

## KEY THRUST AREAS UNDER GT SOLUTIONS

### Watershed Management

Monitoring of watersheds through mapping factors such as land use, slope, rainfall, runoff, extent and intensity of soil erosion, amount of soil loss, level of existing degradation, etc.

### Water and Sanitation

Preparation of GIS based interfaces for management of constructed structures, gap analysis for identification of areas that require such structures, groundwater quality mapping, etc.

### Protected area Management

Study changes in land cover over time, assess the type of change (from one use to another), quantify the change through fragmentation studies, etc.

### Rural Development

- Mapping of status of resources, type of infrastructural facilities etc
- Mapping of livelihoods capabilities based on affecting and contributing factors.
- Mapping of resources through community participation to mobilize the community for better management of natural resources.

## AFPRO'S GEOSPATIAL TECHNOLOGY FACILITIES

- ▶ **A well established Geospatial Technology Unit:** offers complete solutions in the areas of Natural Resource Management.
- ▶ **Latest GIS Software:** ArcGIS/Arc Info software with tools like
  - Analyst and Spatial analyst for spatial queries like suitable location or cost effective path.
  - Geostatistical analyst to understand statistical relationships between geographic features.
  - 3D Analyst to create and visualize three-dimensional surface.
- ▶ **Integrated Land and Water Information System (ILWIS):** Image processing, change detection and spatial modeling.
- ▶ **Latest Global Positioning (GPS) equipments:** Magellan and Garmin
- ▶ **Experienced senior professionals and operators**

# Geospatial Technology in Natural Resource Management

WAKAL BASIN WITH TEHSIL BOUNDARY



DRAINAGE MAP  
Wakal Basin



LANDUSE LANDCOVER MAP  
WAKAL-BASIN



Action for Food Production (AFPRO)



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# APPLICATION OF GEOSPATIAL TECHNOLOGY IN NATURAL RESOURCE MANAGEMENT

**Action For Food production (AFPRO)** is a national level NGO with Christian inspiration providing socio-technical services for rural development. AFPRO supports grassroot NGOs and rural communities with technical guidance facilitation and monitoring support for the implementation of environmentally sound projects.

AFPRO works through 9 field units located across India in the states of Maharashtra, Karnataka, Rajasthan, Jharkhand, Madhya Pradesh, Andhra Pradesh, Assam, Chattisgarh and Orissa.

AFPRO offers Geospatial Technological Services for planning rural development activities based on NRM.

## GEOSPATIAL TECHNOLOGY (GT) IN NATURAL RESOURCE MANAGEMENT (NRM)

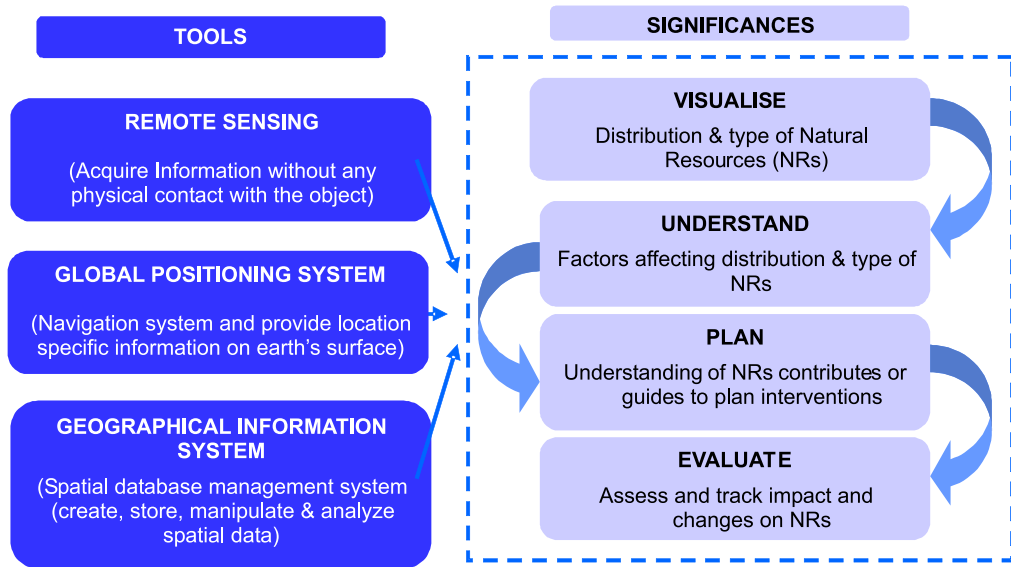
Millions of farmers across the country depend on natural resources for their livelihoods. Increased dependency of small and marginal farmers on natural resources for achieving their food security has led to an enormous pressure on the existing natural resource base. This has resulted in a radical change in availability and distribution

of resources within existing spatial contexts. In this backdrop, proper geographical understanding of the factors affecting distribution and/or leading to the deterioration of natural resources is required for sustainable management of natural resources.

**Geospatial Technology** comprising tools like Remote Sensing, Global Positioning Systems (GPS) and Geographical Information Systems (GIS) plays a significant role in understanding the status of resources along with the affecting factors. This helps in planning and designing better practices to restore natural resources.

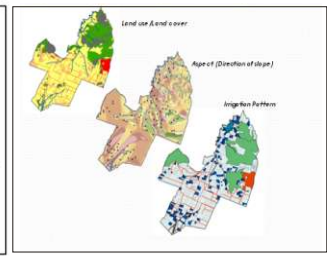
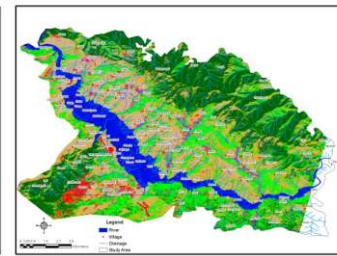
AFPRO offers services in Geospatial Technology with value-addition from its NRM experiences. The enormous use of Geospatial Technology in the management of natural resource has been integrated in AFPRO's projects to provide solutions for planning and implementing environmentally sound interventions related to development of land and water resources, food security and rural livelihoods. AFPRO now offers Geospatial Technological solutions that will add impetus to NRM based rural development activities by providing spatial information base for strategic planning, identifying policy thrusts and mapping progress of projects.

## APPLICATION OF GEOSPATIAL TECHNOLOGY IN NRM



# GEOSPATIAL TECHNOLOGY SERVICES OFFERED

<b>Thematic Base Maps and Spatial Databases</b>	<p>Customized base maps of any area to interactively display the information related to natural resources. This information could include land use/land cover maps, slope, drainage patterns, transportation maps and others.</p> <p><b>AFPROs Key Projects:</b> Design of spatial databases for the Wakal river basin comprising land use, drainage patterns, slope, elevation, village location etc. Cadastral level mapping for Sagatpuri watershed in Udaipur for land use planning.</p>
<b>GIS based Action Plan</b>	<p>Based on the thematic mapping affecting and/or contributing, GT is used to prepare action plans for natural resources management.</p> <p><b>AFPROs Key Projects:</b> Preparation of groundwater maps while assessing the Water Balance in a part of Bangalore. Use of GT under proposed restoration work for Balasamad Lake for understanding extent of the catchments of the Lake and the nature of change in land use over a period of twenty years.</p>
<b>Impact Assessment</b>	<p>GT is used to assess characterization of natural resources in a given location and identification of gaps to prioritize interventions as natural resource management strategy.</p> <p><b>AFPROs Key Projects:</b> Impact Assessments of NABARD watersheds using geospatial tools to quantify and map the improvements in the natural resources. Assess the impact of the Tehri dam on surrounding natural resources and infrastructure.</p>
<b>Priority/ Gap Analysis</b>	<p>GT is used to assess deterioration level of natural resources and prioritize conservation measures based on the findings.</p>
<b>GIS based PRA</b>	<p>GT is used to facilitate PRA ((Participatory Rural Appraisal) by mapping of local resources along with community. The appraisal helps to mobilize the community for better management natural resources.</p> <p><b>AFPROs Key Projects:</b> GIS based validation of PRA to assess state of natural resources in Mahoba watershed, Uttar Pradesh.</p>



Pre and Post construction of dam images reflect submergence of surrounding land use, villages and infrastructure (roads)

PRA based thematic maps for a natural resource management