Societal Applications of Indian Space Programme: An Update

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Space technology for Healthy & Knowledgeable Society

**Tele-Education**
- Jhabua Dev. Communications Project (1996)
- GRAMSAT Pilot Project (Current)
- EDUSAT Utilization Prog (Current)
- > 55,000 Virtual Class Rooms

**Tele-Medicine**
- 382 Hospitals
- 306 Dist/ Rural Hospitals
- 60 Specialty Hospitals
- 16 Mobile Units
- > 650,000 Patients treated

**Literacy:**
- Total Population: 1150 Million
- Literacy: 65%

**Medical consultants:**
- Urban: 75%
- Semi Urban: 23%
- Rural: 2%
Village Resource Centre (VRC)
For Empowering Rural Community

VRC Coverage:
- States/ UT: 22
- No. of VRC: 473
- Expert Centres/Hospitals: 75
- No. of Programmes: 6000

Single Window Delivery Mechanism for:
- Information on Land and Water Resources
- Dissemination of Weather & Disaster info
- Tele education & Tele healthcare services
- Advisories on Agriculture, Fisheries
- Enhanced livelihood opportunities
- Enabling the villagers with info on Price, Market, Pests, Diseases, Livestock, Govt. schemes, job opportunities, etc.
Groundwater Exploration & Recharge

Rajiv Gandhi National Drinking Water Mission

- 1.6 billion (28%) lack safe drinking water; 5 M die per year
- 1.5 billion people depend on GW for drinking
- GW Pumping > natural recharge @ 160 billion m$^3$/year

- 14 States completed; work is in progress in 6 states
- 275,000 + Bore wells drilled with 90% + Success rate
- 9,000 + Recharge structures constructed
Wasteland Inventory

A Targeted Rural Development Programme: with village & watershed boundaries

- National Wasteland Inventory Project (1986 - 2000)
- National Wasteland Updation using 2006 - Ongoing
- Coverage: Entire India in 1:50k scale
- No. of Wasteland categories: 28
- Wasteland Change Analysis project using 2009 data taken up

- 63.85 mha - 20.17% of India’s TGA (1986 -2000 data)
- 55.27 mha - 17.45% of India’s TGA (2003 data)
- 46.43 mha - 14.81% of India’s TGA (2005 data)
National Urban Information System (NUIS)
Towards administering Towns/ Cities in a Scientific Manner

- Multi scale (10K, 2K, 1K) hierarchical Urban Geospatial database
- For supporting Urban Planning, Infrastructure development, e-governance,

Physiography
Soil
Urban Landuse
Geomorphology
Lithology

Base

Physiography

No. of Towns : 158
Area : 55,755 sq.km

Metro - 13 towns
Class I - 76 towns
Class II - 15 towns
Class III - 19 towns
Class IV - 17 towns
Class V - 6 towns
Class VI - 12 towns
Improving Productivity in Drylands

Integrated Mission for Sustainable Development (IMSD)

Land & Water resources development plans for 84 Mha in 175 districts in country

Land Resource Development Plan

Ground Water Potential

Drainage

Imagery

Watershed

Water Resource Development Plan

Soil

Land Use

Participatory Land and Water Resources Management : Sujala

Monitoring & Evaluation of developmental activity in 77 sub-watersheds in 5 districts of Karnataka

- Watershed prioritization & Development using EO inputs
- Concurrent Monitoring & Mid-course correction of Implementation
- Social & Environmental Impact Assessment
- Improving the quality of life
- Conferred Globe Sustainability Research Award 2010 by the Globe Forum

Monitoring Land use Changes

Cropping Intensity has increased from 106 % to 128 %

Fallow

Maize

IRS-1D, PAN+LISS-3 FEB 2002

IRS-1D, PAN+LISS-3 MAR, 2005
ICT enabled geospatial platform using space based data for planning & carrying out developmental activities in a decentralized and speedy manner involving local bodies

SIS-DP Objectives

- Input for Planning at Panchayat Level
- Land & water resources information at Cadastral level
- Tools for user driven applications for speedy, accurate decision making;
- Dissemination of data through existing network
- Capacity building in state departments
Disaster Impact Relief Rehabilitation Reconstruction Mitigation Preparedness

Post Disaster Phase
Pre disaster Phase

Observational Systems
Satellite (GEO, LEO, All-weather), Aerial, Ground

Disasters - Operationally addressed
Flood
- Inundation monitoring
- Damage assessment
- Hazard zonation
- Bank erosion studies

Drought
- Monthly & End-of-Season Agri Drought Assessment

Earthquake
- Damage Assessment

Cyclone
- Inundation mapping
- Damage assessment

Forest Fire
- Active fire detection
- Damage assessment

Landslide
- Damage Assessment
- Hazard zonation

Disaster Management Support (DMS) System

Single-Window for Services Delivery
DMS-DSC

Multi-tier databases with query/decision tools

Emergency Communication
CWDS, Type D Sat phones, DDWS, Fishermen DAT...

R&D on early warning
Cyclone, flood, Earthquake, Landslides, Drought,....

International Activities
Charter, Sentinel Asia, UN Spider...
Cyclone Laila - 20\textsuperscript{th} May 2010

- Formed in the Bay of Bengal on 17\textsuperscript{th} May 2010
- Landfall near Bapatla in Prakasam District on May 20\textsuperscript{th}, 2010
- Many coastal districts in Andhra Pradesh were worst affected.

Inundation Statistics

<table>
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<tr>
<th>#</th>
<th>District name</th>
<th>Inundated Area (ha)</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Prakasam</td>
<td>39618</td>
</tr>
<tr>
<td>2</td>
<td>Nellore*</td>
<td>18734</td>
</tr>
<tr>
<td>3</td>
<td>Chittoor*</td>
<td>2768</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>61121</td>
</tr>
</tbody>
</table>

Note: Flood inundated districts with less than 1000 Ha are not considered.
Thank you for your kind attention

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