

## **Success Story: Space Based Information Support For Decentralised Planning Update (SISDP-U)**

### **Applications of Data Generated from the SISDP Project -Kerala State**

Kerala state remote sensing and Environment centre carried out the work of Space based Information Support For Decentralised Planning (SISDP) project sponsored by NRSC, ISRO for state of Kerala during 2011 to 2016. The main objective of the project was to generate cadastral level digital data for entire state for the purpose of decentralised planning at grass root level. The seamless cadastral data for Kerala with 14 district, 75 Taluks and 1093 villages were generated using the cadastral maps or litho map provided by the Survey and Land records Department of Kerala. The same data was used to generate the administrative layers of 941 Grama Panchayaths, 87 municipalities and 6 corporations in the state.

The digital information on 1:10,000 scale is in use for various department for different purposes and applications. The major users are Department of Revenue, Agriculture, Forest, Environment, Vigilance and Honourable Court.

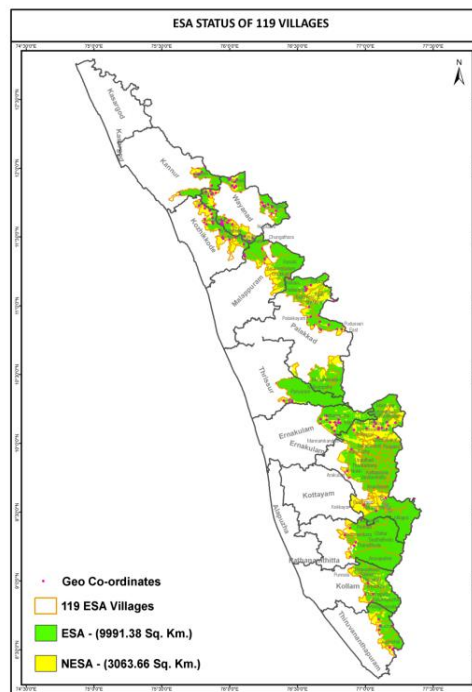
#### ***Application - 1***

The first use of this cadastral data was for mapping of the Ecologically Sensitive Area (ESA) in 123 villages of Kerala. The report was submitted to the MoEF&CC through state Environment Department in 2018.

The MoEF&CC constituted a High Level Working Group (HLWG) chaired by Dr. K. Kasturirangan to suggest all round and holistic approach for sustainable and equitable development taking into account of suggestion and recommendations of Western Ghats Ecology Expert Panel (WGEEP) Report. The HLWG defined the extent of Western Ghats area in six states taking the smallest revenue boundary village as the analytical unit for demarcation of Ecologically Sensitive Areas (ESA). In Kerala 123 villages were listed as ESA in the HLWG report. Taking into account of the comments and protections made by different section of the people in Kerala, the Government appointed an expert committee chaired by Dr. Umman V.

Umman to examine the matter and submit report. The Expert Committee approached the KSREC through Department of Planning and Economic Affairs, Government of Kerala for demarcation of the ESA and Non-ESA within the 123 villages listed in the HLWG report on Western Ghats. The work has been entrusted to the GIS team of KSREC.

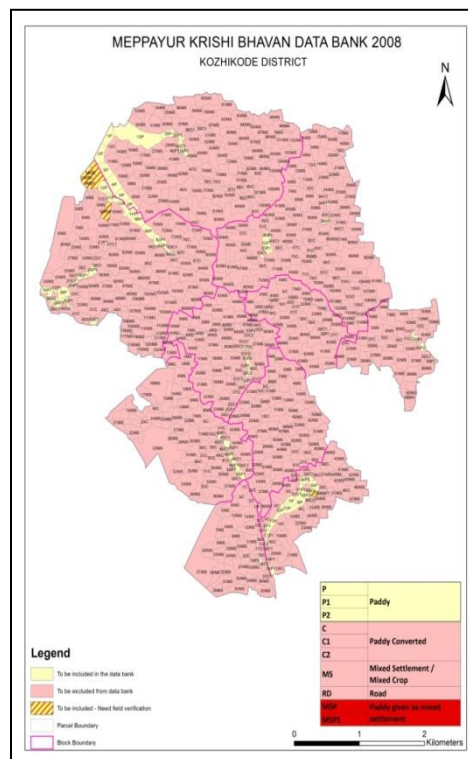
KSREC carefully examined various information available for demarcating the Non-ESA by following a detailed large scale analysis on 1:5,000 cadastral maps generated under SIS-DP project. Taking cadastral as base map, the spatial land use pattern of each 123 villages were analysed and defined the plot wise area pertaining to protected forest, waste lands, water bodies under ESA and separated the settlements, Agricultural lands within the survey plots and arrived at the exact area and survey numbers under ESA in 123 villages in the State.



## Application - 2

### Validation of draft Agriculture Data Bank for the Department of Agriculture Development and Farmers Welfare ( 2017-23)

The State of Kerala has passed the Kerala Conservation of Paddy Land and Wetland Act in 2008. The Act is aimed at conservation of paddy, wetland and to restrict conversion or reclamation. To implement the law, the Agriculture Officers at the Krishi Bhavan level were entrusted with the task of preparing a Data Bank with the cultivable paddy land and wetland information within the jurisdiction of the concerned Agriculture Office with survey number wise. The same was validated by KSREC with the help of Remote Sensing technology using satellite imagery 2008. The cadastral map generated under SIS-DP was superimposed on satellite imagery, analyse the status of land as on 2008 and record up to which the extent the change detected (reclaimed or not) than the draft data bank. The ortho rectified CARTOSAT data is used for georeferencing the cadastral boundary of each Krishibhavan. About 400 draft agriculture data banks, published by the department has validated with the support of the cadastral data base generated in SISDP project.



### *Application - 3*

#### **Satellite image based report on the status of plot, survey/sub-division wise for the individual applicants ( 2015-...)**

The Subdivision wise plot information was another application of the SIS-DP project output data. As per the requests from officials of different departments viz., Revenue, LSGD, Agriculture, Home, from the Honorable High Court or from other Judicial forums regarding the current / historical status of land/survey plots, survey / sub-division wise has been providing by KSREC. Using the SISDP data products, CARTOSAT- 1, LISS-IV images and cadastral data base is referring for the process. More than 45,000 individual reports were processed till date from year 2017 with a processing fee of Rupees 1500 per report as fixed by Government.

### *Application - 4*

#### **‘State Wetland Inventory and Assessment of Kerala’ for the State Wetland Authority of Kerala (2016-2023)**

The MoEF& CC has identified a number of wetlands for conservation and management under the National Wetland Conservation Programme and some financial assistance is being provided to State Governments through State Wetland Authorities for various conservation activities. The need to have an updated map database of wetlands at large scale that will support such actions has been realized. This work is an attempt for State wetland Authority of Kerala (SWAK) to have an appropriate geospatial database of natural wetland resources that is based on high resolution satellite Remote Sensing (RS) data in Geographical Information System (GIS). The mapping has been envisaged to KSREC at 1:5,000 scale using high resolution satellite data and cadastral maps as base to account for numerous small yet important wetlands found across the state of Kerala.

Primary identification of wetlands done using ortho rectified CARTOSAT data with references to SOI Toposheet, Theses cross checked with Wetland Atlas of SAC, Ground truthing was done jointly by SWAK and KSREC team, First boundary delineation done from CARTOSAT-1 data,

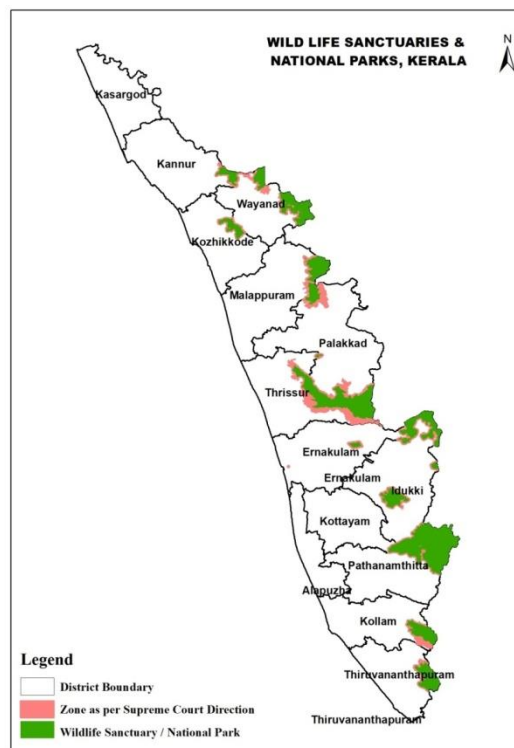
Due to Seasonal fluctuation, wetland boundary has corrected with available historical data of Google Earth, Survey boundary within and sharing the wetlands identified by spatial overlay.

### ***Application - 6***

### **‘Large Scale Mapping of Eco-Sensitive Zones around National Parks and Wild Life Sanctuaries in Kerala’ for Department Forest and Wildlife, Govt. of Kerala**

The Hon’ble Supreme Court of India vide Judgment dated 03/06/22 in I.A.1000 of 2003 in WP (C) 202/95 had directed the Principal Chief Conservator of Forests, Kerala to make a list of subsisting structures and other relevant details within the respective Eco-sensitive Zones (ESZs) of the Protected Area in Kerala with the assistance of Government agency for satellite imaging. The Department of Forest approached Kerala State Remote Sensing and Environment (KSREC) for demarcation of the Eco- Sensitive Zones around National Parks and Wild Life Sanctuaries in Kerala.

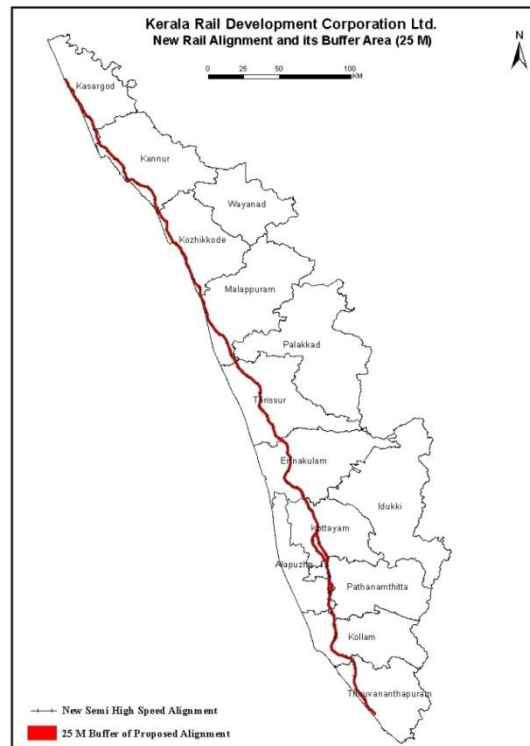
The KSREC formulated a standard methodology and project execution plan to carry out the work in a systematic and scientific approach. As per the methodology the work was carried out using the cadastral maps generated in the SISDP project and satellite data in GIS platform. The statistical information of each village is calculated, the spatial, present land use pattern inside the zone were demarcated and the subsisting structures visible in the satellite data were demarcated as point data information.



**Application - 7**

**“Land Acquisition support for Semi High speed Rail Alignment” for Kerala Rail Development Corporation Ltd.**

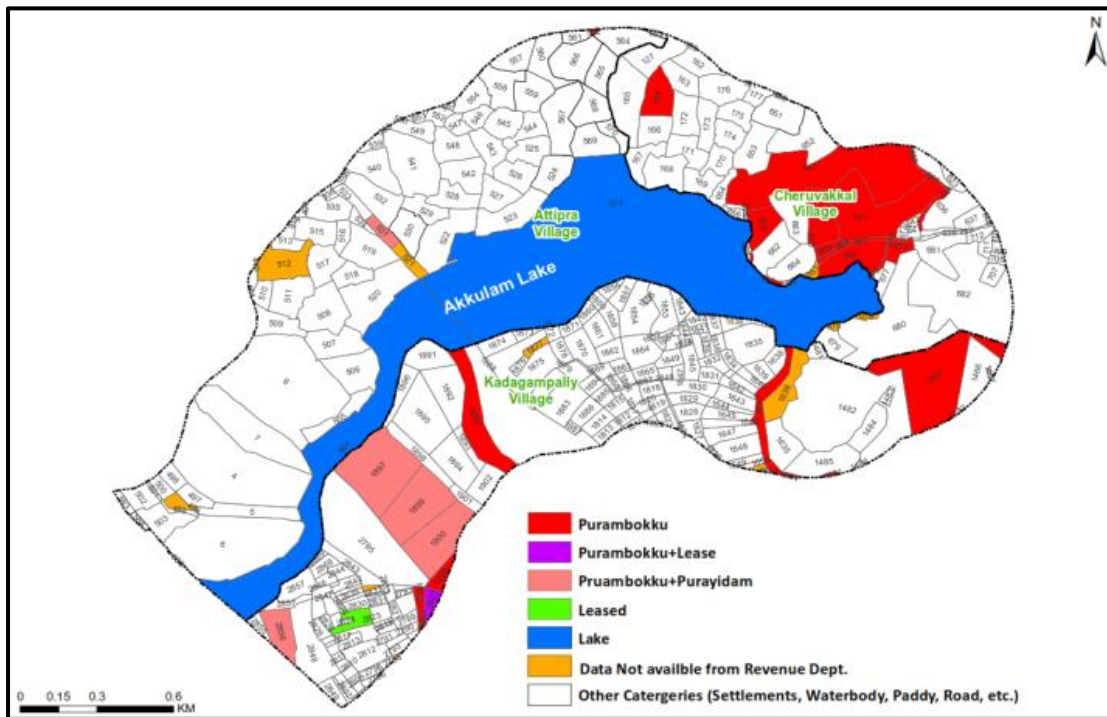
The State Government through Kerala Rail Development Corporation Ltd (KRDCL) approached for technical support for the purpose of land acquisition for Semi High Speed Rail Corridor between Thiruvananthapuram and Kasargod. List out the survey plot details within the proposed rail alignment and its 25 m buffer area touching approximate 201 villages of 11 districts in state. An area of 2931 Ha being covered by the proposed alignment with 25 meter buffer. With short span of time, KSREC has delivered Revenue details of 25 m both sides of proposed alignment with survey and revenue block numbers and details regarding villages, Taluk and type of land taking SISDP data as base information integrated with subdivision from FMB.



### ***Application - 8***

## **“Encroachment in Akkulam Lake and surroundings” for Akkulam Destination Management Council (ADMC), Thiruvananthapuram**

Mapping of seasonal water level, land use, and encroachment etc. of 500 m buffer zone near Akkulam Lake in cadastral level. This study undertakes an area encompassing 500M perimeter of the lake. The map showing land categories delineated in the 500 M buffer area around Akkulam lake. This includes Attipra, Kadakampally and Cheruvaykkal villages.



### ***Application - 9***

## **Report on land use change of survey plots in Mulaikkal village, Ambalapuzha taluk of Alappuzha district (Alapuzha lake palace Resort) for District Collector, Alapuzha.**

District Collector, Alapuzha by requested for No. C10.57262/12 dated 17-10-2017 land use/cover change detection report and maps of the survey plots 77/9, 77/15 and 78/8 in Mulaikkal village, Ambalapuzha Taluk of Alappuzha District, the lake palace resort site.

***Application - 10***

**Report on Harrison Malayalam limited for Office of the Principal Accountant General, Kerala**

The Senior Audit Officer, Office of the Principal Accountant General (ERSA), Thiruvananthapuram vide letter Lr. RSA/Review Party-3 dtd. 08/08/2017 requested for validation of 248 survey number wise property details of M/s HML. As pilot exercise we have carried out work in four sample geographical area in Pozhuthana village, block no.23 Sy. No: 9, Vellarimala village, block no. 32, Sy. No: 244 and 310 and Achooranam village, Bl.no.21 Sy. No.140). The results of the work had submitted on 19/08/2017. The report of all 248 survey plots in 5 districts were also completed.

***Application - 11***

**GREEN FIELD AIRPORT SABARIMALA**

State Government selected the Cheruvally Esatate as the site for proposed airport near Shabarimala Temple. Kerala State Industrial Development Corporation Ltd. (KSIDC) has been appointed as the nodal agency for commissioning a consultant to conduct feasibility study on the airport project. KSIDC, informed KSREC to provide spatial data and information to M/s Louis Berger Consulting Pvt Ltd. KSIDC/TVM/SBG/2017 Dtd. 13/12/2017.

**Prepared by : Kerala Remote Sensing Centre and RRSC- S, Bengaluru**