

NOTE ON NNRMS/RRSSCs*In dicke
VOTER*INTRODUCTION

Remote Sensing Technology offers a new tool in resources survey and management. It provides a fast and reliable method for inventorying various types of natural resources. With an idea to fully utilise this technology, Government of India approved the establishment of National Natural Resources Management System (NNRMS).

ROLE OF DOS

The Department of Space (DOS) has been made the nodal Department for evolution and establishment of the NNRMS. The generation of integrated data, mainly based on remote sensing, and the analysis and dissemination of information derived from the data, are the main responsibility of DOS, while activities relating to utilisation of the information will be carried out by the respective Central and State Government agencies. DOS is also to install and initially manage, on behalf of the different funding organisations of the Government of India, a set of Regional Remote Sensing Service Centres (RRSSCs) to cater for the needs of the different geographic regions. Some major national surveys were conducted in forest mapping, wasteland mapping etc.

ROLE OF STATE
GOVERNMENTS /
UNION TERRI-
TORIES/CENTRAL
AGENCIES

In order to realise the full potential of remote sensing technology there is need that a large number of projects have to be carried out by the State/User Departments. Towards this, DOS had suggested that all States / Union Territories set up their own remote sensing centres with basic visual interpretation facilities to start with.

Many States / Union Territory Governments have taken steps to identify nodal agencies / Departments and made budget provision towards setting up of remote sensing units. Remote Sensing Application Centres (RSAC), Units or Cells are presently functioning in the States of Bihar, Gujarat, Karnataka, Kerala, Madhya Pradesh, Orissa, Rajasthan, Tamil Nadu and Uttar Pradesh. During the Seventh Plan

period, the States of Andhra Pradesh, Assam, Haryana, Jammu and Kashmir, Maharashtra and Manipur propose to set up State Remote Sensing Applications Centres, Units or Cells.

The State Remote Sensing Application Centres primarily will undertake application studies relevant to the State concerned. The studies relating to various natural resources such as water, forest, agriculture, minerals, soils, land use etc., will be taken up on a priority basis. In addition to the above, they will also participate in various national projects for resources monitoring and inventorying such as national wasteland mapping for critically affected districts, forest cover mapping etc.

REGIONAL REMOTE
SENSING SERVICE
CENTRES (RRSSCs)

In order to provide basic digital processing facility to the large number of users in the country, Government of India decided to set up five RRSSCs one each at Bangalore, Dehradun, Nagpur, Jodhpur and Kharagpur. These Centres will be equipped with sophisticated digital processing facility centred around powerful (VAX 11/780) computer system and peripherals. In the initial years, the RRSSCs will provide training in image processing to users. A major part of the software requirements of RRSSC is being met by indigenous development. The procurement of the computer systems is in advanced stage and the RRSSCs are expected to be operational by 1987. In addition to the digital analysis facility, each RRSSC will be equipped with full fledged photolabs, ground truth collection equipments, audio visual aids and limited visual interpretation equipments.

Two more RRSSCs one each in Shillong and Jammu and Kashmir are planned to be set up during Seventh Five Year Plan period to cater to the needs of the North Eastern region, and Jammu and Kashmir and its neighbouring States. The Central Management Office (CMO) situated in Bangalore looks after all the co-ordination in terms of facility, manpower etc., for the RRSSCs.

The RRSSC-CMO is also extending technical and managerial assistance for procuring Image Analysis Systems for the State level remote sensing centres such as Tamil Nadu, Uttar Pradesh, Orissa, Haryana and Madhya Pradesh. These are called Associate Centres. An Interactive Image Analysis System for similar to the RRSSC System has been made operational at Institute of Remote Sensing, Anna University, Madras, Tamil Nadu. Also for the Remote Sensing Applications Centre, Lucknow, Uttar Pradesh and the National Forest Data Management Centre of Ministry of Environment & Forests, similar Image Analysis Systems are being procured and set up by the RRSSC-CMO.

The RRSSCs at Bangalore and Dehradun have also conducted short duration hands-on training courses in digital processing for the scientists of user organisations. Thus, on the whole, RRSSCs have come into being in a successful manner and are ready to service the major Application Projects relating to the Agriculture Mission, Forest type classification, Vegetation Index etc.

ROLE OF IRS

One of the major elements of the Indian Space Programme is the development and deployment of Remote Sensing Spacecraft and the technology to use them in aid of a National Natural Resources Management System (NNRMS). With instruments for remote sensing mounted on a satellite orbiting around the earth, large areas can be covered because of the vantage point in space, much more cheaply and quickly than by photography from aircraft, or by ground based survey. Further, as the earth rotates, the same area can be covered several times and can be monitored periodically during the life of the satellite. The repetitive coverage makes the satellite extremely useful for monitoring dynamic resources, such as agriculture, forestry and water, in applications such as crop inventory and forecasts, forest mapping and damage detection, studies covering land use/land cover mapping, land degradation and desertification, soil mapping, flood mapping etc. Other important applications where satellite remote sensing has provided quick

accurate and reliable information for ground water exploration, petroleum and mineral exploration, land erosion monitoring in coastal environments, urban land use studies and cartography. The IRS Programme envisages the establishment of such a system in collaboration with the resources management agencies (eg. Ministry of Agriculture, Irrigation, Forests and Environment, Mines etc.)

IRS UTILISATION
PROGRAMME (IRS-UP)

Sixteen projects for remote sensing technology development operationalisation have been identified in the fields of Agriculture, Hydrology, Geology and Environment under the IRS-UP. These may be separately classified into operational (3), quasi operational (5), experimental (6), and technique development (2). The operational projects dealing with regional geological mapping, ground water exploration and flood mapping have been taken up by the NRSA with the involvement of the major national survey organisations and some state agencies utilising the Landsat Multi-Spectral Scanner and Thematic Mapper data, to begin with; the methodology thus developed will be extrapolated as and when data from the IRS become available. In the quasi-operational projects dealing with land use/land cover monitoring, land degradation, snow-mapping, drought-monitoring and soil-mapping, the National Remote Sensing Agency (NRSA) is carrying out extensive work to make these quickly operational. Among the experimental projects, significant work on estimation of wheat acreage has been carried out in the Karnal area (Haryana) under a project entitled Crop Production Forecasting. It has been found that optimally selected and processed digital data from satellites can be of use for estimating acreage under wheat with good accuracy. In all, 31 Central and State Government Departments/agencies are collaborating with DOS in the IRS-Utilisation Programme. Work on most of them is progressing as per schedule.

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