; it highlights key information on natural resources, various types of assets, socio-economic details, disaster prone areas, other major priorities and constraints in an area.**

**These are represented in the form of Tables, Maps and Charts.**

Village & Town  
Directory

**Census  
2011**

House Listing  
& Housing  
Census  
Schedule



Class of Agriculture	Area
Area under crop	64
Plantations	56
Agro horticulture	23
Agro Forestry	2

# DP Process & Activity Planning

Activities

Sectors

Ministries

Schemes

**Activities  
for rural areas  
(29)**

**Activities  
for urban areas  
(18)**

1. Land and Water  
Development Activities
2. Productive Activities
3. Civic Amenities and  
Infrastructure Development  
Activities
4. Social Welfare Activities
5. Governance Activities

- MoPR
- MoRD
- MoUD
- MoDW&S
- MoP
- MoWR
- MoA
- MoEF
- MHA
- MHUPA
- MHRD...

**17 Flagship  
Schemes of  
Government  
of India:  
2013-14**



1. Mahatma Gandhi National Rural  
Employment Guarantee Act  
(MGNREGA 2.0)
2. Integrated Watershed Management  
Programme (IWMP)
3. Indira Awas Yojana (IAY)
4. Pradhan Mantri Gramin Sadhak Yojana  
(PMGSY)
6. National Rural Health Mission (NRHM)
7. Integrated Child Development Services  
(ICDS)
7. Nirmal Bharat Abhiyan (TSS)
8. Mid-Day Meal Scheme (MDM)

9. Sarva Siksha Abhiyan (SSA)
10. Jawaharlal Nehru National Urban Renewal  
Mission (JNNURM)
11. Accelerated Irrigation Benefit Programme (AIBP)
12. National Social Assistance Programme (NSAP)
13. Backward regions grant fund (BRGF)
14. National Rural Livelihoods Mission (NRLM)-  
Aajeevika
15. Rashtriya Krishi Vikas Yojana (RKVY)
16. National Rural Drinking Water Mission (NRDWP)
17. Rajiv Gandhi Panchayat Sashaktikaran Abhiyan  
(RGPSA)

# Capacity Building

## General Curriculum for all levels of Panchayats

- About Bhuvan Geo-Panchayats
- Geo-visualization and available data for decentralized planning
- Spatial data: Satellite imagery, Resource layers, Assets, Attributes
- Non-spatial data: General Village/Block/District Characteristics, Meteorological data, Census 2011 amenities and village & town directory, Major issues of the village
- Asset mapping: asset mapping using point, line & polygon, attribute editing, uploading photographs of assets.
- Activity Planning & monitoring: 29 activities, Planning using spatial & non-spatial data, finding an existing scheme, monitoring the progress of an activity
- Availability of different Schemes
- Profile of the area
- Panchayat & citizen login
- Share views

## ***Gram Panchayat Curriculum***

- How to take data from portal
- How to map assets in a village
- How to plan activities at gram Panchayat level
- Area Profiler - Snapshot of the panchayats which includes size of the population, structure of the population, animal wealth etc. in the area
- Finding the gap or the priority areas
- How to incorporate suggestions in planning
- How to share views

## ***Panchayat Samiti (Block) Curriculum***

- How to take data from portal
- Visualization of the desired area in terms of availability of assets, climatic conditions, natural resources
- Considering the different village level development plans
- Consolidation of village development plans
- Feasibility analysis of consolidated plans
- Spatial Distribution of assets and considering availability of assets for more than one village using proximity, buffer analysis.
- How to check the availability of assets in vicinity
- How to plan activities at Block Panchayat level
- Synergy between all activities, funds and schemes
- Implementation and Monitoring of activities
- How to incorporate suggestions in planning

## ***Zilla Parishad (District) Curriculum***

- How to take data from portal
- Consolidation of block level plans
- Feasibility analysis of gram Panchayat plans passed by block
- Sector wise analysis of proposed plans and analyzing the funds available within same sector
- How to check the availability of assets in vicinity
- How to plan activities at Block Panchayat level
- How to incorporate suggestions in planning
- Implementation and Monitoring of activities – Scheme/Sector wise

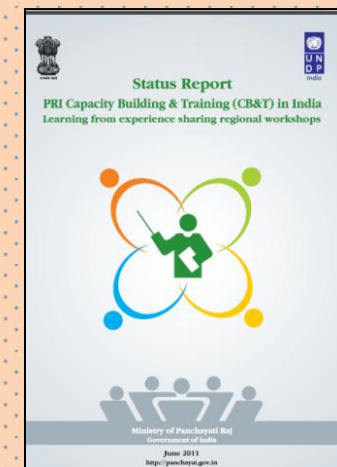
# Scale of Operation

Number of Elected Representatives in the three tiers Panchayats  
in the Country + PIA, NGOs

Category	PRI No.	General	SC	ST	Total	Women
Village Panchayats	232913	1851166	490986	314324	2656476	975116
Intermediate Block level Panchayats	6094	112371	32898	11340	156609	58094
District Panchayat	537	11311	2734	1649	15694	5779
<b>Grant Total</b>	<b>2,39,544</b>	<b>19,74,848</b>	<b>5,26,618</b>	<b>3,27,313</b>	<b>28,28,779</b>	<b>10,38,989</b>

Estimated no. of functionaries requiring training & data

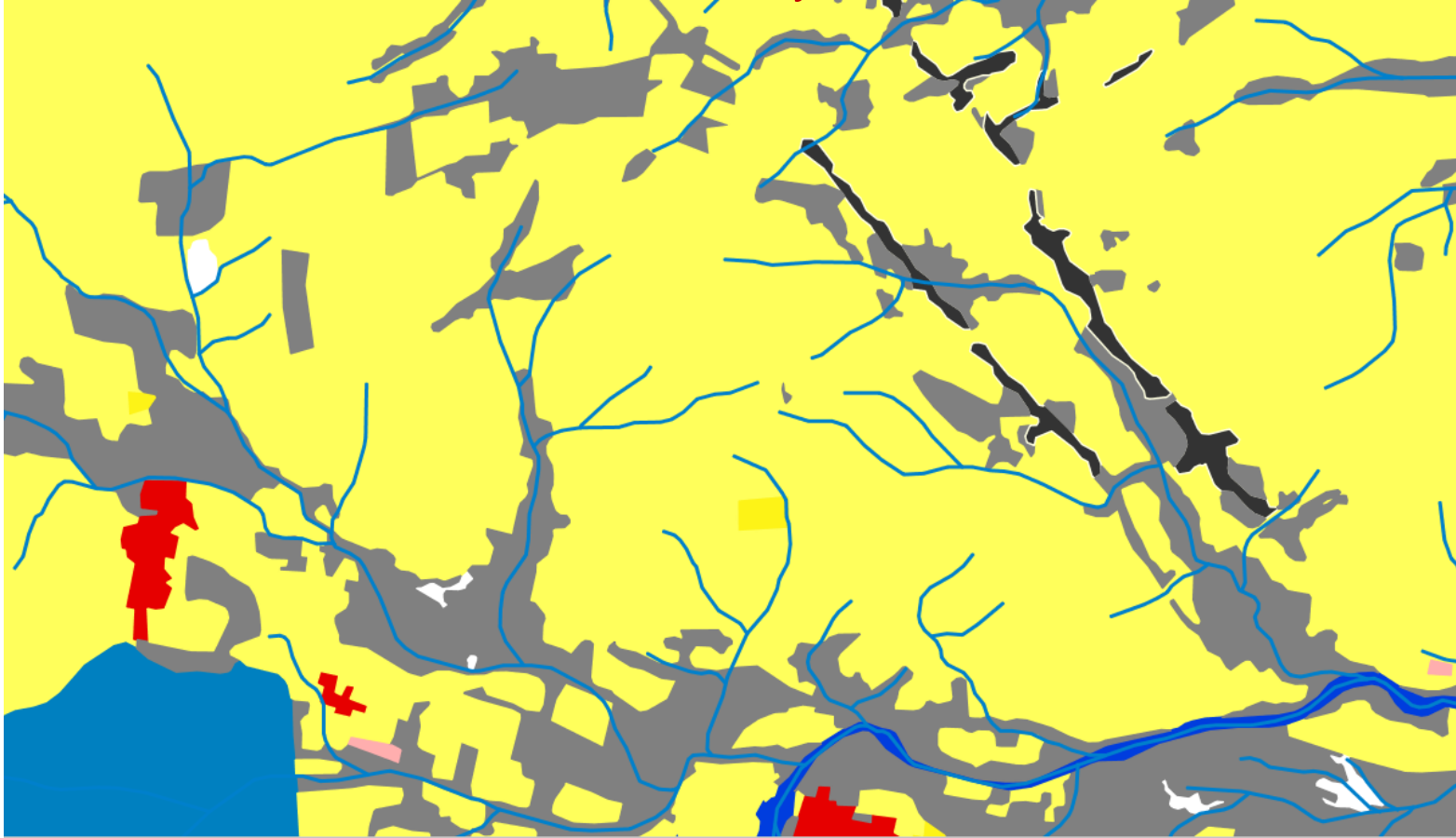
<b>Centre/State Level</b>	<b>3,600</b>
District Level	27,500
Block Level	2,70,000
GP Level	15,98,900
<b>Total</b>	<b>1900000</b>



# 1. MGNREGA- Water harvesting-Check Dam construction

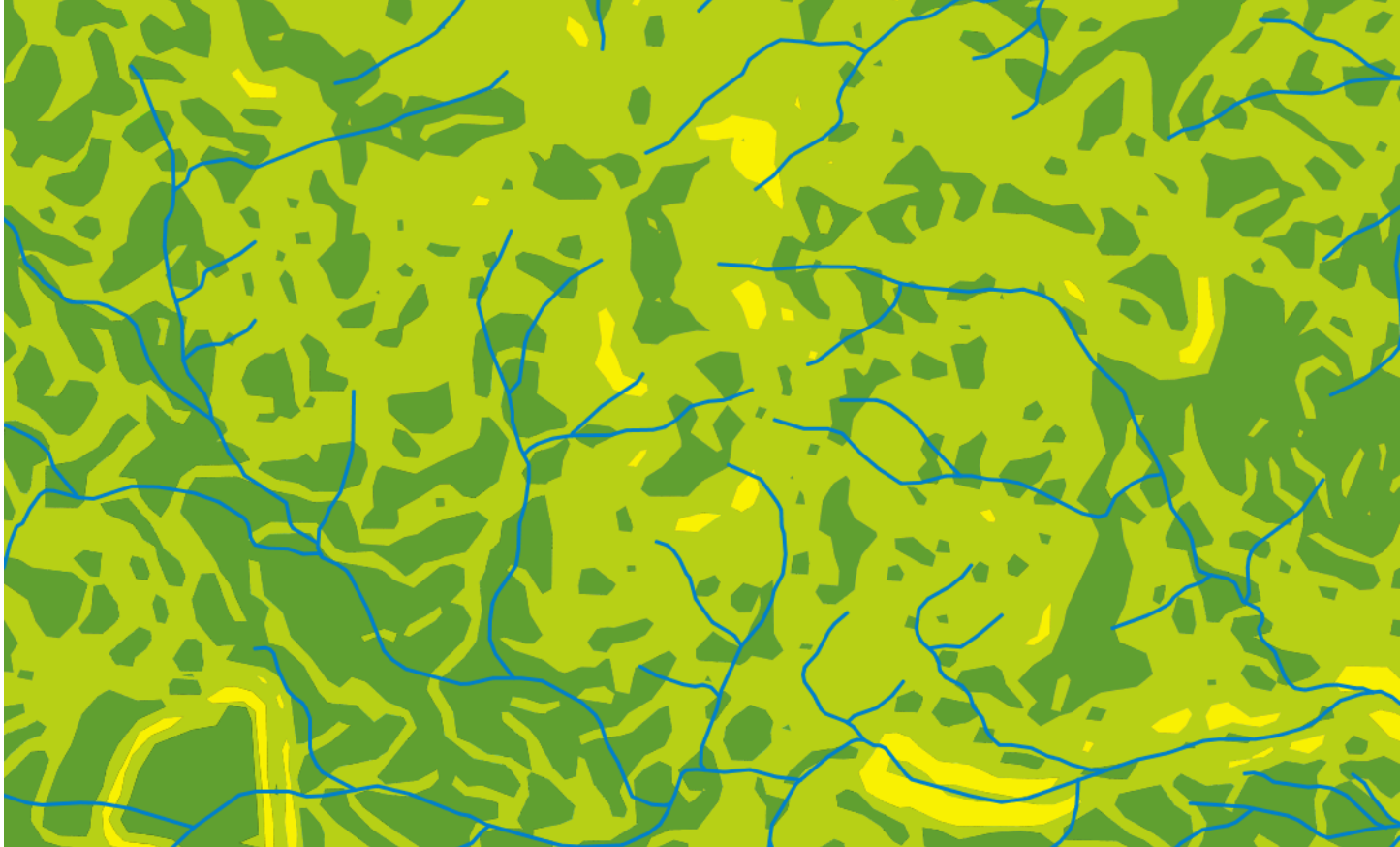
A.P – Anantpur – Dharmavaram - Pothkunta

LULC – Agriculture/cropland area with high drainage density



# MGNREGA- Water harvesting-Check Dam construction

SLOPE: Very Gentle to Moderate



# MGNREGA- Water harvesting-Check Dam construction

## DRAINAGE



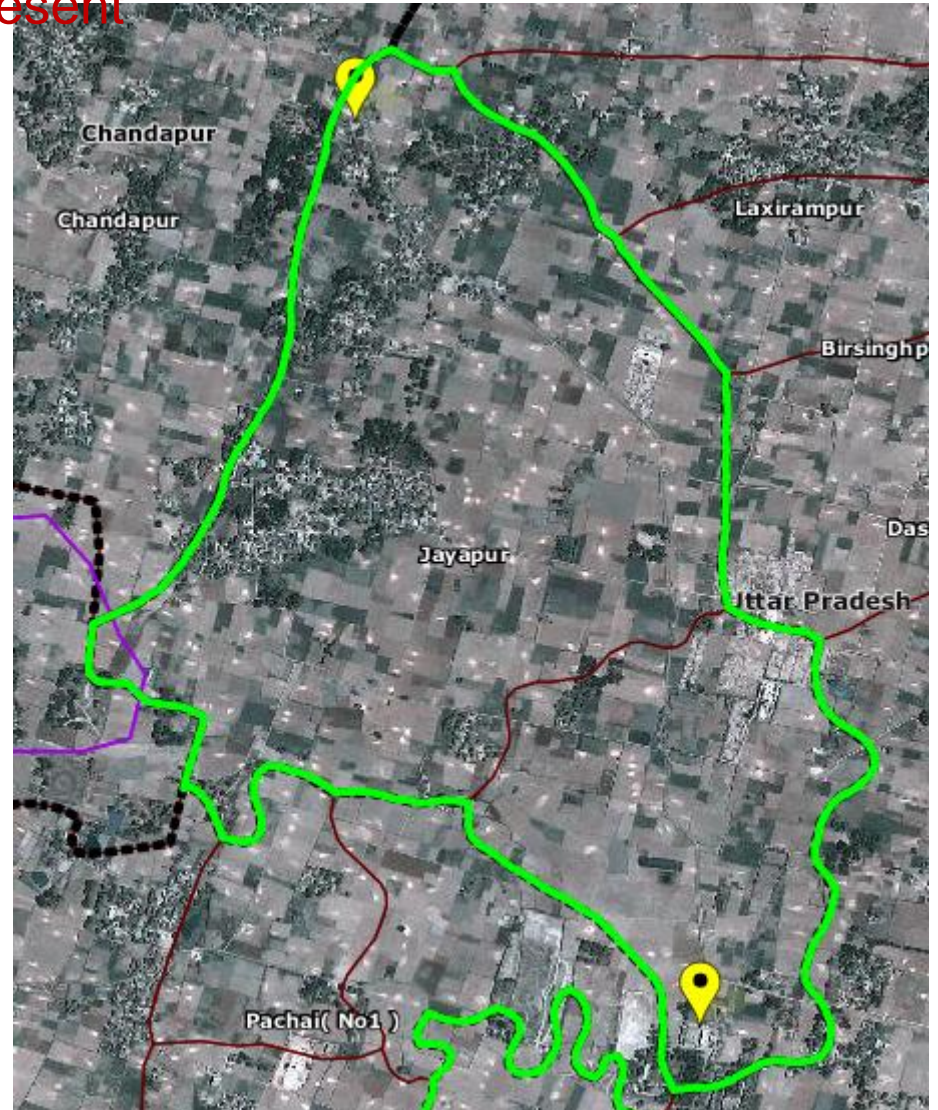
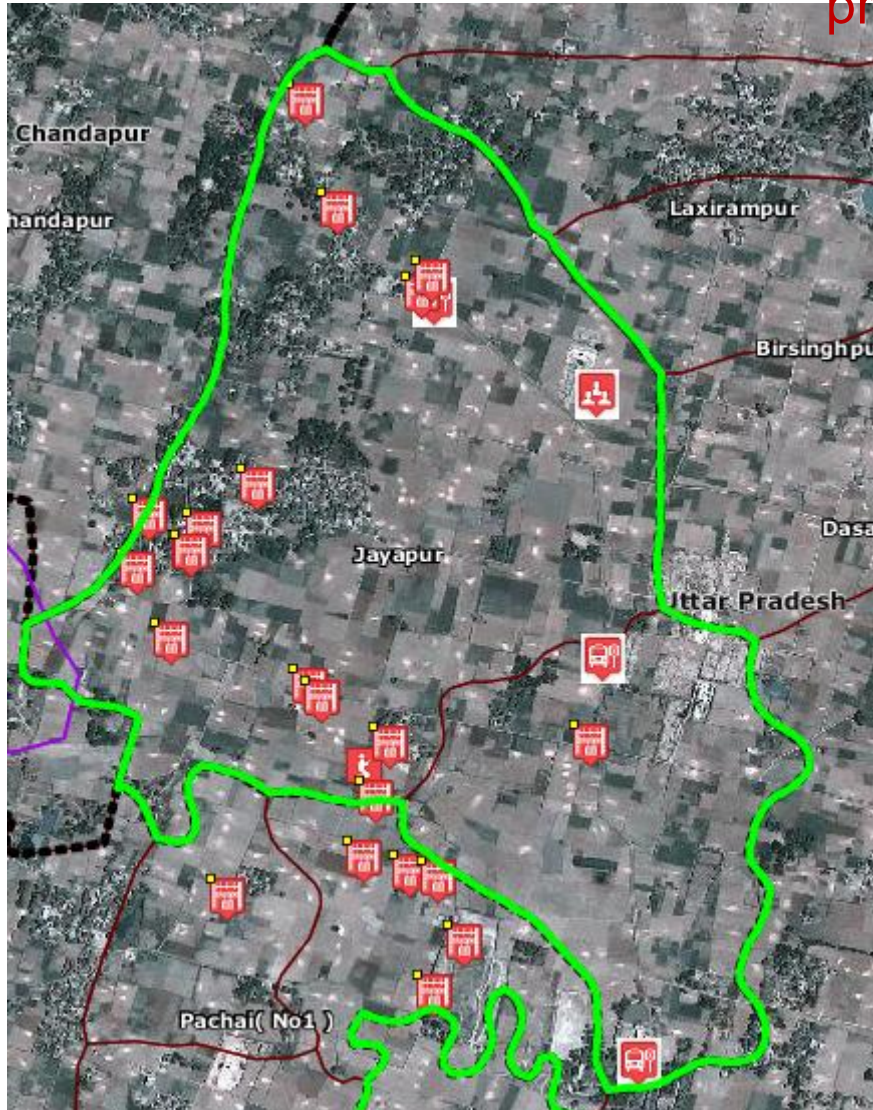
Check Dams could be constructed at these locations as these have:

1. High Drainage density
2. Agriculture cropland in vicinity
3. Gentle to moderate slope

## 2. Sarva Siksha Abhiyan – Construction of School buildings

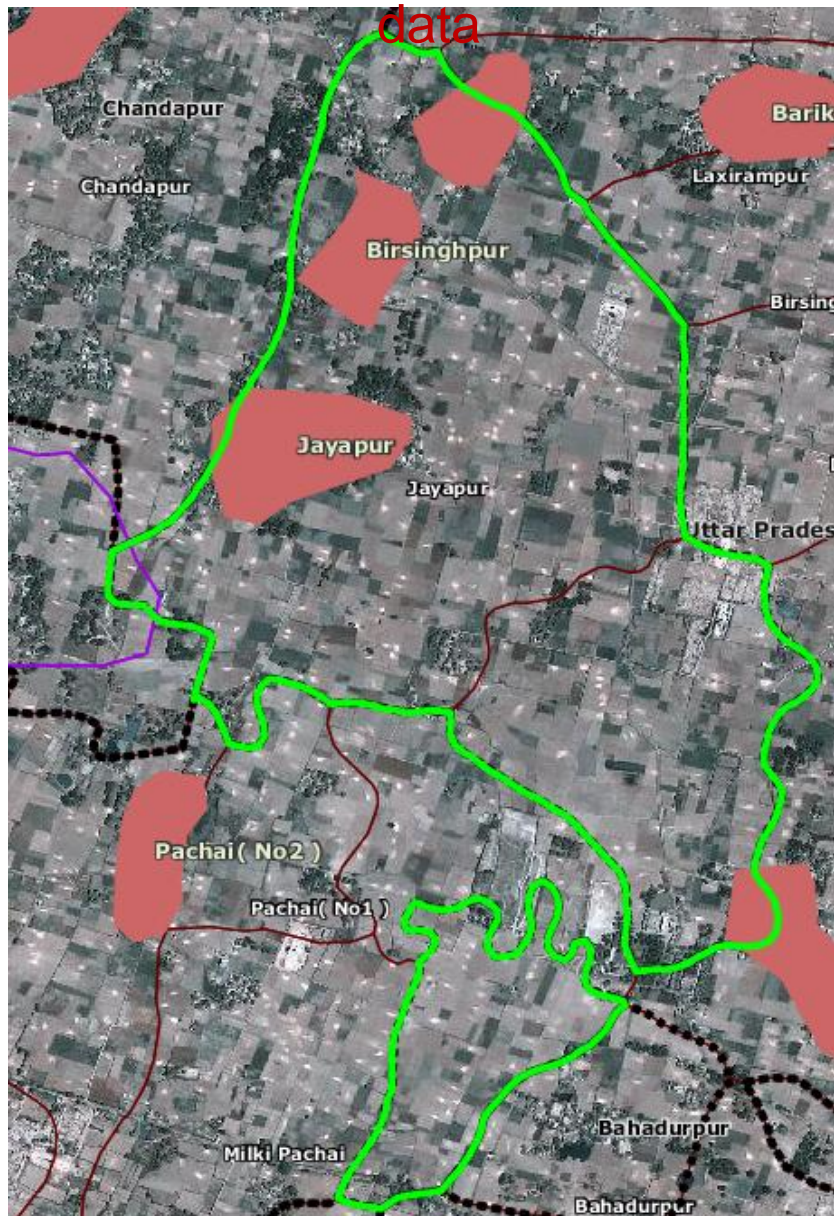
U.P - Varanasi – Arajiline - Jayapur

Asset data to identify existing school and their types : No higher School present

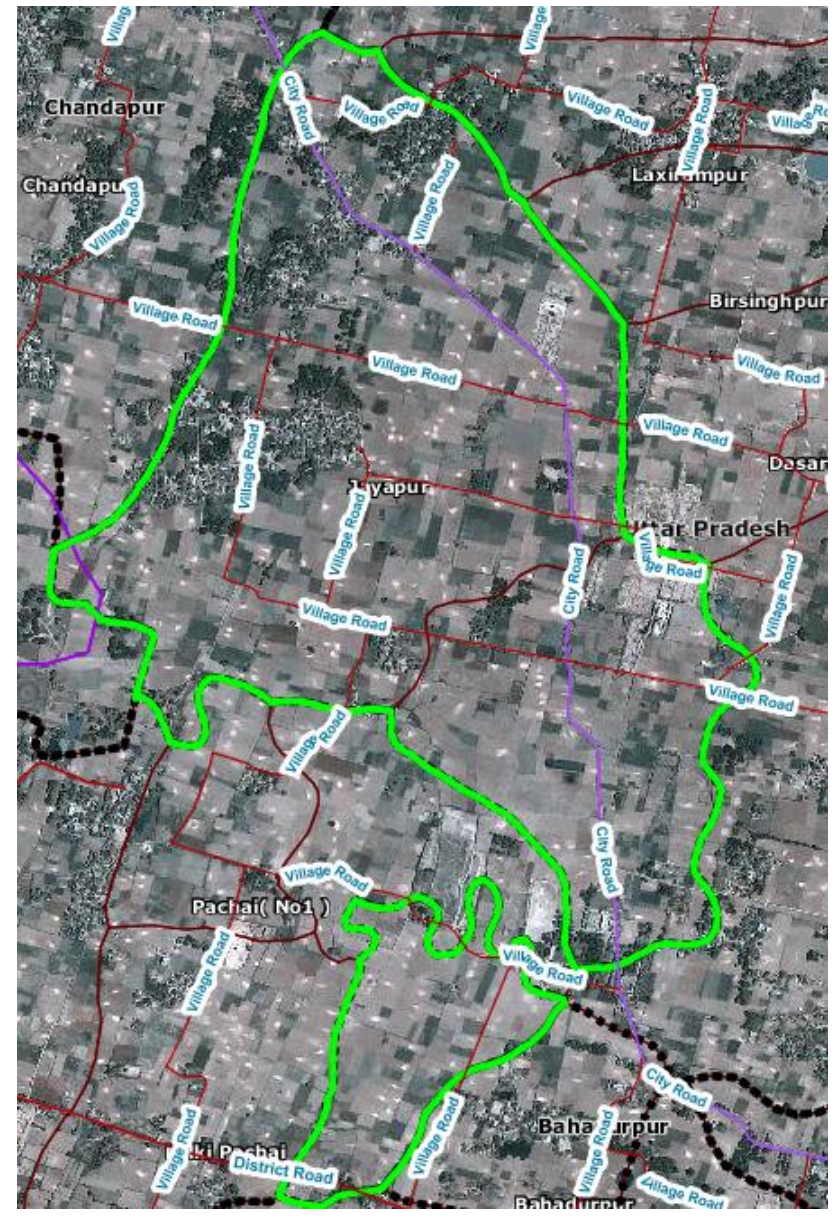


# Sarva Siksha Abhiyan – Construction of School buildings

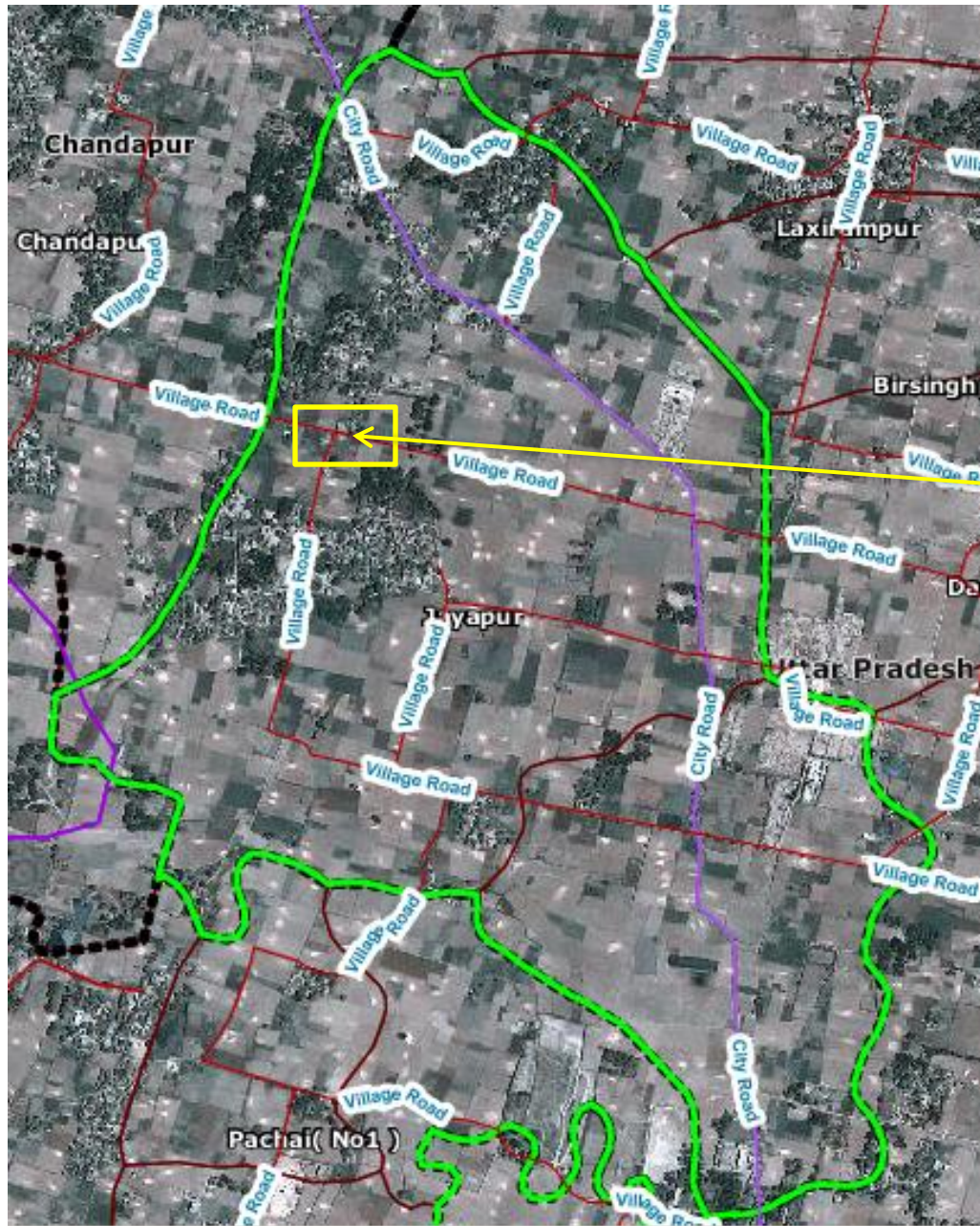
## Settlement with demography



## Road network for connectivity



# Sarva Siksha Abhiyan – Construction of School buildings

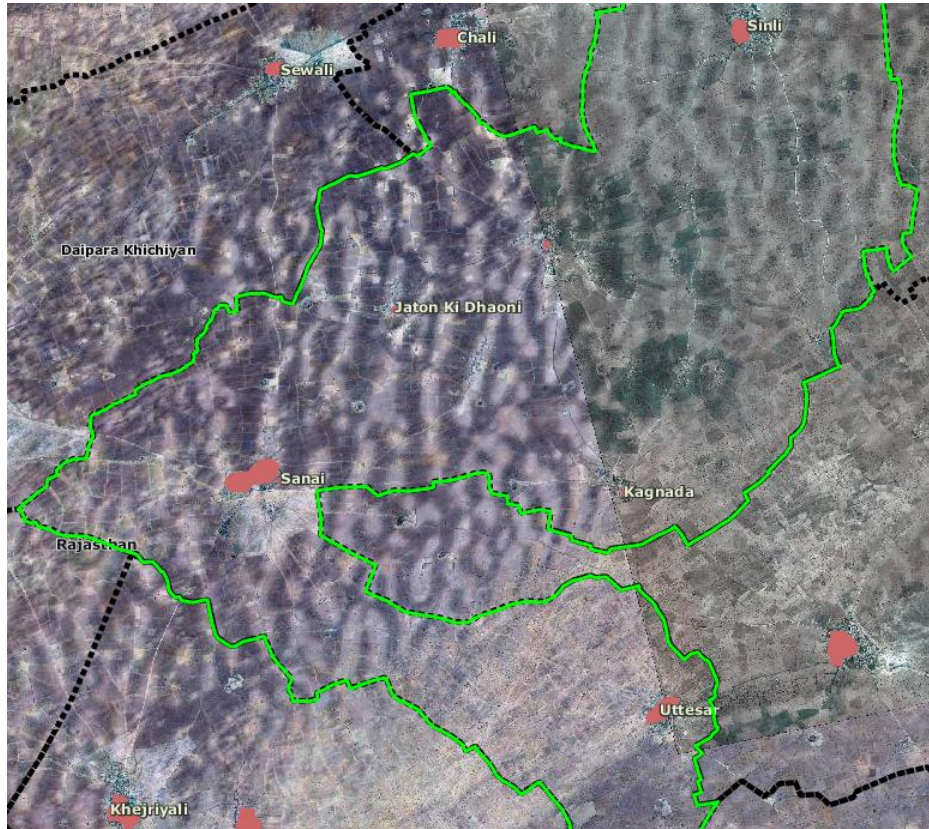


- School can be constructed at this location due to
1. No school other than primary school exist in panchayat
  2. Good connectivity by road
  3. Near to settlements

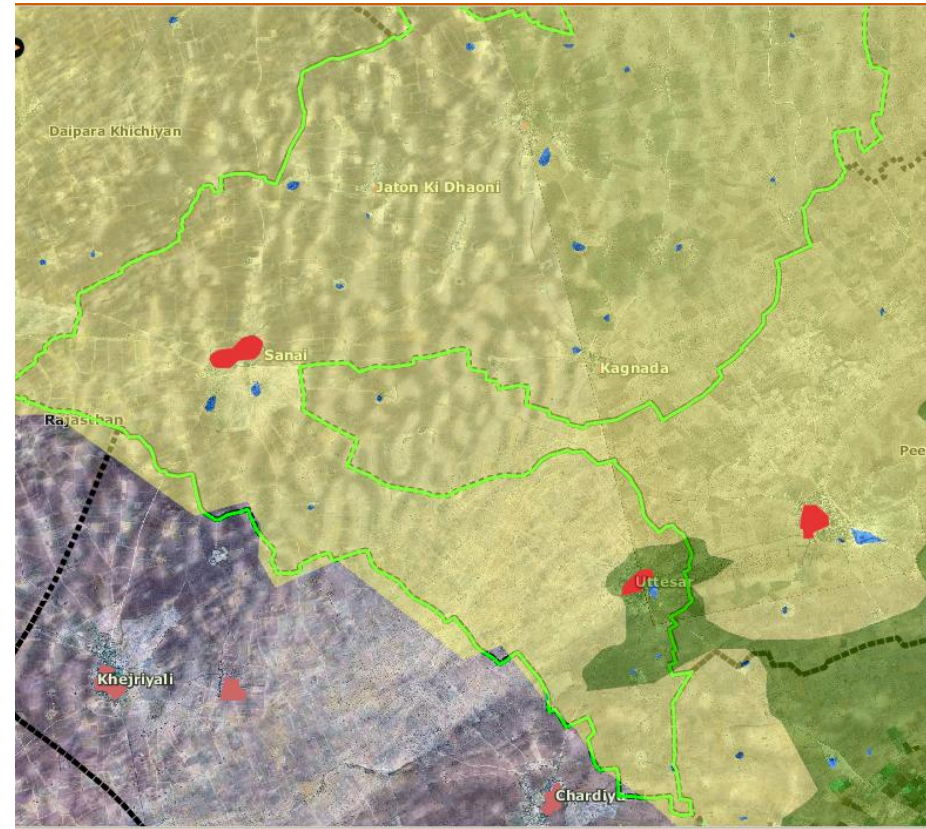
# 5.National Rural Drinking Water Mission – Public Facilities for Drinking Water

## Rajasthan - Jodhpur - Luni- Subdand

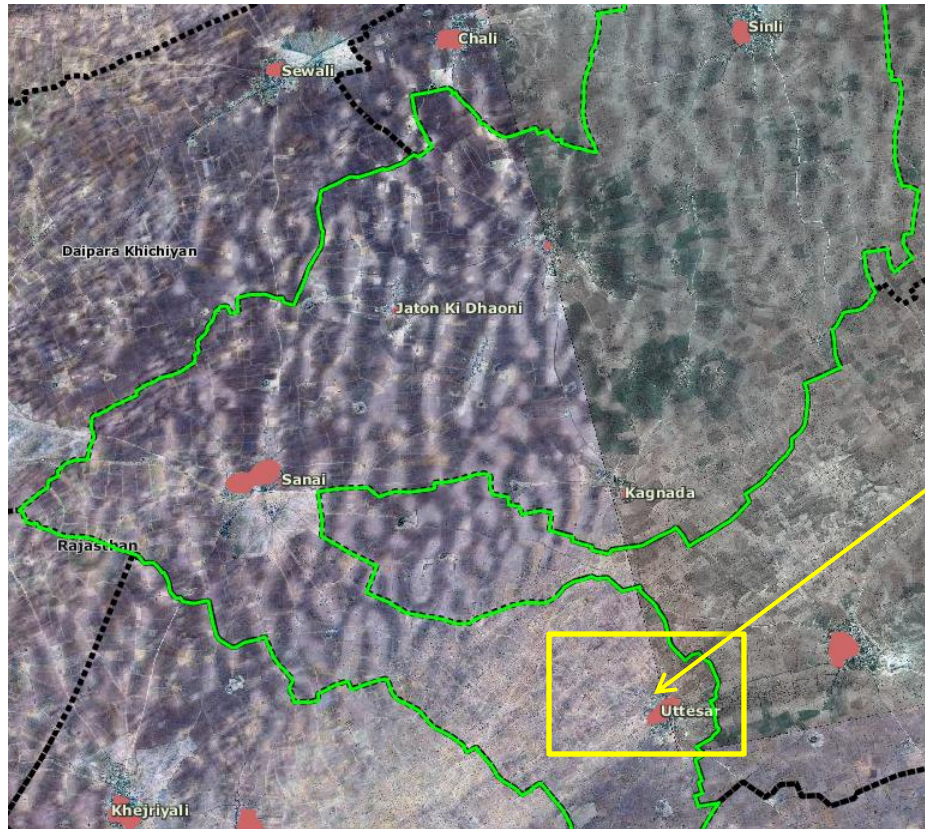
### Settlement locations & demography



### Legacy data – Ground water potential



# National Rural Drinking Water Mission – Public Facilities for Drinking Water



Public facility for drinking water can be proposed here due to

1. Very good to good ground water prospects
2. Near to settlements

# 6. Pradhan Mantri Gram Sadak Yojana – Upgradation of Roads

Rajasthan - Jodhpur - Luni- Subdand

Road Network – For identification of roads that are frequently used and are to be upgraded



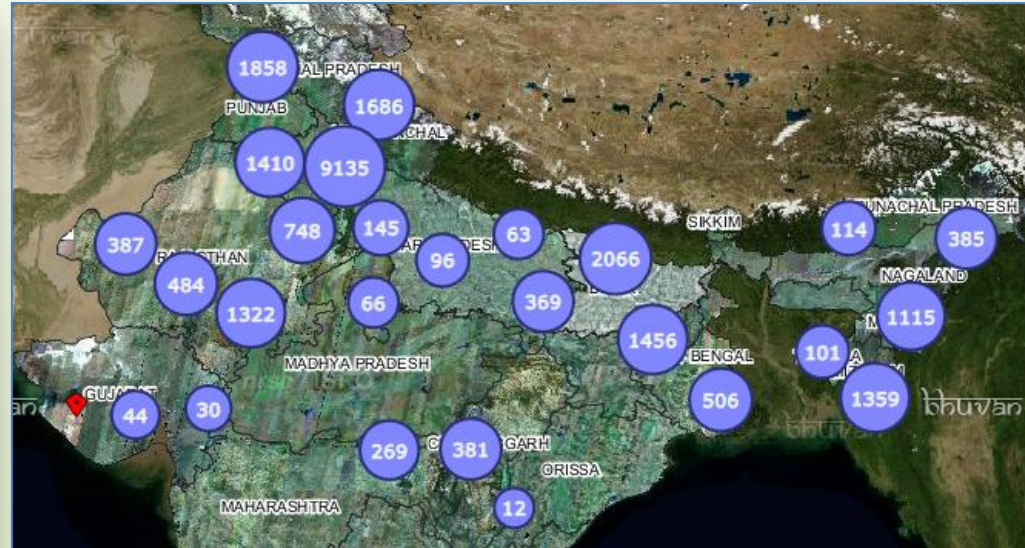
1. Cart track to be metalled/ made as pucca road
2. Not many metalled roads in the vicinity



# Bhuvan



The Gateway to Geospatial World



Developed with Open source Solutions

**National Remote Sensing Centre**

Indian Space Research Organization

Department of Space, Hyderabad

[www.bhuvan.nrsc.gov.in](http://www.bhuvan.nrsc.gov.in)



# BHUVAN

**Satellite  
Map  
Terrain  
(2D,3D)**

**Thematic  
Data**

**Open Data  
Satellite Data  
& Products**

**Bhuvan  
Applications**

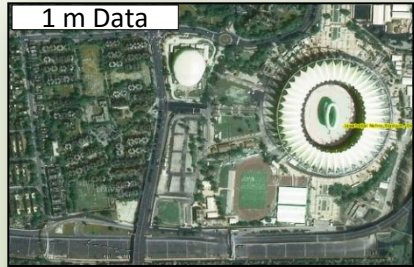
**SERVICES  
Disaster  
Weather  
Ocean**

**Crowd  
Sourcing**

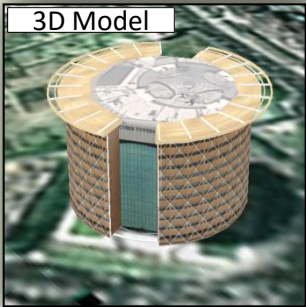
**Web**

**Mobile**

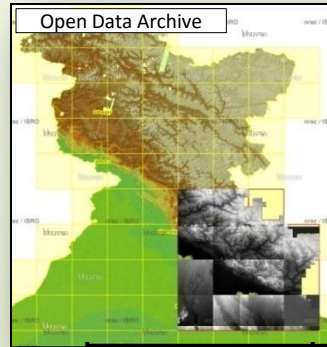
**1 m Data**



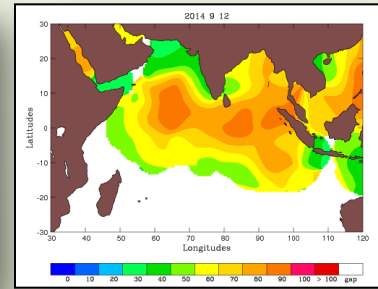
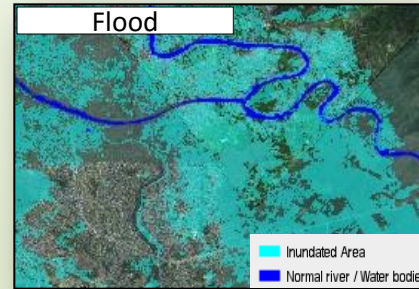
**3D Model**



**Open Data Archive**



**Flood**



**Agriculture**

**Forest**

**e-  
Governance**

**Irrigation**

**Tourism**

**Urban**

**+  
State Portals**

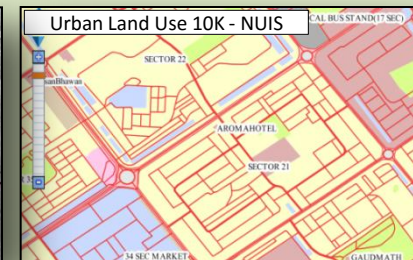
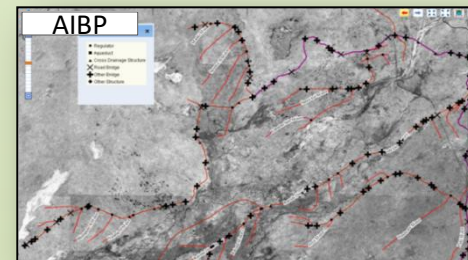
**Land Use  
Waste Land**

**Geomorphology  
/ Lineament**

**Salt effected  
water logging**

**Water  
Bodies and  
Floods**

**Erosion**



# Bhuvan – At a glance

Satellite Data	1m (269 Cities) , 2.5 m ( 32 States)
Base Map	Scale based (1:50,000 to 1:10,000) 1:10,000 : - 95% of India from SIS-DP and 152 towns from NUIS Projects
Thematic Maps	15 Themes with Web Map Services
Data Download	Total downloads : 4.7 Lakhs Nices Products : 30,000+
Disaster Support	6 Disasters , NRT Support for Cyclone, Flood, Landslides, Forest fire • Live Map Upload from DSC, • Automated Forest Fire Alert
Applications	75
State Portals	30
Ministry Portals	22

Outreach  
Bhuvan Trainings

## DATA

18 TB of  
6  
sensors

Services  
WMS  
6204

Web  
Apps  
75+

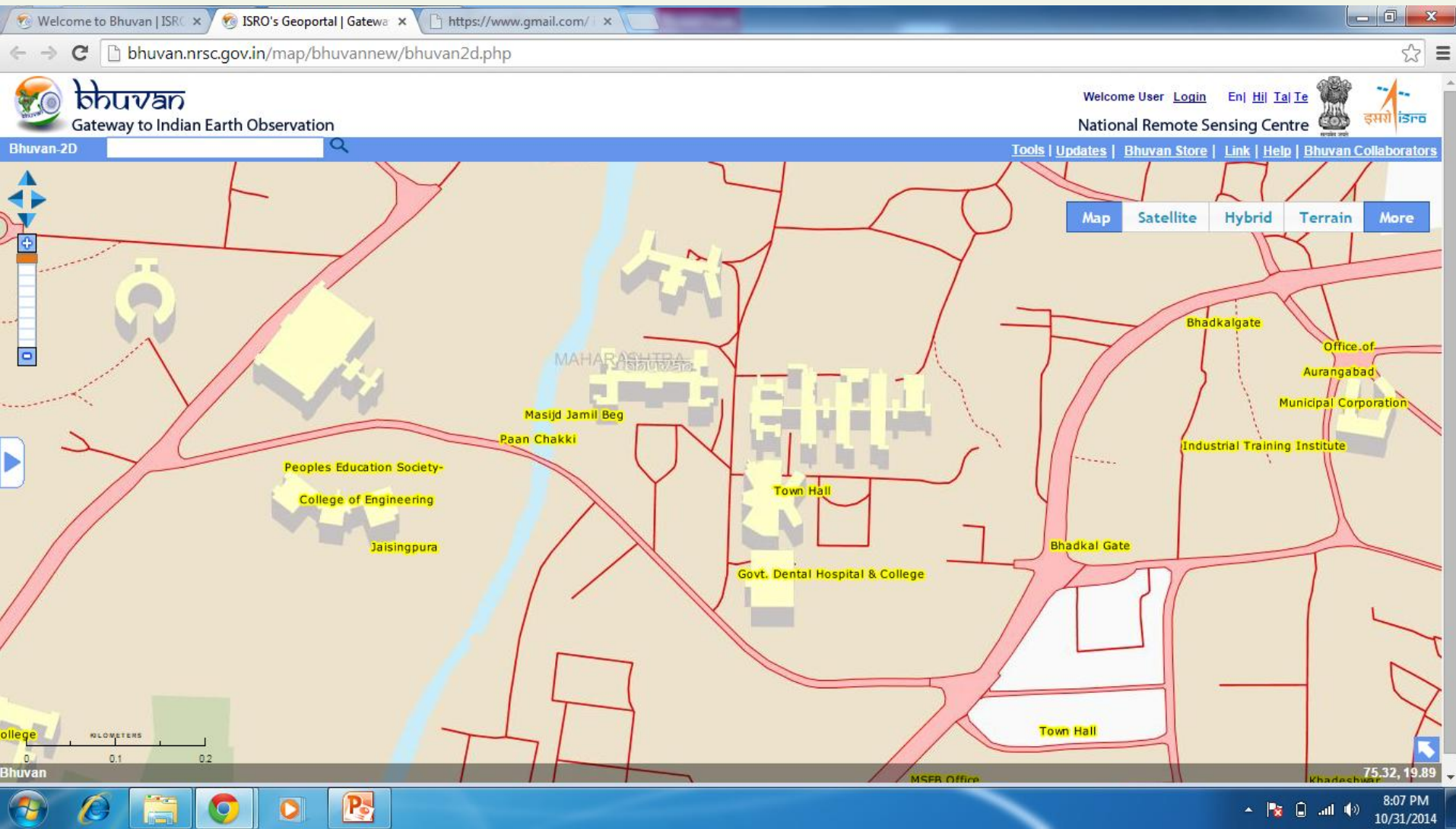
Maps  
From  
Data  
32

Crowd  
Sourcing  
4 Million

“Open Source Geospatial Approach & OGC compliance Services”



# 1 m Meter Resolution 212 cities



# Bhuvan Crowd Sourcing

File Edit View History Bookmarks Tools Help


Welcome to Online Ordering S... x Gmail x Welcome to Bhuvan | ISRO's ... x ISRO's

bhuvan.nrsc.gov.in/map/bhuvannew/bhuvan2d.php#

**bhuvan**  
Gateway to Indian Earth Observation

Bhuvan-2D Enter City or Lat,Lon(ex:chennai or 13

**Crop**



**Information**

Type of Crop:	mustard
Crop Health	
Condition:	Average

**Posted Time** 2014-01-10 14:34:04

**Posted By** Neetu Rathi

Discussion Forum | Send Mail

start ISRO's Geoportal | G... Bhuvan\_Engr\_Concla... Search Results

3:27 PM

## Information

**Posted Time** 2013-12-07 11:36:55

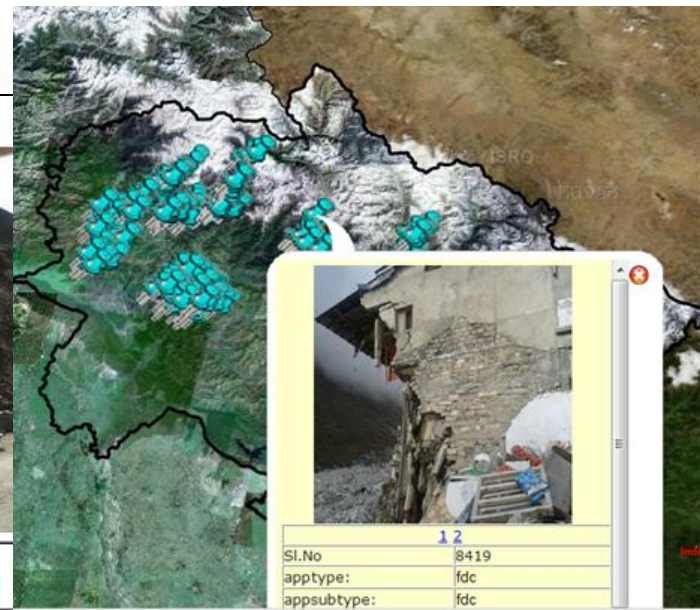
**Posted By** surbhi/anil/divya/suraj

**Field Survey**

**Disaster Damage**

**Watershed Monitoring**

**Incident Reporting**



Sl.No	8419
apptype:	fdc
appsubtype:	fdc

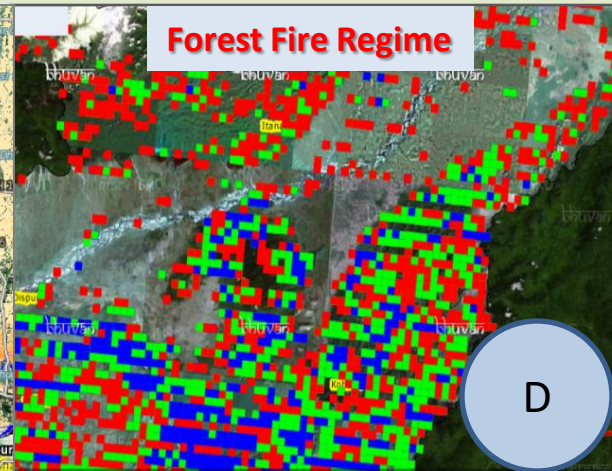
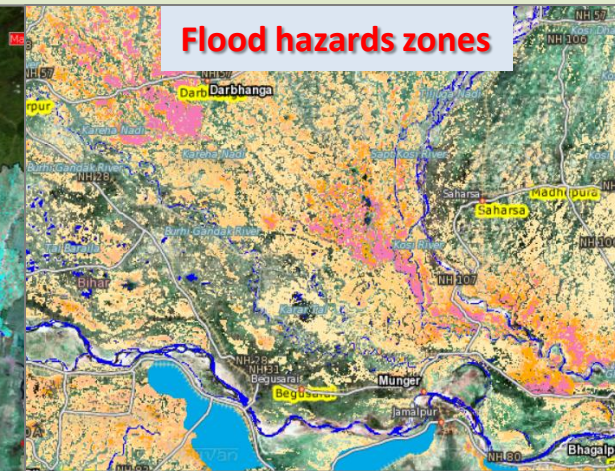
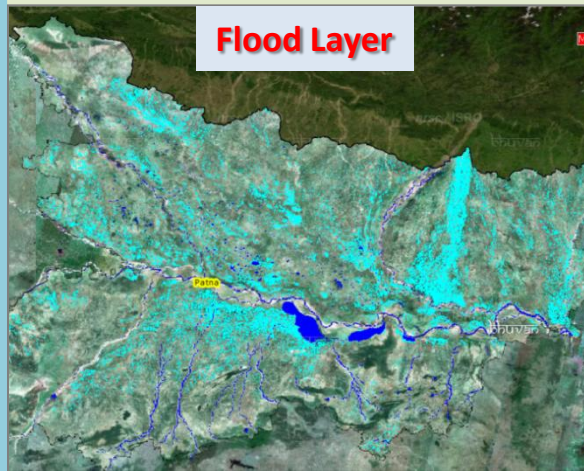
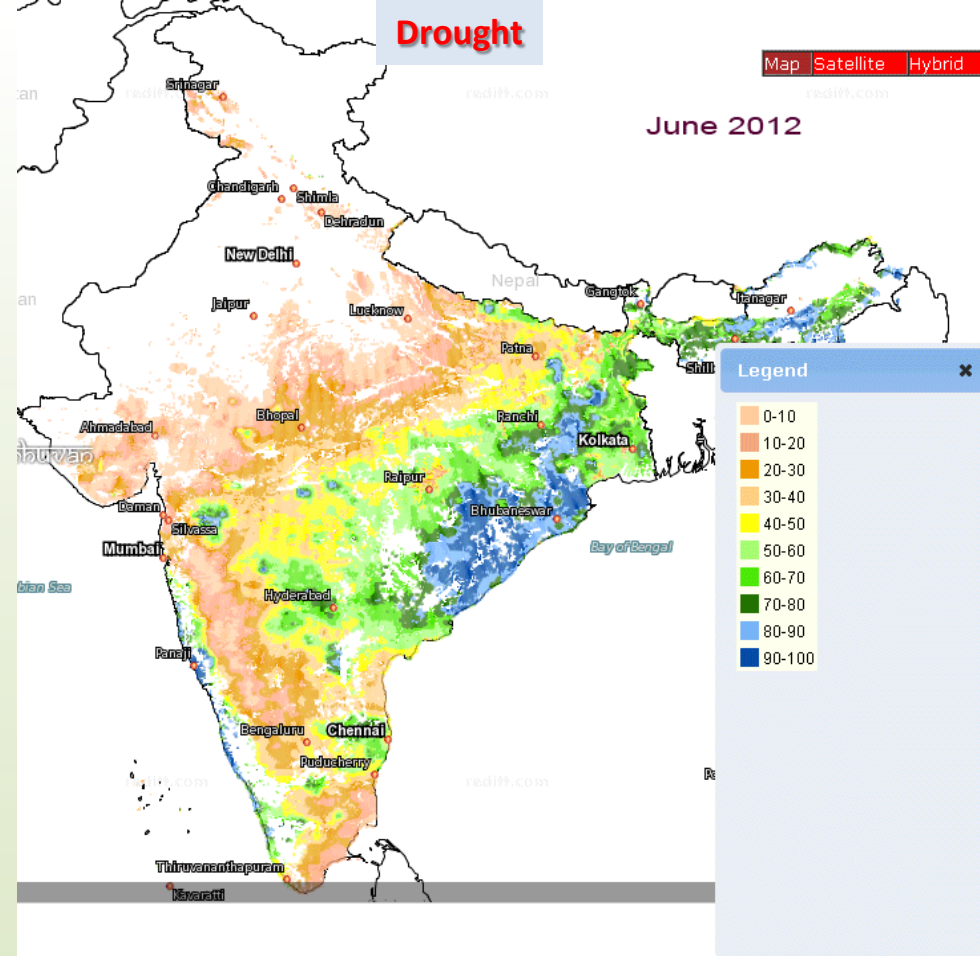
## LAYERS

- ☒ Crop
- ☒ Land Cover and Natural Resources
- ☒ Landslides
- ☒ Settlement Locations

# Disaster Management Support Services

- Drought
- Flood
- Forest Fire- Daily
- Cyclone
- Landslides
- Earthquake - (Feed USGS)

IMD – Fog, Thunderstorm



About AIBP  
AIBP Phase - I  
AIBP Phase - II  
AIBP Phase - III ( Online

State Andhra P  
River Basin East Flo  
Irrigation Project Gundlaka

Remove

- Cartosat-1
  - Gundlakamma\_JAN\_M
- Cartosat-2
  - Gundlakamma\_JAN\_F
  - Gundlakamma\_DOP\_
- Phase-1 Layers
  - Cartosat Satellite Im
  - Canal Network [Leg](#)
  - Structures on Canals
  - Project Boundary

Activate Swipe Deactivate Swipe

Canal Details Progress

Canal Network

Remarks can be added by Clicking on any point

**Physical-Financial Progress**

Physical and Financial Progress

☒ Physical Progress ☐ Financial Progress

**PHYSICAL PROGRAMME OF AIBP COMPONENTS**

S.No	Item of AIBP	Estimated Quantity	Quantity Executed	Balance	Programme	Year	Q1 Program	Q2 Program	Q3 Program	Q4 Program	SpillOver
Page 1 of 0 10											
No records to view											

Export CSVfile

Close

Bhuvan

Summary of the Microwatersheds can be obtained State-wise, Year-wise, District-wise.

**Microwatersheds** **Special IWMP Microwatersheds**

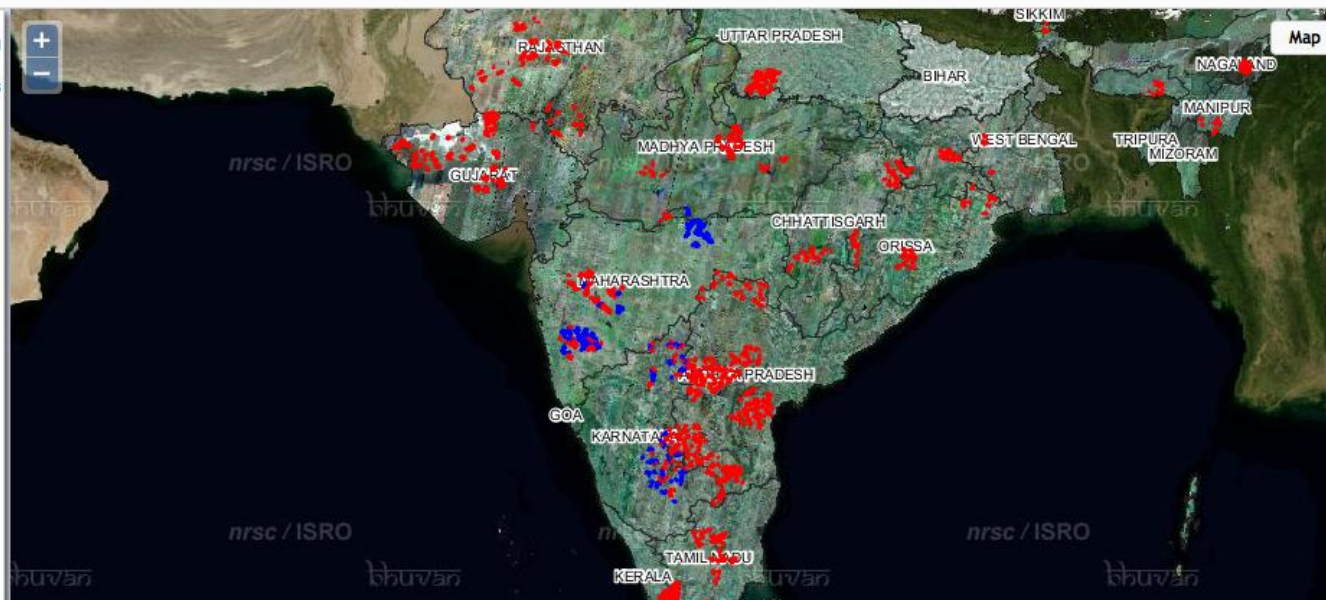
State:

Summary of Microwatersheds

Select Microwatersheds by navigating through selection of State->Year->District to get the Details and Layers available

## Microwatershed Legend

- PREPARATORY
- WORK
- CONSOLIDATION



aded natural resources  
vegetation, rain water

## Monitoring and Evaluation

A Web based GIS application (Geoportal) enabling the monitoring and evaluation of IWMP watersheds, using satellite remote sensing and sample field data using mobile smart phone applications has been realised. This Geoportal facilitates M&E of all IWMP watersheds for 10 states and 50 special watersheds in 16 states.

## Salient Features

The geoportal enables image and map display, monitoring tools, summary statistics of all the IWMP watersheds. The application enables National, State, District and watershed level access for information and report generation.



Login as:

Administrator Module

Data Provider Module

DOLR

SLNA

State

WCDC



Download  
Field Data Collection  
App for Android

Smart phone App for online Field data collection



# NRSC Open EO Data Archive (NOEDA)

A new initiative to download IRS satellite data products.

- Cartosat-1:DEM: 1 arc Sec
- Resourcesat-1:AWiFS Ortho (2008,2009):56m
- Resourcesat-1:LISS III Ortho (2008-09):24m
- Metadata NSDI 2.0
- Select Area based on 'Bounding box, Mapsheet(SOI), Tiles, Interactive Drawing'



**-BHUVAN**

# Space Inputs, Spatial Enablement and G - Governance

## *Thank you*



Space Based Information Support for Decentralized Planning (SIS-DP)



Draft

### Activity Planning, Implementation and Monitoring - Guidelines

Space Based Information Support for  
Decentralized Planning (SIS-DP)

*Empowering Communities for  
Reshaping Economy, Society and Environment*

National Remote Sensing Centre  
Indian Space Research Organization  
Department of Space, Government of India

September, 2014

