Andhra Pradesh State of Forest Report 2013

ANDHRA PRADESH FOREST DEPARTMENT
GOVERNMENT OF ANDHRA PRADESH
HYDERABAD

Kautilya on forest and wildlife conservation & management:

The "Arthashastra" of Kautilya, which is the treatise Indian administration, highlights the scientific approach to the aspects of administration, forest policy and their enforcement. There was a regular and independent Forest Department in the administration of Chandragupta Maurya. Kautilya, a great visionary as he was, sketched an ideal Indian State with forests as an important part. In "Arthashastra" he mentioned four types of forests viz., Pashuvan(Deer Forest), Mrigvan(Game Forest), Dravyavan(Productive Forest) and Hastivan (Elephant Forest) which have its own functions.

The Productive Forest was for commercial production of forest produce, the Elephant Forest for capturing wild elephants and nurturing them and the Game Forest for recreational use like hunting. The Vanaprasthasor forest recluses were also allotted parts of forest for their habitation, meditation and contemplation. The well-protected Leisure Forest, intended for the King's pleasure, had plantations bearing sweet fruits, thorn less trees and pools of water. It was stocked with tame and harmless deer, elephants and other wild animals. Wildlife sanctuaries and wildlife protection also found a mention in "Arthashastra".

Kautilya said that whoever plants a large forest for exploiting the timber resources, near the border of his State, watered by a river and yielding material of high value, is said to out manoeuvre others. A forest watered by a river is self-sustaining and provides shelter in times of calamities. Probably today's irrigated plantations along the canals resemble most what Kautilya described. Such examples may be compared with today's Indira Gandhi Canal Areas in Indian Thar Desert.

Kautilya outlines measures for the development and improved management of mines and forests, agriculture and livestock, manufacturing, and commerce. The king was advised to (and did) "exploit timber and elephant forests".The king had property rights in all natural resources. Kautilya did recommend practices for the conservation of natural resources, especially living resources. He was aware that the future productivity of natural resources is linked to their appropriate conservation. Also, in line with Hindu traditions, he recommends kindness towards animals. The present day forest administration and management is the descendant of Kautilya's vision of future only.

ANDHRA PRADESH STATE OF FOREST REPORT 2013

Andhra Pradesh Forest Department
Government of Andhra Pradesh
Hyderabad

Andhra Pradesh
State of Forest Report - 2013

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Government of Andhra Pradesh

Sri N. KIRAN KUMAR REDDY
Hon'ble Chief Minister of A.P.

MESSAGE

It gives me immense pleasure to learn that Andhra Pradesh Forest Department is bringing out its Annual State Forest Report 2013 showing changes of forest cover between 2010 and 2011. It is encouraging to note that Andhra Pradesh Forest Department brings out this report annually using modern technology.

Forests play an important role in developing the livelihood of rural community particularly tribals. It also helps in maintaining ecological balance, reduction of soil erosion and maintains atmospheric equilibrium. There is Global concern now to protect and expand our green cover as our existence is threatened due to climate change, Global warming and depletion of Ozone layers etc., I hope this work showing loss and gain of forest cover in various geographical units and information on forest fire etc., shall go a long way in proper planning and management of our forest resources.

I congratulate the PCCF (HoFF) and his team who achieved this difficult task.

Kiran Reddy.

09-07-2013
HYDERABAD

(N. KIRAN KUMAR REDDY)

Government of Andhra Pradesh

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Sri Satrucharla Vijaya Rama Raju
Hon'ble Minister of Forests, Environment
Science & Technology

MESSAGE

Andhra Pradesh is the fourth biggest State in India with about 63,814 Sq. Kms of notified forests. There are 2 Tiger Reserves, 6 National Parks and 21 Sanctuaries in the State of Andhra Pradesh. Moreover there are about 8000 Vana Samrakshana Samithies in the State for Protection and improvement of our Forests. Several crores of rupees are spent under various schemes like CAMPA, CAMPA - NPV, FDA, 13th Finance Commission, NREGS to protect and improve the forests.

It is therefore vital to see how the forest cover is changing Division wise in the State with location and area specific information. I am happy that State of Forest Report 2013 gives us the details of Forest Cover change using Satellite images of 2010 & 2011 to act as an impetus for taking up further improvements depending on the depletion of Forest cover. Very hard work is done by the IT wing of the Department under the guidance of PCCF (HoFF) to bring out this informative report.

I hope this annual report which is the 4th of its kind shall help one and all in the Department in protection and planning.

24-06-2013
HYDERABAD

(Satrucharla Vijaya Rama Raju)

Government of Andhra Pradesh

Sri M. Samuel, I.A.S.,
Special Chief Secretary to Government

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MESSAGE

Forests are God given gift of nature to the mankind. They provide Soil, cause rains, give Oxygen and food to animals and human beings. They also preserve Carbondioxide in solid form, there by reducing global warming and ameliorate our environment. Hence, the forests are considered sacred since times immemorial. The Mauryas, the Guptas and English rulers had taken action to preserve forests and conserve Wild Life because, they realized that the very existence of human beings depended on the forests. It is thus crucial that forests and Wild life are conserved for eternity.

The State of Forest Report 2013 is an attempt to depict the forest cover changes between 2010 and 2011 using satellite technology, with an objective to asses ourselves whether we are able to increase the cover or not, and to take corrective steps. This 4th annual exercise certainly helps the department to protect the forest wealth and plan for future to increase it.

I congratulate the Prl. Chief Conservator of Forests (HoFF) and his team for attempting this excellent report.

01-07-2013
HYDERABAD

(M. Samuel, I.A.S.,)
Special Chief Secretary to Government
E.F.S & T Department.

FOREWORD

Andhra Pradesh has 63,814 Sq.Km of recorded forests which are mostly Deciduous forests and Thorny forests apart from few patches of mangroves. They constitute 23% of the geographic area of the State. It is very crucial to preserve the existing cover and make the scrub as well as blank areas green by afforestation. The GIS Wing of Andhra Pradesh Forest Department is entrusted with the work of monitoring the forest cover of State inside notified areas every year using satellite technology. The job involves collection of satellite data (LISS III Sensor) from NRSC; Georeferencing them, classifying them, determining change areas, ground truthing them and preparing the report. The change polygons are flashed to field officers in MIS package developed and feed back is taken online. The disputed polygons are ground checked by the scientists before the report is generated.

The Present report is the fourth consecutive annual report and highly exhaustive. It gives details of encroachments, diverted areas, areas where fellings have been taken place for planting and areas where greenery has developed by comparing 2010 (Oct- Dec) image with 2011 (Oct- Dec) image. The work is technical and the report is highly reliable.

I congratulate the entire team led by APCCF (IT) who have laboured hard to bring out this annual report in a professional manner.

05-07-2013
HYDERABAD

B.S.S. REDDY
Prl. Chief Conservator of Forests & HoFF
Andhra Pradesh, Hyderabad

PREFACE

The Andhra Pradesh State of Forest Report is the 4th publication in a row by the IT Wing of Andhra Pradesh Forest Department. The reports lead us to reevaluate ourselves and our working.

Andhra Pradesh Forest Department is at the cross roads. Pursuant to National Forest Policy 1988, people's participation was invoked to protect and improve our forests. Lot of money is spent in last decade including funds from World Bank, NABARD, FDA and Finance Commission grants to protect and improve our forests. But satellite pictures give us disturbing results. Let us do some soul searching how to improve our green cover. The report shall assist one and all in that endeavor.

Chapter -I deals with the introduction wherein a brief about Andhra Pradesh Forests and activities of Geomatics wing are presented.

Chapter - II deals with the satellite data used and the procedure adopted, limitations of technology, the accuracy aspects and summary of the cost of generation of the APSFR 2013.

Chapter - III deals with State wide results and the extent of various forest canopy cover classes in various divisions, VSS areas, protected areas (PAs) and a brief analysis of changes between 2010 end & 2011 end.

Chapter -IV lists the Forest Division wise changes in forest canopy cover between various classes up to Beat level; where changes have occurred.

Chapter - V deals with forest canopy cover change statistics in protected areas.

Chapter - VI deals with forest canopy cover statistics in joint Forest Management or VSS areas.

Chapter - VII deals with details of Forest Fires occurring in Andhra Pradesh.

The report is scientifically brought out. Enough care has been taken for its accuracy, which is about 98%. Hope the practicing foresters, wild life and environment lovers and planners shall benefit from the report.

21-06-2013
HYDERABAD

DR. H.C. MISHRA, IFS
Addl. Prl. Chief Conservator of Forests (IT)

Acknowledgements

P. Sreenivasa Rao
Deputy Conservator of Forests (GIS)

Dr. A. Rama Murthy
Assistant Conservator of Forests (RS)

Bringing out the 4th State of Forest Report includes identification and mapping of location specific Forest Cover Changes, both negative and positive, between 2010 and 2011 using the LISS III Imagery which is a herculean task. This is possible only with the great cooperation and support from all the Officers and Staff of APFD. We gratefully acknowledge the guidance and encouragement given by Sri B.S.S.Reddy, IFS, PCCF (HoFF) in bringing out the State of Forest Report-2013. We sincerely acknowledge the guidance and encouragement given by Sri P.K. Sharma, IFS, the then APCCF (IT) presently APCCF (FCA) in refinement of the feedback mechanism and improvement of the analysis. We express our profound gratitude and deep regards to Dr H.C. Mishra, IFS, APCCF (IT) for his exemplary leadership, guidance, monitoring and constant encouragement in all activities starting from procurement of Satellite data till finalizing the report. He is the driving force and led the team from the front. He had gone through the entire manuscript himself and finalized.

Sincere thanks are due to Technical Advisory Committee (TAC) constituted by Government of AP for advising in Geomatics Technology. Critical review by Dr. Devendra Pandey, IFS, (Retd) former DG FSI, Dr. H.C. Mishra, IFS, APCCF (IT), Dr. C.S Jha, Head Forestry & Ecology Division NRSC, Dr. Krishna Bhagawan and Dr D.V.J Shastry, APSRAC are thankfully acknowledged.

Contributions of Smt. Ch. Deepa, FRO (GIS-III), Sri S. Sreenivas, FRO (RS), Smt. J.P.Sowjanya, FRO (GIS), Smt. S.A. Nagini Banu, FRO (MIS) in guiding Project Scientists in image processing and analysis, change polygonisation and also in ground truthing, correcting & compilation of SFR-2013 are sincerely acknowledged.

Project Scientists namely Sri M. Rajeshwar Reddy, Sri B. Ramakrishna, Sri K. Bhaskar, Sri K. Rajashekar Reddy, Smt A.I. Sheeba, Sri A. Srinivasa Rao, Smt D. Kavitha, Smt K. Anuradha, Miss K. Sravani, Smt K. Sharon, Sri B. Pavan Kumar, Sri Krishna Prasad, Sri Ashwin Kumar who worked hard in Image Processing & Analysis, ground truthing, correction, and compilation of the report. Their sincere contribution is highly appreciated and acknowledged. Contribution of Project Scientists namely Sri Karthik and Smt. Harika in developing the Forest Cover Change Monitoring Module for obtaining the feedback from field officers on the change polygons is sincerely acknowledged. This facilitated speeding up of work.

Contributions from all the field officers of the Department from Circle Heads to ABOs are highly acknowledged for Ground Checking of the change areas and furnishing of feedback without which achieving high level accuracy was impossible.

Last but not the least we would like to acknowledge all the officers & our colleagues and other staff in head office for their valuable contributions and suggestions in bringing out this report.

01-06-2013
HYDERABAD

P. Sreenivasa Rao
Deputy Conservator of Forests(GIS)

Dr. A. Rama Murthy
Assistant Conservator of Forests(RS)

CONTENTS

Abbreviations

AE	Allowable Error
AVI	Advanced Vegetation Index
AOI	Area of Interest
AWiFS	Advanced Wide Field Sensor
BIL	Band Interleaved by Line
BIP	Band Interleaved by Pixel
BSQ	Band Sequential
CAD	Computer Assisted Design
CBD	Convention on Biodiversity
CFM	Community Forest Management
CI	Confidence Interval
CV	Coefficient of Variation
DBMS	Database Management System
DEM	Digital Elevation Model
DGPS	Differential Global Positioning System
DIP	Digital Image Processing
DN	Digital Number
DOS	Disk Operating System
DPI	Dots Per Inch
DTM	Digital Terrain Model (or Modeling)
EMR	Electromagnetic Radiation
ESRI	Environmental Systems Research Institute
ERDAS	Earth Resources Data Analysis System
ETM	Enhanced Thematic Mapper
EVI	Enhanced Vegetation Index
FAO	Food & Agriculture Organization
FCC	False Color Composite
FOV	Field Of View
GCP	Ground Control Points
GIS	Geographic(al) Information System(s);
GPS	Global Positioning System(s)
GSDI	Global Spatial Data Infrastructure
HDOP	Horizontal Dilution of Precision
IFOV	Instantaneous Field Of View
IRS	Indian Remote Sensing Satellite
JFPC	Joint Forest Protection Committee
LAI	Leaf Area Index
LCC	Lambert Conformal Conic (projection)
LISS	Linear Imaging Self Scanner
LULC	Landuse / Landcover
MDF	Moderately Dense Forest (In terms of Canopy Cover)
MODIS	Moderate Resolution Imaging Spectroradiometer (or Spectrometer)
MSS	Multi-Spectral Scanner
NAD	North American Datum
NASA	National Aeronautics and Space Administration (U.S.)
NDVI	Normalized Difference VegetationIndex
NDWI	Normalized Difference Water Index
NF	Non-Forest
NRCAN	Natural Resources Canada
NRSC	National Remote Sensing Centre
NIR	Near Infrared
NSDI	National Spatial Data Infrastructure
OF	Open Forest (in terms of Canopy Cover)
PDOP	Positional Dilution Of Precision
PA	Protected Area
PAR	Photo synthetically Active Radiation
PCA	Principal Component Analysis
PF	Protected Forest
PPS	Precise Positioning Service
PVI	Perpendicular Vegetation Index
RADAR	Radio-wave Detection and Ranging
RAR	Real Aperture Radar
RDBMS	Relational Database Management System
RF	Reserved Forest
RGB	Red, Green, Blue Colour Space
RS	Remote Sensing
RTK	Real-Time Kinematic
SAR	Synthetic Aperture Radar
SAVI	Soil Adjusted Vegetation Index
SD	Standard Deviation
SLAR	Side-Looking Airborne Radar
SNR	Signal to Noise Ratio
SPS	Standard Positioning Service
SRTM	Shuttle Radar Topography Mission
SWIR	Shortwave Infrared
TIR	Thermal Infrared
TM	Thematic Mapper
TSAVI	Tansformed Soil Adjusted Vegetation Index
TVI	Transformed Vegetation Index
UTM	Universal Transverse Mercator (Projection)
VDF	Very Dense Forest (in terms of Canopy Cover)
VI	Vegetation Indices
VSS	Vana Samrakshana Samithi(es)
WGS	World Geodetic System
WHS	Water Harvesting Structures

EXECUTIVE SUMMARY

"The Andhra Pradesh State of Forest Report" gives a detailed view of the health of the notified Forests in the State on Annual basis. State of Forest Report 2013 is the fourth report in the series. It gives precise locations of the forest cover changes, assessed using LISS III data of 2010 & 2011 seasons up to Compartment level. It shows that forest cover has depleted inside notified forests of Andhra Pradesh during the period. The changes have been streamed on line and near cent percent verification is done, which give high authenticity to the results. The following are the key results of this assessment:

Key Results:

1. The State had 931.73 Km^2 of Very Dense Forest, 18408.48 Km^2 Moderately Dense Forest & 22651.28 Km^2 Open Forest in 2010 and corresponding figures in 2011 are 931.73 Km^2 of VDF, 18400.61Km^2 MDF, 22594.92Km^2 Open Forest.
2. There is a reduction of 7.87 Km^2 in MDF and 56.36 Km^2 in Open Forest. There is total reduction of 96.70 Km^2 during this period including 32.47 km^2 Scrub forest.
3. There is degradation of forests from higher canopy density class to lower canopy density class in an extent of 105.48 Km^2.
4. There is Positive change in an area of 12.81 Km^2.
5. 7.55 Km^2 of MDF, 62.30 Km^2 of Open Forest and 34.19 Km^2 of Scrub forest has been converted into Non-Forests during the period. Of this, 43.77 Km^2 of forest is lost due to fresh encroachments and 61.70 Km^2 due to clearance of jungle growth for raising of plantations & harvesting of matured plantations and to some extent diversion of forest land for non-forestry purposes.

6. As negative change in forest cover due to clearance of jungle growth for raising of plantations and harvesting of plantations is only a management intervention, the same is not considered as permanent loss of forest cover. Hence, the **net loss of forest** cover by encroachment during this period is **43.77 Km^2.**

7. **VSS** areas showed 12.30 Km^2 of encroachments. It is noticed that 150 VSS in the state are involved in encroachment over an area of 1230 Hectares.

8. **Protected Areas** account for 1.68Km^2 of encroachments.

9. **Most negative change** due to encroachments of 17.15 Km^2 was found in Khammam Circle followed by Warangal Circle with 10.94 Km^2 and Vishakapatnam Circle with 5.82 Km^2. Guntur Circle showed the **least negative change** due to encroachments in an extent of 0.53 Km^2 of 8 Circles where encroachments noticed.

10. **Encroachments** were noticed in 32 Divisions of the state. The Divisions contributing most negative changes due to encroachments are: Karimnagar East (8.12Km^2), Kothagudem (6.46 Km^2), Eluru (4.03 Km^2), Paloncha (3.47Km^2), Badrachalam North (3.21 Km^2) and Srikakulam (3.17 Km^2).

11. **No changes** were found in 04 Divisions, viz., Chittoor west, Kurnool, WLM Medak and WLM Nagarjunasagar.

12. **Net positive change** was found only in one Division, i.e., Warangal North. This has shown a net growth of 280 Hectares, which is commendable.

13. Though there are lot of plantations for improving vegetation cover and growing stock, they are not discernible as to their growth in most cases. This is resulting in loss of forest cover. The technical committee formed by G.O Ms.No.57, EFS&T (For III) Department, dated 07-05-2011 on Geomatic activities has noted this with concern in its meeting on 10-06-2013 and advised for result oriented afforestation.

Chapter - I

INTRODUCTION

1.1 About the state

Andhra Pradesh is the 4th largest state in India, geographical area wise; with an area of 2,75,068 Km^2. It is bounded by Maharastra, Chattisgarh and Orissa in the north, Bay of Bengal in the east, Tamilnadu in the south and Karnataka & Maharastra in the west. The state was formed on 1st November 1956 when states were reorganized on linguistic basis by Government of India. It has 63,814 Km^2 of notified forest land, which is 23.20% of the Geographical area. Under RoFR Act, 2005 individual rights over 1,65,691Ha of Forest land has been given from 2007 to till date to 4,72,016 individuals.

The population of the state is 84.66 million (2011 census) which is 7.41% of country's population. Nearly 73% of the population of the state is rural, which primarily depends upon agriculture for livelihood. Scheduled castes constitute about16% and Scheduled tribes about 6% of the population. Hyderabad, Visakhapatnam and Vijayawada are the principal cities in the state with over a million population. Traditionally, the state is divided into three regions called Andhra Region consisting of the 9 districts of coastal area, Telangana region consisting of 10 districts of erstwhile Hyderabad state and Rayalseema region consisting of 4 southern districts.

1.2 History of Geomatics in AP Forest Department

Prior to 1996 there was no mechanism to monitor the Forest cover changes in Andhra Pradesh. It used to rely on the data given by the Forest Survey of India, Dehradun through its bi-ennial "State of Forest Reports". However, these reports, which were brought out since 1987, did not provide the statistical information on the forest cover inside the notified forest which is under the control of forest Department and outside separately. It presented a nationwide& state wise picture of the green cover, inclusive of the areas outside the notified forests. These provide data only up to the district level and no statistics of forest/tree cover were available below the district units. Therefore a necessity was felt for generating this data for the notified forest areas, which are under the control of Forest Department, up to the smallest unit of administration, i.e. Beat level and Compartment level. This could have been possible only with the setting up of Geomatics unit at the State level. This required procurement of satellite images, Hardware, Software, and technically trained manpower. For doing all this huge investment was essential.

The opportunity came with the launch of World Bank funded Andhra Pradesh Forestry Project in 1994. A consultancy for setting up and operationalization of a Geomatics center at Hyderabad was provided in the project and given to FAO, Rome. Dr K. D. Singh was the principal consultant for this consultancy.

A small Geomatics Center was set up in a small room in the old Aranya Bhavan building with the 386 processor based personal computers with 80 MB hard disk and 1 MB RAM. The first software installed was the IDRISI package provided by FAO. In due course of time other required hardware, software were procured and going in pace with technological advancement.

Few Officers of the Department were sent for training in the Remote Sensing and GIS to NRSC, Hyderabad and IIRS, Dehradun. On their return, after successful completion of the training, these Officers started working in the Geomatics centre and started sensitizing the other Officers in the use of Remote Sensing, GIS and GPS. Gradually, the trainings were extended to the entire Department and to the members like VSSs.

The first thing required for the monitoring of forest cover changes upto Beat and Compartment level was to create spatial data bases both from Administrative point of view as well as Management point of view. It was decided to create these spatial databases (Vector layers) on 1:250 K scale. This work was outsourced by tender process in November-December 1994 to a private agency called "Remote Sensing Instruments" Hyderabad for digitization of forest blocks, administrative boundaries, rivers, water bodies, Villages, roads and forest cover density layers with attribute data. These layers were generated by the end of 1995. Subsequently ERDAS software and PC Arc Info version 3.4.2 were procured.

Subsequently about 50 basic and derived themes were generated on 1:50 K Scale. This data is being used in the monitoring of forest cover changes and several other applications in the department. Right now AP Geomatics Wing has latest State of the art gadgets and software. It has half a dozen high end servers, Work Stations, Firewall, desktops upto range level, In the software side has Arc GIS Server version 2010, Skyline Software, Arc GIS 2010, Erdas 2010, e-cognition, Leica photogrammetry Suite, Map Info, Arc View to mention a few.

1.3 History of Forest cover change Monitoring in AP

The Forest cover monitoring in Andhra Pradesh was initiated in 1995 by Mr. Rudi Drigo of FAO who carried out and demonstrated forest cover change assessment in Adilabad District using IRS IA/IB LISS II images of 1988 and 1994 using"Interdependent Visual Interpretation" method. The results were brought out in 1995-96. During the period between 1988& 1994 in Adilabad District it was noticed that there is a gross deforestation of 2700 Ha per year and there was a net deforestation of 2600 Ha per year in the district including un notified Forest areas. The extent of close forests, Plantations, open forest and Scrub were 4232 Km^2, 1421 Km^2,704 $Km^2$and 990 Km^2in 1988 and the corresponding figures in 1994 were 4110 Km^2, 1390 Km^2, 590 $Km^2$and 930 Km^2.

Subsequently, for interpreting the IRS IC and IRS 1D LISS-III data of 1996 & 1998, the task was outsourced. These agencies digitally interpreted the densities of the forests and submitted the results to the Forest Department. The notified forests were classified into **Water bodies, Blank/others,Scrub (0 to 10% Canopy), Open forest (10% to 40% canopy) and Dense forest (> 40% canopy) in line with FSI classification.**

There after the forest cover change monitoring was carried out by the officers of the Geomatics center regularly on annual basis commencing from 2000 AD using digital interpretation methods of LISS-III data. This method was followed up to 2006 and statistics of various classes of Forest canopy cover were generated by eliminating 0.5 Ha Area.

The Forest of Andhra Pradesh is mostly deciduous in nature and its canopy density widely changes in different months. Experience has shown that complete digital interpretation, without input from visual editing doesn't give a satisfactory level of accuracy. Further, it was noticed that repeated digital classification was prone to interpretational errors and overlaying two classified images didn't give proper change image at times. It was therefore decided to use visual editing after classifying the image of 2007 to get a correct interpretation of areas not properly classified by the digital methods. NDVI slicing cum limited visual editing was resorted to for Adilabad, Nizamabad, Medak, Warangal, Karimnagar, Khammam, Nalgonda, Srikakulam, Vijayanagaram, Visakhapatnam, East Godavari, West Godavari, Krishna, Guntur, Prakasham, Nellore, Chittoor, Anantpur and Kurnool districts. However to check the relative accuracies of various methods, other methods apart from NDVI slicing cum visual editing like Unsupervised classification cum Supervised classification were also attempted in Mahabubnagar, Kadapa, Hyderabad & Ranga Reddy and better method in terms of final accuracy was taken. With 2007 classified image as a base classification various years of images were classified and changes brought out by Erdas matrix tool and Visual comparison taking clues from Google, Bhuvan etc. The change areas both +ve and –ve are ploygonised in Arc map software after swiping, keeping all previous years polygons as a separate layers. The changes were to some extent ground truthed by Geomatics wing and the remaining by the field staff for total verification. For easy access to the data, all the change points were kept on the APFD's website. Feedback was obtained through a web enabled MIS package developed by the Department called as "Forest Cover Change MIS" and few members of staff have given their reports using traditional modes – paper reports & e-mails.

Over the years the digital interpretation of Satellite data had been done independently, as a result changes in Forest cover were prone to subjectivity results in interpretational errors. Therefore, APFD has switched over to Vector based approach like the FSI from 2007 in which forest cover is mapped in polygons (Vector) by defining clusters of pixels with boundaries. This improves the cartographic presentation of the output, helps in mapping the changes more accurately and makes the output available for use by protection staff. Both positive and negative changes were captured for about 1500 locations and communicated to field staff for verification & feedback.

Chapter- II

METHODOLOGY

2.1 Satellite data and its period

The Satellite data for the entire State was procured from the National Remote Sensing Centre (NRSC), Hyderabad in digital form. It was multi spectral (LISS- III Sensor) data of IRS P6 satellite with a resolution of 23.5m.

One scene of LISS – III covers an area of about 20,000 km^2 (140 km X 140 km); there are considerable overlaps (15 to 20 percent) among adjacent scenes. At the borders of the State or for islands, the whole scene has to be procured even though the Area of Interest (AOI) may be small. Thus a total of 29 scenes covering the entire state were procured.

The scene wise details of data procured are as follows:

S.No	Path/Row (P/R)	Date of Pass 2010	Date of Pass 2011	Remarks
1	99-58	28-10-2010	23-10-2011	Cloud Free
	99-59	15-12-2010	23-10-2011	Cloud Free
3	99-60	15-12-2010	23-10-2011	Cloud Free
4	99-61	15-12-2010	23-10-2011	Cloud Free
5	99-62	01-08-2011	27-01-2012	Cloud Free
6	99-63	21-11-2010	01-03-2012	Cloud Free
7	100-59	20-12-2010	28-10-2011	Cloud Free
8	100-60	20-12-2010	21-11-2011	Cloud Free
9	100-61	20-12-2010	20-1-2012	Partly Cloudy
10	100-62	13-01-2011	01-08-2012	Cloud Free
11	100-63	13-01-2011	01-08-2012	Cloud Free
12	101-59	14-10-2010	20-12-2011	Cloud Free
13	101-60	14-10-2010	02-06-2012	Cloud Free
14	101-61	14-10-2010	18-02-2012	Partly Cloudy
15	101-62	14-10-2010	02-06-2012	Partly Cloudy
16	101-63	18-01-2011	18-02-2012	Cloud Free
17	101-64	18-01-2011	18-02-2012	Cloud Free
18	102-60	30-12-2010	07-11-2011	Cloud Free
19	102-61	30-12-2010	07-11-2011	Cloud Free
20	102-62	No Data	07-11-2011	-
21	102-63	No Data	18-03-2012	-
22	102-64	No Data	18-03-2012	-
23	103-59	30-09-2010	19-10-2011	Cloud Free
24	103-60	28-01-2011	19-10-2011	Cloud Free
25	103-61	28-01-2011	19-10-2011	Partly Cloudy
26	104-59	16-12-2010	30-09-2011	Partly Cloudy
27	104-60	01-09-2011	17-11-2011	Cloud Free
28	105-059	27-11-2010	02-02-2012	Cloud Free
29	105-060	27-11-2010	02-02-2012	Cloud Free

2.2 Technical Advisory Committee:

Government of Andhra Pradesh has constituted a Technical Advisory Committee Vide G.O.Ms No.121, EFS & T-(For-III) Dept. Dated 04.12.2009 to aid and advice Andhra Pradesh Forest Department in matters of Remote Sensing & GIS application. This committee was re-constituted by the Govt. vide G.O.Ms. No.57, EFS & T- (For-III) Dept. Dated 07.05.2011, with the following Members:

1.	Representative from Forest Survey of India, Dehradun	-	Member
2.	The Addl. Director (Scientific-Biosphere reserves) Representative of MoEF, New Delhi.	-	Member
3.	The Head, Forestry Division, NRSC, Hyderabad	-	Member
4.	The Director General, APSRAC, Hyderabad	-	Member
5.	Dr. DevendraPandey, IFS (Retd.) Ex-DG of FSI, Dehradun, presently stationed at New Delhi. Member	-	Member
6.	Addl. Prl. CCF (IT), O/o Prl.CCF, Hyderabad.	-	Convener

Accordingly, the Committee met on 11.11.2011 & 10.06.2013 and took certain decisions, which are incorporated in the State of Forest Report – 2013.

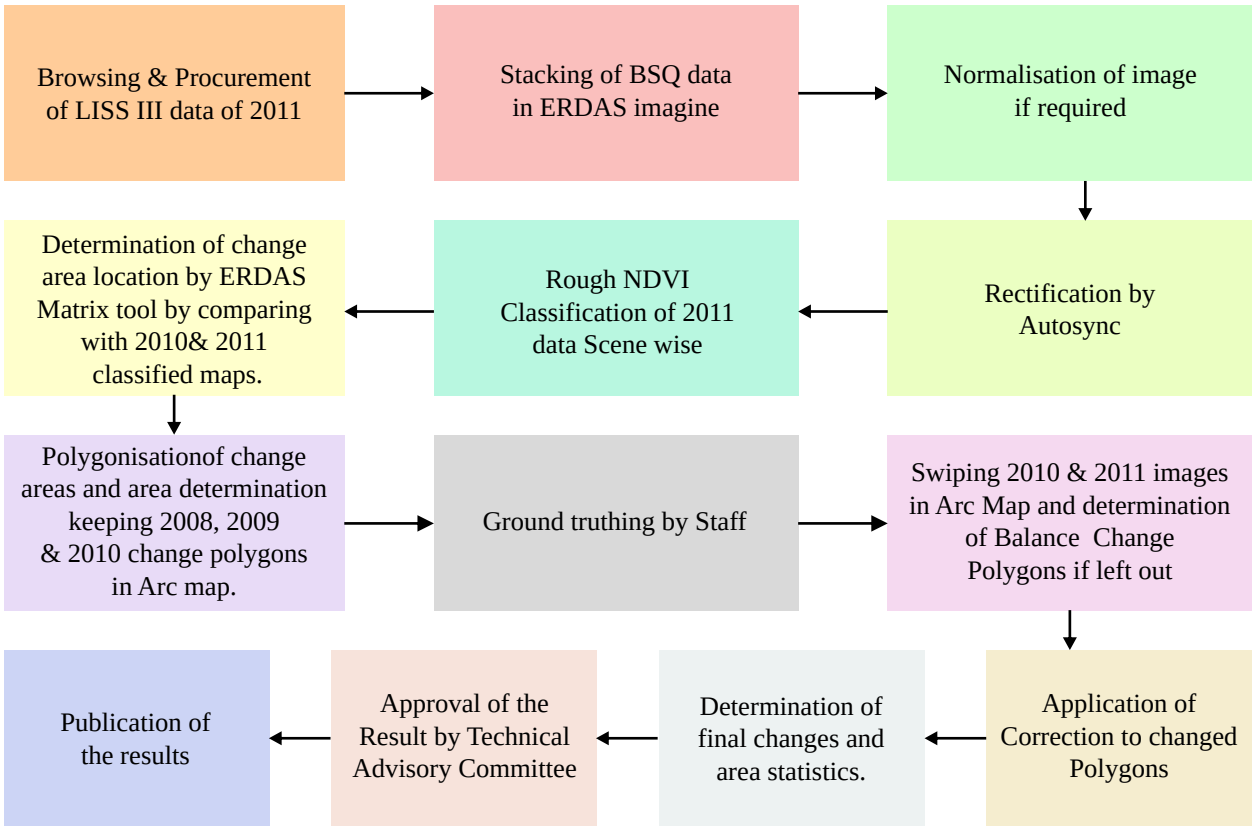
2.3. Image Processing Technique Adopted:

The 2007 image has been previously classified as Very Dense Forest, Moderately Dense Forest, Open Forest, Scrub, Non-Forests and water with an accuracy of 85%. This Classified image was taken as the basis for bringing out forest cover changes in future. Simultaneously 2008, 2009 & 2010 changed polygons were also taken into account to determine the changes between 2010 and 2011.

The Erdas Autosync module was used to register the 2011 image taking 2007 images. It took only about 15 minutes to Geo–reference one scene of 2011 image. After this, the 2011 image was roughly classified into various classes and the Erdas matrix tool was used to determine various changes from each class of 2010 to each class of 2011.The 2008, 2009 & 2010 change polygons were overlaid on the 2011 FCC and changes between 2010 and 2011 only were determined by manual Polygonisation. Arc Map was used for change Polygon determination by swiping. Various polygon changes of 2008, 2009 & 2010 were kept as layers in Arc Map to examine the changes.

The lat-long of the change Polygons, change classes and areas were communicated to the field Officers through online using APFMIS module for verification and reports were obtained. About 300 points were checked by the officers of Geomatics Wing. There was good correlation between the points shown in the lab and the situation on ground. It was noticed that the change points tallied in area, location and shape on the ground.

The flow diagram of the work carried is as follows:



2.4 Limitations of Technology

The following are the limitations of the technology:

- As the resolution of data from LISS-III is 23.5 m, smaller areas below 0.40 Ha cannot be captured. Thresholds of various classes are not very precise and subjective.
- Young plantations and species having less chlorophyll content in their crown, do not give proper reflectance and as a result correct interpretation of such areas becomes difficult.
- Considerable details on ground could be obscured in areas having clouds and shadows. It is difficult to interpret such areas without the help of collateral data.
- Variation in spectral response pattern during leafless period of our deciduous forests poses problems in interpretation.
- Gregarious occurrence of bushy vegetation like Lantana and certain agricultural crops, such as sugarcane, cotton, etc. often pose problems in delineation of forest cover change as their spectral response pattern is similar to that of tree canopy.
- In encroached areas harvested agriculture crop gives a pseudo change impression.

2.5 Accuracy Assessment

Accuracy was estimated in the monitoring activity restricting to the change polygons only. It was found that the change polygons given by Geomatics wing were accurate in extent, location and shape. The accuracy achieved was of extremely high order of about 98%. Occasional errors were found in interpretations showing loss of vegetation because of inter-ploughing of plantations and weeding of dense weeds in plantations, deciduous nature of our forests and cropharvested areas in old encroached forest lands.

2.6 Cost and time of bringing out of APSFR 2013

An expenditure of approx. Rs.23.60 lakhs is involved in the entire exercise (excluding the cost of Forest Department person days.) The details are as follows:

S.No	Item of Works	Cost in Rs
1.	Cost of 27 scenes of LISS III data @ 7000/- per scene	1,89,000.00
2.	Proportionate cost of Software in average ERDAS packages and 1 autosync is used only 20 % Cost is projected.	3,00,000.00
3.	Cost of Hardware – 25% of 6 Computers Cost	1,25,000.00
4.	Cost of 6 Scientists doing lab and field work per 1 year.	12,00,000.00
5.	Cost of field trips	50,000.00
6.	Cost of Printing of SFR (700 Copies)	1,26,700.00
7.	Ground truthing expenditure by FBO's (@ 2 locations per day)	3,50,000.00
8.	Miscellaneous	22,000.00
	Total	**23,60,700**

S.No	Item of Work	Time schedule
1.	Browsing ordering and collection of data from NRSC	September 2011 to March 2012.
2.	Geo – referencing, classification and detection of change polygons.	November 2011 to March 2012.
3.	Ground truthing the change polygons	January 2012 to May 2013.
4.	Collection of feedback from field staff.	January 2011 to May 2013.
5.	Preparation of Report	April 2012 to June 2013.
6.	Printing of report	July 2013.

Chapter- III

Statewide Results and Analysis

3.1. Introduction:

Andhra Pradesh State lies between latitudes 12.623^0 & 19.917^0 N and longitudes 76.761^0 & 84.766^0 E. The Geographical area of the State is 2,75,068 km^2 which is 8.37 % of the landmass of the country and the State has 974 kilometers of coastline. The State has three physiographic zones, the hilly region having Nallamalai and Erramalai hills and the Eastern Ghats having an altitude of 500 to 1400 m; the plateau having an altitude of 100 m to 1000 m and the deltas of rivers between the Eastern Ghats and the Sea Coast. Godavari, Krishna and Pennar are the 3 principal rivers of the State which drain into the Bay of Bengal. The River Godavari with its tributaries Pranahita, Manjeera, Maneru, Indravati, Kinnerasani, Pamuleru and Sileru, drains through the northern parts of the State into Bay of Bengal. The River Krishna with its tributaries Tungabhadra, Vedhavati, Hundri, Musi, Paleru and Munneru flows through the central parts of the State. The River Pennar, the third biggest river, with its tributaries Chitravati, Papaghni, Cheyyeru and Pincha drains Rayalaseema region and Nellore district.

Land use pattern of the State is given in Table 3.1.

The climate of this State is generally dry with temperature ranging from 8^{0}C to 50^{0}C and the annual rainfall is about 500-1300 mm, received mainly from Southwest and Northeast monsoons. The geological formations of the State are: (1) The unclassified Archaean crystalline rocks are mainly the granite but in the eastern ghats it comprises of granulite suites (khondalites and kodurites), (2) The Middle–Upper Proterozoic the Cuddapahs and its equivalents; (3) The Mesozoic coal bearing Gondwana strata, (4) Eocene lava flows (the Deccan traps) and (5) The semi-consolidated or unconsolidated tertiary and recent rocks. The soils of the State are Red, Black, Alluvial, Laterite and Saline/Alkaline. The population of the State is 84.7 million (2011 Census). The male population is 42.5 million and female 42.1 million. The Per capita forest area is **0.07 Ha.** The population density is 308 persons per Km^2. The livestock population is 150.5 million.

Table 3.1: Land use Pattern *(Source : NRSC)*

Land use	Area in Sq km	Percentage
Forest including Scrub	55664.31	20.23
Agriculture	168821.46	61.37
Land with Scrub	17137.66	6.23
Fallow Lands	10333.94	3.76
Grasslands	652.17	0.24
Settlements	2633.41	0.96
Vegetation outside Forest	9132.87	3.32
Water bodies	10343.00	3.76
Total	**275068.00**	**100.00**

3.2. Recorded Forest Area:

The total notified forest area of the State is 63,814 Km^2, which is 23.2 % of the geographical area. Reserved-, Protected- and Un-classed forests occupy 50,478.63 Km^2 (79.10%), 12,365.34 Km^2 (19.38%) and 969.76 Km^2 (1.52%) of the total forest area respectively. The Khammam District has the highest notified forest area of 8,436.94 Km^2 and the Krishna has the lowest notified forest area of 664.28 Km^2 in the State. As regards the ratio of notified forest to geographical area, Khammam District has the highest with 52.64 % and Nalgonda the lowest with 5.9%. As per Champion and Seth's classification the Forests of State fall under Southern Moist Mixed Deciduous

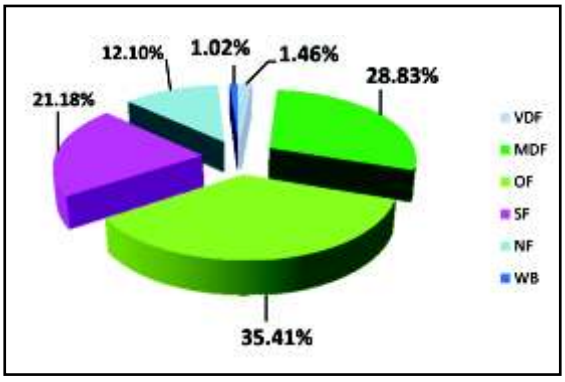


Fig. 3.1

Forest, Littoral Swamp Forest, Dry Teak Forest, Dry Red Sanders Bearing Forest, Southern Dry Mixed Deciduous Forest, Dry Deciduous Scrub, Dry Savannah Forest, Hardwickia Forest, Dry Bamboo Brakes, Southern Thorn Forest, Dry Scrub Forest, Tropical Dry Evergreen Forest types.

3.3. Protected Area:

The State has 27 Protected Areas – 21 Wildlife Sanctuaries, 6 National Parks and 2 Tiger Reserves. Nagarjuna Sagar–Srisailam Tiger Reserve (NSTR) is the biggest Tiger Reserve of India and the Kawal Tiger Reserve in Adilabad District is the latest to be notified as Tiger Reserve in A.P. Out of 63814 Km^2 of notified forest area, 14876.54 Km^2 is included in the PA network.

3.4. Community Forest Management:

There are 7,718 Vana Samrakshana Samities (VSSs) or Joint Forest Protection Committees (JFPCs) in the State. An area of 15,199.8 Km^2 of notified forests, which is 23.8 % of the forest area, is under Community Forest Management (CFM). 15.39 Lakh members are involved in CFM. This includes 4.65 Lakh members belonging to Scheduled Tribes (S.Ts) and 3.23 Lakh members belonging to Scheduled castes (S.Cs).

3.5. Forest Cover:

The forest cover* in the State based on the interpretation of IRS P6 LISS-III 2011 data (September 2011 - March 2012) is 41927.26 Km^2, which is 15.24% of the Geographical area. In terms of the forest canopy cover density classes the State has 931.73 Km^2 of Very Dense Forest, 18400.61 Km^2 of Moderately Dense Forest and 22594.92Km^2 of Open Forest. The area of the Scrub is 13517.84 Km^2, Non-Forest 7719.19 Km^2 and Water Bodies 649.86 Km^2. The distribution of the forest cover of the State is shown in **Figure 3.1 and figure 3.2.**

The distribution of Forest Cover in the CFM areas is 76.78 Km^2 in Very Dense Forest, 3773.06 Km^2 in Moderately Dense Forest and 5384.27 Km^2 in Open Forest. The area of Scrub is 3786.43 Km^2, Non-Forest 2131.07 Km^2 and Water bodies 48.47 Km^2.

The distribution of Forest Cover in the PA areas is 208.37 Km^2 in Very Dense Forest, 3911.94 Km^2 in Moderately Dense Forest and 5796.88 Km^2 in Open Forest. The area of Scrub is 2831.40 Km^2, Non-Forest 1271.87 Km^2 & Water bodies 856.08 Km^2.

Change in Forest Cover (Including Scrub and Non-Forest): An analysis of the total extent of Forests between 2010 and 2011 shows that degradation is seen in an area of 105.49 Km^2 and positive change in 12.82 Km^2. Thus an area of 104.04 Km^2 of forests (7.55 Km^2 of MDF, 62.30 Km^2 of Open Forests and 34.19 $Km^2$of Scrub) is converted to Non forest during the year.

On further analysis it is seen that out of this 105.49 Km^2 of negative change over in an area of 43.77 Km^2 is due to attempts of encroachments in the State and 61.30 Km^2 is due to harvesting of matured plantations and clearance of jungle growth for raising of plantations and 0.41 Km^2 is diversion of forest land. The latter are management interventions and hence cannot be considered as permanent loss of forest cover. Hence loss of forest cover due to encroachments is taken as net loss of forest cover, which is 43.77 Km^2.Out of this an area of 12.30 Km^2 is inside VSS areas and 1.68 Km^2 inside the Protected Areas.

Encroachments were noticed in 32 Divisions, positive changes in only one Division and no changes in 05 Divisions (Chittoor West, Jannaram WLM, Kurnool, WLM Medak, and WLM Nagarjunasagar)

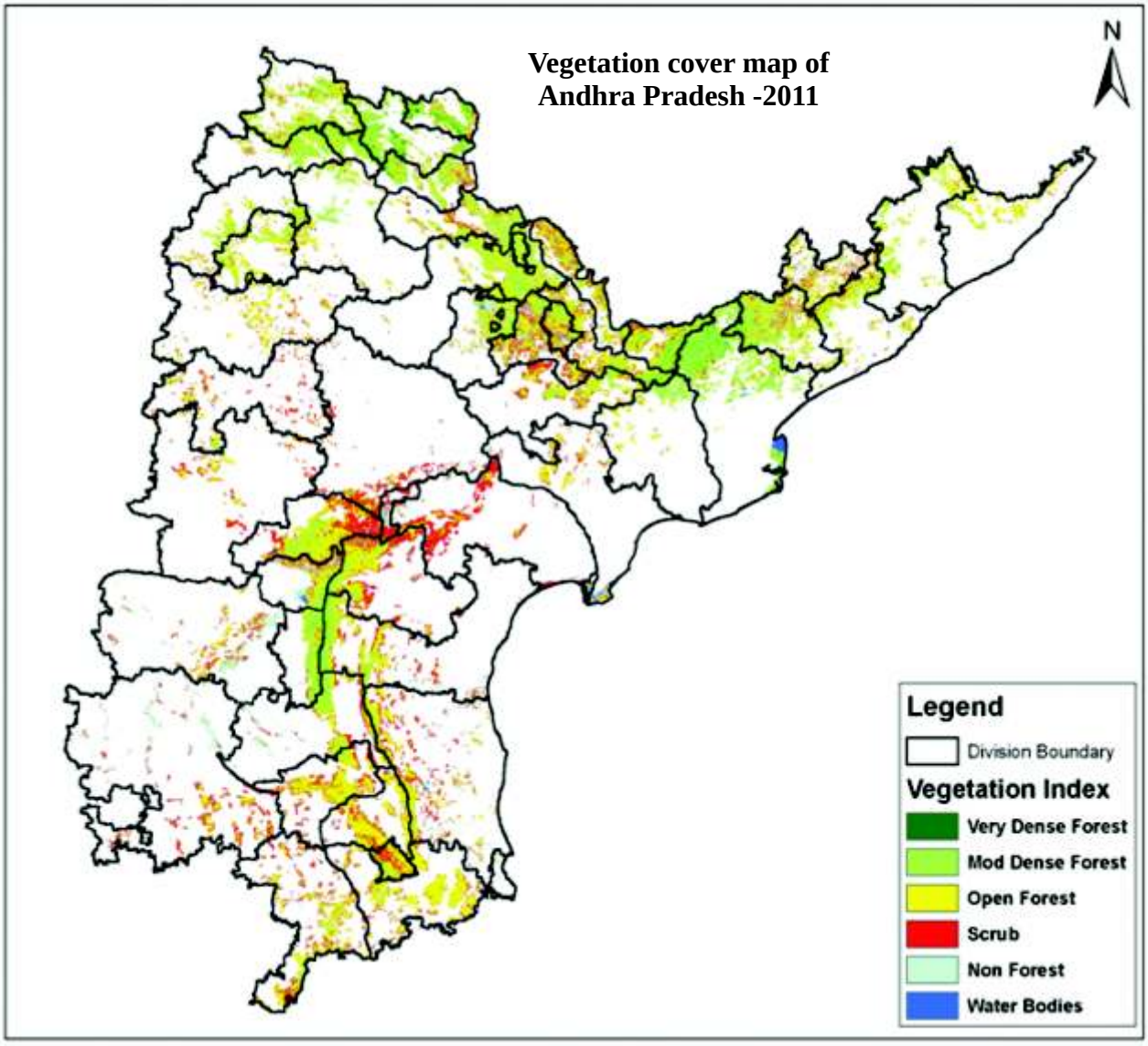
Change in Forest Cover (Excluding Scrub and Non-Forest): The forest cover in VDF, MDF and OF in 2010 was 931.73 Km^2, 18408.48 Km^2 and 22651.28Km^2 respectively. However in 2010 it is 931.73 Km^2, 18400.61Km^2 and 22594.92 Km^2 respectively. Thus there was a reduction of 7.87 Km^2 in MDF and 56.36 Km^2 in OF. The net loss of forest cover in MDF and OF put together is 64.23 Km^2 in the State during the year.

Divisions with most loss of Forest Cover due to encroachments are Karimnagar East, Kothagudem, Eluru, Paloncha and Badrachalam North.

**The forest cover is the area covered by VDF,MDF and OF, unless specified other wise.*

In **CFM areas,** there is a net loss of 20.02 Km^2 of forest cover. In Protected Areas, there is a net loss of 2.28 Km^2 of forest cover. The change locations are shown in **Figure 3.3.** It is noticed that 1230 Hectares of forest area is under encroachment in 150 VSS of the State.

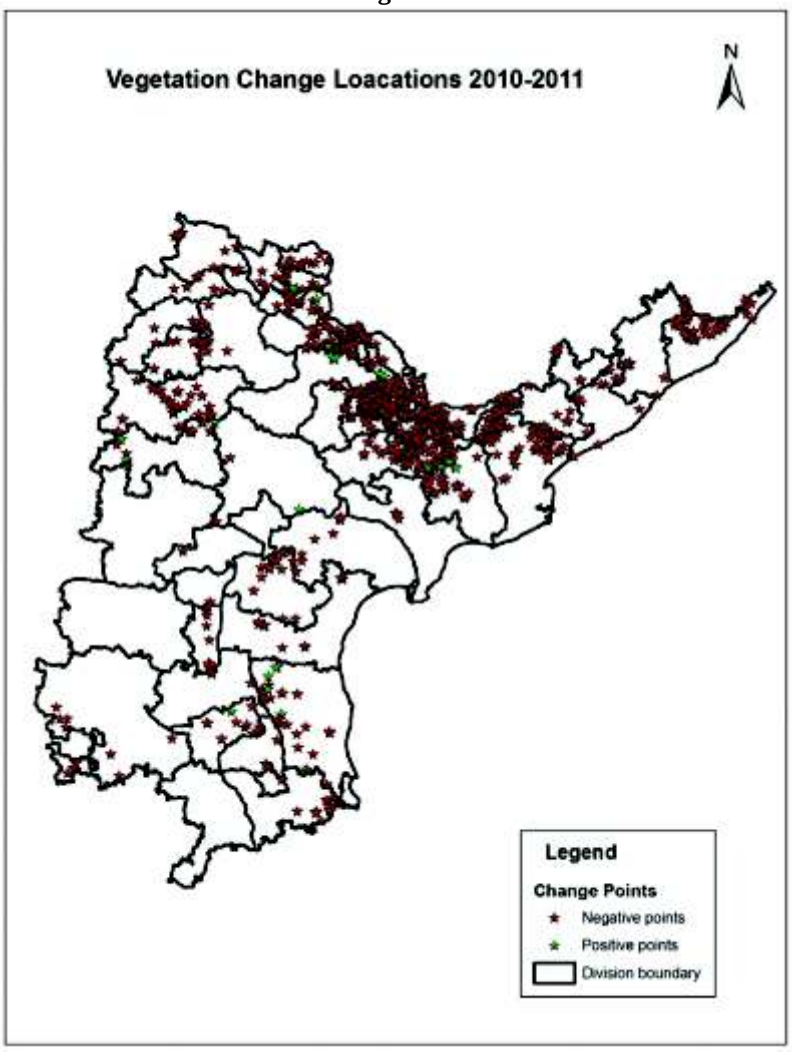
Fig 3.2



The forest cover change matrix, showing changes from one class to other, is given in Table 3.2. It reveals that there has been a decrease of 7.87 Km^2 of Moderately Dense Forest and 56.36 Km^2 of Open Forest.

On the basis of ground truthing conducted by the officers of the Geomatics Center and the field officers, the **main reasons for decrease in the forest cover** are management interventions like harvesting (clear felling) of matured plantations, clearance of bush growth and preparation of land for raising of plantations and fresh attempts on encroachments triggered by recognition of rights of occupation.

Fig. 3.3



Division wise forest cover in different forest canopy density classes along with the changes compared to 2010 assessment is given in **Table 3.3.**

Table 3.2 Forest cover change matrix **(Area in Km^2)**

2010 (Data of Sep 2010-Jan2011)	2011 (Data of Sep 2011 - Mar 2012)						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	931.73	0.00	0.00	0.00	0.00	0.00	**931.73**
Moderately Dense Forest	0.00	18400.61	0.01	0.31	7.55	0.00	**18408.48**
Open Forest	0.00	0.00	22587.85	1.13	62.30	0.00	**22651.28**
Scrub	0.00	0.00	5.48	13510.64	34.19	0.00	**13550.31**
Non-Forest	0.00	0.00	1.58	5.76	7615.15	0.00	**7622.49**
Water	0.00	0.00	0.00	0.00	0.00	649.86	**649.86**
Total of 2011	**931.73**	**18400.61**	**22594.92**	**13517.84**	**7719.19**	**649.86**	**63814.15**
Net Change	**0.00**	**-7.87**	**-56.36**	**-32.47**	**96.70**	**0.00**	

Table 3.3 Division wise Forest Cover Changes **(Area in Km^2)**

S.No & Division	VDF	MDF	OF	Scrub	NF	WB	Total of 2011	Encroa-chments
I.ADILABAD								
1.ADILABAD	52.31	925.01	337.49	382.14	194.62	7.37	**1898.95**	0.38
2.BELLAMPALLY	172.82	867.22	239.80	107.12	131.95	5.88	**1524.79**	0.07
3.JANNARAM	41.22	222.25	228.77	64.41	85.38	1.71	**643.74**	0.01
4.KAGAZNAGAR	159.17	377.26	161.59	74.32	117.86	3.09	**893.29**	0.41
5.MANCHERIAL	50.23	576.63	279.13	114.61	84.36	10.41	**1115.37**	0.02
6.NIRMAL	7.18	650.20	200.07	68.55	92.80	6.37	**1025.16**	0.24
Total	**482.93**	**3618.57**	**1446.84**	**811.16**	**706.97**	**34.83**	**7101.30**	**1.13**
II.ANANTHAPUR								
7.ANANTHAPUR	0.00	0.87	348.69	709.62	885.92	0.50	**1945.60**	0.00
8.CHITOOR WEST	0.03	197.72	962.68	646.34	280.62	2.37	**2089.76**	0.00
Total	**0.03**	**198.59**	**1311.37**	**1355.96**	**1166.54**	**2.87**	**4035.36**	**0.00**
III. FDPT SRISAILAM								
9.ACHAMPET	0.33	479.11	1032.14	782.05	69.78	59.96	**2423.37**	0.00
10.ATMAKUR	5.53	229.08	373.96	259.74	347.43	70.03	**1285.77**	0.49
11.MARKAPUR	1.93	372.31	950.86	682.27	250.98	14.50	**2272.86**	0.17
12.NAGARJUNASAGAR	0.00	8.49	181.98	441.72	133.29	29.50	**794.98**	0.00
Total	**7.79**	**1088.99**	**2538.94**	**2165.79**	**801.48**	**173.99**	**6776.98**	**0.66**
IV. GUNTUR								
13.GIDDALUR	22.10	746.57	728.80	443.37	262.05	5.31	**2208.20**	0.37
14.GUNTUR	0.00	0.08	314.00	887.57	237.01	38.26	**1476.91**	0.17
15.NELLORE	0.00	191.55	953.26	720.21	484.99	29.95	**2379.96**	0.00
Total	**22.10**	**938.20**	**1996.05**	**2051.15**	**984.04**	**73.52**	**6065.07**	**0.53**
V. HYDERABAD								
16.HYDERABAD	0.00	121.95	212.13	386.13	35.91	2.75	**758.87**	0.00
17.MAHABUBNAGAR	0.00	16.20	291.26	308.89	2.97	0.16	**619.48**	0.00
18.NALGONDA	0.00	1.57	38.35	241.32	158.40	2.36	**442.00**	0.00
Total	**0.00**	**139.72**	**541.74**	**936.34**	**197.28**	**5.27**	**1820.35**	**0.00**
VI. KHAMMAM								
19.BHADRACHALAM_N	9.26	377.05	540.96	368.03	136.53	3.74	**1435.57**	3.21
20.BHADRACHALAM_S	83.57	619.16	368.34	179.59	40.01	3.00	**1293.66**	0.92
21.KHAMMAM	0.41	349.85	506.74	350.42	112.34	2.58	**1322.34**	1.66
22.KOTHAGUDEM	0.04	349.32	578.51	452.18	300.32	3.51	**1683.88**	6.46
23.PALVONCHA	38.77	415.71	636.64	288.85	139.53	4.02	**1523.52**	3.47
24.PALVONCHA WLM	1.43	220.42	270.28	125.79	55.71	12.75	**686.38**	1.43
Total	**133.48**	**2331.51**	**2901.47**	**1764.86**	**784.43**	**29.60**	**7945.35**	**17.15**
VII. KURNOOL								
25.KADAPA	0.03	164.81	973.38	483.66	92.35	2.32	**1716.55**	0.00
26.KURNOOL	0.00	0.56	269.09	364.04	565.97	2.89	**1202.55**	0.00
27.NANDYAL	40.71	595.10	291.94	67.67	67.61	3.43	**1066.46**	0.00
28.PRODDATUR	3.58	426.38	552.15	301.49	282.56	8.95	**1575.11**	0.00
Total	**44.32**	**1186.85**	**2086.56**	**1216.86**	**1008.49**	**17.59**	**5560.67**	**0.00**

Table 3.3 Division wise Forest Cover Changes **(Area in Km^2)**

S.No & Division	VDF	MDF	OF	Scrub	NF	WB	Total of 2011	Encroa-chments
VIII. NIZAMABAD								
29.KAMAREDDY	0.00	327.40	488.84	84.94	76.12	4.00	**981.29**	0.68
30.MEDAK	0.00	92.65	490.95	277.08	53.22	2.68	**916.58**	0.58
31.MEDAK WLM	0.00	20.56	21.68	3.58	0.70	0.02	**46.54**	0.00
32.NIZAMABAD	0.00	309.20	309.64	80.03	82.95	5.32	**787.13**	0.83
Total	**0.00**	**749.81**	**1311.10**	**445.63**	**212.98**	**12.02**	**2731.54**	**2.08**
IX.RAJAHMUNDRY								
33.ELURU	0.00	512.15	147.79	52.11	60.39	0.59	**773.02**	4.03
34.KAKINADA	203.04	2355.54	218.46	182.93	106.35	169.06	**3235.39**	1.36
35.VIJAYAWADA	0.00	1.74	285.51	210.61	73.20	73.46	**644.52**	0.08
Total	**203.04**	**2869.43**	**651.76**	**445.65**	**239.93**	**243.11**	**4652.93**	**5.46**
X. VISHAKAPATNAM								
36.NARSIPATNAM	32.80	1084.08	755.86	244.93	235.75	0.33	**2353.75**	0.21
37.PADERU	1.91	140.21	398.54	234.50	236.26	0.11	**1011.52**	0.47
38.SRIKAKULAM	0.00	134.52	436.96	102.11	37.77	10.35	**721.72**	3.17
39.VISHAKAPATNAM	0.15	431.98	527.66	199.52	105.51	1.23	**1266.06**	0.34
40.VIZIANAGARAM	0.00	595.98	524.55	61.36	36.92	0.44	**1219.25**	1.63
Total	**34.86**	**2386.78**	**2643.57**	**842.42**	**652.21**	**12.46**	**6572.30**	**5.82**
XI. WARANGAL								
41.KARIMNAGAR EAST	0.00	657.93	405.33	258.72	58.57	6.26	**1386.81**	8.12
42.KARIMNAGAR WEST	0.00	501.42	335.43	120.07	15.77	1.78	**974.47**	1.01
43.WARANGAL NORTH	0.00	950.81	1016.09	90.32	246.30	6.73	**2310.25**	0.73
44.WARANGAL SOUTH	0.00	306.44	425.36	78.76	341.80	22.29	**1174.65**	0.62
45.WARANGAL_WLM	0.00	218.50	276.39	15.30	26.59	1.77	**538.55**	0.46
Total	**0.00**	**2635.10**	**2458.60**	**563.17**	**689.04**	**38.83**	**6384.73**	**10.94**
XII. WLM-TIRUPATHI								
46.CHITOOR EAST	0.02	114.71	1326.56	361.29	198.28	0.45	**2001.31**	0.00
47.WLM-TIRUPATHI	3.16	86.64	404.38	194.35	23.38	2.41	**714.32**	0.00
48.RAJAMPET	0.00	55.71	975.98	363.21	54.13	2.91	**1451.94**	0.00
Total	**3.18**	**257.06**	**2706.92**	**918.85**	**275.80**	**5.77**	**4167.57**	**0.00**
Grand Total	**931.73**	**18400.61**	**22594.92**	**13517.84**	**7719.19**	**649.86**	**63814.15**	**43.77**

Chapter- IV

FOREST DIVISION WISE RESULTS

4.1 ADILABAD DIVISION

4.1.1 Introduction:

Adilabad Forest Division lies in Northern Part of Adilabad District between latitudes 19^0 9' 50'' and 19^0 54' 59'' N and longitudes 78^0 7' 28'' and 79^0 5' 37'' E. The Geographical Area of the Division is 4409.41 Km^2 which constitutes 27.34 % of the total area of the District. The highest hill ranges are situated in the southeast corner of the Division. They are Kuchanpally 646 M above MSL and Tummidipally gutta 634 M above MSL. The important rivers of the Division are Kadam , Penuganga and Peddavagu; which are tributaries of Godavari.

Land use pattern of the Division is given in Table 4.1.1

The climate of the Division is characterized by hot summer and is generally dry except during the south-west monsoon season. The temperature varies from 15^0C to 40^0C. The average annual rainfall of the Division is 1051mm, received mainly from south-west monsoons.

The soils vary with underlying rock formation. Black cotton soils, Chalka and Red , Sandy loams, Saline and Alkaline soils are found. The District is well endowed with rich reserves of coal, iron ore, lime stone and clays.

The total population of the Division is 0.71million (2011 Census). The Per capita forest area is 0.27Ha. The population density is 148 persons per Km^2.

Table 4.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1699.55	38.54
Agriculture	2153.17	48.83
Land with Scrub	293.57	6.66
Fallow Lands	84.42	1.91
Grasslands	0.00	0.00
Settlements	20.03	0.46
Vegetation outside Forest	108.2	2.46
Water body	50.47	1.14
Total	**4409.41**	

4.1.2 Recorded Forest Area:

The notified forest area of the Division is **1830.35 Km^2** which is 41.51 % of the geographical area. The area under Reserved, Protected and Un-classed Forests is 996.47 Km^2 (54.45 %), 820.32 Km^2 (44.8%) and 13.56 Km^2 (0.7%) respectively.

As per Champion and Seth's classification the Forests of Division fall under Tropical Dry Deciduous & Bamboo Mixed Forests (Dry Teak bearing Forests, Dry Mixed Forests).

4.1.3 Protected Area:

There is 506.6 Km^2 of protected area which is part of Kawal wild life sanctuary and Tiger Reserve in the Division.

4.1.4 CommunityForest Management:

There are 390 Vana Samrakshana Samities (VSSs) or Joint Forest Protection Committees (JFPCs) in the Division. An area of 359.34 Km^2 forests, which is 21.06 % of the notified forests, is under the management of the VSSs.

4.1.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Oct & Dec 2011) is **1314.81 Km²** which is **29.82%** of the Geographical area. In terms of the forest canopy density classes the Division has **52.31 Km²** of Very Dense Forests, **925.01Km²** of Moderately Dense Forests and **337.49 Km²** of Open Forests. The area of the Scrub is **382.15Km²,** Non-Forest **194.62 Km²** and Water Bodies **7.37Km².** The distribution of the forest cover of the division is shown in Fig 4.1.1

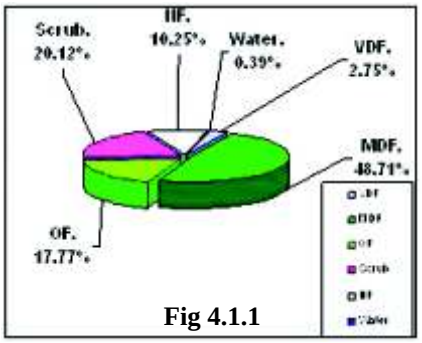


Fig 4.1.1

4.1.6 Change in Forest Cover: -

The Satellite images of 2010 and 2011 have been shown in Fig (4.1.2 & 4.1.3) and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a **negative change of 34.09 Ha**. The forest cover change matrix given in Table 4.1.2 reveals that there has been a decrease of **1.56 Ha** Moderately Dense Forest, **32.53 Ha** of Open Forest and **1.78 Ha** of Scrub.

The total negative change (including scrub) is **41.35 Ha** in which **3.35 Ha** is on account of clearance of jungle growth for raising of plantations and **38.00 Ha** is on account of encroachments. As clearance of jungle growth for raising of plantations are forest management interventions the same are not considered as loss of forest cover. Thus only the negative change due to encroachments is taken as loss of forest cover. Therefore the net loss of forest cover is **38.00 Ha** in the Division.

Fig 4.1.2

Fig 4.1.3

There are 75 Beats in the Division. Negative changes in Forest Cover are noticed in **7 Beats** only. There are no changes in the remaining 68 Beats.

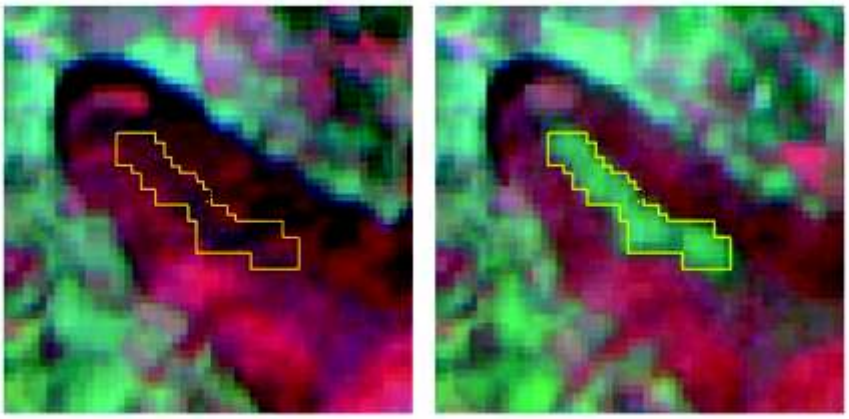
Details of forest cover changes in the 7 Beats mentioned above are shown in Table 4.1.3.

Table 4.1.2: Forest Cover change matrix **(Area in Km²)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	52.31	0.00	0.00	0.00	0.00	0.00	**52.31**
Moderately Dense Forest	0.00	925.01	0.00	0.02	0.00	0.00	**925.03**
Open Forest	0.00	0.00	337.49	0.04	0.29	0.00	**337.82**
Scrub	0.00	0.00	0.00	382.09	0.07	0.00	**382.16**
Non-Forest	0.00	0.00	0.00	0.00	194.26	0.00	**194.26**
Water	0.00	0.00	0.00	0.00	0.00	7.37	**7.37**
Total of 2011	**52.31**	**925.01**	**337.49**	**382.15**	**194.62**	**7.37**	**1898.95**
Net Change	0.00	-0.02	-0.33	-0.01	0.36	0.00	

Table 4.1.3: List of Beats with negative change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
ADILABAD RANGE									
KOSAI	0.00	1752.96	488.70	251.92	464.34	12.68	2970.60	-7.97	7.97
KUCHLAPUR	0.00	1356.56	441.19	201.44	183.26	0.00	2182.45	-15.12	11.77
Total	**0.00**	**3109.52**	**929.89**	**453.36**	**647.60**	**12.68**	**5153.05**	**-23.09**	**19.74**
BOATH RANGE									
PISRA	18.32	2023.76	399.71	249.52	187.80	37.09	2916.19	-7.23	7.23
Total	**18.32**	**2023.76**	**399.71**	**249.52**	**187.80**	**37.09**	**2916.19**	**-7.23**	**7.23**
INDERVELLY RANGE									
CHORGAON	260.82	1488.19	488.42	1579.94	152.86	0.65	3970.90	-1.56	1.56
WAIPET[SOUTH]	2.75	2558.32	385.74	412.25	64.96	162.46	3586.48	-2.04	2.04
Total	**263.57**	**4046.51**	**874.16**	**1992.19**	**217.82**	**163.11**	**7557.38**	**-3.60**	**3.60**
UTNOOR RANGE									
CHINNAKOHINOOR	164.83	610.00	80.82	91.11	29.88	0.00	976.64	-5.84	5.84
UMRI	21.00	1386.30	889.66	306.34	77.95	0.00	2681.25	-1.59	1.59
Total	**185.83**	**1996.30**	**970.48**	**397.45**	**107.83**	**0.00**	**3657.89**	**-7.43**	**7.43**
Grand Total	**467.72**	**11176.09**	**3174.25**	**3092.53**	**1161.05**	**212.87**	**19284.52**	**-41.35**	**38.00**

2010 **2011**



Longitude	78.50777 ° E
Latitude	19.22364 ° N
Area in Ha	7.23
Change	OF TO NF
Comp No.	38
Beat	Pisra
Range	Boath
Division	Adilabad

4.2 BELLAMPALLY DIVISION

4.2.1 Introduction:

• Bellampally Forest Division lies in Adilabad District between latitudes 18^0 56' 16'' and 19^0 36' 58'' N and longitudes 78^0 56' 8'' and 79^0 56' 53'' E. Geographical Area of the Division is 3293.30 km^2 which is 20.41 % of the area of the District. The terrain is undulating with a fringe of low hills in different directions. The general elevation of hill ranges varies from 125 M to 570 M above MSL. Deccan gutta is the highest peak with an elevation of 633 M above MSL.

Land use pattern of the Division is given in Table 4.2.1

The temperature varies from 15^0C to 40^0C. The average annual rainfall of the Division is 1051 mm received mainly from south-west monsoons.

The soils are predominantly black cotton, red and the sandy loams are found mostly in the middle and eastern portion of the Division. The Saline and Alkaline soils are also found but to a lesser extent.

The prominent geological formations are Archean Granites and Gneisses, the Deccan trap and the Gondwana sand stones. The lower Gondwanas bear some coal seams which are being mined by Singareni Collieries Company Limited in the Bellampally-Mancherial belt. The Division has rich reserves of coal, lime stone and clays.

The population of the Division is 0.40 million (2011 Census). The per capita forest area is 0.37 Ha. The population density is 116 persons per Km^2.

Table 4.2.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1392.19	42.27
Agriculture	1563.56	47.48
Land with Scrub	141.66	4.30
Fallow Lands	7.24	0.22
Grasslands	0.1	0.00
Settlements	11.68	0.36
Vegetation outside Forest	95.62	2.90
Water Bodies	81.25	2.47
Total	**3293.3**	

4.2.2 Recorded Forest Area:

The area of notified forests of the Division is **1540.56 Km^2** which is 46.77 % of the geographical area. Reserved, Protected and un-classed forests comprise of 1337.74 Km^2 (86.8 %), 163.58 Km^2 (10.64%) and 39.24 Km^2 (2.5 %) of the forest area respectively.

As per Champion and Seth's classification the Forests of Division fall under Tropical Dry Deciduous forests but for the convenience of forest management classified as Teak forests and Mixed forests.

4.2.3 Protected Area:

There is no Protected Area in the Division.

4.2.4 Community Forest Management:

There are 228 Vana Samrakshana Samities (VSSs) or Joint Forest Protection Committees (JFPCs) in the Division. An area of 206.92Km^2 forests, which is 13.43% of the notified forests, is under the management of the VSSs.

4.2.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Oct/Dec 2011) is **1279.84 Km²** which is 38.86% of the geographical area. In terms of the forest canopy density classes the Division has **172.82** Km² of Very Dense Forests, **867.22** Km² of Moderately Dense Forests and **239.80** Km² of Open Forests. The area of the Scrub is **107.13 Km²,** Non-Forest 131.94 Km² and Water Bodies **5.58** Km². The distribution of the forest cover of the division is shown in Fig 4.2.1

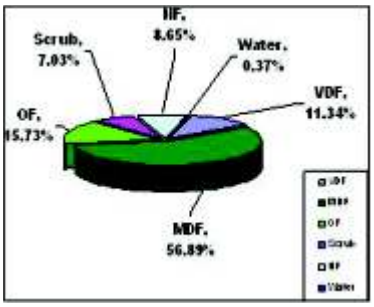


Fig 4.2.1

4.2.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 are shown in Figures (4.2.2 & 4.2.3) and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a negative change of **117.41 Ha.** The forest cover change matrix given in Table 4.2.2 reveals that there is a decrease of **117.41 Ha** of Open Forest and **12.54 Ha** of Scrub.

The total positive change (including Scrub) is **106.93 Ha** on account of growth in raised plantations. The total negative change (including Scrub) is **236.88 Ha.** Out of this **230.20 Ha** is on account of advance operation for raising of plantation, **6.68 Ha** is on account of encroachments. As advance operation, for raising of plantation are Forest management interventions and hence not considered as loss of forest Cover. Thus only the negative change due to encroachments is taken as loss of forest cover. Therefore the net loss of forest cover is **6.68 Ha** only.

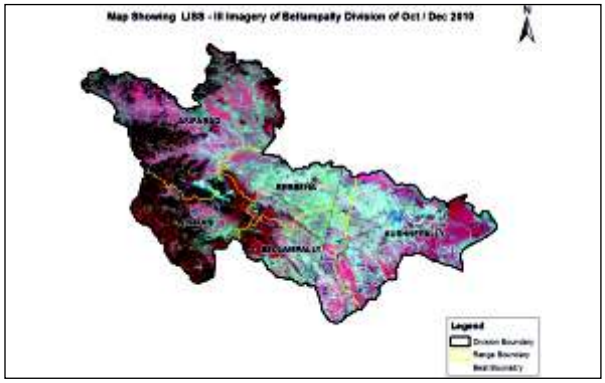


Fig 4.2.2

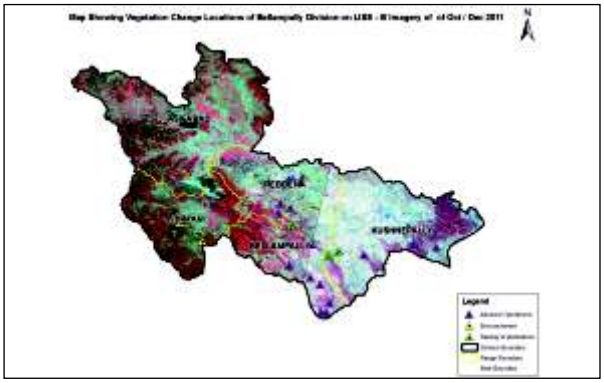


Fig 4.2.3

There are 60 Beats in the Division. Negative changes in forest cover are noticed in 14 Beats and positive change in 2 Beats. There are no changes in remaining 44 Beats.

Details of forest cover changes in the 16 Beats mentioned above are shown in Table 4.2.3.

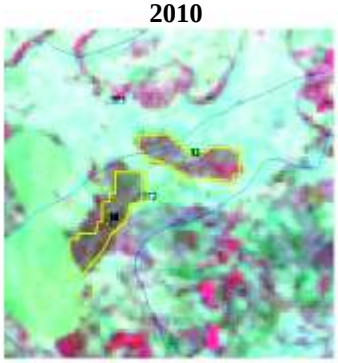
Table 4.2.2: Forest Cover change matrix **(Area in Km²)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	172.82	0.00	0.00	0.00	0.00	0.00	**172.82**
Moderately Dense Forest	0.00	867.22	0.00	0.00	0.00	0.00	**867.22**
Open Forest	0.00	0.00	239.80	0.00	1.17	0.00	**240.97**
Scrub	0.00	0.00	0.00	106.06	1.19	0.00	**107.25**
Non-Forest	0.00	0.00	0.00	1.07	129.58	0.00	**130.65**
Water	0.00	0.00	0.00	0.00	0.00	5.58	**5.58**
Total of 2011	**172.82**	**867.22**	**239.80**	**107.13**	**131.94**	**5.58**	**1524.49**
Net Change	**0.00**	**0.00**	**-1.17**	**-0.12**	**1.29**	**0.00**	

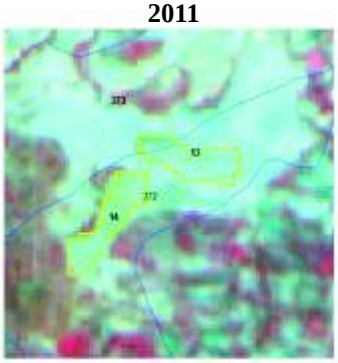
Table 4.2.3: List of Beats with change in Forest Cover **(Area in Ha)**

Beat	VDF	MDF	OF	Scrub	NF	WB	Total	Net Change	Encroa-chment
ASIFABAD Range									
Dantanpally	618.98	3513.16	681.45	274.74	96.45	1.72	5186.50	-1.24	1.24
TOTAL	**618.98**	**3,513.16**	**681.45**	**274.74**	**96.45**	**1.72**	**5,186.50**	**-1.24**	**1.24**
BELLAMPALLY Range									
Adilpet	0.00	754.24	612.44	223.26	384.65	7.44	1970.49	-8.63	0.00
Bellampally	2.36	656.11	584.24	596.91	907.47	7.10	2741.65	-12.61	0.00
Narwaipet	4.14	717.01	545.11	184.60	566.92	16.81	2034.59	-14.78	0.00
Rallapet	1.81	475.87	398.24	183.96	244.47	-0.01	1293.88	-5.23	0.00
Tandur	34.66	513.95	317.51	154.22	156.00	1.10	1114.86	31.29	0.00
TOTAL	**42.97**	**3,117.18**	**2,457.54**	**1,342.95**	**2,259.51**	**32.44**	**9,155.47**	**-9.96**	**0.00**
KUSHNEPALLY Range									
Lingala	104.80	904.36	381.53	166.87	215.32	3.52	1776.40	-5.79	0.00
Nagaram	251.78	1558.30	346.16	143.75	229.84	5.19	2535.02	-11.44	0.00
Rangapet	60.08	993.47	402.04	510.78	1152.68	56.50	3024.27	75.64	0.00
Rebbena[Kpl]	6.98	880.56	695.39	402.41	487.77	25.44	2498.55	-11.67	0.00
Vemanpally	495.37	3424.82	959.10	519.24	220.77	36.01	5655.31	-7.88	0.00
TOTAL	**919.01**	**7,761.51**	**2,784.22**	**1,743.05**	**2,306.38**	**126.66**	**15,489.55**	**38.86**	**0.00**
REBBENA RANGE									
Abbapur	196.27	822.90	222.50	193.19	299.52	21.84	1756.22	-36.26	1.63
Dharmaram	0.00	144.06	901.68	494.34	1541.22	2.40	2879.30	-102.20	0.00
Takkallapally	122.02	625.04	228.77	128.96	234.10	4.93	1343.82	-15.34	0.00
TOTAL	**318.29**	**1,592.00**	**1,352.95**	**816.49**	**2,074.84**	**29.17**	**5,979.34**	**-153.80**	**1.63**
TIRYANI Range									
Gudipet	123.33	1223.06	752.76	142.07	122.82	16.21	2380.25	-3.28	3.28
Irkepally	174.33	1820.68	467.08	93.76	41.48	0.01	2597.34	-0.53	0.53
TOTAL	**297.66**	**3,043.74**	**1,219.84**	**235.83**	**164.30**	**16.22**	**4,977.59**	**-3.81**	**3.81**
Grand Total	**2,196.91**	**19,027.59**	**8,496.00**	**4,413.06**	**6,901.48**	**206.21**	**40,788.45**	**-129.95**	**6.68**

2010



2011



Longitude	79.59243 ° E
Latitude	19.10565 ° N
Area in Ha	9.7
Change	NF TO SF
Comp No.	372
Beat	Rangapet
Range	Kushnepally
Division	Bellampally

4.3 JANNARAM WLM DIVISION

4.3.1 Introduction:

Jannaram WLM Forest Division lies in the central portion of Adilabad District between latitudes 18^0 55' 21'' and 19^0 21' 5'' N and longitudes 78^0 45' 10'' and 79^0 14' 5'' E. Geographical Area of the Division is 925.27 Km^2 which is 5.7 % of the area of the District. The northwestern corner of this Division is Birsaipet plateau which is 396 M above MSL. This plateau is all undulating and drains from either side into Peddavagu stream which runs across the plateau from north-east to south-west.

Land use pattern of the Division is given in Table 4.3.1

The temperature varies from 15^0C to 40^0C. Average annual Rainfall of the Division is 750mm, received mainly from south-west monsoons.

In this Division about 30 seasonal streams are identified. The area serves as a catchment for many streams, which drain into Kadem reservoir and Godavari River. There are a large number of small, medium and big tanks scattered through out the Division inside and outside the Reserve Forest.

Red soils are extensive, followed by Black soils. Alluvial and laterite soils are found occasionally to a small extent.

Population of the Division is 0.10 million (2011 Census); Per capita forest area is 0.63 Ha and the population density is 144 persons per Km^2.

Table 4.3.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	631.29	68.23
Agriculture	236.33	25.54
Land with Scrub	9.53	1.03
Fallow Lands	3.91	0.42
Grasslands	0	0.00
Settlements	13.03	1.41
Vegetation outside Forest	13.9	1.50
Water Bodies	17.28	1.87
Total	**925.27**	

4.3.2 Recorded Forest Area:

The notified forest area of the Division is **617.94 Km^2** which is 66.78 % of the geographical area. Reserved and Protected Forests constitute 80.82 Km^2 (13.2 %) and 537.12 Km^2 (86.8 %) of the forest area respectively.

As per Champion and Seth's classification the forests of Division fall under Tropical Dry Deciduous & Bamboo Mixed Forests (Dry Teak bearing Forests and Dry Mixed Forests).

4.3.3 Protected Area:

Large part of the Kawal Wildlife Sanctuary & Tiger Reserve (TR) falls in this Division. The entire notified forest area of the Division is included in Kawal WLS & TR.

4.3.4 Community Forest Management:

There are 75 Vana Samrakshana Samities (VSSs) or Joint Forest Protection Committees (JFPCs) in the Division. An area of 122.02 Km^2 forests which is 19.74 % of of the notified forests, is under the management of the VSSs.

4.3.5 Forest Cover:

The forest cover in the Division, based on the interpretation of IRS P6 LISS III 2011 data (Oct/Dec 2011) is **492.24 Km²** which is **53.20 %** of the Geographical area. In terms of the forest canopy density classes the Division has **41.22** Km² of Very Dense Forests, **222.25** Km² of Moderately Dense Forests and **228.77** Km² of Open Forests. The area of the Scrub is **64.41** Km², Non-Forest **85.38** Km² and Water Bodies **1.71** Km². The distribution of the forest cover of the division is shown in Fig 4.3.1

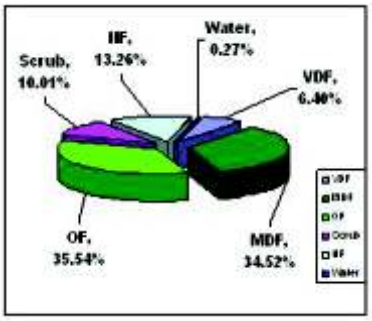


Fig 4.3.1

4.3.6 Change in Forest Cover:

The Satellite images of the Division of 2010 and 2011 are shown in Figures 4.3.2 & 4.3.3 respectively and the changes during this period are shown on the image of 2011.

Comparison of the current forest cover (data of Oct/Dec 2011)with that of previous assessment year(data of Oct/Dec 2010) shows a negative change of 1.10 Ha. The forest cover change matrix given in Table 4.3.2 reveals that there is a decrease of 1.10 Ha of Open Forest.

The entire negative change of 1.10 Ha is on account of encroachments. There fore the net loss of Forest cover is 1.10 Ha.

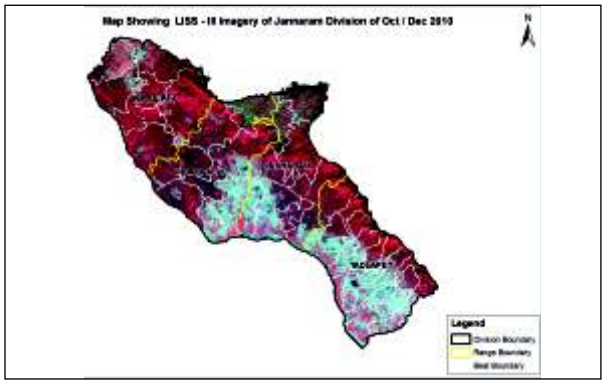


Fig 4.3.2

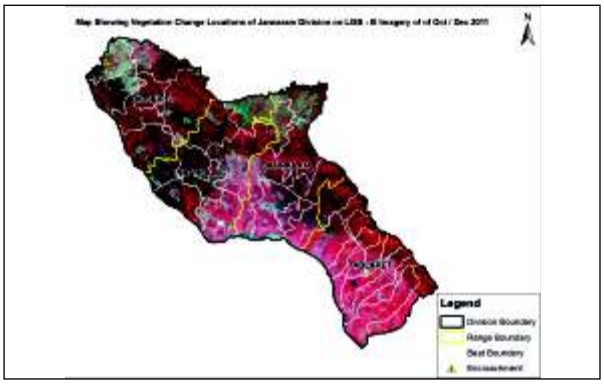


Fig 4.3.3

There are 34 Beats in the Division. Negative change in forest cover is noticed only in 1 Beat. There are no changes in the remaining 33 Beats.

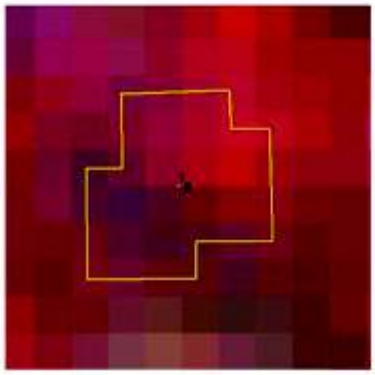
Details of Forest Cover change in the 1 Beat, viz., Dantanpalli West is shown in Table 4.3.3.

Table 4.3.2: Forest Cover change matrix **(Area in Km²)**

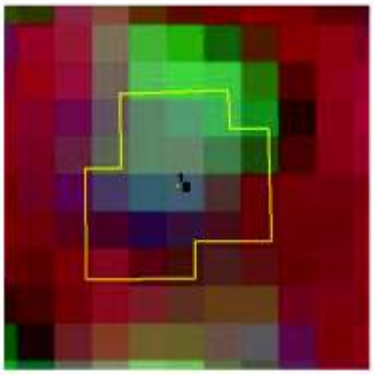
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	41.22	0.00	0.00	0.00	0.00	0.00	**41.22**
Moderately Dense Forest	0.00	222.25	0.00	0.00	0.00	0.00	**222.25**
Open Forest	0.00	0.00	228.77	0.00	0.01	0.00	**228.78**
Scrub	0.00	0.00	0.00	64.41	0.00	0.00	**64.41**
Non-Forest	0.00	0.00	0.00	0.00	85.37	0.00	**85.37**
Water	0.00	0.00	0.00	0.00	0.00	1.71	**1.71**
Total of 2011	**41.22**	**222.25**	**228.77**	**64.41**	**85.38**	**1.71**	**643.74**
Net Change	0.00	0.00	-0.01	0.00	0.01	0.00	**0.00**

Table 4.3.3: List of Beats with change in Forest Cover									(Area in Ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
Birsaipet Range									
Dantanpalli West	9.34	167.01	86.56	31.37	1105.29	0.00	1399.57	-1.10	1.1
Total	**9.34**	**167.01**	**86.56**	**31.37**	**1105.29**	**0.00**	**1399.57**	**-1.10**	**1.1**

2010



2011



Longitude	78.78252 ° E
Latitude	19.31605 ° N
Area in Ha	1.1
Change	OF TO NF
Comp No.	8
Beat	Dantanpally - w
Range	Birsaipet
Division	Jannaram

4.4 KAGAZNAGAR DIVISION

4.4.1 Introduction:

Kagaznagar Forest Division lies in the North Eastern side of Adilabad District between latitudes 19^0 11' 51'' and 19^0 36' 20''N and longitudes 79^0 22' 28'' and 79^0 58' 21'' E. Geographical area of the Division is 1645.83 Km^2. which is 10.20% of the area of the District. The important rivers and streams of the Division are Wardha, Pranahitha and Peddavagu; which finally join River Godavari.

Land use pattern of the Division is given in Table 4.4.1

The climate of the Division is generally dry and hot. The temperatures vary from 15^0C to 40^0C. The normal Annual rainfall of the Division is 904 mm, received mainly from south-west monsoons.

The rock formations in the Division are Archaean Granites and Genesis, the Deccan trap and the Gondwana sand stones. Soils formed from these rocks support good Teak forests. Soil types are Black cotton, Chalka and Red loams, Sandy loams, Saline and Alkaline.

The total population of the Division is 0.25million (2011 Census). The Per capita forest area is 0.35 ha. The population density is 155 persons per Km^2.

Table 4.4.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	777.61	47.25
Agriculture	706.05	42.90
Land with Scrub	73.15	4.44
Fallow Lands	11.61	0.71
Grasslands	0.00	0.00
Settlements	8.51	0.52
Vegetation outside Forest	34.68	2.10
Water Bodies	34.22	2.08
Total	**1645.83**	

4.4.2 Recorded Forest Area:

The notified forest area of the Division is 858.81 Km^2 which is 52.18 % of the geographical area. Reserved, Protected and Un-classed Forests constitute 650.62 Km^2 (75.74 %), 206.58 Km^2 (24 %) and 1.61 Km^2 (0.18 %) of the forest area respectively.

As per Champion and Seth's classification the forests of Division fall under Tropical Dry Deciduous & Bamboo Mixed Forests.

4.4.3 Protected Area:

There is no Protected Area in the Division.

4.4.4 Community Forest Management:

There are 113 Vana Samrakshana Samities (VSSs) in the Division. 148.42 Km^2 forest area, which is 17.27% of the forest area, is under the management of the VSSs.

4.4.5 Forest Cover:

The forest cover in the Division, based on the interpretation of IRS P6 LISS III 2011 data (Oct-Dec 2011) is **698.02 Km²** which is **42.41 %** of the Geographical area. In terms of the forest canopy density classes, the Division has **159.17** Km² of Very Dense Forests, **377.26** Km² of Moderately Dense Forests and **161.59** Km² of Open Forests. The area of the Scrub is **74.32** Km², Non-Forests **117.86** Km² and Water Bodies **3.09** Km². The distribution of the forest cover of the division is shown in Fig 4.4.1

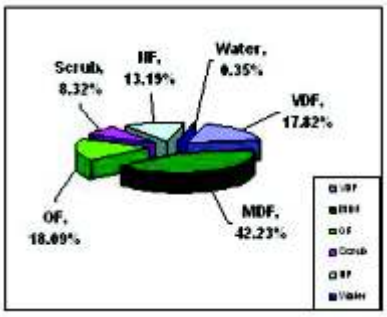


Fig 4.4.1

4.4.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 are shown in Figures 4.4.2 & 4.4.3 respectively and the changes during this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a positive change of 18.89 Ha and negative change of **65.20 Ha.** The forest cover change matrix given in Table 4.4.2 reveals that there is a decrease of **46.31 Ha** of Open Forest and **100.51 Ha** of Scrub.

The total positive change is 18.89 Ha on account of growth in raised plantations. The total negative change is **165.71 Ha.** Out of this **121.88 Ha** is on account of clearance of jungle growth for raising of plantations, **3.23 Ha** is on account of harvesting of plantation, and **40.60 Ha** is on account of encroachments. As clearance of jungle growth for raising of plantations, harvesting of plantations and raising of plantation are forest management interventions the same are not considered as loss of forest cover. Thus only the negative change due to encroachments is taken as loss of forest cover. Therefore the net loss of forest cover is **40.60 Ha** in the Division.

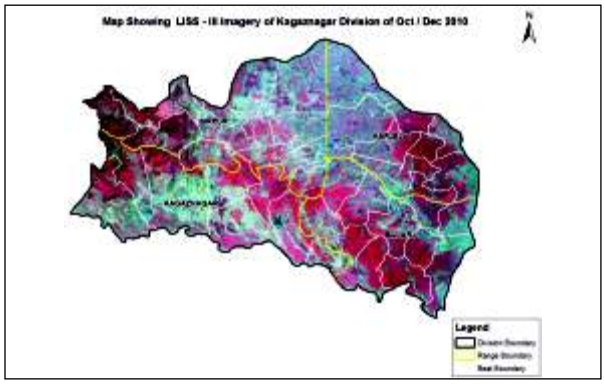


Fig 4.4.2

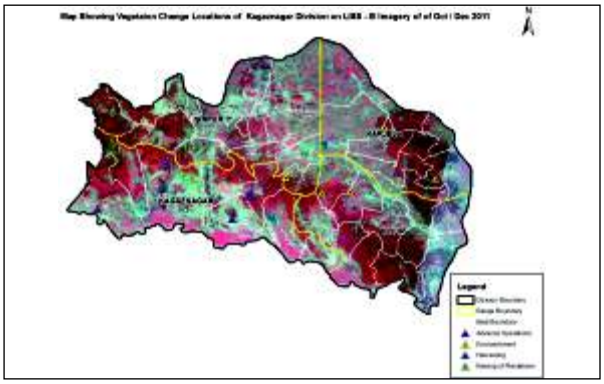


Fig 4.4.3

There are 39 Beats in the Division. Negative changes in Forest Cover are noticed in 9 Beats. There are no changes in remaining 30 Beats.

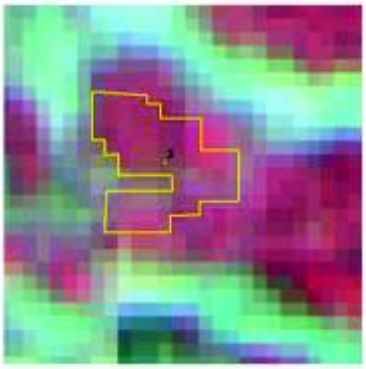
Details of forest cover changes in the 9 Beats mentioned above are shown in Table 4.4.3

Table 4.4.2: Forest Cover change matrix **(Area in Km²)**

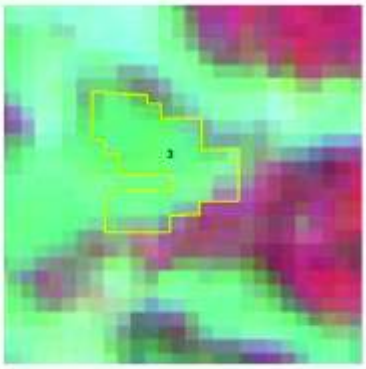
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	159.17	0.00	0.00	0.00	0.00	0.00	**159.17**
Moderately Dense Forest	0.00	377.26	0.00	0.00	0.00	0.00	**377.26**
Open Forest	0.00	0.00	161.40	0.00	0.65	0.00	**162.05**
Scrub	0.00	0.00	0.00	74.32	1.01	0.00	**75.33**
Non-Forest	0.00	0.00	0.19	0.00	116.20	0.00	**116.39**
Water	0.00	0.00	0.00	0.00	0.00	3.09	**3.09**
Total of 2011	**159.17**	**377.26**	**161.59**	**74.32**	**117.86**	**3.09**	**893.29**
Net Change	0.00	0.00	-0.46	-1.01	1.47	0.00	

Table 4.4.3: List of Beats with change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
BIJJUR RANGE									
Kuntalamanepally	353.25	924.17	91.21	98.60	522.14	5.32	1994.69	-2.33	2.33
Sulgupally	282.41	1183.69	83.80	84.13	527.55	21.36	2182.94	-19.10	19.10
Total	**635.66**	**2107.86**	**175.01**	**182.73**	**1049.69**	**26.68**	**4177.63**	**-21.43**	**21.43**
KAGAZNAGAR RANGE									
Kadamba	1104.87	1455.20	399.42	43.31	230.72	0.00	3233.52	-33.62	0.00
Kothapet	1226.97	1449.64	493.24	196.50	424.07	15.22	3805.64	-3.80	0.00
Raspalli	102.51	403.58	449.09	66.85	732.72	35.33	1790.08	-54.60	0.00
Vempalli	1145.26	1285.83	550.90	106.61	201.72	2.45	3292.77	-14.20	0.00
Total	**3579.61**	**4594.25**	**1892.65**	**413.27**	**1589.23**	**53.00**	**12122.01**	**-106.22**	**0.00**
KARJELLI RANGE									
Gudem	3579.61	4594.25	1892.65	413.27	1589.23	53.00	12122.01	-16.24	16.24
Karjelly	514.13	1041.99	136.60	53.95	320.51	0.00	2067.18	-2.54	2.54
Total	**4093.74**	**5636.24**	**2029.25**	**467.22**	**1909.74**	**53.00**	**14189.19**	**-18.78**	**18.78**
SIRPUR RANGE									
Rebbena	449.73	792.23	231.58	121.19	268.25	9.06	1872.04	-0.39	0.39
Total	**449.73**	**792.23**	**231.58**	**121.19**	**268.25**	**9.06**	**1872.04**	**-0.39**	**0.39**
Grand Total	**8758.74**	**13130.58**	**4328.49**	**1184.41**	**4816.91**	**141.74**	**32360.87**	**-146.82**	**40.60**

2010



2011



Longitude	79.42181 ° E
Latitude	19.35198 ° N
Area in Ha	3.8
Change	OF TO NF
Comp No.	69
Beat	Kothapet
Range	Kagaznagar
Division	Kagaznagar

4.5 MANCHERIAL DIVISION

4.5.1 Introduction:

Mancherial Forest Division lies in the south-eastern part of Adilabad District between latitudes 18^0 40' 10'' and 19^0 8' 42'' N and longitudes 79^0 10' 15'' and 79^0 57' 53'' E. Geographical area of the Division is 2328.56 Km^2 which is 14.4% of the area of the District. The elevation of hill ranges varies from 135 M 540 M above MSL. The highest point in the Division is 556 M above MSL. Godavari and Pranahita are the major rivers of the Division. River Pranahita forms eastern boundary- and the River Godavari forms southern boundary of the Division.

Land use pattern of the Division is given in Table 4.5.1

The temperature varies from 15^0C to 40^0C. The average annual rainfall of the Division is 1100mm received mainly from south-west monsoon.

The soils of Mancherial Division range from Black cotton, Chalka, sandy loam, Red loam to saline and alkaline. The Black cotton, Chalka and Red loamy soils are found throughout the Division and the sandy loams are found mostly in the middle portion of the Division. Coal is found in the Barakar sand stone of Gondwanas and the limestone deposits are found in Rally block, well suited for cement manufacture.

Population of the Division is 0.56 million (2011 Census), per capita forest area is 0.20 Ha and the population density is 261 persons per Km^2.

Table 4.5.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1026.02	44.06
Agriculture	983.23	42.22
Land with Scrub	115.78	4.97
Fallow Lands	63.42	2.72
Grasslands	0.00	0.00
Settlements	13.76	0.59
Vegetation outside Forest	65.25	2.81
Water Bodies	61.1	2.63
Total	**2328.56**	

4.5.2 Recorded Forest Area:

The notified forest area of the Division is **1205.83 Km^2** which is 51.85 % of the geographical area. Reserved, Protected and Un-classed Forests constitute 1180.64 Km^2 (97.92 %), 24.09 Km^2 (0.0199 %) and 1.10 Km^2 (0.09 %) of the forest area respectively.

As per Champion and Seth's classification the forests of Division fall under Tropical Dry Deciduous & Bamboo Mixed Forests (Dry Teak bearing Forests, Dry Mixed Forests).

4.5.3 Protected Area:

There are 2 Protected Areas in the Division. The first one is Pranahita Wild Life Sanctuary with an area of 68.37 Km^2 or 2.9% of the geographic area of the Division. The second one is a part of Sivaram Wild Life Sanctuary which includes 2 Beats of the Division with an area of 14.23 km^2.

4.5.4 Community Forest Management:

There are 113 Vana Samrakshana Samities (VSSs) in the Division. 137.67 Km^2 or 11.41 % of notified forest area is under the management of VSSs.

4.5.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Oct/Dec 2011) is **906.38 Km²** which is **38.91 %** of the Geographical area. In terms of the forest canopy density classes, the Division has **50.23** Km² of Very Dense Forests, **576.63** Km² of Moderately Dense Forests and **279.12** Km² of Open Forests. The area of the Scrub is **114.61** Km², Non-Forest **84.37** Km² and Water Bodies **10.41** Km². The distribution of the forest cover of the division is shown in Fig 4.5.1

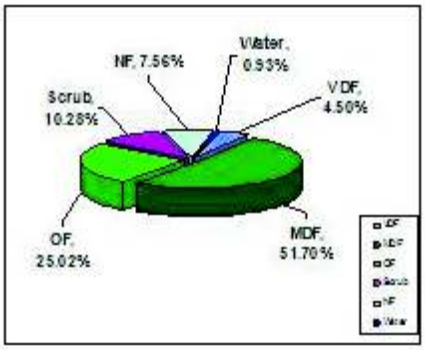


Fig 4.5.1

4.5.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 are shown in Figures 4.5.2 & 4.5.3 respectively and the changes during this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a positive change of **8.43 Ha** and negative change of **98.89 Ha.** The forest cover change matrix given in Table 4.5.2 reveals that there is a decrease of **90.46 Ha** of Open Forest and **66.74 Ha** of Scrub.

The positive change (including Scrub) is **15.51 Ha** on account of growth in raised plantations. The total negative change (including Scrub) is **172.71 Ha** Out of this **107.10 Ha** is on account of clearance of jungle growth for raising of plantations, **54.58 Ha** is on account of harvesting of plantation,**9.02 Ha** is an account of diversion of forest lands for non-forestry purpose and **2.01 Ha** is on account of encroachments. As clearance of jungle growth for raising of plantations, harvesting of plantations and diversion land are forest management interventions the same are not considered as loss of forest cover. Thus only the negative change due to encroachments is taken as loss of forest cover. Therefore the net loss of forest cover is 2.01 Ha in the Division.

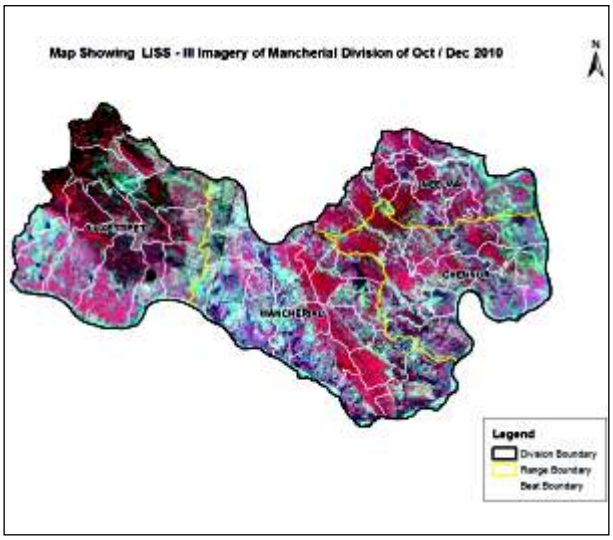


Fig 4.5.2

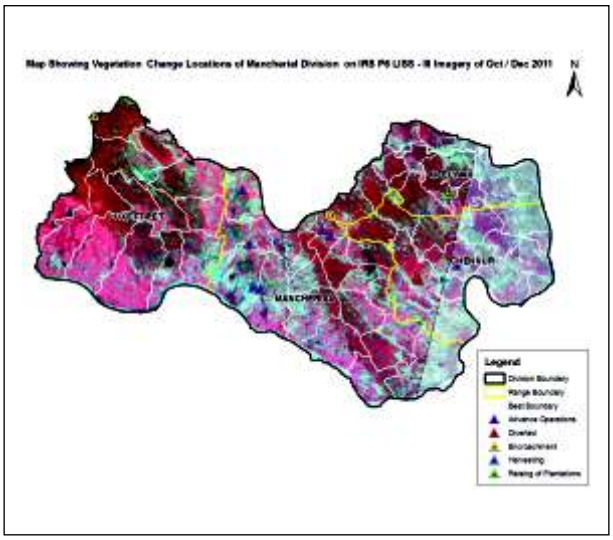


Fig 4.5.3

There are 50 Beats in the Division. Negative changes in the forest cover are noticed in 10 Beats and positive change in 2 Beats only. There are no changes in remaining 38 Beats.

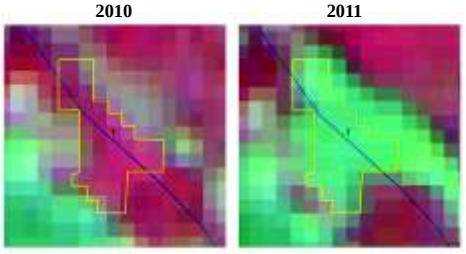
Details of forest cover changes in the 12 Beats mentioned above are shown in Table 4.5.3

Table 4.5.2: Forest Cover change matrix **(Area in Km^2)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	50.23	0.00	0.00	0.00	0.00	0.00	**50.23**
Moderately Dense Forest	0.00	576.63	0.00	0.00	0.00	0.00	**576.63**
Open Forest	0.00	0.00	279.04	0.00	0.99	0.00	**280.03**
Scrub	0.00	0.00	0.00	114.54	0.74	0.00	**115.28**
Non-Forest	0.00	0.00	0.08	0.07	82.64	0.00	**82.79**
Water	0.00	0.00	0.00	0.00	0.00	10.41	**10.41**
Total of 2011	**50.23**	**576.63**	**279.12**	**114.61**	**84.37**	**10.41**	**1115.37**
Net Change	0.00	0.00	-0.91	-0.67	1.58	0.00	

Table 4.5.3: List of Beats with change in Forest Cover **(Area in ha)**

Beat	VDF	MDF	OF	Scrub	NF	WB	Total	Net Change	Encroa-chment
CHENNUR Range									
Chennur	0.00	1410.39	897.40	431.62	75.92	0.00	2815.32	-1.39	0.00
Kistampet	31.41	2021.29	1061.47	272.49	392.65	47.48	3826.79	1.25	0.00
Total	**31.41**	**3431.68**	**1958.87**	**704.11**	**468.57**	**47.48**	**6642.11**	**-0.14**	**0.00**
LUXETTIPET Range									
Mulkalla	2.07	1107.80	419.98	42.84	17.25	226.11	1816.05	-1.84	0.00
Sonapur	404.97	2832.45	419.43	88.96	96.88	0.01	3842.70	-0.77	0.77
Total	**407.04**	**3940.25**	**839.41**	**131.80**	**114.13**	**226.12**	**5658.75**	**-2.61**	**0.77**
MANCHERIAL Range									
Audam	20.57	839.61	292.61	64.33	47.79	2.86	1267.77	-5.90	0.00
Indaram	0.00	441.30	744.89	503.89	544.65	0.16	2234.89	-24.12	0.00
Mancherial	0.00	658.57	566.96	206.28	604.09	8.59	2044.49	-2.80	0.00
Mandamarry	7.54	196.76	372.54	195.28	325.13	28.63	1125.88	-14.16	0.00
Sarangapalli	0.00	579.96	764.95	326.27	717.15	18.71	2407.04	-53.65	0.00
Total	**28.11**	**2716.20**	**2741.95**	**1296.05**	**2238.81**	**58.95**	**9080.07**	**-100.63**	**0.00**
NEELWAI Range									
Kothur	8.07	1387.64	714.22	204.55	234.64	0.99	2550.11	-1.24	1.24
Mallampet	1.24	1653.35	518.66	86.49	46.65	5.95	2312.34	2.00	0.00
Shankarapur	0.00	1303.79	962.66	194.63	232.57	6.80	2700.45	-54.58	0.00
Total	**9.31**	**4344.78**	**2195.54**	**485.67**	**513.86**	**13.74**	**7562.90**	**-53.82**	**1.24**
Grand Total	**475.87**	**14432.91**	**7735.77**	**2617.63**	**3335.37**	**346.29**	**28943.83**	**-157.20**	**2.01**



Longitude	79.61135 ° E
Latitude	18.94016 ° N
Area in Ha	2.19
Change	OF to NF
Comp No.	89
Beat	Audam
Range	Mancherial
Division	Mancherial

4.6 NIRMAL DIVISION

4.6.1 Introduction:

Nirmal Forest Division lies in the south-western part of Adilabad District between latitudes 18^0 50' 39'' and 19^0 20' 31''N and longitudes 77^0 45' 45'' and 78^0 56' 34'' E. Geographical area of the Division is 3525.62 Km^2 which is 21.8% of the area of the District. Godavari is the major river of the Division and forms its southern boundary. Siddha and Kadam are other important rivers, which are tributaries of River Godavari.

Land use pattern of the Division is given in Table 4.6.1

The temperature varies from 15^0C to $4^0$0 C. The normal Annual rainfall of the Division is 800 mm received mainly from south-west monsoons.

Soils found in the Division are black, chalka and red, sandy loams, saline and alkaline. The Division has reserves of iron ore, lime stone and clays.

Population of the Division is 0.69 million (2011 Census), per capita forest area is 0.15 Ha and the population density is 209 persons per Km^2.

Table 4.6.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	927.25	26.30
Agriculture	1951.56	55.35
Land with Scrub	81.76	2.32
Fallow Lands	75.74	2.15
Grasslands	0.46	0.01
Settlements	32.49	0.92
Vegetation outside Forest	144.85	4.11
Water body	311.52	8.84
Total	**3525.63**	

4.6.2 Recorded Forest Area:

The total notified forest area of the Division is 1178.4 Km^2, which is 33.42 % of the total geographical area. Reserved, Protected and un-classed Forests Constitute 354.57 Km^2 (30%), 743.17 Km^2 (63%) and 80.66 Km^2 (7%) of the total forest area respectively.

As per Champion and Seth's classification the forests of Division fall under Tropical Dry Deciduous & Bamboo Mixed Forests (Dry Teak bearing Forests, Dry Mixed Forests).

4.6.3 Protected Area:

A part of the Kawal Wildlife Sanctuary & Tiger Reserve, with an area of 315.01 km^2 of notified forests or 30.27 % of Division Forest area; is included in the Division.

4.6.4 Community Forest Management:

There are 205 Vana Samrakshana Samities (VSSs) in the Division. An area of 282.48 Km^2 forests, which is 23.97% of the notified forests, is under the management of the VSSs.

4.6.5 Forest Cover:

The forest cover in the Division, based on the interpretation of IRS P6 LISS III 2011 data (Oct/Dec 2011) is **857.45 Km^2** which is **24.32 %** of the geographical area. In terms of the forest canopy density classes the Division has **7.18** Km^2 of Very Dense Forests, **650.20** Km^2 of Moderately Dense Forests and **200.07** Km^2 of Open Forests. The area of the Scrub is **68.55** Km^2, Non-Forest **92.79** Km^2 and Water Bodies **6.37** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.6.1

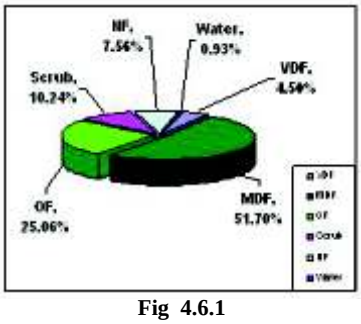


Fig 4.6.1

4.6.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 are shown in Fig 4.6.2 & Fig 4.6.3 respectively and the changes during this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a negative change in forest cover of **39.58 Ha.** The forest cover change matrix given in Table 4.6.2 reveals that there is a decrease of **3.11 Ha** of Moderately Dense Forest and **36.47 Ha** of Open Forest.

The total negative change (including Scrub) is **39.58 Ha.** Out of this **15.47 Ha** is on account of clearance of jungle growth for raising of plantations, **24.11 Ha** is on account of encroachments. As clearance of jungle growth for raising of plantations are management interventions and hence not considered as loss of forest cover. Therefore the negative change on account of encroachment is considered as loss of forest cover. Therefore, the net loss of Forest cover is **24.11 Ha** in the Division.

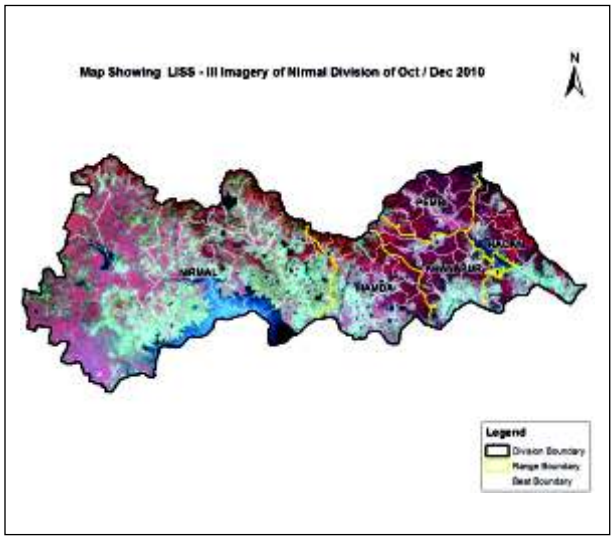


Fig 4.6.2

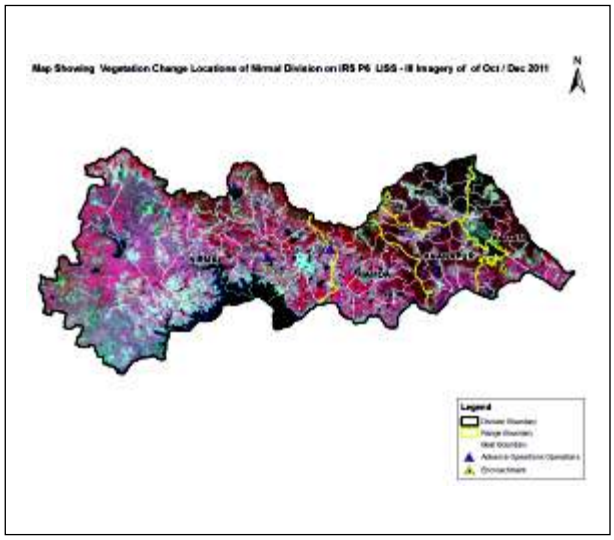


Fig 4.6.3

There are 56 Beats in the division. Negative changes in forest cover are noticed in 5 Beats. There are no changes in the remaining 51 Beats.

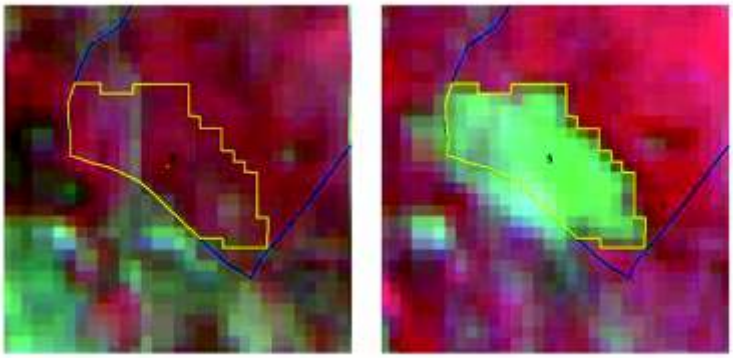
Details of Forest Cover changes in these 5 Beats are shown in Table 4.6.3.

Table 4.6.2: Forest Cover change matrix **(Area in Km^2)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	7.18	0.00	0.00	0.00	0.00	0.00	**7.18**
Moderately Dense Forest	0.00	650.20	0.00	0.00	0.03	0.00	**650.23**
Open Forest	0.00	0.00	200.07	0.00	0.36	0.00	**200.43**
Scrub	0.00	0.00	0.00	68.55	0.00	0.00	**68.55**
Non-Forest	0.00	0.00	0.00	0.00	92.40	0.00	**92.40**
Water	0.00	0.00	0.00	0.00	0.00	6.37	**6.37**
Total of 2011	**7.18**	**650.20**	**200.07**	**68.55**	**92.79**	**6.37**	**1025.16**
Net Change	0.00	-0.03	-0.36	0.00	0.39	0.00	

Table 4.6.3:List of Beats with negative change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
KHADAM RANGE									
Peddur	117.25	1345.08	287.87	45.06	37.80	52.98	1886.04	-2.17	2.17
Total	**117.25**	**1345.08**	**287.87**	**45.06**	**37.80**	**52.98**	**1886.04**	**-2.17**	**2.17**
KHANAPUR RANGE									
Muthyampet	7.25	1116.33	223.31	38.05	75.16	1.37	1461.47	-3.41	3.41
Total	**7.25**	**1116.33**	**223.31**	**38.05**	**75.16**	**1.37**	**1461.47**	**-3.41**	**3.41**
MAMDA RANGE									
Dilawarpur	0.00	55.64	223.98	173.72	140.46	0.67	594.47	-8.41	0.00
Neelaipet	0.00	659.29	125.55	92.83	117.70	0.00	995.37	-7.06	0.00
Total	**0.00**	**714.93**	**349.53**	**266.55**	**258.16**	**0.67**	**1589.84**	**-15.47**	**0.00**
PEMBI RANGE									
Paspula	17.00	2681.81	313.58	75.36	299.46	0.00	3387.21	-18.53	18.53
Total	**17.00**	**2681.81**	**313.58**	**75.36**	**299.46**	**0.00**	**3387.21**	**-18.53**	**18.53**
Division Total	**141.50**	**5858.15**	**1174.29**	**425.02**	**670.58**	**55.02**	**8324.56**	**-39.58**	**24.11**

2010 **2011**



Longitude	78.26883 ° E
Latitude	19.10194 ° N
Area in Ha	8.41
Change	OF to NF
Comp No.	1090
Beat	Dilawarpur
Range	Nirmal
Division	Nirmal

4.7 ANANTHAPUR DIVISION

4.7.1 Introduction:

Ananthapur Forest Division lies in the South Western part of Andhra Pradesh state between latitudes $13^0$40'52.32" and $15^0$14'0.24"N and longitudes $76^0$45'39.96" and 78^0 28' 14.52"E. The Geographical Area of the Division (and the District) is 19130 Km^2. The Division's northern and central portions are a high plateau, generally undulating with large granite rocks or low hill ranges rising occasionally above its surface. In the southern portion of the district the surface is hillier. 6 rivers flow within the district. These are Penna, Chithravathi, Vedavathi, Papagni, Swarnamukhi and Thadakaleru.

Land use pattern of the Division is given in Table 4.71

Table 4.7.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1060.42	5.54
Agriculture	15173.67	79.32
Land with Scrub	1286.08	6.72
Fallow Lands	802.60	4.20
Grasslands	28.66	0.15
Settlements	58.89	0.31
Vegetation outside Forest	134.32	0.70
Water bodies	585.36	3.06
Total	**19130**	

The climate of this Division is generally dry with temperatures ranging from 20^0C to 40^0C and the annual rainfall is about 553.00 mm, received from Southwest monsoon (338 mm) and North East monsoon (156.0 mm). The failure of the rains in South West monsoon period of June to September leads to drought in the district resulting failure of crops.

The District can be divided into 3 Natural Divisions. These are 1) Northern portion of black cotton soils (2) Central portion mainly made up of arid region with poor red soils & (3) High Level Land connecting with Mysore plateau at higher elevation having sandy red soils of normal productivity. The soils in Ananthapur District are predominantly red (76%) followed by black (24%) which occur in certain pockets.

The population of the District is 4.08 million (2011 Census). The Per capita forest area is 0.054 Ha. The population density is 213 persons per Km^2. The livestock population is 8.25 million.

4.7.2 Recorded Forest Area:

Area of the notified forests of the Division is **1969.78 Km^2** which is 10.3% of the geographical area. Reserved, Protected and Un-classed Forests constitute 1921.48 Km^2 (77.64%), 14.73 Km^2 (15.55%) and 33.57 Km^2 (6.81%) of the total forest area respectively.

As per Champion and Seth's classification the Forests of Division fall under Tropical Dry Deciduous, Tropical Moist Deciduous, Tropical Semi-Evergreen and Tropical Thorn Forest types.

4.7.3 Protected Area:

There are no Protected Areas in the Division

4.7.4 Community Forest Management:

There are 281 Vana Samrakshana Samities (VSSs) or Joint Forest Protection Committees (JFPCs) in the Division covering an area of 628.35 Km^2 forest areas which constitutes 32 % of forest area.

4.7.5 Forest Cover:

The forest cover in the Division based on the Interpretation of IRS P6 LISS III 2011 data (Jan 2012) is **349.56 Km²** which is **1.83%** of the Geographical area. In terms of the forest canopy density classes the Division has **0.87** Km² of Moderately Dense Forests and **348.69** Km² of Open Forests. The area of the Scrub is **709.62** Km², Non-Forest **885.92** Km² and Water Bodies **0.50** Km². The distribution of the forest cover of the Division is shown in Fig 4.7.1

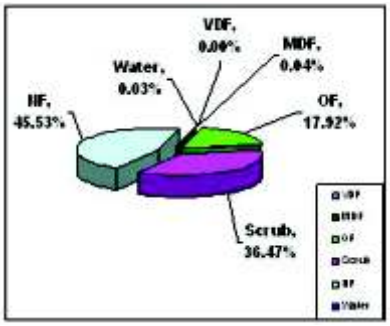


Fig 4.7.1

4.7.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 are shown in Fig 4.7.2 & Fig 4.7.3 respectively and the changes during this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a negative change of **26.19 Ha.** The forest cover change matrix given in Table 4.7.2 reveals that there is a decrease of **26.19 Ha** of Open Forest and **62.02 Ha** of Scrub.

The total negative change (including Scrub) is **88.21 Ha.** Out of this **78.66 Ha** is on account of clearance of jungle growth for raising of plantations, and **9.55 Ha** is an account of diversion of forest lands for non-forestry purpose. As clearance of jungle growth for raising of plantations and diversion of forest lands are forest management interventions the same are not considered as loss of forest cover. Therefore there is **no net loss** of Forest cover in the Division.

The simplified forest cover change matrix is given in Table 4.7.2

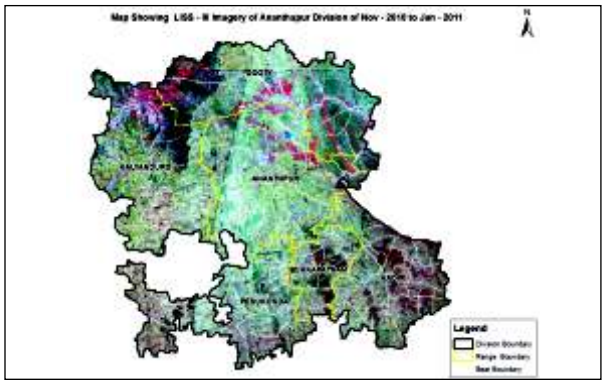


Fig 4.7.2

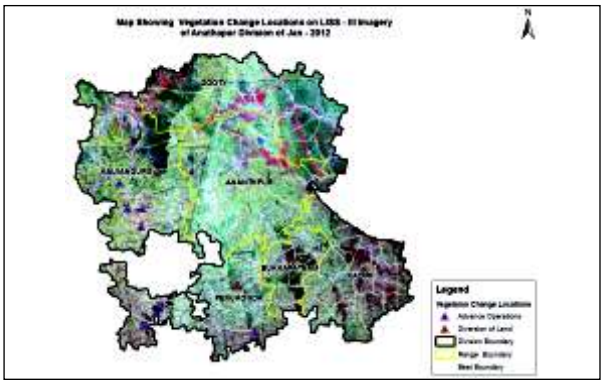


Fig 4.7.3

There are 72 Beats in the Division. Negative changes in forest cover are noticed in 9 Beats. There are no changes in the remaining 63 Beats.

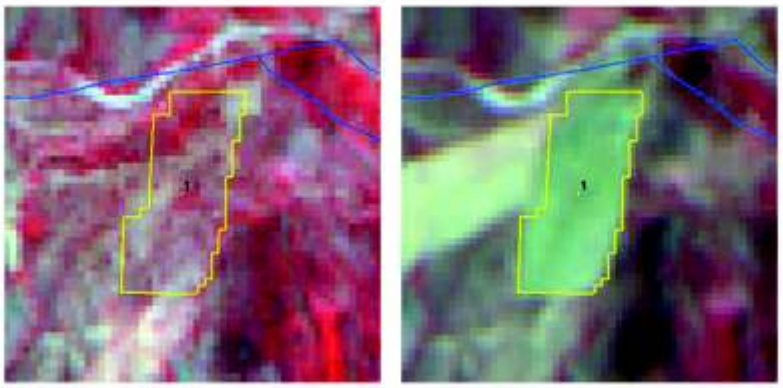
Details of Forest Cover changes in the 9 Beats are shown in Table 4.7.3.

Table 4.7.2: Forest Cover change matrix **(Area in Km²)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	0.87	0.00	0.00	0.00	0.00	**0.87**
Open Forest	0.00	0.00	348.69	0.00	0.26	0.00	**348.95**
Scrub	0.00	0.00	0.00	709.62	0.62	0.00	**710.24**
Non-Forest	0.00	0.00	0.00	0.00	885.04	0.00	**885.04**
Water	0.00	0.00	0.00	0.00	0.00	0.50	**0.50**
Total of 2011	**0.00**	**0.87**	**348.69**	**709.62**	**885.92**	**0.50**	**1945.60**
Net Change	0.00	0.00	-0.26	-0.62	0.88	0.00	

Table 4.7.3: List of Beats with change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
Kadiri Range									
Kuntlapalli	0.00	11.26	2,801.61	1,707.21	193.65	0.99	4,714.72	-8.28	0.00
Total	**0.00**	**11.26**	**2801.61**	**1707.21**	**193.65**	**0.99**	**4714.72**	**-8.28**	**0.00**
Kalyandurg Range									
Khairevu	0.00	0.00	21.18	666.55	2,655.64	0.67	3,344.04	-14.23	0.00
Pillalapalli	0.00	0.00	44.93	340.65	886.86	0.00	1,272.44	-11.68	0.00
Settur	0.00	0.00	2.72	324.35	1,438.60	0.00	1,765.67	-22.47	0.00
Total	**0.00**	**0.00**	**68.83**	**1331.55**	**4981.1**	**0.67**	**6382.15**	**-48.38**	**0.00**
Penukonda Range									
Gundumala	0.00	0.00	528.43	1,302.40	572.74	3.22	2,406.79	-5.51	0.00
Penukonda	0.00	0.00	205.84	2,406.41	2,025.63	0.00	4,637.88	-9.55	0.00
Rallapalli	0.00	0.00	126.55	485.6	540.92	0.00	1,153.07	-5.42	0.00
Rolla	0.00	0.00	5.35	547.48	818.71	0.00	1,371.54	-5.71	0.00
Yerrakonda South	0.00	0.89	332.03	1,207.50	313.21	0.00	1,853.63	-5.36	0.00
Total	**0.00**	**0.89**	**1198.2**	**5949.39**	**4271.21**	**3.22**	**11422.91**	**-31.55**	**0.00**
Division Total	**0.00**	**12.15**	**4068.64**	**8988.15**	**9445.96**	**4.88**	**22519.78**	**-88.21**	**0.00**

2010 **2011**



Longitude	78.23944° E
Latitude	14.23363 ° N
Area in Ha	8.28
Change	SF TO NF
Comp No.	124
Beat	Kuntlapally
Range	Kadiri
Division	Ananthapur

4.8 CHITTOOR WEST DIVISION

4.8.1 Introduction:

Chittoor West Forest Division lies in the Southern Part of Andhra Pradesh state between latitudes 12^0 37' 22" and 13^0 59' 37.76" N and longitudes 78^0 40' 12" and 79^0 08' 35.52" E. Geographical area of the Division is 7944 Km^2 which is 52.32% of the geographical area of the District. Terrain can be roughly divided in to Hills and plateaus and Outer slopes and Outliners. The Eastern Ghats traverse this division from South-West to North – East. Palmaner, Punganur, Madanapalli Plateaus are constituents of the Mysore Plateau. The elevation of the Division varies from 305 M on plains to 1377M on the hills. One of the prominent hills in the Division is Horsley Hill 1314M above MSL.

Land use pattern of the Division is given in Table 4.8.1

The climate of the Division is equable, healthy and pleasant. The temperatures ranging from 12^0C to 38^0C and the average rainfall of the Division is 730 mm.

The soils in the Division are red loamy, red sandy, black clay, black loamy, black sandy and red clay.

The population of the Division is 2.07 million (2011 Census). The per capita forest area is 0.10 Ha & population density is 262 persons per Km^2.

Table 4.8.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1807.19	22.75
Agriculture	4377.76	55.11
Land with Scrub	855.53	10.77
Fallow Lands	593.37	7.47
Grasslands	11.69	0.15
Settlements	11.63	0.14
Vegetation outside Forest	88.07	1.11
Water Bodies	198.77	2.50
Total	**7944.00**	

4.8.2 Recorded Forest Area:

The notified forest area of the Division is 2068 Km^2 which is 26% of the geographical area. Reserved, Protected and Un-classed Forests constitute 1510.5 Km^2 (73%), 550.85 Km^2 (26.64%) and 6.72 Km^2 (0.32%) of the forest area respectively.

As per Champion and Seth's classification the Forests of Division fall under Dry Tropical South Indian mixed Deciduous Forests, Southern cutch Thorn Forest Groups & Tropical Dry Evergreen Forests.

4.8.3 Protected Area:

There is one Protected Area in the Division, viz., **Koundinya Wildlife Sanctuary** with an extent of 815.50 Km^2.

4.8.4 Community Forest Management:

There are 119 Joint-Forest Protection Committees (JFPCs) or Vana Samrakshana Samities (VSSs) in the Division. An area of 222.34 Km^2 forests which is 10.8% of the notified forests is under the management of the VSSs.

4.8.5 Forest Cover:

The forest cover in the Division, based on the interpretation of IRS P6 LISS III 2011 data (Jan/Feb 2012) is **1160.43 Km²** which is **14.61%** of the Geographical area. In terms of forest canopy cover density classes the Division has **0.03** Km² of Very Dense Forests, **197.72** Km² of Moderately Dense Forests and **962.68** Km² of Open Forests. The area of the Scrub is **646.34** Km², Non-Forest **280.62** Km² and Water Bodies **2.37** Km². The distribution of the forest cover of the Division is shown in Fig 4.8.1.

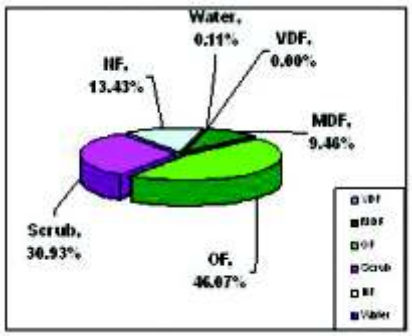


Fig 4.8.1

4.8.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 are shown in Fig 4.8.2 & 4.8.3 respectively.

Comparison of the current forest cover with that of previous assessment year does not show any change in the forest cover. The forest cover change matrix is given in Table 4.8.2.

There is no loss of Forest cover in this Division during the period.

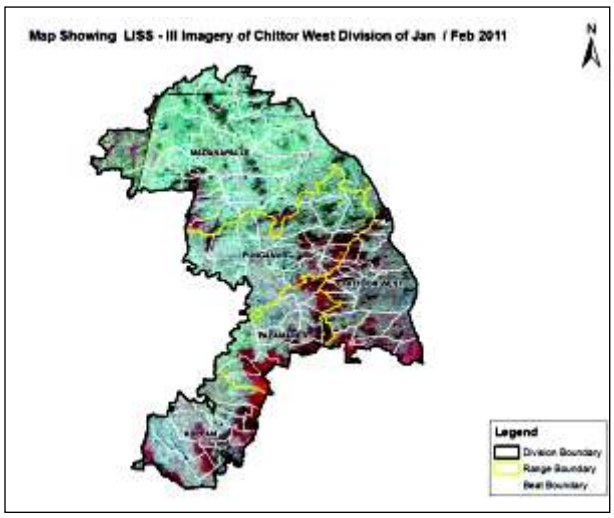


Fig 4.8.2

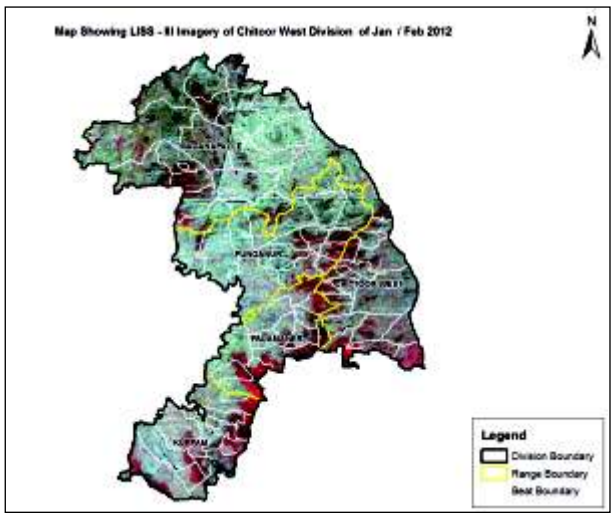


Fig 4.8.3

There are **84 beats** in the division. There is no change in the forest cover in any of the Beats.

Table 4.8.2: Forest Cover change matrix **(Area in Km²)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.03	0.00	0.00	0.00	0.00	0.00	**0.03**
Moderately Dense Forest	0.00	197.72	0.00	0.00	0.00	0.00	**197.72**
Open Forest	0.00	0.00	962.68	0.00	0.00	0.00	**962.68**
Scrub	0.00	0.00	0.00	646.34	0.00	0.00	**646.34**
Non-Forest	0.00	0.00	0.00	0.00	280.62	0.00	**280.62**
Water	0.00	0.00	0.00	0.00	0.00	2.37	**2.37**
Total of 2011	**0.03**	**197.72**	**962.68**	**646.34**	**280.62**	**2.37**	**2089.76**
Net Change	0.00	0.00	0.00	0.00	0.00	0.00	

4.9 ACHAMPET WLM DIVISION

4.9.1 Introduction:

Achampet WLM Forest Division lies in the south eastern part of Mahabubnagar District between latitudes 16^0 08' 50'' and 16^0 37' 45'' N and longitudes 78^0 4' 30'' and 78^0 58' 50'' E. The Geographical Area of the Division is 4303.47 Km^2, which is 23.35 % of the geographical area of the District. The Division has two physiographic zones, the Amrabad plateau of Nallamalai hills having an altitude of 500 to 876 M and the plains having an altitude of 200 to 500 M. The River Krishna forms Southern boundary of the Division as well as the District. Major tributaries of Krishna falling in Division are Dindi, Bhumunikolanu vagu, Nallavagu, Buggavagu and Yemulapayavagu.

Land use pattern of the Division is given in Table 4.9.1

The climate of this Division is generally dry with temperatures ranging from 15^0C to 41^0C. The annual rainfall is about 700 mm received mainly from Southwest monsoons.

Srisailam quartzite occupies most part of the Division. The soil types found mainly are Black cotton, Red and Brown sandy loam.

The total population of the Division is 0.49 million (2011 Census) which constitutes 12.25 % of the total population of the District. The per capita forest area is 0.49 Ha. The population density is 106 persons per Km^2. The livestock population is 4.82 million.

Table 4.9.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	2293.29	53.29
Agriculture	804.03	18.68
Land with Scrub	236.07	5.49
Fallow Lands	102.87	2.39
Grasslands	127.72	2.97
Settlements	4.03	0.09
Not available for cultivation	645.24	14.99
Water Bodies	90.22	2.10
Total	**4303.47**	

4.9.2 Recorded Forest Area:

The notified forest area of the Division is 2423.36 Km^2, which is 56.31% of the geographical area. Extents of Reserved, Protected and Un-classed forests are 1881.51 Km^2 (77.64%), 376.72 Km^2 (15.55%) and 165.03 Km^2 (6.81%) respectively of the total forest area.

As per Champion and Seth's classification the Forests of Division fall under Tropical Dry Deciduous, Tropical Moist Deciduous, Tropical Semi-evergreen and Tropical Thorn Forest types.

4.9.3 Protected Area:

The Division is one of the 4 constituent Divisions of Nagarjuna Sagar–Srisailam Tiger Reserve (NSTR). Out of 2,423.36 Km^2 of forest of this division area,1750 Km^2 is included in NSTR.

4.9.4 Community Forest Management:

There are 79 Vana Samrakshana Samities (VSSs) or JFPCs in the Division. 216.73 Km^2 or 8.95 % of forest area of the Division is under management of the VSSs.

4.9.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Jan/Feb-2012) is **1,511.58 Km^2** which is **35.13%** of the Geographical area. In terms of the forest canopy density classes the Division has **0.33** Km^2 of Very Dense Forests, **479.11** Km^2 of Moderately Dense Forests and **1032.14** Km^2 of Open Forests. The area of the Scrub is **782.05** Km^2,that of Non-Forest **69.60** Km^2 and Water Bodies **59.96** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.9.1

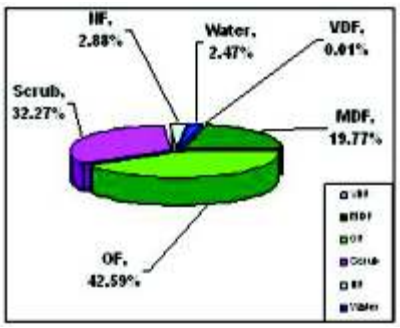


Fig 4.9.1

4.9.6 Change in Forest cover:

The Satellite images of the Division of 2010 and 2011 are shown in Figures 4.9.2 & 4.9.3 respectively and the changes during this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows no negative change. The forest cover change matrix of given in Table 4.9.2. reveals that there is no change in forest cover.

The total negative change (including Scrub) is **17.88 Ha** out of this **17.88 Ha** is on account of clearance of jungle growth for raising of plantations. As clearance of jungle growth for raising of plantations are forest management interventions the same are not considered as loss of forest cover. Thus only the negative change due to encroachments is taken as loss of forest cover. Therefore there is no loss of forest cover in the Division.

There are 70 Beats in the Division. Negative changes in forest cover are seen in 1 Beat. There is no change in the remaining 69 Beats.

Details of forest cover changes in the Beat is shown in Table 4.9.3.

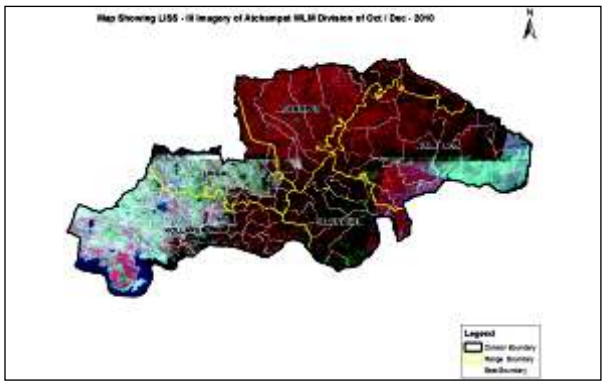


Fig 4.9.2

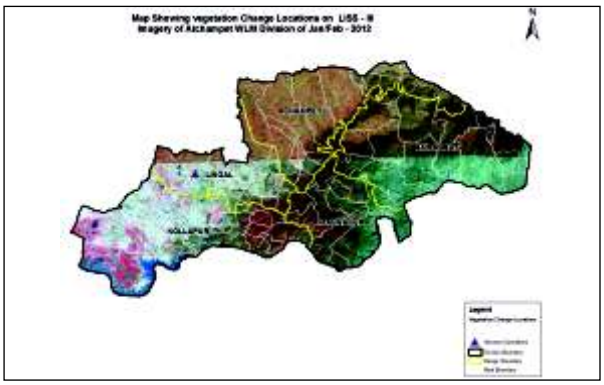


Fig 4.9.3

Table 4.9.2: Forest Cover change matrix **(Area in Km^2)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.33	0.00	0.00	0.00	0.00	0.00	**0.33**
Moderately Dense Forest	0.00	479.11	0.00	0.00	0.00	0.00	**479.11**
Open Forest	0.00	0.00	1032.14	0.00	0.00	0.00	**1032.14**
Scrub	0.00	0.00	0.00	782.05	0.18	0.00	**782.23**
Non-Forest	0.00	0.00	0.00	0.00	69.60	0.00	**69.60**
Water	0.00	0.00	0.00	0.00	0.00	59.96	**59.96**
Total of 2011	**0.33**	**479.11**	**1032.14**	**782.05**	**69.78**	**59.96**	**2423.37**
Net Change	0.00	0.00	0.00	-0.18	0.18	0.00	

Table 4.9.3: List of Beats with change in Forest Cover **(Area in Ha)**

Beat	VDF	MDF	OF	Scrub	NF	WB	Total	Net Change	Encroa-chment
LINGAL RANGE									
Bacharam	0.00	0.00	143.59	1039.41	22.95	5.21	1211.16	-17.88	0.00
Total	**0.00**	**0.00**	**143.59**	**1039.41**	**22.95**	**5.21**	**1211.16**	**-17.88**	**0.00**
Grand Total	**0.00**	**0.00**	**143.59**	**1039.41**	**22.95**	**5.21**	**1211.16**	**-17.88**	**0.00**

4.10 ATMAKUR WLM DIVISION

4.10.1 Introduction:

Atmakur WLM Forest Division lies in the north-eastern part of Kurnool District between latitudes 15^0 39' 3.6'' and 16^0 8' 52.8''N and longitudes78^0 15' 1.8'' and 78^0 55' 57'' E. Geographical Area of the Division is 2154 Km^2 which is 12.20 % of the total area of the District.

Land use pattern of the Division is given in Table 4.10.1.

The climate of this Division is generally dry with temperatures ranging from 20^0C to 40^0C and the annual rainfall is about 670 mm, received mainly from Southwest monsoons.

Important minerals and rocks found in the District are iron, lime stone, steatite, barytes, quartz, asbestos, diamond and black & pink granite. The soil types found mainly are Black cotton (East and North Western), Red (South Eastern) and Brown sandy loam.

The population of the Division is 0.30 million (2011 Census) .The per capita forest area is 0.42 Ha. The Population density is 141 persons per Km^2.

Table 4.10.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	868.80	40.33
Agriculture	784.92	36.44
Land with Scrub	77.13	3.58
Fallow Lands	22.93	1.07
Grasslands	30.68	1.42
Settlements	12.89	0.60
Vegetation outside Forest	103.96	4.83
Water bodies	252.69	11.73
Total	**2154.00**	

4.10.2 Recorded Forest Area:

Area of the notified forest of the Division is **1288.81 Km^2** which is 59.83 % of the geographical area. Reserved and Un-classed Forests Constitute 1204.44 Km^2 (93.45%) and 84.37 Km^2 (6.54%) of the forest area respectively.

As per Champion and Seth's classification the Forests of Division fall under Tropical Dry Deciduous, Tropical Moist Deciduous and Tropical Thorn Forest types.

4.10.3 Protected Area:

The Atmakur Division comprises of Gundla Brahmeswaram Wildlife Sanctuary (GBM), Nagarjuna Sagar Tiger Reserve (NTSR) and Rollapadu WLS. Out of 1288.81 Km^2 of forest area, an area of 536.16 Km^2 is included in Nagarjuna Sagar Tiger Reserve (NTSR), 277.88 Km^2 in Gundla Brahmeswaram Wildlife Sanctuary (GBM) & 5.20 Km^2 in Rollapadu Wild Life Sanctuary.

4.10.4 Community Forest Management:

There are 47 Vana Samrakshana Samities (VSSs) in the Division. An area of 135.31 Km^2 forests, which is 10.5 % of the notified forests, is under the management of the VSSs.

4.10.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Jan-2012) is **608.57 Km^2** which is **28.25 %** of the Geographical area. In terms of the forest canopy cover density classes the Division has **5.53** Km^2 of Very Dense Forests, **229.08** Km^2 of Moderately Dense Forests and 373.96 Km^2 of Open Forests. The area of the Scrub is **259.74** Km^2, Non-Forests **347.43** Km^2 and Water Bodies is **70.03** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.10.1

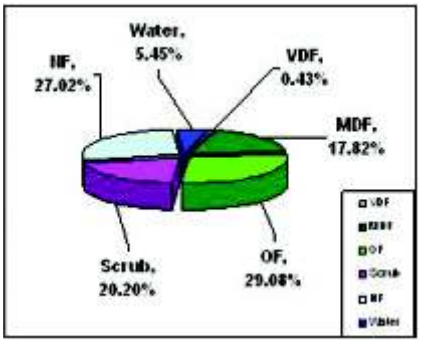


Fig 4.10.1

4.10.6 Change in Forest cover:

The satellite image of 2010 and 2011 seasons are shown in Fig (4.10.2 & 4.10.3) and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a negative change of **48.68 Ha**. The forest cover change matrix of given in Table 4.35.2 reveals that there is a decrease of **48.68 Ha** of Open Forest.

The total negative change (including Scrub) of **48.68** Ha is on account of encroachments, which is a loss of forest cover. Therefore the net loss of forest cover is **48.68 Ha** only.

The total negative change (including Scrub) is **48.68 Ha.** which is on account of encroachments. Thus only the negative change due to encroachments is taken as loss of forest cover. Therefore the net loss of forest cover is **48.68 Ha** in the Division.

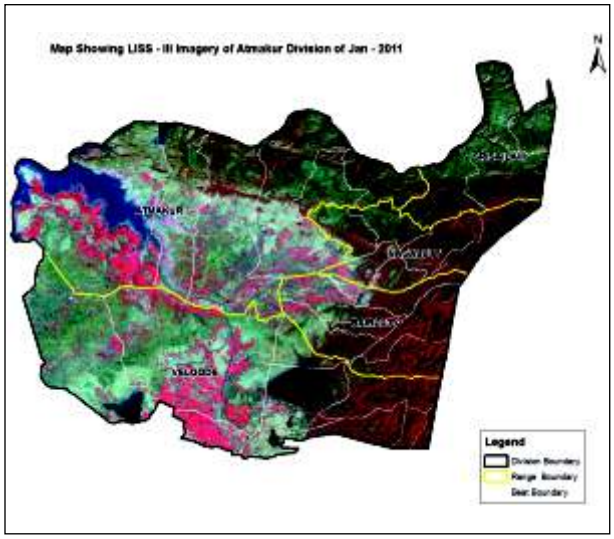


Fig 4.10.2

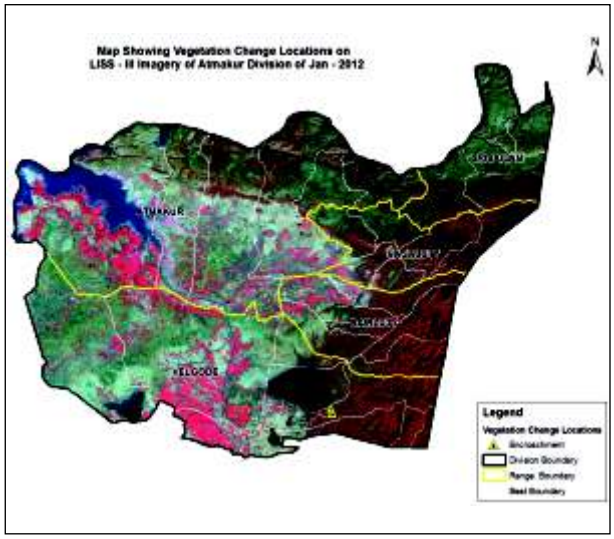


Fig 4.10.3

There are 30 Beats in the Division. Negative changes in forest cover are noticed in 1 Beat. There are no changes in the remaining 29 Beats.

Details of forest cover changes in the Beat are shown in Table 4.10.3.

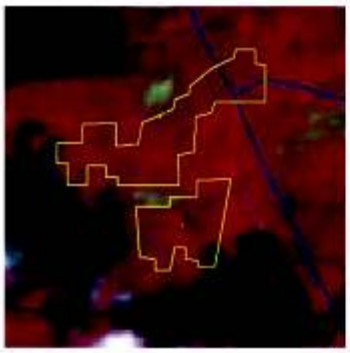
The simplified forest cover change matrix is given in Table 4.10.2

Table 4.10.2: Forest Cover change matrix **(Area in Km^2)**

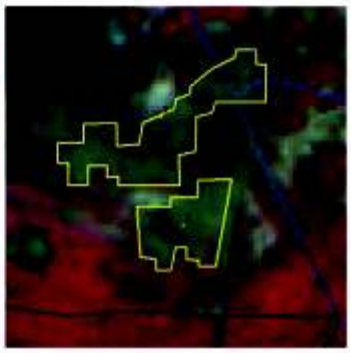
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	5.53	0.00	0.00	0.00	0.00	0.00	**5.53**
Moderately Dense Forest	0.00	229.08	0.00	0.00	0.00	0.00	**229.08**
Open Forest	0.00	0.00	373.96	0.00	0.49	0.00	**374.45**
Scrub	0.00	0.00	0.00	259.74	0.00	0.00	**259.74**
Non-Forest	0.00	0.00	0.00	0.00	346.94	0.00	**346.94**
Water	0.00	0.00	0.00	0.00	0.00	70.03	**70.03**
Total of 2011	**5.53**	**229.08**	**373.96**	**259.74**	**347.43**	**70.03**	**1285.77**
Net Change	0.00	0.00	-0.49	0.00	0.49	0.00	

Table 4.10.3: List of Beats with change in Forest Cover									(Area in Ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroachment**
VELGODE Range									
Pangidi	184.46	4,046.74	1,977.85	414.00	344.05	22.48	6,989.58	-48.68	48.68
Total	**184.46**	**4,046.74**	**1,977.85**	**414.00**	**344.05**	**22.48**	**6,989.58**	**-48.68**	**48.68**
Grand Total	**184.46**	**8,093.48**	**3,955.70**	**828.00**	**688.10**	**44.96**	**13,979.16**	**-48.68**	**48.68**

2010



2011



Longitude	78.65401° E
Latitude	15.71168 ° N
Area in Ha	31.38
Change	OF TO NF
Comp No.	642
Beat	Pangidi
Range	Velgode
Division	Atmakur

4.11 MARKAPUR WLM DIVISION

4.11.1 Introduction:

Markapur WLM Forest Division lies in the south-eastern part of Prakasham district between latitudes 15^0 23' 1'' and 16^0 18' 16'' N and longitudes 78^0 47' 48'' and 79^0 57' 56'' E. Geographical area of the Division is 7,218 Km^2 which is 25.1 % of the area of the District. The seasonal rivers like Gundlakamma, Sagileru, Musi, Paleru and Manneru flow through the Division. The Gundlakamma River rises in Nallamala hills and the famous Cumbum Tank is formed across this river.

Land use pattern of the Division is given in Table 4.11.1

The climate of this Division is dry and salubrious, temperatures ranging from 19^0C to 40^0C; the annual rainfall is about 871 mm, received mainly from Southwest monsoons.

Sandstone mixed with quartzite and occasional shales are the characteristic rock formations on the Veligondas and at their extremes, bordering Kanigiri, the rocks gradually change into Gneisses or Granite composition. Outcrops of Barytes and Manganese ores occur in Veligondas. The soil types found mainly are red loamy, black cotton, sandy loam and sandy.

Population of the Division is 0.86 million (2011 Census), per capita forest area is 0.26 Ha and the population density is 155 persons per Km^2.

Table 4.11.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	2014.3	27.91
Agriculture	4267.32	59.12
Land with Scrub	534.29	7.40
Fallow Lands	111.67	1.55
Grasslands	13.84	0.19
Settlements	31.10	0.43
Vegetation outside Forest	188.96	2.62
Water bodies	56.53	0.78
Total	**7218.00**	

4.11.2 Recorded Forest Area:

The notified forest area of the Division is **2476.39 Km^2** which is 34.30% of the geographical area. The status of entire forest area is Reserved Forest.

As per Champion and Seth's classification the forests of Division fall under Southern Tropical Dry Deciduous, as the predominant and climatic climax forest in the Division. The Southern Tropical Thorn Forest also occurs in low elevations and in plains.

4.11.3 Protected Area:

Parts of 2 Protected Areas, viz., the Nagarjuna Sagar Srisailam Tiger Reserve (NSTR) and Gundla Brahmeswaram (GBM) Wild Life Sanctuary, fall in the Division. An area of 1039.51 Km^2 is included in the Nagarjuna Sagar Srisailam Tiger Reserve and 55.45 Km^2 in the Gundla Brahmeswaram Wild Life Sanctuary (GBM).

4.11.4 Community Forest Management:

There are 93 Vana Samrakshana Samities (VSSs) in the Division. An area of 347.14 Km^2 forests, which is 14.01 % of the notified forests, is under the management of VSSs.

4.11.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Feb-2012) is **1325.10 Km²** which is **18.36%** of the geographical area. In terms of the forest cover canopy density classes the Division has **1.93** Km² of Very Dense Forests, **372.31** Km² of Moderately Dense Forests and **950.86** Km² of Open Forests. The area of the Scrub is **682.27** Km², Non-Forest **250.99** Km² and Water Bodies **14.50** Km². The distribution of the forest cover of the Division is shown in Fig 4.11.1

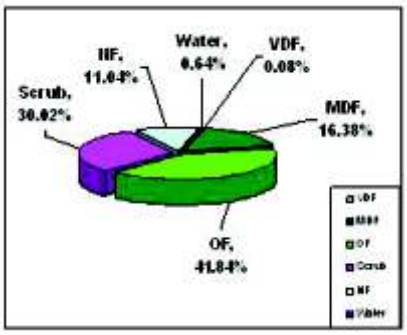


Fig 4.11.1

4.11.6 Change in Forest Cover:

The satellite images of 2010 and 2011 are shown in Fig 4.11.2 & 4.11.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a negative change of **48.91 Ha.** The forest cover change matrix given in Table 4.11.2 reveals that there is a decrease of **48.91 Ha** of Open Forest and **276.57 Ha** of Scrub.

The total negative change (including Scrub) of **325.48 Ha.** out of this **308.38 Ha** is on account clearance of jungle growth for raising of plantations and **17.10 Ha** is on account of encroachment. As clearance of jungle growth for raising of plantations is a forest management intervention the same is not considered as loss of forest cover. Thus only the negative change on account of encroachments is taken as loss of forest cover. Therefore the net loss of forest cover is **17.10** Ha only.

There are 40 Beats in the Division. Negative changes in forest cover are noticed in 11 Beats. There are no changes in the remaining 29 Beats.

Details of forest cover changes in these 11 Beats mentioned above are shown in Table 4.11.3.

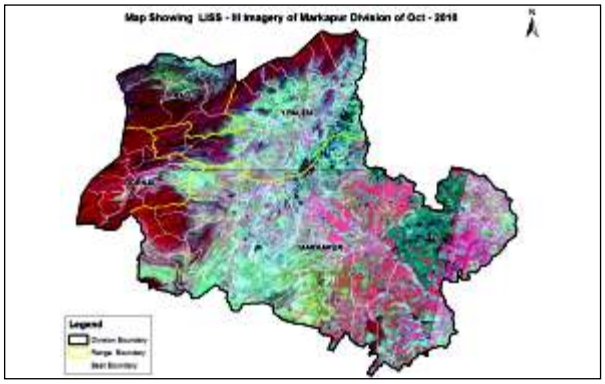


Fig 4.11.2

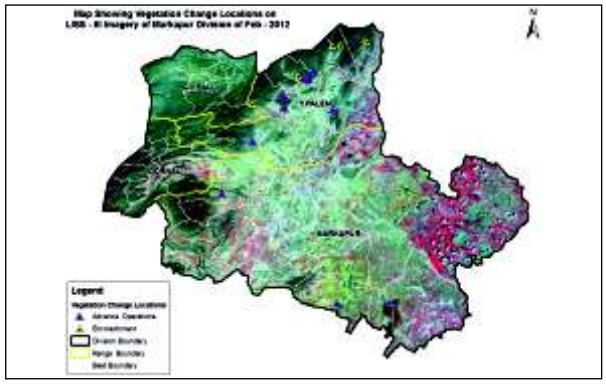


Fig 4.11.3

Table 4.11.2: Forest Cover change matrix **(Area in Km²)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	1.93	0.00	0.00	0.00	0.00	0.00	**1.93**
Moderately Dense Forest	0.00	372.31	0.00	0.00	0.00	0.00	**372.31**
Open Forest	0.00	0.00	950.86	0.00	0.49	0.00	**951.35**
Scrub	0.00	0.00	0.00	682.27	2.77	0.00	**685.04**
Non-Forest	0.00	0.00	0.00	0.00	247.73	0.00	**247.73**
Water	0.00	0.00	0.00	0.00	0.00	14.50	**14.50**
Total of 2011	**1.93**	**372.31**	**950.86**	**682.27**	**250.99**	**14.50**	**2272.86**
Net Change	0.00	0.00	-0.49	-2.77	3.26	0.00	

Table 4.11.3: List of Beats with change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
MARKAPUR RANGE									
Gotlagattu	0.74	2.36	225.67	2116.75	1741	0.00	4086.52	-25.05	0.00
Kalanuthala	0.89	472.27	1516.44	2977.25	886.05	0.71	5853.61	-5.39	0.00
Peddarikatla	0.00	198.91	1003.95	1209.72	633.48	0.00	3046.06	-14.24	0.00
Total	**1.63**	**673.54**	**2746.06**	**6303.72**	**3260.53**	**0.71**	**12986.2**	**-44.68**	**0.00**
Y.PALEM RANGE									
Akkapalem	0.00	691.01	3027.57	3171.18	293.72	1.56	7185.04	-1.43	1.43
Kolukula	4.16	1363.28	7169.15	1457.61	103.72	0.00	10097.92	-22.66	0.00
Komarolu	0.00	430.23	2189.26	2338.16	1900.76	6.02	6864.43	-119.41	0.00
Mallapalem	0.00	7.38	679.36	2663.78	1535.52	2.73	4888.77	-115.51	4.08
Naidupalem	0.00	0.00	112.6	868.52	880.7	0.00	1861.82	-3.89	0.00
Pullalacheruvu	0.00	309.48	2833.99	2519.78	86.73	0.00	5749.98	-5.58	5.58
Veerabhadrapuram	2.59	1276.87	3395.03	1342.38	187.67	19.22	6223.76	-6.01	6.01
Venkatareddypalli	0.00	210.33	2793.73	3983.56	245.9	14.24	7247.76	-6.31	0.00
Total	**6.75**	**4288.58**	**22200.7**	**18345**	**5234.72**	**43.77**	**50119.5**	**-280.80**	**17.10**
Grand Total	**8.38**	**4962.12**	**24946.8**	**24648.7**	**8495.25**	**44.48**	**63105.7**	**-325.48**	**17.10**

4.12 NAGARJUNA SAGAR WLM DIVISION

4.12.1 Introduction:

Nagarjuna Sagar WLM Forest Division spreads over parts of 2 districts, i.e., Nalgonda and Guntur. It is located between latitudes 16^0 09' 45'' and 16^0 55' 04'' N and longitudes 78^0 51' 04'' and 78^0 31' 12'' E. Geographical area of the Division is 2323.46 Km^2. The Division has an average altitude of 615 M above MSL. The River Krishna is main River of the Division.

Land use pattern of the Division is given in Table 4.12.1

The climate of this Division is extremely hot and arid. It experiences very hot summers with temperatures soaring up as high as 40^0C especially during March and June. The winters are comparatively pleasant and cool. The winter temperatures fall down to 10^0C. The Nagarjuna Sagar Wildlife Sanctuary experiences heavy rainfall caused by the southwest monsoons from the month of June to October.

This Division contains very rich minerals like Limestone, Quartzite, Granite, Feldspar etc. The soil types found mainly are black cotton, red and brown sandy loam.

Population of the Division is 0.62 million (2011 Census), per capita forest area is 0.15 Ha and the population density is 266 persons per Km^2.

Table 4.12.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forests Including Scrub	638.04	27.46
Agriculture	850.64	36.61
Land with Scrub	295.83	12.73
Fallow Lands	168.83	7.27
Grass Lands	21.96	0.95
Settlements	6.50	0.28
Vegetation outside Forest	171.76	7.39
Water bodies	169.90	7.31
Total	**2323.46**	

4.12.2 Recorded Forest Area:

The notified forest area of the Division is **818.57 Km^2** which is 35.2% of the geographical area. Reserved, Protected and un-classed forests constitute 818.57 Km^2 (99.44%), 0.2 Km^2 (0.03%) and 4.12 Km^2 (0.53%) of the forest area respectively.

As per Champion and Seth's classification the forests of the Division fall under Tropical Dry Deciduous and Tropical Thorn Forest types.

4.12.3 Protected Area:

Nagarjuna Sagar WL Division is one of the 4 constituent Divisions of Nagarjuna Sagar – Srisailam Tiger Reserve (NSTR), the biggest Tiger Reserve of India. An area of 440.89 Km^2 is included in the Tiger Reserve.

4.12.4 Community Forest Management:

There are 79 Vana Samrakshana Samities (VSSs) in the Division. An area of 176.23 Km^2 forests which is 21.19% of the notified forests is under the management of the VSSs.

4.12.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Feb2012) is **190.47 Km²** which is **8.20%** of the geographical area. In terms of the forest canopy density classes the Division has **8.49** Km² of Moderately Dense Forest and **181.98** Km² of Open Forest. The area of the Scrub is **441.72** Km², Non-Forest **133.29** Km² and Water Bodies **29.50** Km². The distribution of the forest cover of the Division is shown in Fig 4.12.1

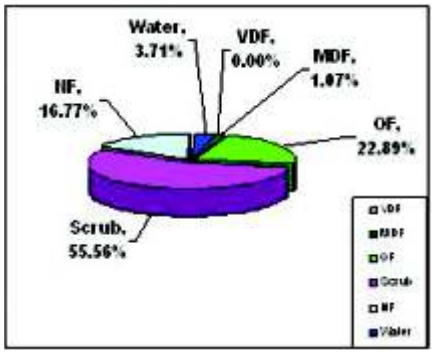


Fig 4.12.1

4.12.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 are shown in Fig (4.12.2 & 4.12.3) and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows no change in forest cover. The forest cover change matrix is given in Table 4.12.2.

There is no loss of Forest cover in this Division during the period.

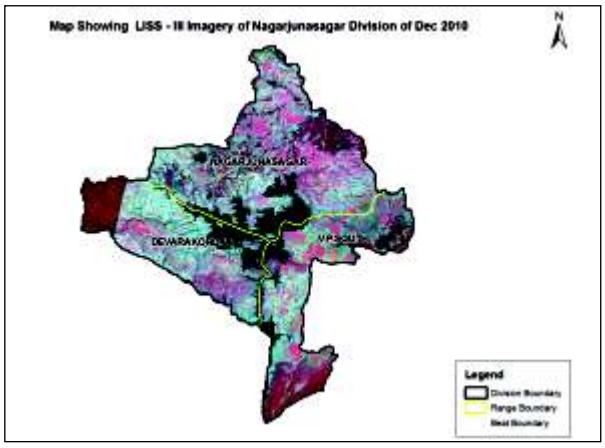


Fig 4.12.2

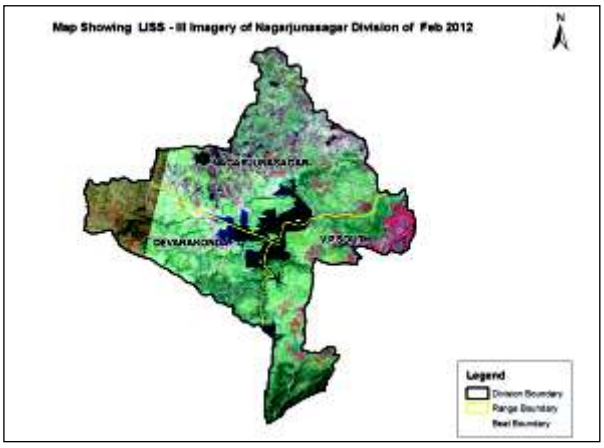


Fig 4.12.3

Table 4.12.2: Forest Cover change matrix **(Area in Km²)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	8.49	0.00	0.00	0.00	0.00	**8.49**
Open Forest	0.00	0.00	181.98	0.00	0.00	0.00	**181.98**
Scrub	0.00	0.00	0.00	441.72	0.00	0.00	**441.72**
Non-Forest	0.00	0.00	0.00	0.00	133.29	0.00	**133.29**
Water	0.00	0.00	0.00	0.00	0.00	29.50	**29.50**
Total of 2010	**0.00**	**8.49**	**181.98**	**441.72**	**133.29**	**29.50**	**794.98**
Net Change	0.00	0.00	0.00	0.00	0.00	0.00	

4.13 GIDDALUR DIVISION

4.13.1Introduction:

Giddalur Forest Division lies in the south-eastern part of Prakasham District between latitudes 14^0 57' 46'' and 16^0 09' 48'' N and longitudes 78^0 44' 16'' and 80^0 28' 35'' E. Geographical Area of the Division is 10,408.00 Km^2 which is 59.04% of the area of the District. The Rivers in this Division are Gundlakamma, Sagileru, Musi, Paleru and Manneru. The Gundlakamma River rises in Nallamala hills and the Cumbum Tank is formed across this river.

Landuse pattern of the Division is given in Table 4.13.1.

The climate of this Division is dry and salubrious; the temperatures ranging from 19^0C to 40^0C and the annual rainfall is about 871mm received mainly from Southwest monsoons.

The rocks in the Division are Sandstone mixed with quartzite and occasional shales are the characteristic rock formations on the Veligonda and at their extremes bordering Kanigiri the rocks gradually change into Gneisses or Granite composition. Outcrops of Barytes and Manganese ores also occur in Veligonda. The soil types found mainly are red loamy, Black cotton, sandy loam and sandy soils.

Population of the Division is 2.53million (2011 Census); Per capita forest area 0.09Ha and the population density 209 persons per Km^2.

Table 4.13.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1944.51	18.68%
Agriculture	7164.53	68.84%
Land with Scrub	618.70	5.94%
Fallow Lands	100.77	0.97%
Grasslands	22.17	0.21%
Settlements	103.26	0.99%
Vegetation outside Forest	192.62	1.85%
Water bodies	261.44	2.51%
Total	**10408.00**	

4.13.2 Recorded Forest Area:

The notified forest area of the Division is **1,948.60 Km^2** which is 18.72% of the geographical area. Reserved, Protected and Un-classed Forests constitute 1908.69 Km^2 (97.95%) and 39.91 Km^2 (2.09%) of the forest area respectively.

As per Champion and Seth's classification the forests of Division fall under Southern Tropical Dry Deciduous and Southern Tropical Thorn Forests.

4.13.3 Protected Area:

A part of one Protected Area, the Gundla Brahmeswaram (GBM) Wildlife Sanctuary falls in the Division. An area of 444.76 Km^2 of the Division is included in this WLS.

4.13.4 Community Forest Management:

There are 110 Vanasamrakshana Samities (VSSs) in the Division. An area of 287.08 Km^2 forests, which is 19.16 % of the notified forests, is under the management of VSSs.

4.13.5 Forest Cover:

The Forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Nov 2011/Feb 2012) is **1497.47 Km²** which is **14.39 %** of the Geographical area. In terms of the forest canopy cover density classes the Division has **22.10** Km² of Very Dense Forests, **746.57** Km² of Moderately Dense Forests and **728.80** Km² of Open Forests. The area of the Scrub is **443.37** Km², Non-Forests **262.05** Km² and Water Bodies **5.31** Km². The distribution of the forest cover of the division is shown in Fig 4.13.1.

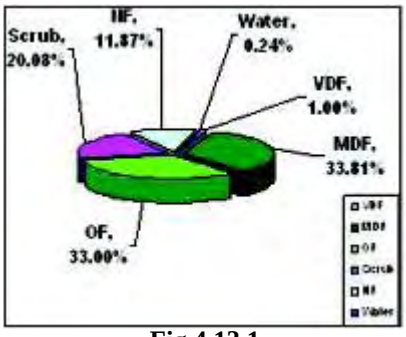


Fig 4.13.1

4.13.6 Change in Forest Cover:

The satellite images of 2010 and 2011 are shown in Figs 4.13.2 & 4.13.3 respectively and in Forest Cover changes during this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows negative change of **27.41 Ha.** The forest cover change matrix given in Table 4.13.2 reveals that there is a decrease of **27.41 Ha** of open forest and **120.57 Ha** of Scrub.

The total positive change (including Scrub) of **18.26 Ha** is on account of raising of plantations . The total negative change (including Scrub) is **166.24 Ha.** Out of this **129.60 Ha** is on account of clearance of jungle growth for raising of plantations, and **36.64 Ha** is on account of encroachments. As clearance of jungle growth for raising of plantations are forest management interventions the same are not considered as loss of forest cover. Thus only the negative change due to encroachments is taken as loss of forest cover. Therefore the net loss of forest cover is **36.64 Ha** in the Division.

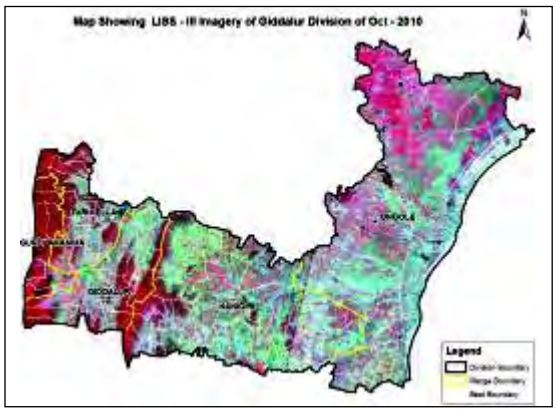


Fig 4.13.2

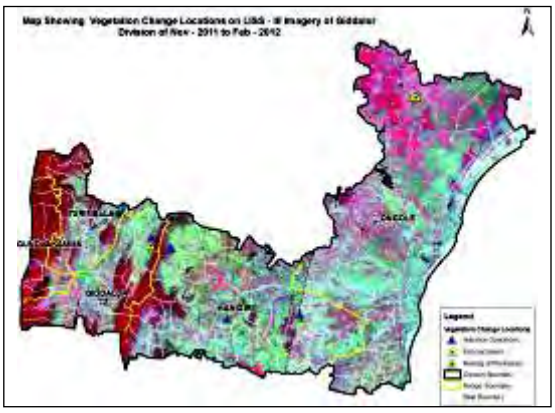


Fig 4.13.3

There are 62 Beats in the Division. Negative changes are noticed in 5 Beats only. There are no changes in the forest cover in remaining 57 Beats.

Details of Forest cover changes in the 5 Beats mentioned above is shown in Table 4.13.3.

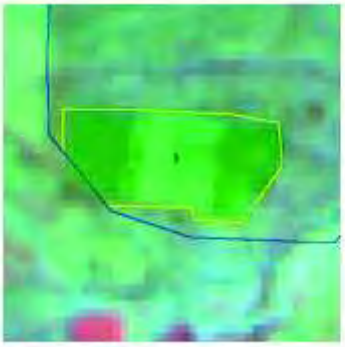
Table 4.13.2: Forest Cover change matrix **(Area in Km²)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	22.10	0.00	0.00	0.00	0.00	0.00	**22.10**
Moderately Dense Forest	0.00	746.57	0.00	0.00	0.00	0.00	**746.57**
Open Forest	0.00	0.00	728.80	0.00	0.27	0.00	**729.07**
Scrub	0.00	0.00	0.00	443.19	1.39	0.00	**444.58**
Non-Forest	0.00	0.00	0.00	0.18	260.39	0.00	**260.57**
Water	0.00	0.00	0.00	0.00	0.00	5.31	**5.31**
Total of 2011	**22.10**	**746.57**	**728.80**	**443.37**	**262.05**	**5.31**	**2208.20**
Net Change	0.00	0.00	-0.27	-1.21	1.48	0.00	

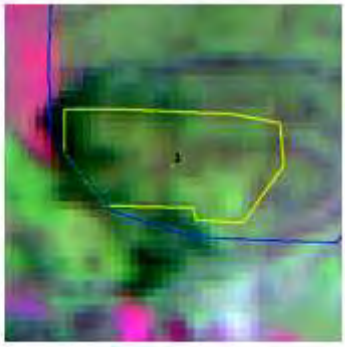
Table 4.13.3: List of Beats with change in Forest Cover **(Area in ha)**

Beat	VDF	MDF	OF	Scrub	NF	WB	Total	Net Change	Encroachment
GIDDALUR RANGE									
Chinaobenenipalli	0	209.66	1867.77	1627.19	315.02	4019.64	8039.28	-16.30	7.14
Total	**0**	**209.66**	**1867.77**	**1627.19**	**315.02**	**4019.64**	**8039.28**	**-16.30**	**7.14**
KANIGIRI RANGE									
Ballipalli	0	0	298.24	1336.54	724.85	2359.63	4719.26	-12.75	0.00
Gudipatipalli	20.96	1469.17	3143.67	1931.69	349.89	6915.38	13830.76	-95.2	0.00
Malapadu	0	0	459.98	595.68	629.49	1698.56	3383.71	-5.77	0.00
Total	**20.96**	**1469.17**	**3901.89**	**3863.91**	**1704.23**	**10973.6**	**21933.7**	**-113.72**	**0.00**
ONGOLE RANGE									
Kukatlapalli	0	0	-23.9	221.56	1338	1537.72	3073.38	-29.5	29.50
Total	**0**	**0**	**-23.9**	**221.56**	**1338**	**1537.72**	**3073.38**	**-29.50**	**29.50**
Grand Total	**20.96**	**1678.83**	**5745.76**	**5712.66**	**3357.25**	**16530.9**	**33046.4**	**-147.98**	**36.64**

2010



2011



Longitude	79.6854 ° E
Latitude	15.22057 ° N
Area in Ha	18.26
Change	NF TO SF
Comp No.	423
Beat	Malapadu
Range	Kanigiri
Division	Giddalaur

4.14 GUNTUR DIVISION

4.14.1 Introduction:

Guntur Forest Division comprises of the entire District and lies in the south-eastern part of Prakasham District between latitudes 15^0 42' 13.68'' and 16^0 49' 23.52'' N and longitudes 79^0 12' 34.56'' and 80^0 54' 16.92'' E. Geographical area of the Division (and District) is 11,391.00 Km^2. The Division has four physiographic zones- the sea board, the plains, ghats and hills rising gently to an altitude of 500 M and the 'U" shaped Nallamalai hills skirting Macherla to its west and Markapur and Kurnool Divisions to the east. The other hill ranges of the Division are Venkatayyapalem and Kondaveedu of Sattenapalli and Narasaraopet. The important rivers draining the Division are the Krishna and Gundlakamma with tributaries Chandravanka, Goli and Naguleru in Macherla.

Landuse pattern of the Division is given in Table 4.14.1

The climate of this Division is dry and salubrious; temperature ranging from 17^0C to 40^0C and the annual rainfall is about 989 mm received both from the South-West and North-East monsoons.

The Common rocks are Shales, Slates, Lime-stone, Quartzite, Gneisses and Schist. Soils of all kinds occur in the Division, Swampy in the Krishna estuary, Sandy along the coast, Alluvial on the banks of Krishna, Red Gravelly in the interior and Loamy of rather rare occurrence.

Population of Guntur Division is 4.88 million (2011 Census); the per capita forest area is 0.04 Ha and the population density is 429 persons per Km^2. The livestock population is 2.3 million.

Table 4.14.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1112.92	10.48
Agriculture	8446.28	79.51
Land with Scrub	80.08	0.75
Fallow Lands	314.65	2.96
Grasslands	0.71	0.01
Settlements	287.41	2.71
Vegetation outside Forest	107.88	1.02
Water Bodies	273.26	2.57
Total	**10623.19**	

4.14.2 Recorded Forest Area:

The notified forest area of the Division is **1411.10 Km^2,** which is 13.28 % of the geographical area. The entire forest area is Reserved Forest.

As per Champion and Seth's classification, the major Forest types of Division are Coastal Forests and Inland Forests. In Coastal Forests Mangrove Forests and Dry Evergreen Forests are present. Whereas Inland Forests contain Southern Dry Mixed Deciduous, *Hardwickia binata* and *Acacia arabica* forests.

4.14.3 Protected Area:

The Division contains a part of the Krishna Wildlife Sanctuary (KWS). An area of 81.99 Km^2 of the Division is included in the Krishna Wildlife Sanctuary (KWS).

4.14.4 Community Forest Management:

There are 180 Vana Samrakshana Samities (VSSs) in the Division. An area of 260.80 Km^2 forests, which constitutes 16.10 % of the notified forests, is under the management of the VSSs.

4.14.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Nov 2011–Feb 2012) is **314.08 Km²** which is **2.96%** of the Geographical area. In terms of the forest canopy cover density classes the Division has **0.08** Km² of Moderately Dense Forests and **314.00** Km² of Open Forests. The area of the Scrub is **887.57** Km², Non-Forest **237.00** Km² and Water Bodies **38.26** Km². The distribution of the forest cover of the Division is shown in Fig 4.14.1.

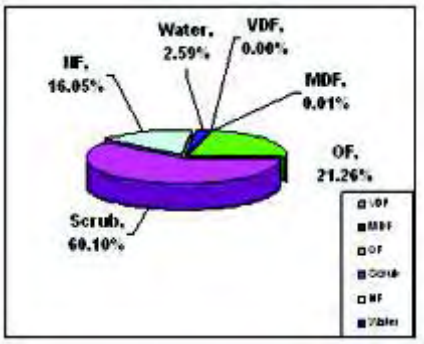


Fig 4.14.1

4.14.6 Change in Forest Cover:

The satellite images of 2010 and 2011 are shown in Figs 4.14.2 & 4.14.3 respectively. The changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a negative change of **119.31 Ha.** The forest cover change matrix given in Table 4.14.2 reveals that there is a decrease of **119.31 Ha** of Open Forest and **5.29 Ha** of Scrub.

The total negative change of **124.60 Ha** out of this **107.92 Ha** is on account of clearance of jungle growth for raising of plantations and **16.68 Ha** on account of encroachments. As clearance of jungle growth for raising of plantations is a forest management intervention and hence not considered as loss of forest cover. Thus only the negative change due to encroachments is taken as loss of forest cover. Therefore the net loss of forest cover is **16.68 Ha** only.

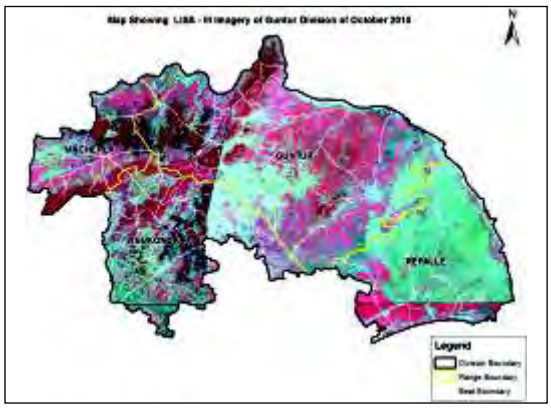


Fig 4.14.2

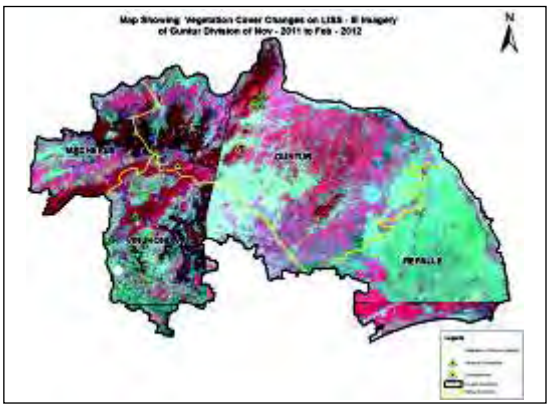


Fig 4.14.3

There are 57 Beats in the Division. Negative changes in forest cover are noticed in 7 Beats. There are no changes in the remaining 50 Beats.

Details of forest cover changes in the 7 Beats mentioned above, are shown in Table 4.14.3.

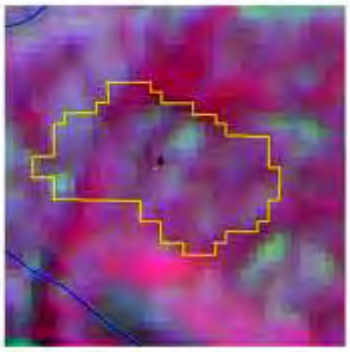
Table 4.14.2: Forest Cover change matrix **(Area in Km²)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	0.08	0.00	0.00	0.00	0.00	**0.08**
Open Forest	0.00	0.00	314.00	0.00	1.19	0.00	**315.19**
Scrub	0.00	0.00	0.00	887.57	0.05	0.00	**887.62**
Non-Forest	0.00	0.00	0.00	0.00	235.76	0.00	**235.76**
Water	0.00	0.00	0.00	0.00	0.00	38.26	**38.26**
Total of 2011	**0.00**	**0.08**	**314.00**	**887.57**	**237.00**	**38.26**	**1476.91**
Net Change	0.00	0.00	-1.19	-0.05	1.24	0.00	

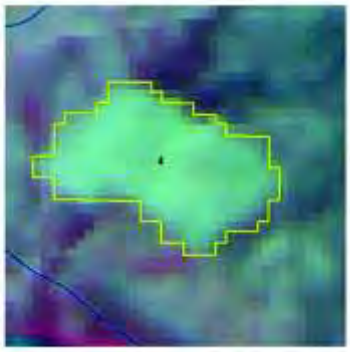
Table 4.14.3: List of Beats with change in Forest Cover **(Area in ha)**

Beat	VDF	MDF	OF	Scrub	NF	WB	Total	Net Change	Encroa-chment
Guntur Range									
Atchampet	0	0	422.59	2202.86	267.29	0	2892.74	-69.99	0.00
Guthikonda	0	0	1577.93	2360.82	83.26	1.8	4023.81	-8.21	8.21
Tangirala	0	0	4.22	1364.05	36.22	2.53	1407.02	-5.29	0.00
Tripurapuram	0	0	1145.66	2790.65	77.77	1.48	4015.56	-8.47	8.47
Total	**0**	**0**	**3150.4**	**8718.4**	**464.5**	**5.8**	**12339.13**	**-91.96**	**16.68**
Vinukonda Range									
Kanumulachervu	0	0.78	166.32	4963.97	201.25	2.38	5334.70	-18.86	0.00
Naidupalem	0	0	172.61	2652.66	324.14	1.52	3150.93	-5.21	0.00
Ravulapuram	0	0	440.92	2375.19	59.35	0	2875.46	-8.57	0.00
Total	**0**	**0.78**	**779.85**	**9991.8**	**584.7**	**3.9**	**11361.09**	**-32.64**	**0.00**
Grand Total	**0**	**0.78**	**3930.3**	**18710**	**1049**	**9.7**	**23700.2**	**-124.60**	**16.68**

2010



2011



Longitude	79.55972 ° E
Latitude	16.14787 ° N
Area in Ha	18.86
Change	OF TO NF
Comp No.	31
Beat	Kanumulacheruvu
Range	Vinukonda
Division	Guntur

4.15 NELLORE DIVISION

4.15.1Introduction:

Nellore Forest Division comprises of the entire District of Nellore and lies in the south-eastern part of Andhra Pradesh between latitudes 13^0 48' 49.58'' and 15^0 4' 58.59'' N and longitudes 79^0 6' 4.36'' and 80^0 14' 46.71'' E. Geographical area of the Division is 13,076 Km^2.

Land use pattern of the Division is given in Table 4.15.1.

Table 4.15.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1879.83	14.53
Agriculture	6610.72	51.11
Land with Scrub	2126.77	16.44
Fallow Lands	621.88	4.81
Grasslands	21.02	0.16
Settlements	84.33	0.65
Vegetation outside Forest	141.98	1.10
Water Bodies	1448.19	11.20
Total	**12934.72**	

The Division is bordered by the Bay of Bengal on the east, state of Tamil Nadu on the south, the district of Kadapa on the west and the district of Prakasham on the north. The eastern side consists of area of low lying land extending from the base of the Eastern Ghats to the sea. The western side of the district is separated from Kadapa district by Veligonda hills. The district is split by the River Pennar and is located on both south and north banks of it. This Division has 4 physiographic zones - the sea board, the plains, foothills and Ghats reaching up to 800 M above MSL. The principal rivers in the district are Pennar in the centre, Kandaleru, Swarnamukhi and Kalinga in the south and Uppuvagu in the north.

The climate of this Division is hot and exhausting for most part of the year. Temperature ranges from 15^0 to 41^0 C. Annual rainfall ranges from 700-1040 mm received from south-west and north-east monsoons.

The Division is under laid by two types of the oldest rocks, Schistose and Quartzite's of the Dharwar System. The Peninsular gneisses, Closepet granite and Pegmatite are also found intruding into the Schistose series, the north-west portion of the Dharwarian belt of Nellore devoid of Pegmatite intrusions but the South Eastern portion, Gudur, Rapur areas is traversed by many intrusions and they contain Deposits of Muscovite mica. The soil types found mainly are Sandy, Red, Lateritic, Murram, Clayey and Alluvial soils.

Population of the Division is 2.96 million (2011 Census), per capita forest area is **0.08** Ha and the population density is 226 persons per Km^2. The livestock population is 2.5 million.

4.15.2 Recorded Forest Area:

The notified forest area of the Division is **2519.37 Km^2** which is 19.26% of the geographical area. Reserved, Protected and un-classed forests constitute 2,500.01 Km^2 (99.23%), 14.46 Km^2 (0.57%) and 4.90 Km^2 (0.19%) of the forest area respectively.

As per Champion and Seth's classification this Division has 5 major forest types - Dry Red Sanders bearing forest, Southern Tropical Dry Mixed Deciduous Forests, Hardwickia binata Forest, Southern Tropical Thorn Forest and Southern Topical Dry Evergreen Forest.

4.15.3 Protected Area:

The Nellore Division is en-compassing 3 Wild Life Sanctuaries namely the Penusila Narasimha Swami (PNS) WLS with an area of 1030 Km^2, Pulicat Bird Sanctuary (PBS)- a RAMSAR wetland, with an area of 500 Km^2 and Nelapattu Bird Sanctuary (NBS) with an extent of 4.58 Km^2.

4.15.4 Community Forest Management:

There are 292 Vana Samrakshana Samities (VSSs) in the Division. An area of 645.93 Km^2 of forests which is 25.63 % of the notified forests, is under the management of the VSSs.

4.15.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Feb-Mar 2012) is **1144.81 Km^2** which is **8.85%** of the geographical area. In terms of the forest cover canopy density classes the Division has **191.55** Km^2 of Moderately Dense Forests and **953.26** Km^2 of Open Forests. The area of the Scrub is **720.21** Km^2, Non-Forest **484.99** Km^2 and Water Bodies **29.95** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.15.1

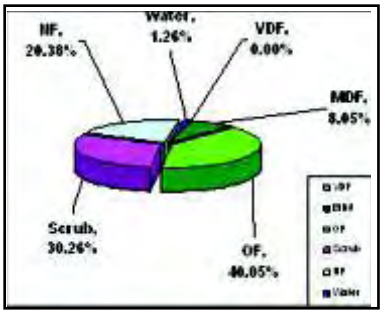


Fig 4.15.1

4.15.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 are shown in Figs 4.15.2 & 4.15.3 respectively and the changes between this period, on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a **negative change of 120.08 Ha.** The forest cover change matrix given in Table 4.15.2 reveals that there is a decrease of **120.08 Ha** of Open Forest and **294.71 Ha** of Scrub.

The total positive change (including Scrub) is **111.25 Ha** on account of growth in raised plantations. The total negative change (including Scrub) is **526.04 Ha** is on account of clearance of jungle growth for raising of plantations, As clearance of jungle growth for raising of plantations, are forest management interventions the same are not considered as loss of forest cover. Thus only the negative change due to encroachments is taken as loss of forest cover. Therefore **no net loss of forest cover** in the Division.

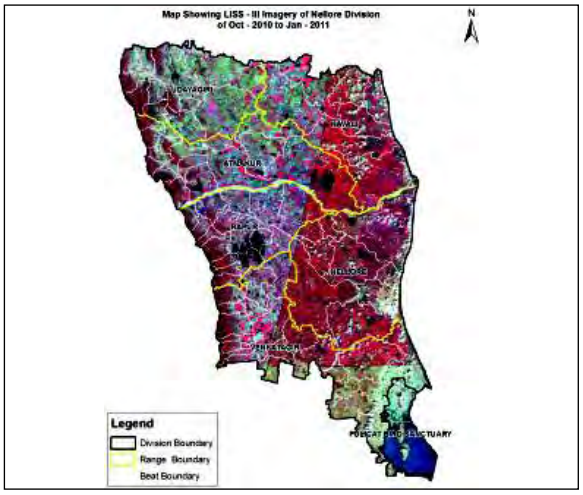


Fig 4.15.2

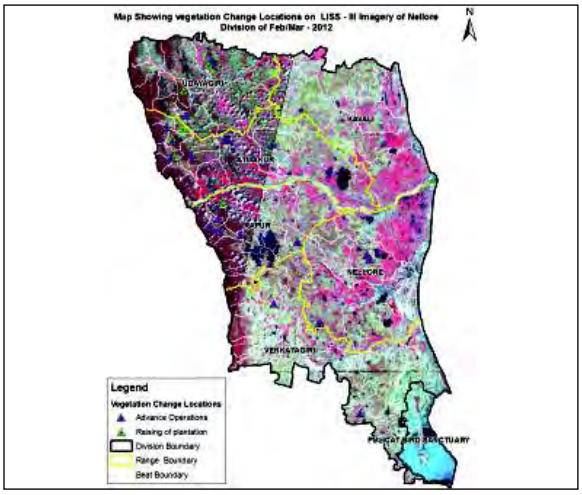


Fig 4.15.3

There are 85 Beats in the Division. Negative changes in forest cover are noticed in 16 Beats and positive changes in 4 Beats. There are no changes in the remaining 65 Beats.

Details of forest cover changes in the 20 Beats mentioned above are shown in Table 4.15.3.

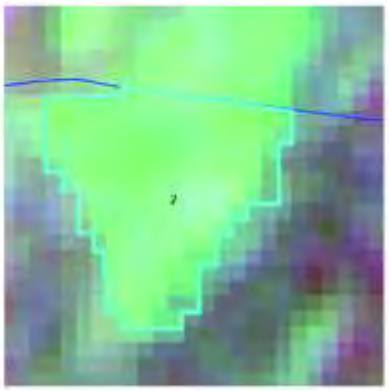
Table 4.15.2: Forest Cover change matrix **(Area in Km^2)**

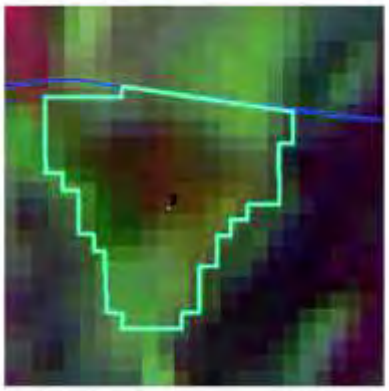
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	191.55	0.00	0.00	0.00	0.00	**191.55**
Open Forest	0.00	0.00	953.26	0.00	1.20	0.00	**954.46**
Scrub	0.00	0.00	0.00	719.10	4.06	0.00	**723.16**
Non-Forest	0.00	0.00	0.00	1.11	479.73	0.00	**480.84**
Water	0.00	0.00	0.00	0.00	0.00	29.95	**29.95**
Total of 2011	**0.00**	**191.55**	**953.26**	**720.21**	**484.99**	**29.95**	**2379.96**
Net Change	0.00	0.00	-1.20	-2.95	4.15	0.00	

Table 4.15.3: List of Beats with negative change in Forest Cover **(Area in ha)**

Beat	VDF	MDF	OF	Scrub	NF	WB	Total	Net Change	Encroa-chment
ATMAKUR RANGE									
BATA	0.00	792.99	2162.81	872.53	54.13	14.24	3896.70	-6.02	0.00
BRAHMANAPALLI	0.00	434.67	1162.99	500.50	95.11	9.50	2202.77	14.05	0.00
KAMPASAMUDRAM	0.00	0.00	17.78	525.79	220.67	6.89	771.13	5.84	0.00
PONGURU	0.00	0.34	783.29	3010.89	371.82	13.11	4179.45	-10.92	0.00
RAJAVOLU	0.00	0.58	102.90	1206.00	587.26	1.29	1898.03	-7.23	0.00
RAJUPALEM-ATMA	0.00	393.36	1509.52	364.07	180.18	8.37	2455.50	-6.00	0.00
SINGANAPALLI	0.00	209.55	1440.50	1100.10	246.01	0.00	2996.16	-41.45	0.00
Total	**0.00**	**1831.49**	**7179.79**	**7579.88**	**1755.18**	**53.40**	**18399.74**	**-51.73**	**0.00**
NELLORE RANGE									
GUDUR	0.00	33.21	1185.35	755.55	970.42	0.00	2944.53	-7.13	0.00
VENKATACHALAM	0.00	23.57	784.81	800.05	1469.46	20.17	3098.06	-99.36	0.00
Total	**0.00**	**56.78**	**1970.16**	**1555.60**	**2439.88**	**20.17**	**6042.59**	**-106.49**	**0.00**
RAPUR RANGE									
GONUPALLI	0.00	517.89	4824.88	1611.21	229.82	32.86	7216.66	-37.68	0.00
KALUVOYA	0.00	273.17	1561.47	935.71	367.23	60.25	3197.83	15.87	0.00
KOTURUPALLI	0.00	105.07	1761.84	878.62	62.38	1.39	2809.30	-8.43	0.00
TAGECHERLA	0.00	51.03	1635.50	562.16	146.68	0.00	2395.37	-10.54	0.00
THUMAYA	0.00	1.40	414.91	1095.29	269.73	831.53	2612.86	-8.34	0.00
VAVINTAPARTHI	0.00	1.79	510.15	1104.51	598.34	143.40	2358.19	-82.52	0.00
Total	**0.00**	**950.35**	**10708.75**	**6187.50**	**1674.18**	**1069.43**	**20590.21**	**-131.64**	**0.00**
UDAYAGIRI RANGE									
NANDIPADU	0.00	45.66	954.44	1933.68	581.97	4.77	3520.52	-6.74	0.00
UDAYAGIRI (WEST)	0.00	84.92	1709.56	534.00	91.72	5.72	2425.92	13.72	0.00
VARIKUNTAPADU	0.00	2.44	528.21	2046.77	749.43	0.00	3326.85	-12.19	0.00
Total	**0.00**	**133.02**	**3192.21**	**4514.45**	**1423.12**	**10.49**	**9273.29**	**-5.21**	**0.00**
VENKATAGIRI RANGE									
JOREPALLI	0.00	0.00	207.06	1560.93	818.08	33.46	2619.53	-11.26	0.00
UGGUMUDI	0.00	32.19	463.18	802.54	1637.12	1.45	2936.48	-108.46	0.00
Total	**0.00**	**32.19**	**670.24**	**2363.47**	**2455.20**	**34.91**	**5556.01**	**-119.72**	**0.00**
Division Total	**0.00**	**3003.83**	**23721.15**	**22200.90**	**9747.56**	**1188.40**	**59861.84**	**-414.79**	**0.00**

2010 **2011**





Longitude	79.37195° E
Latitude	14.99908 ° N
Area in Ha	9.27
Change	NF TO SF
Comp No.	461
Beat	Varikuntapadu
Range	Udayagiri
Division	Nellore

4.16 HYDERABAD DIVISION

4.16.1 Introduction:

Hyderabad Forest Division consists of Hyderabad & Rangareddy Districts. Hyderabad Forest Division lies between latitudes 16^0 50' 39" to 17^0 42' 28" in the North & Longitudes 77^0 21' 49" to 78^0 49' 49" in the East. The Geographical Area of the Division is 7,710 Km^2. The average altitude is 536 M above MSL. Twin cities of Hyderabad and Secunderabad fall in this Division which is the capital of the state. The highest point in the city is Banjara Hills, which is 665 M above MSL. The contour level falls gradually from west to east creating almost a trough near the Musi River which runs through the city.

Landuse pattern of the Division is given in Table 4.16.1

The climate of this Division is generally dry with temperatures ranging from 14^0C to 45^0C and the normal rain fall of the District is 786.8 mm, received mainly from Southwest monsoons.

Granites are found in the Division. The soil types mainly are Black cotton, Red and Brown sandy loam.

The population of the Division is 9.30 millions (2011 Census) .The per capita forest area is 0.01 Ha and the population density is 1207 persons per Km^2.The livestock population is 1.6 million.

Table 4.16.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	730.75	9.48
Agriculture	5916.47	76.77
Land with Scrub	435.56	5.64
Fallow Lands	14.15	0.18
Grasslands	0.79	0.01
Settlements	424.91	5.50
Not available for cultivation	27.36	0.35
Water Bodies	160.01	2.07
Total	**7710.00**	

4.16.2 Recorded Forest Area:

The notified forest area of the Division is 730.75 Km^2 which is 9.48% of the geographical area. Reserved, Protected and Un-classed Forests constitute 379.96 Km^2 (52%), 244.70 Km^2 (33.49%) and 106.09 Km^2 (14.52%) of the forest area respectively.

As per Champion and Seth's classification the forests of Division fall under Tropical Dry Deciduous and Tropical Thorn Forest types.

4.16.3 Protected Area:

There are 3 Protected Areas in the Division. These are Chilkur National Park (4.87 Km^2), KBR National Park (1.70 Km^2) and of Mahaveer Harina Vanasthali Deer Park (14.12 Km^2).

4.16.4 Community Forest Management:

There are 123 Vana Samrakshana Samities (VSSs) in the Division. An area of 353.49 Km^2 forests, which is 48.37 % of the notified forests, is under the management of the VSSs.

4.16.5 Forest Cover:

The forest cover in the Division based on the Interpretation of IRS P6 LISS III 2011 data (Oct / Jan 2012) is **334.08 Km²** which is **4.33%** of the Geographical area. In terms of the forest canopy density classes the Division has **121.95** Km² of Moderately Dense Forest and **212.13** Km² of Open Forest. The area of the Scrub is **386.13** Km², Non-Forest **35.91** Km² and Water Bodies **2.75** Km². The distribution of the forest cover of the Division is shown in Fig 4.16.1

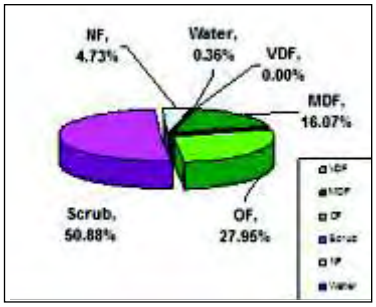


Fig. 4.16.1

4.16.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 are shown in Figs 4.16.2 & 4.16.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a **negative change** in forest cover of **81.10 Ha.** The forest cover change matrix given in Table 4.16.2 reveals that there is a decrease of **81.10 Ha** of Open Forest.

The total positive change (including Scrub) is **41.09 Ha** on account of growth in raised plantations. The total negative change (including Scrub) is **123.06 Ha.** Out of this **30.72 Ha** is on account of clearance of jungle growth for rising of plantations, **85.39 Ha** is on account of harvesting of plantation, **6.95 Ha** is an account of diversion of forest lands for non forestry purpose. As clearance of jungle growth for raising of plantations, harvesting of plantations and diversion of forest lands are forest management interventions the same are not considered as loss of forest cover. Thus only the negative change due to encroachments is taken as loss of forest cover. Therefore there is **no net loss of forest cover** in the Division.

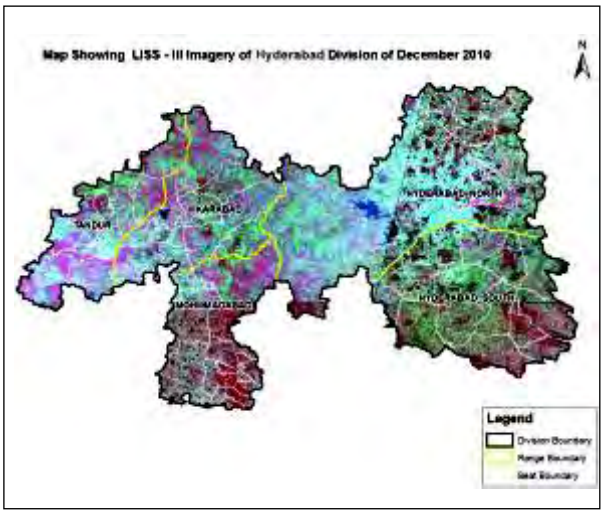


Fig 4.16.2

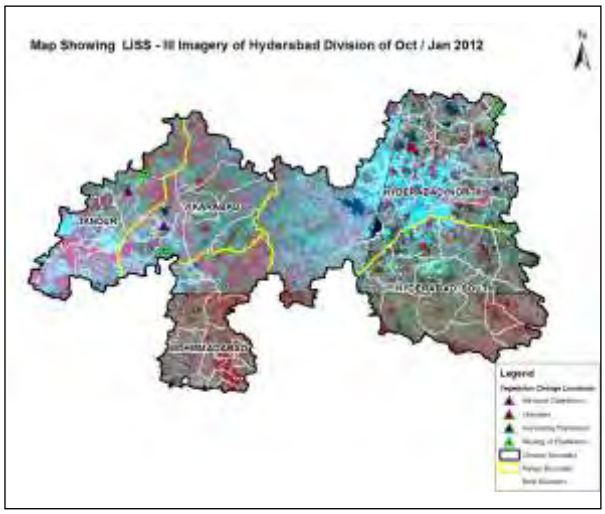


Fig 4.16.3

There are 62 Beats in the Division. Negative changes in forest cover are noticed in only 6 Beats and positive changes in 3 Beats only. There are no changes in the remaining 53 Beats.

Details of forest cover changes in these 9 Beats are shown in Table 4.16.3

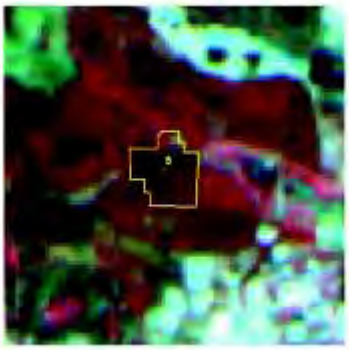
Table 4.16.2: Forest Cover change matrix **(Area in Km^2)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	121.95	0.00	0.00	0.00	0.00	**121.95**
Open Forest	0.00	0.00	212.13	0.70	0.11	0.00	**212.94**
Scrub	0.00	0.00	0.00	385.02	0.42	0.00	**385.44**
Non-Forest	0.00	0.00	0.00	0.41	35.38	0.00	**35.79**
Water	0.00	0.00	0.00	0.00	0.00	2.75	**2.75**
Total of 2011	**0.00**	**121.95**	**212.13**	**386.13**	**35.91**	**2.75**	**758.87**
Net Change	0.00	0.00	-0.81	0.69	0.12	0.00	

Table 4.16.3: List of Beats with change in Forest Cover **(Area in ha)**

Beat	VDF	MDF	OF	Scrub	NF	WB	Total	Net Change	Encroa-chment
Hyderabad_N Range									
Keesra	0.00	49.45	117.52	1,402.10	392.49	35.96	1,997.52	-15.82	0.00
Laxmapur	0.00	125.01	157.21	372.62	35.68	1.80	692.32	7.40	0.00
Pochampally	0.00	22.26	222.20	597.83	201.44	0.00	1,043.73	-18.22	0.00
Suraram	0.00	0.00	9.28	435.16	168.63	0.00	613.07	-4.29	0.00
Turkapally	0.00	309.05	336.97	918.89	319.93	0.00	1,884.84	-69.83	0.00
Total	**0.00**	**505.77**	**843.18**	**3,726.60**	**1,118.17**	**37.76**	**6,231.48**	**-100.76**	**0.00**
Tandur Range									
Kalkhoda	0.00	196.37	384.75	763.97	23.30	0.00	1,368.39	22.92	0.00
Nagulpally	0.00	484.26	484.99	694.30	24.37	9.16	1,697.08	-13.23	0.00
Total	**0.00**	**680.63**	**869.74**	**1,458.27**	**47.67**	**9.16**	**3,065.47**	**9.69**	**0.00**
Vikarabad Range									
Adhalpur	0.00	743.40	1,662.79	620.48	1.98	1.63	3,030.28	10.77	0.00
Dharpur	0.00	77.66	736.14	568.65	4.87	0.63	1,387.95	-1.67	0.00
Total	**0.00**	**821.06**	**2,398.93**	**1,189.13**	**6.85**	**2.26**	**4,418.23**	**9.10**	**0.00**
Division Total	**0.00**	**2,007.46**	**4,111.85**	**6,374.00**	**1,172.69**	**49.18**	**13,715.18**	**-81.97**	**0.00**

2010 **2011**



Longitude	78.46182 ° E
Latitude	17.57285 ° N
Area in Ha	11.27
Change	OF to NF
Comp No.	208
Beat	Pochampally
Range	Hyderabad North
Division	Hyderabad

4.17 Mahabubnagar Division

4.17.1 Introduction:

Mahabubnagar Forest Division lies in the western part of Mahabubnagar District between latitudes 15^0 50' 12'' and 17^0 14' 13'' N and longitudes 77^0 14' 55'' and 78^0 48' 07'' E. Geographical area of the Division is 13,802.75 Km^2 which is 74.88 % of the area of the District. The Division has an average altitude of 498 M above MSL. The district can be physiographically divided into more or less 2 distinct regions; the plains with low lying scattered hills and the extensive Amarabad-Farhabad plateau a continuous range of hills of an average elevation of about 800 M above MSL extending more or less east-west along the Krishna river on the southern boundary of the district. The hill range is interspersed by several deep valleys which are almost inaccessible from the plains. Two important rivers, viz. Krishna and Tungabhadra flow through the district.

Land use pattern of the Division is given in Table 4.17.1

The climate of this Division is generally dry with temperatures ranging from 16.9^0 C to 45^0C and the annual rainfall is about 754 mm received mainly from south-west monsoons. The soils found in the Division are red sandy, black cotton and loamy.

Population of the Division is 3.54 million (2011 Census) which constitutes about 77.75 % of the population of the district, per capita forest area is 0.02 Ha and the population density is 257 persons per Km^2. The livestock population is 4.82 million.

Table 4.17.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	616.85	4.47
Agriculture	11560.48	83.76
Land with Scrub	436.22	3.36
Fallow Lands	412.62	2.99
Settlements	36.58	0.26
Not available for cultivation	250.11	3.35
Water Bodies	462.38	1.81
Total	13802.75	

4.17.2 Recorded Forest Area:

The notified forest area of the Division is **573.18 Km^2** which is 4.15% of the geographical area. Reserved, Protected and un-classed forests constitute 442.44 Km^2 (77.19%), 118.77 Km^2 (20.72%) and 11.97 Km^2 (2.09%) of the forest area respectively.

As per Champion and Seth's classification the Forests of Division fall under Tropical Dry Deciduous, Tropical Moist Deciduous, Tropical Semi-evergreen and Tropical Thorn Forest types.

4.17.3 Protected Area:

There is no Protected Area in the Division.

4.17.4 Community Forest Management:

There are 207 Vana Samrakshana Samities (VSSs) in the Division. An area of 455.62 Km^2 forests which is 79.49 % of the notified forests, is under the management of the VSSs.

4.17.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 (Data of Oct 2011 to Jan 2012) is **307.46 Km²** which is **2.23%** of the geographical area. In terms of the forest canopy density classes the Division has **16.20** Km² of Moderately Dense Forest and **291.26** Km² Open Forest. The area of the Scrub is **308.89** Km², Non-Forest **2.97** Km² and Water Bodies 0.16 Km². The distribution of the forest cover of the Division is shown in Fig 4.17.1

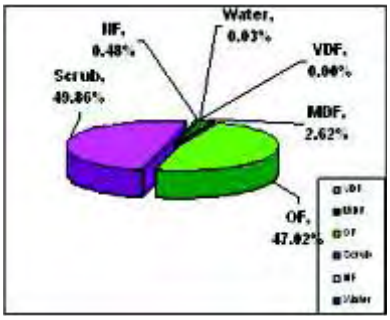


Fig. 4.17.1

4.17.6 Change in Forest Cover:

The satellite images of 2010 and 2011 are shown in Figs 4.17.2 & 4.17.3 respectively and the changes during this period on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows **no change.** The forest cover change matrix given in Table 4.17.2 reveals that there is a decrease of **9.14 Ha** of Scrub.

The total negative change (including Scrub) of **9.14 Ha,** in which **9.14 Ha** is on account of clearance of jungle growth for raising of plantations. As clearance of jungle growth for raising of plantation is a management intervention the same is not considered as loss of forest cover. Thus only the negative change due to encroachment is taken as loss of forest cover. Therefore there is **no net loss of forest cover.**

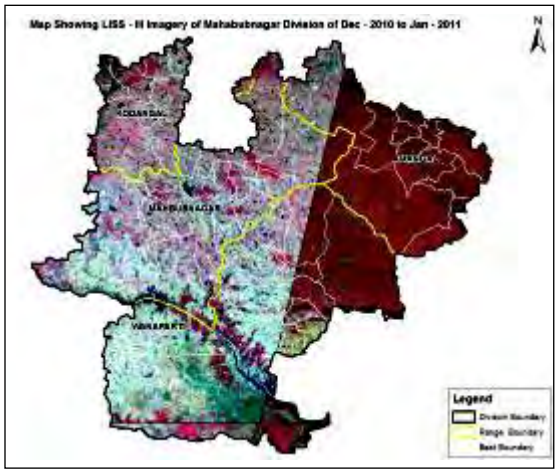


Fig 4.17.2

Fig 4.17.3

There are 51 Beats in the Division. Negative changes in forest cover are seen in 1 Beat and there are no changes in remaining 50 Beats.

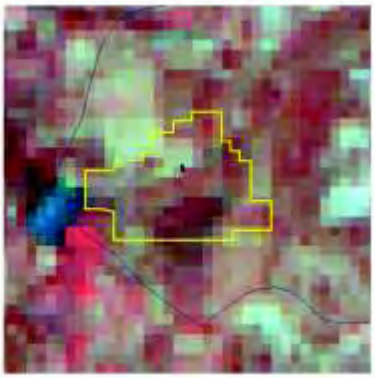
Details of forest cover changes in the Beat are shown in Table 4.17.3

Table 4.17.2: Forest Cover change matrix **(Area in Km²)**

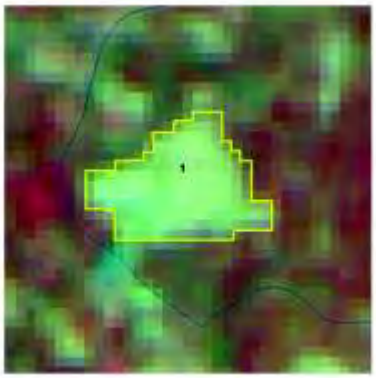
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	16.20	0.00	0.00	0.00	0.00	**16.20**
Open Forest	0.00	0.00	291.26	0.00	0.00	0.00	**291.26**
Scrub	0.00	0.00	0.00	308.89	0.09	0.00	**308.98**
Non-Forest	0.00	0.00	0.00	0.00	2.88	0.00	**2.88**
Water	0.00	0.00	0.00	0.00	0.00	0.16	**0.16**
Total of 2011	**0.00**	**16.20**	**291.26**	**308.89**	**2.97**	**0.16**	**619.48**
Net Change	0.00	0.00	0.00	-0.09	0.09	0.00	

Table 4.17.3: List of Beats with change in Forest Cover									(Area in Ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
KODANGAL RANGE									
BOMRASIPET	0.00	85.29	460.96	474.89	21.04	0.00	1042.18	-9.14	0.00
Total	**0.00**	**85.29**	**460.96**	**474.89**	**21.04**	**0.00**	**1042.18**	**-9.14**	**0.00**

2010



2011



Longitude	77.76574 ° E
Latitude	17.17765 ° N
Area in Ha	9.14
Change	SF TO NF
Comp No.	299
Beat	Bomraspet
Range	Kodangal
Division	Mahabubnagar

4.18 NALGONDA DIVISION

4.18.1 Introduction:

Nalgonda Forest Division and District lies in the southern part of Telangana region of the State between latitudes 16^0 21' 19" and 17^0 48' 42" N and longitudes 78^0 36' 43" and 80^0 04' 27" E. Geographical area of the Division is 12,553.70 Km^2. The Division has an average altitude of 421 M above MSL. Major streams falling in Division are Musi, Dindi, Pegga vadu, Kangal, Alair, and Halia, which are tributaries of Krishna river.

Landuse pattern of the Division is given in Table 4.18.1

The climate of this Division is generally dry with temperatures ranging from 17^0C to 40^0C and the annual rainfall is about 772 mm, received mainly from south-west monsoons.

Much of the soil is of red yellow type. Many areas have deep red soil derived from the decomposition of the granitic base rock. Riverine tracts have alluvial soil where paddy is grown. Due to the semi-arid climate, poor soils and lack of adequate irrigation, dry land farming is widely prevalent. Horticulture is also practiced; there are a number of Citrus and Mango plantations.

Population of the Division is 3.48 million (2011 Census), per capita forest area is 0.03 Ha and the population density is 244 persons per Km^2.

Table 4.18.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	281.41	2.24
Agriculture	10714.96	85.35
Land with Scrub	837.29	6.67
Fallow Lands	171.14	1.36
Settlements	104.70	0.83
Not available for cultivation	30.79	0.25
Water bodies	413.41	3.29
Total	**12553.70**	

4.18.2 Recorded Forest Area:

The notified forest area of the Division is **450.29 Km^2** which is 3.6% of the geographical area.

As per Champion and Seth's classification the forests of Division fall under Tropical Dry Deciduous Forest type.

4.18.3 Protected Area:

There is no Protected Area in the Division.

4.18.4 Community Forest Management:

There are 95 Vana Samrakshana Samities (VSSs) in the Division. An area of 188.41 Km^2 forests, which is 21.19% of the notified forests , is under the management of the VSSs.

4.18.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Nov-2011 to Feb-2012) is **39.92 Km^2** which is **0.318%** of the geographical area. In terms of the forest canopy density classes the Division has **1.57** Km^2 of Moderately Dense Forest and **38.35** Km^2 of Open Forest. The area of the Scrub is **241.32** Km^2, Non-Forest **158.40** Km^2 and Water Bodies **2.36** Km^2.The distributions of the forest cover of the Division is shown in Fig 4.18.1.

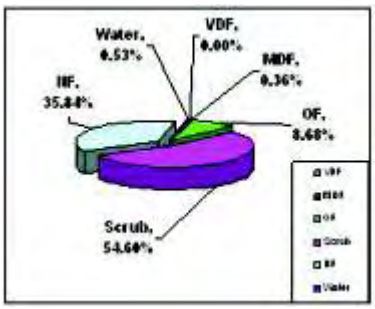


Fig 4.18.1

4.18.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 are shown in Figs 4.18.2 & 4.18.3 respectively and the changes during this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year **does not show any change** during the period. The forest cover change matrix given in Table 4.18.2 reveals that there is a decrease of **4.21 Ha** of Scrub.

The total positive change (including Scrub) of **5.58 Ha,** is on account of raising of plantations.The total negative change (including Scrub) of **9.79 Ha.** Out of this **9.79 Ha** is on account of clearance of jungle growth for raising of plantations. As clearance of jungle growth for raising of plantations are forest management interventions the same are not considered as loss of forest cover. Thus only the negative change due to encroachment is taken as loss of forest cover. Therefore there is no **net loss of forest cover.**

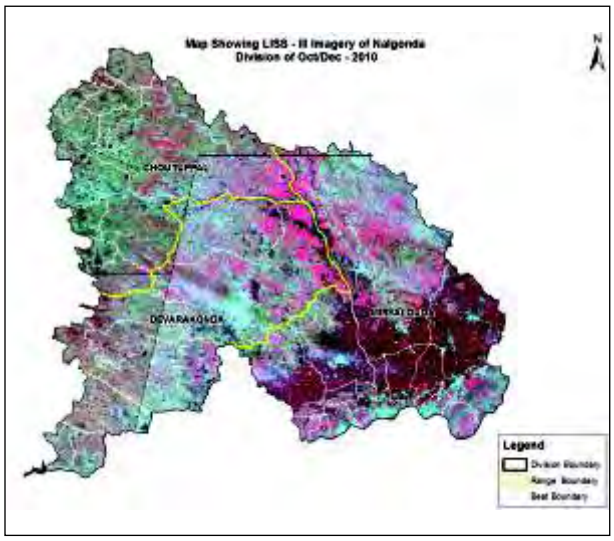


Fig 4.18.2

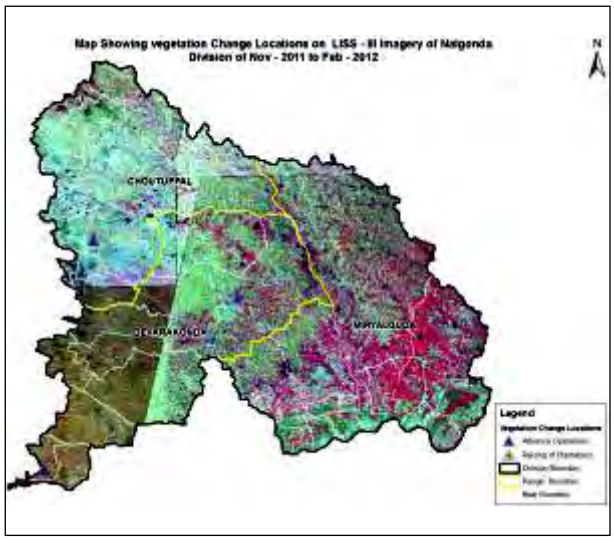


Fig 4.18.3

There are 36 Beats in the Division. Negative changes in forest cover are noticed in only 2 Beats. Positive changes in forest cover is noticed in only 1 Beat. There are no changes in remaining 33 Beats.

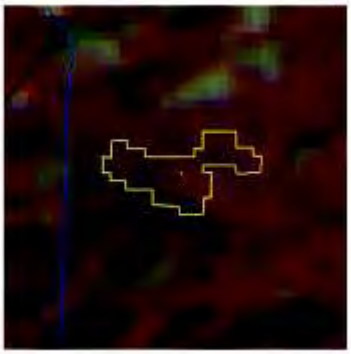
Details of forest cover changes in these 3 Beats is shown in Table 4.18.3

Table 4.18.2: Forest Cover change matrix **(Area in Km^2)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	1.57	0.00	0.00	0.00	0.00	**1.57**
Open Forest	0.00	0.00	38.35	0.00	0.00	0.00	**38.35**
Scrub	0.00	0.00	0.00	241.26	0.10	0.00	**241.36**
Non-Forest	0.00	0.00	0.00	0.06	158.30	0.00	**158.36**
Water	0.00	0.00	0.00	0.00	0.00	2.36	**2.36**
Total of 2011	**0.00**	**1.57**	**38.35**	**241.32**	**158.40**	**2.36**	**442.00**
Net Change	0.00	0.00	0.00	-0.04	0.04	0.00	

Table 4.18.3: Beat wise Forest Cover									(Area in Ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
CHOUTUPPAL RANGE									
Choutuppal	0.00	0.00	0.00	30.44	256.2	0.00	286.64	-4.53	0.00
Total	**0.00**	**0.00**	**0.00**	**30.44**	**256.2**	**0**	**286.64**	**-4.53**	**0.00**
DEVARAKONDA RANGE									
Gundlapally	0.00	2.37	51.74	1050.28	788.54	25.83	1918.76	-5.26	
Total	**0.00**	**2.37**	**51.74**	**1050.28**	**788.54**	**25.83**	**1918.76**	**-5.26**	**0.00**
MIRYALGUDA RANGE									
Damercherla	0.00	1.58	35.29	1075.2	670.49	15.42	1797.98	5.58	0
Total	**0.00**	**1.58**	**35.29**	**1075.2**	**670.49**	**15.42**	**1797.98**	**5.58**	**0.00**
Division Total	**0.00**	**2.37**	**51.74**	**1080.72**	**1044.74**	**25.83**	**2205.4**	**-4.21**	**0.00**

2010



2011

Longitude	78.72049 ° E
Latitude	16.57761 ° N
Area in Ha	5.26
Change	SF TO NF
Comp No.	169
Beat	Gundlapally
Range	Devarakonda
Division	Nalgonda

4.19 BHADRACHALAM NORTH DIVISION

4.19.1 Introduction:

Bhadrachalam North Forest Division lies in the northern part of Khammam District between latitudes 17^0 35' 47'' and 18^0 37' 46'' N and longitudes 80^0 22' 22'' and 81^0 09' 40'' E. Geographical area of the Division is 2406 Km^2 which is 15.01 % of the area of District. The important rivers which flow through this Division are the Godavari and the Taliperu.

Land use pattern of the Division is given in Table 4.19.1

The temperature ranges from 17^0C to 37^0C. The average rainfall in this Division is 1361.22 mm.

The soil types found mainly are black and red loams. The Rock found in this Division is Gneiss. The Mineral resources in this Division are Iron, Coal, Kankar and Lime stone.

The population of the Division is 0.231 million (2011 Census), per capita forest area 0.62 Ha and the population density 96 persons per Km^2.

Table 4.19.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1307.66	54.35
Agriculture	649.69	27.00
Land with Scrub	85.74	3.56
Fallow Lands	184.48	7.67
Grasslands	34.10	1.42
Settlements	7.88	0.33
Vegetation outside Forest	69.52	2.89
Water Bodies	66.93	2.78
Total	**2406.00**	

4.19.2 Recorded Forest Area:

The notified forest area of the Division is **1863.82 Km^2** which is 77.46% of the geographical area. Reserved, Protected- and Un-classed forests comprise of 1418.72 Km^2 (76.12%), 333.70 Km^2 (17.9%) and 111.40 Km^2 (5.98%) of the total forest area respectively.

As per Champion and Seth's classification the forests of Division fall under Tropical Dry Deciduous, Tropical Moist Deciduous, Tropical Semi-evergreen, Dry Teak and Tropical Thorn Forest types.

4.19.3 Protected Area:

There is no protected area in the Division.

4.19.4 Community Forest Management:

There are 64 Vana Samrakshana Samities (VSSs) or Joint Forest Protection Committees (JFPCs) in the Division. An area of 118.81 Km^2, which is 8.28 % of the forest area, is under the management of VSSs.

4.19.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Nov/Dec 2011) is **927.27 Km^2** which is **38.54%** of the geographical area. In terms of the forest canopy density classes the Division has **9.26** Km^2 of Very Dense Forests, **377.05** Km^2 of Moderately Dense Forests and **540.96** Km^2 of Open Forests. The area of the Scrub is **368.03** Km^2, Non-Forest **136.53** Km^2 and Water Bodies **3.74** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.19.1

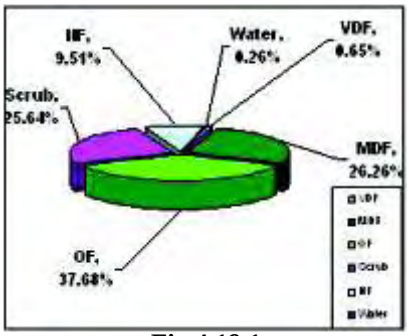


Fig 4.19.1

4.19.6 Change in Forest Cover:

The satellite images of 2010 and 2011 are shown in Fig 4.19.2 & 4.19.3 respectively and the changes between this period on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a negative change of **496.67 Ha.** The forest cover change matrix given in Table 4.19.2 reveals that there is a decrease of **496.67 Ha** of Open Forest and **12.36 Ha** of Scrub.

The total negative change (including Scrub) of **509.03 Ha** out of this **188.12 Ha** is on account of clearance of jungle growth for raising of plantations, **320.91 Ha** is on account of encroachments. As clearance of jungle growth for raising of plantations is a Forest management intervention and hence not considered as loss of forest cover. Thus only the negative change due to encroachment is taken as loss of forest cover. Therefore the **net loss of forest cover is 320.91 Ha** only.

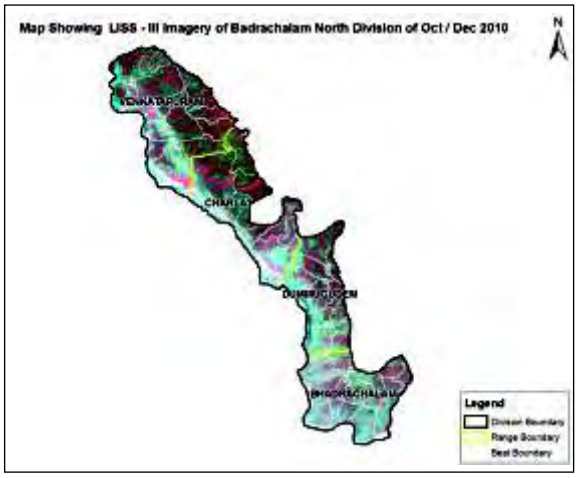


Fig 4.19.2

Fig 4.19.3

There are 52 Beats in the Division. Negative changes are noticed in 23 Beats. There is no change in the remaining 29 Beats.

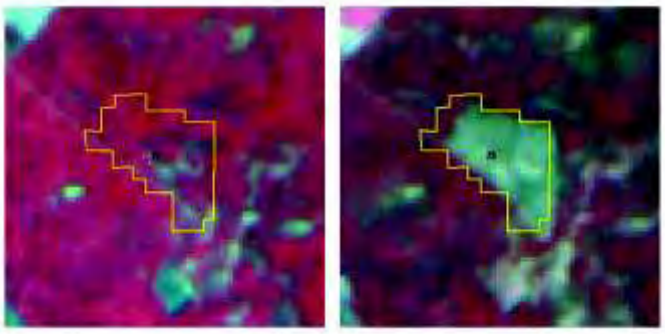
Details of forest cover changes in these 23 Beats is shown in Table 4.19.3

Table 4.19.2: Forest Cover change matrix **(Area in Km^2)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	9.26	0.00	0.00	0.00	0.00	0.00	**9.26**
Moderately Dense Forest	0.00	377.05	0.00	0.00	0.00	0.00	**377.05**
Open Forest	0.00	0.00	540.96	0.00	4.97	0.00	**545.93**
Scrub	0.00	0.00	0.00	368.03	0.12	0.00	**368.15**
Non-Forest	0.00	0.00	0.00	0.00	131.44	0.00	**131.44**
Water	0.00	0.00	0.00	0.00	0.00	3.74	**3.74**
Total of 2011	**9.26**	**377.05**	**540.96**	**368.03**	**136.53**	**3.74**	**1435.57**
Net Change	0.00	0.00	-4.97	-0.12	5.09	0.00	

Table 4.19.3: List of Beats with negative change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
BHADRACHALAM Range									
Arlagudem	0.00	434.19	552.5	236.73	211.6	1.78	1423.64	-13.54	13.54
Bandirevu N	1.17	976.53	421.19	238.97	19.36	0.00	1657.22	-10.25	10.25
Cherupalli	0.00	450.83	505.11	302.91	131.04	9.82	1399.71	-14.46	14.46
Jaggaram	0.00	1705.71	517.08	583.43	70.49	0.16	2876.87	-19.04	19.04
K.N. Purram	0.00	138.76	268.58	162.02	222.8	0.00	792.16	-64.23	18.97
Kallerukunta	0.00	653.58	175.8	364.07	75.2	0.00	1268.65	-6.81	6.81
Kondepally	0.00	252.28	426.3	137.15	58.17	0.00	873.9	-7.29	7.29
Madhavaraopet	0.00	263.04	500.7	304.21	69.43	0.00	1137.38	-1.59	1.59
Nallakunta	0.00	395.41	756.1	326.62	118.02	0.00	1596.15	-6.09	6.09
Nellipaka	0.00	23.96	294.28	392.48	207.8	1.61	920.13	-22.90	0.00
Nimmalagudem	0.00	637.64	476.25	204.36	95.13	0.00	1413.38	-21.04	21.04
Palamadugu	0.00	460.69	558.55	299.45	138.22	0.00	1456.91	-43.97	24.36
Tunikicheruvu	0.00	469.29	409.71	230.96	245.78	0.00	1355.74	-77.96	2.50
Vissapuram	0.00	347.59	894.37	861.37	287.62	14.35	2405.3	-10.12	10.12
Total	**1.17**	**7209.5**	**6756.52**	**4644.73**	**1950.66**	**27.72**	**20577.14**	**-319.29**	**156.06**
CHERLA Range									
Cherla	0.00	149.55	327.5	422.29	236.61	111.91	1247.86	-57.12	57.12
Total	**0.00**	**149.55**	**327.5**	**422.29**	**236.61**	**111.91**	**1247.86**	**-57.12**	**57.12**
DUMMUGUDEM Range									
Anjubaka	0.00	230.06	67.96	104.46	96.52	0.00	499	-1.94	1.94
Bodanelly	10.58	1353	868.73	376.37	36.56	0.00	2645.24	-9.77	9.77
Kothuru	0.00	726.4	585.9	712.24	242.55	1.12	2268.21	-13.11	13.11
Tyagada	0.00	584.18	596.34	680.85	343.16	1.72	2206.25	-43.63	43.63
Uyyalamadugu	31.80	2189.52	2176.86	1719.78	173.28	70.10	6361.34	-24.89	0.00
Total	**42.38**	**5083.16**	**4295.79**	**3593.7**	**892.07**	**72.94**	**13980.04**	**-93.34**	**68.45**
VENKATAPURAM Range									
Kadaikal	0.57	1335.48	5254.88	2927.87	831.52	8.79	10359.11	-10.01	10.01
Pragallapally	0.00	332.14	837.13	176.21	65.9	0.00	1411.38	-24.65	24.65
Venkatapuram	1.16	256.88	409.68	135.65	94.61	0.00	897.98	-4.62	4.62
Total	**1.73**	**1924.5**	**6501.69**	**3239.73**	**992.03**	**8.79**	**12668.47**	**-39.28**	**39.28**
Grand Total	**45.28**	**14366.71**	**17881.50**	**11900.45**	**4071.37**	**221.36**	**48473.51**	**-509.03**	**320.91**

2010 **2011**



Longitude	80.48765 ° E
Latitude	18.35248° N
Area in Ha	24.65
Change	OF to NF
Comp No.	97
Beat	Pragallapalli
Range	Venkatapuram
Division	Badrachalam North

4.20 BHADRACHALAM SOUTH DIVISION

4.20.1 Introduction:

Bhadrachalam South Forest Division lies in the eastern part of Khammam District between latitudes 17^0 27' 42'' and 17^0 54' 05'' N and longitudes 81^0 05' 45'' and 81^0 48' 47'' E. Geographical Area of the Division is 1737.52 Km^2 which is 10.84 % of the area of the District. The main rivers of the Division are Godavari, Sabari and Sileru. The Godavari river forms the southern boundary and Sileru river forms the northern boundary of the Division.

Land use pattern of the Division is given in Table 4.20.1

The climate of this Division is generally cool and pleasant with temperatures ranging from 17^0C to 37^0C and the annual rainfall is about 1362 mm, received mainly from Southwest monsoons.

The soil types found mainly are Black and Red loams. The Rock found in this Division is Gneiss. The Mineral resources in this Division are Iron, Coal, Kankar and Lime stone.

Population of the Division is 0.092 million (2011 Census), per capita forest area 1.4 Ha and the population density 53 persons per Km^2.

Table 4.20.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1255.59	72.24
Agriculture	203.03	11.68
Land with Scrub	37.40	2.15
Fallow Lands	178.75	10.28
Grasslands	1.04	0.06
Settlements	0.49	0.03
Vegetation outside Forest	37.34	2.15
Water Bodies	24.35	1.40
Total	**1738.00**	

4.20.2 Recorded Forest Area:

The notified forest area of the Division is **1632.27 Km^2** which is 93.92% of the geographical area. Reserved, Protected and Un-classed forests comprise of 1076.69 Km^2 (65.96%), 479.53 Km^2 (29.38%) and 76.05 Km^2 (4.66%) of the forest area respectively.

As per Champion and Seth's classification the Forests of Division fall under Tropical Dry Deciduous, Tropical Moist Deciduous, Tropical Semi-evergreen, Dry Teak and Tropical Thorn Forest types.

4.20.3 Protected Area:

The Division is one of the 4 constituent Divisions of Papikonda Wildlife Sanctuary. An area of 271.94 Km^2 of the Division is included in the Papikonda Wildlife Sanctuary.

4.20.4 Community Forest Management:

There are 40 Vana Samrakshana Samities (VSSs) or Joint- Forest Protection Committees (JFPCs) in the Division. An area of 86.88 Km^2 forests, constituting 6.72 % of the forest area, is under the management of the VSSs.

4.20.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Oct/Nov 2011) is **1071.07 Km^2,** which is **61.63%** of the geographical area. In terms of the forest canopy density classes the Division has **83.57 Km^2** of Very Dense Forests, **619.16 Km^2** of Moderately Dense Forests and **368.34 Km^2** of Open Forests. The area of the Scrub is **179.59 Km^2,** Non-Forest **40.00 Km^2** and Water Bodies **3.00 Km^2.** The distribution of the forest cover of the Division is shown in Fig 4.20.1

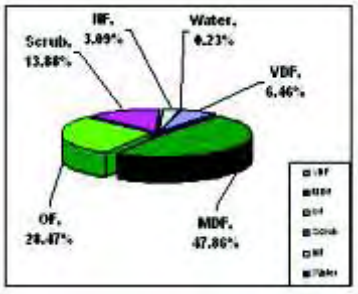


Fig 4.20.1

4.20.6 Change in Forest Cover:

The satellite imageries of 2010 and 2011 are shown in Figs 4.20.2 & 4.20.3 respectively and the changes between the periods on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a **negative change in forest cover of 101.16 Ha.** The forest cover change matrix, given in Table 4.20.2 reveals that there is a decrease of **101.16 Ha** of Open Forest, **15.35 Ha** of Scrub.

The total negative change (including Scrub) of **116.51 Ha** out of this **24.56 Ha** is on account of clearance of jungle growth for raising of plantations, **91.95 Ha** is on account of encroachments. As clearance of jungle growth for raising of plantations is a forest management intervention and hence not considered as loss of forest cover. Thus only the negative change due to encroachment is taken as loss of forest cover. Therefore the **net loss of forest cover is 91.95 Ha** only.

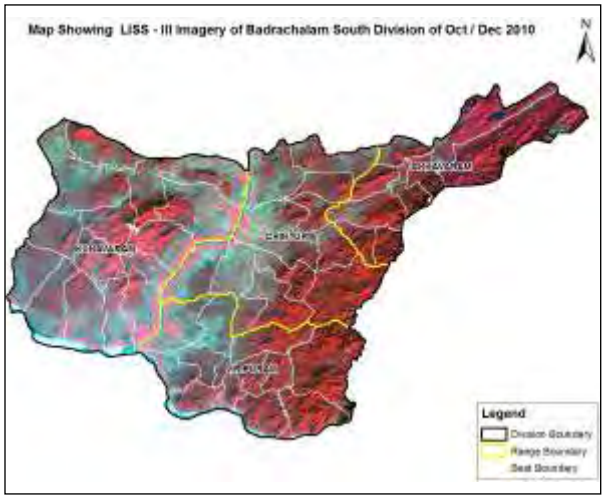


Fig 4.20.2

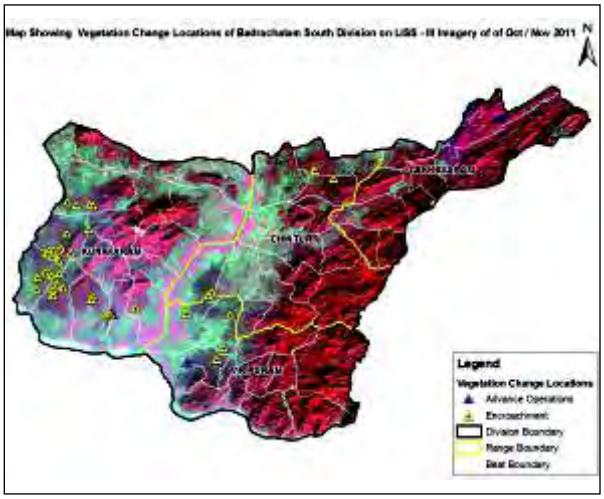


Fig 4.20.3

There are 48 Beats in the Division. Negative changes in forest cover are seen in 14 Beats.There are no changes in the forest cover of the remaining 34 Beats.

Details of forest cover changes in these 14 Beats is shown in Table 4.20.3

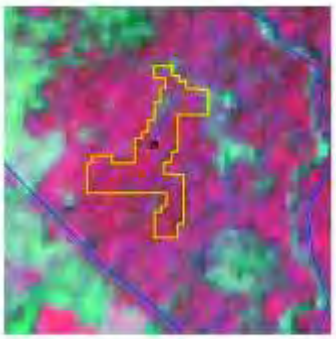
Table 4.20.2: Forest Cover change matrix **(Area in Km^2)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	83.57	0.00	0.00	0.00	0.00	0.00	**83.57**
Moderately Dense Forest	0.00	619.16	0.00	0.00	0.00	0.00	**619.16**
Open Forest	0.00	0.00	368.34	0.00	1.01	0.00	**369.35**
Scrub	0.00	0.00	0.00	179.59	0.15	0.00	**179.74**
Non-Forest	0.00	0.00	0.00	0.00	38.84	0.00	**38.84**
Water	0.00	0.00	0.00	0.00	0.00	3.00	**3.00**
Total of 2011	**83.57**	**619.16**	**368.34**	**179.59**	**40.00**	**3.00**	**1293.66**
Net Change	0.00	0.00	-1.01	-0.15	1.16	0.00	

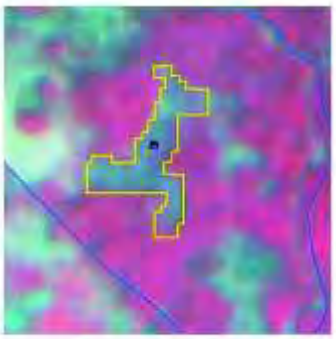
Table 4.20.3: List of Beats with negative change in Forest Cover **(Area in ha)**

Beat	VDF	MDF	OF	Scrub	NF	WB	Total	Net Change	Encroa-chment
Chintur Range									
Choppalli	0.00	318.53	838.39	118.49	14.17	0.00	1289.58	-1.71	1.71
Guduru	21.92	760.54	956.24	691.97	91.99	4.25	2526.91	-4.07	4.07
Pothampalli	39.26	1079.56	1019.74	252.29	18.55	0.00	2409.40	-0.95	0.95
Total	**61.18**	**2158.63**	**2814.37**	**1062.75**	**124.71**	**4.25**	**6225.89**	**-6.73**	**6.73**
Kunavaram Range									
Bodanuru	5.81	533.24	555.56	270.67	81.98	1.78	1449.04	-9.89	0.00
Chinanarsingapet	0.00	1074.83	1052.75	238.88	130.63	8.36	2505.45	-30.93	30.93
E.D. Pally	16.16	1542.27	1871.55	2401.48	858.85	6.55	6696.86	-2.85	2.85
Maddigudem	324.39	1380.23	1062.39	269.17	31.37	0.00	3067.55	-1.65	1.65
Murumuru	1.06	1352.16	701.43	238.43	69.82	0.00	2362.90	-25.96	25.96
Pochavaram	3.18	1177.74	955.49	218.52	16.87	3.10	2374.90	-5.02	5.02
Tekulabore	21.76	876.92	317.01	130.22	19.64	0.00	1365.55	-1.28	1.28
Thatilanka	21.08	1528.22	1106.62	279.80	49.61	2.03	2987.36	-3.75	3.75
Total	**20.77**	**1472.85**	**832.29**	**200.73**	**9.48**	**0.34**	**2536.47**	**-81.33**	**71.44**
V.R.Puram Range									
Chintaregupalli	0.00	214.24	331.00	208.72	86.63	0.00	840.59	-10.11	10.11
Peddamattapalli	0.00	512.11	1037.43	485.36	344.54	3.07	2382.51	-2.87	2.87
Ummadivaram	1.50	669.81	735.01	165.55	29.18	1.76	1602.81	-15.47	0.80
Total	**1.50**	**1396.16**	**2103.44**	**859.63**	**460.35**	**4.83**	**4825.91**	**-28.45**	**13.78**
Grand Total	**83.45**	**5027.64**	**5750.10**	**2123.11**	**594.54**	**9.42**	**13588.27**	**-116.51**	**91.95**

2010



2011



Longitude	81.12677 ° E
Latitude	17.64918 ° N
Area in Ha	11.02
Change	OF TO NF
Comp No.	138
Beat	Murumur
Range	Kunavaram
Division	Badrachalam South

4.21 KHAMMAM DIVISION

4.21.1 Introduction:

Khammam Forest Division lies in the southern part of Khammam district between latitudes 16^0 46' 2'' and 17^0 33' 35'' N and longitudes 79^0 48' 10'' and 81^0 16' 37'' E. Geographical area of the Division is 6027 Km^2 which is 37.6% of the area of the district. The rivers in this Division are Munneru, Paleru, Akheru and Wyra.

Land use pattern of the Division is given in Table 4.21.1

The average highest temperature in the summer is 47^0C and the minimum average temperature in December is 14^0C and the average annual rainfall is 997.96 mm, received mainly from Southwest monsoons.

The soil types found mainly in this Division are sandy soils, black, red loamy and skeletal. The rock formations found in this Division are Archaens, Puranas and Gondwanas. The Mineral resources in this Division are coal, Iron ore, lime stone, marble, barytes, graphite, chromite, mica, garnet, kyanite and building stones.

Population of the Division is 1.58 million (2011 Census), per capita forest area is 0.08 Ha and the population density is 263 Persons Per Km^2.

Table 4.21.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1242.49	20.62
Agriculture	4166.08	69.12
Land with Scrub	126.96	2.11
Fallow Lands	18.75	0.31
Grasslands	0.00	0.00
Settlements	78.02	1.29
Vegetation outside Forest	303.10	5.03
Water Bodies	91.61	1.52
Total	**6027.00**	

4.21.2 Recorded Forest Area:

The notified forest area of the Division is **1246.19 Km^2** which is 20.68% of the geographical area. Reserved, Protected and un-classed forests constitute 1131.25 Km^2 (90.78 %), 112.74 Km^2 (9.04%) and 2.2 Km^2 (0.18%) of the forest area respectively.

As per Champion and Seth's classification the Forests of Division fall under Tropical Dry Deciduous, Tropical Moist Deciduous, Tropical Semi-Evergreen, Dry Teak and Tropical Thorn Forest types.

4.21.3 Protected Area:

There is no Protected Area in the Division.

4.21.4 Community Forest Management:

There are 110 Vana Samrakshana Samithies (VSSs) in the Division. 238.76 Km^2 forest area, which constitutes 18.06 % of the forest area, is under the management of VSSs.

4.21.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Nov 2011-Feb 2012) is **857.00 Km^2** which is **14.22%** of the geographical area. In terms of the forest canopy density classes the Division has **0.41** Km^2 Very Dense Forests, **349.85** Km^2 Moderately Dense Forests and **506.74** Km^2 Open Forest. The area of the Scrub is **350.42** Km^2, Non-Forest **112.34** Km^2 and Water Bodies **2.58** Km^2**.** The distribution of the forest cover of the Division is shown in Fig 4.21.1.

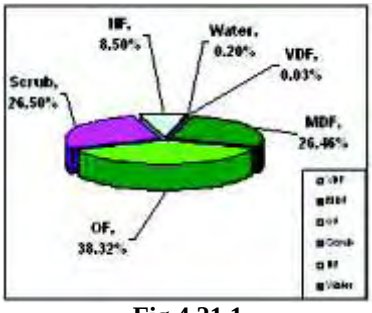


Fig 4.21.1

4.21.6 Change in Forest Cover:

The satellite images of 2010 and 2011 are shown in Figs. 4.21.2 & 4.21.3 respectively and the changes during this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a positive change **197.73 Ha** and negative change of **308.40 Ha.** The forest cover change matrix given in Table 4.21.2 reveals that there is a decrease of **11.81 Ha** of Moderately Dense Forest, **98.86 Ha** of Open Forest and **457.88 Ha** of Scrub.

The total positive change is (including Scrub) **197.73 Ha** on account of growth in raised plantations. The total negative change (including Scrub) is **568.55 Ha.** Out of this **391.19 Ha** is on account of clearance of jungle growth for rising of plantations,**11.11 Ha** is on account of diversion of forest lands for on-forestry purpose, and **166.25 Ha** is on account of encroachments. As clearance of jungle growth for rising of plantations, diversion of forest lands and Raising of plantation are forest management interventions the same are not considered as loss of forest cover. Thus only the negative change due to encroachments is taken as loss of forest cover. Therefore the **net loss of forest cover is 166.25 Ha** in the Division.

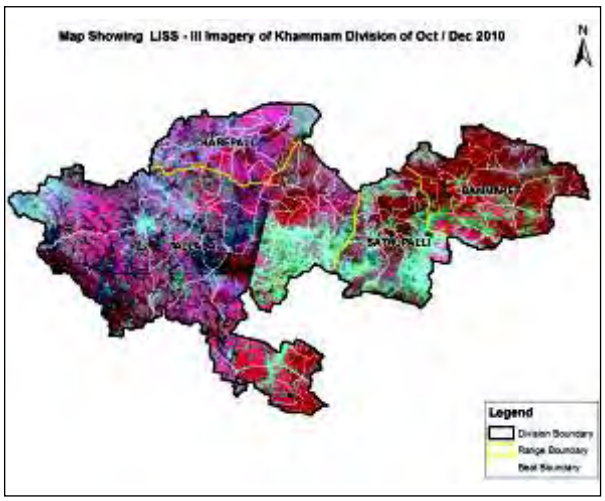


Fig 4.20.2

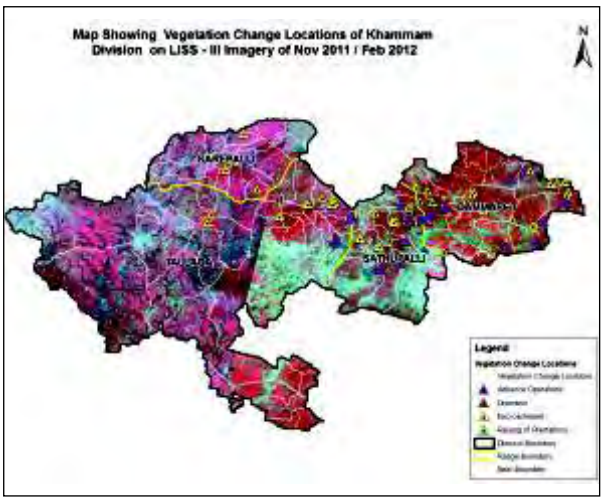


Fig 4.20.3

There are 82 Beats in the Division. Negative changes are noticed in 32 Beats and positive change in 2 Beats only. There are no changes in the remaining 48 Beats.

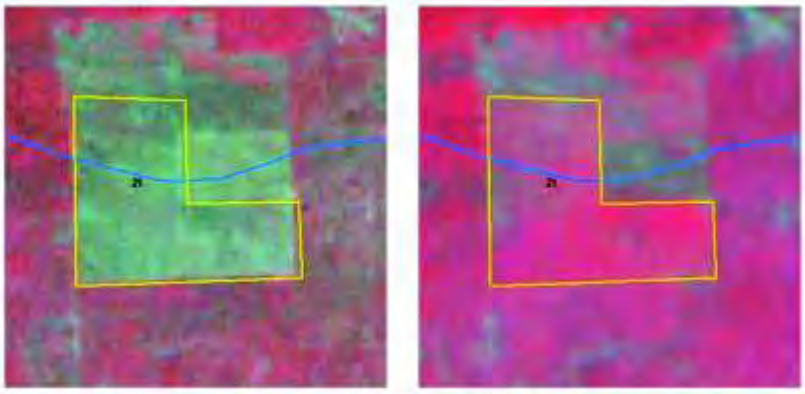
Details of forest cover changes in these 34 Beats are shown in Table 4.21.3.

Table 4.21.2: Forest Cover change matrix **(Area in Km^2)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.41	0.00	0.00	0.00	0.00	0.00	**0.41**
Moderately Dense Forest	0.00	349.85	0.00	0.00	0.12	0.00	**349.97**
Open Forest	0.00	0.00	504.76	0.00	2.97	0.00	**507.73**
Scrub	0.00	0.00	1.98	350.42	2.60	0.00	**355.00**
Non-Forest	0.00	0.00	0.00	0.00	106.65	0.00	**106.65**
Water	0.00	0.00	0.00	0.00	0.00	2.58	**2.58**
Total of 2011	**0.41**	**349.85**	**506.74**	**350.42**	**112.34**	**2.58**	**1322.34**
Net Change	0.00	-0.12	-0.99	-4.58	5.69	0.00	

Table 4.21.3: List of Beats with negative change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
DAMMAPET RANGE									
Achutapuram	1.87	250.81	785.12	547.39	202.59	0.56	1788.34	-23.68	0.00
Anantharam	1.85	858.68	882.35	392.36	202.79	12.95	2350.98	-17.43	7.00
Aswaraopet	0.00	266.35	1094.64	594.92	304.69	1.00	2261.61	-56.05	0.00
Durdapadu	0.00	537.54	1868.38	946.88	95.30	0.00	3448.10	-16.18	0.00
Gandugulapalli	0.00	274.42	772.34	270.35	569.02	1.34	1887.47	-85.38	0.00
Gopannagudem	0.00	638.14	592.73	537.49	130.00	0.73	1899.09	-2.87	0.00
Mandalpalli	1.12	241.95	358.44	92.23	32.63	0.00	726.37	-11.11	0.00
Mustibanda	11.15	471.55	349.91	142.32	71.59	0.90	1047.42	-9.19	0.00
Nagupalli	0.00	881.91	1287.40	11.99	124.34	1.63	2307.27	64.76	9.19
Nallamudi	3.08	728.33	1805.73	492.19	156.34	0.00	3185.67	-14.50	14.50
Narayanapuram	0.00	600.62	1476.68	604.78	138.67	13.94	2834.69	-39.35	4.10
Tirumalkunta	0.00	3106.67	1280.06	150.39	37.07	0.00	4574.19	-6.26	6.26
Vinayakapuram	0.00	879.89	1621.13	567.30	306.77	0.00	3375.09	-35.30	35.30
Total	**19.07**	**9736.86**	**14174.9**	**5350.59**	**2371.8**	**33.08**	**31686.3**	**-252.54**	**76.35**
KAREPALLI RANGE									
Kesupalli	0.00	74.02	758.31	941.63	179.15	0.00	1953.11	-3.87	3.87
Ootokur	0.00	502.89	538.72	790.84	110.84	0.00	1943.29	-3.23	3.23
Regaboinagudem	0.00	20.33	285.20	1368.28	304.54	1.46	1979.81	-7.26	7.26
Total	**0.00**	**597.24**	**1582.23**	**3100.75**	**594.53**	**1.46**	**5876.21**	**-14.36**	**14.36**
SATHUPALLI RANGE									
Buggapadu	0.00	126.90	591.66	385.57	299.84	11.21	1415.18	-25.07	0.00
Chowdaram	0.00	15.32	239.74	337.23	160.71	0.00	753.00	-11.05	11.05
Gollagudem	0.00	2.75	94.88	239.87	304.59	62.56	704.65	-26.19	0.00
Kakarlapalli	0.00	104.84	631.23	697.85	362.47	1.06	1797.45	-10.77	0.00
Kistaram	0.00	20.85	217.67	142.36	63.32	0.00	444.20	-6.20	6.20
Pentalam	0.00	517.31	860.89	299.86	483.57	0.00	2161.63	-33.27	3.87
R.C. Puram	0.00	198.62	459.61	218.91	143.64	58.68	1079.46	-2.99	2.99
Rudrakshapalli	1.79	519.22	1136.50	133.76	191.92	4.73	1987.92	97.59	0.00
Sathupalli	0.00	18.99	437.69	387.56	376.46	1.45	1222.15	-3.95	0.00
Yatalkunta	0.00	673.15	455.92	169.41	258.34	0.00	1556.82	-35.45	35.45
Total	**1.79**	**2197.95**	**5125.79**	**3012.38**	**2644.86**	**139.7**	**13122.5**	**-57.35**	**59.56**
TALLADA RANGE									
Burugugudem	0.00	761.01	772.76	355.03	46.74	0.00	1935.54	-6.25	0.00
Erlapudi	6.01	277.97	329.43	810.52	206.55	1.89	1632.37	-2.92	2.92
Gopalpet	0.00	992.15	477.13	116.92	41.43	0.00	1627.63	-2.15	2.15
Lingagudem	0.00	174.97	303.66	270.03	154.76	0.00	903.42	-24.34	0.00
Maddukur	0.00	602.41	1654.37	336.08	52.60	0.00	2645.46	-3.18	3.18
Nallabandabodu	0.00	1062.29	977.21	319.10	91.54	0.00	2450.14	-2.50	2.50
Ravikampad	0.00	213.71	975.31	463.27	135.94	0.00	1788.23	-0.36	0.36
Tummalapalli	0.00	93.77	347.14	578.69	163.56	4.72	1187.88	-4.87	4.87
Total	**6.01**	**4178.28**	**5837.01**	**3249.64**	**893.12**	**6.64**	**14170.7**	**-46.57**	**15.98**
Division Total	**26.87**	**16710.3**	**26719.9**	**14713.4**	**6504.31**	**180.8**	**64855.6**	**-370.82**	**166.25**

2010 **2011**



Longitude	80.85896 ° E
Latitude	17.35302 ° N
Area in Ha	69.72
Change	SF TO OF
Comp No.	192
Beat	Nagupalli
Range	Dammapet
Division	Khammam

4.22 KOTHAGUDEM DIVISION

4.22.1 Introduction:

Kothagudem Forest Division lies in the western part of Khammam district between latitudes 17^0 19' 55'' and 18^0 4' 49'' N and longitudes 80^0 02' 46'' and 80^0 50' 44'' E. Geographical area of the Division is 2503 Km^2 which is 15.62 % of the geographical area of the district. Pancha Pandavulu is the highest peak of this Division with an altitude of 729.38 M above MSL. The area is undulating and interrupted with hills and hillocks of igneous rocks with elevation ranging from 12 M to 500 M. Kalakandavagu stream forms major source of water for Bayyaram cheruvu. Morredu river and Kinnerasani river are the perennial sources of water in this Division.

Land use pattern of the Division is given in Table 4.22.1

The climate of this Division is generally dry with temperatures ranging from 18^0C to 50^0C and the annual rainfall is about 934.69 mm, received mainly from south-west monsoons.

The most important mineral deposit in the Division is coal. The other minerals are iron ore, Barytes, Graphite and Copper ore. The rocks found in the Division are Lime stone, Marble and Granite. The soil types found mainly are sandy soils, black cotton, red alluvial loam and skeletal.

Population of the Division is 0.472 million (2011 Census), per capita forest area is 0.36 Ha the population density is 188 persons per Km^2.

Table 4.22.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1412.13	56.42
Agriculture	879.50	35.14
Land with Scrub	72.86	2.91
Fallow Lands	22.30	0.89
Grasslands	0.49	0.02
Settlements	20.80	0.83
Vegetation outside Forest	75.75	3.03
Water Bodies	19.17	0.77
Total	**2503.00**	

4.22.2 Recorded Forest Area:

The notified forest area of the Division is **1538.04 Km^2** which is 61.45% of the geographical area. Reserved and Protected forests constitute 1321.03 Km^2 (85.89%) and 217.01 Km^2 (14.11%) of the forest area respectively. **103.50 Km^2** of notified forest area of the Division is transferred to **Paloncha WLM Division.**

As per Champion and Seth's classification, the Forests of Division fall under Tropical Dry Deciduous, Tropical Moist Deciduous, Tropical Semi-evergreen, Dry Teak and Tropical Thorn Forest types.

4.22.3 Protected Area:

There is no PA in this Division. Out of old Kothagudem Division an area of **103.50 Km^2** is transferred to Paloncha WLM Division.

4.22.4 Community Forest Management:

There are 106 Vana Samrakshana Samithies (VSSs) in the Division. 238.62 Km^2 forest area, which constitutes 14.17 % of forest area, is under the management of VSSs.

4.22.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Nov 2011 – Feb 2012) is **927.86 Km²** which is **37.07%** of the geographical area. In terms of the forest canopy density classes the Division has **0.04 Km²** of Very Dense Forests, **349.31 Km²** Moderately Dense Forests and **578.51 Km²** Open Forest. The area of the Scrub is **452.18 Km²,** Non-Forest **300.33 Km²** and Water Bodies **3.51 Km².** The distribution of the forest cover of the Division is shown in Fig 4.22.1

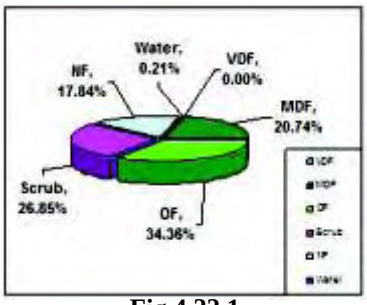


Fig 4.22.1

4.22.6 Change in Forest Cover:

The Satellite image of 2010 and 2011 are shown in Figs 4.22.2 & 4.22.3 respectively and the changes during this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a **negative change of 1067.12 Ha.** The forest cover change matrix given in Table 4.22.2 reveals that there is a decrease of **464.50 Ha** in Moderately Dense Forest and **602.62 Ha** in Open Forest.

The total positive change is (including Scrub) **51.45 Ha** on account of growth in raised plantations. The total negative change (including Scrub) is **1079.40 Ha.** Out of this **433.68 Ha** is on account of clearance of jungle growth for raising of plantations and **645.72 Ha** is on account of encroachments. As clearance of jungle growth for raising of plantations are forest management interventions the same are not considered as loss of forest cover. Thus only the negative change due to encroachments is taken as loss of forest cover. Therefore the **net loss of forest cover is 645.72 Ha** in the Division.

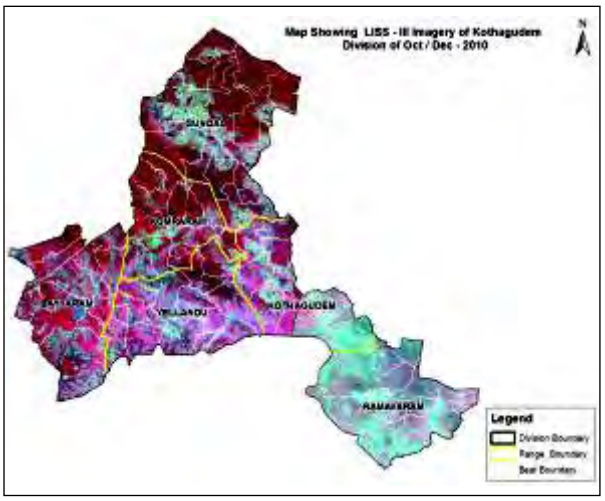


Fig 4.22.2

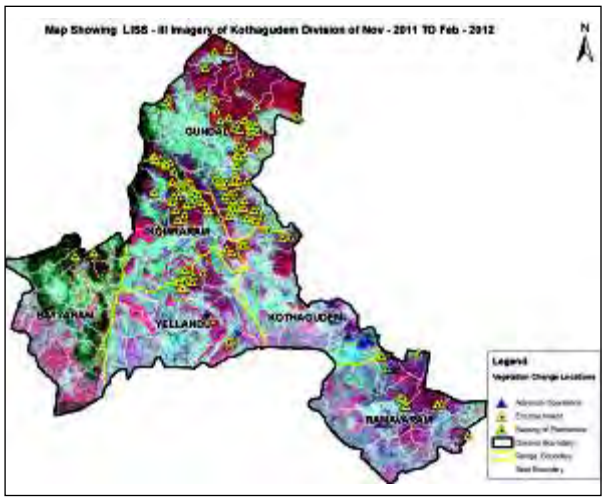


Fig 4.22.3

There are 76 Beats in the Division. Negative changes in forest cover are noticed in 27 Beats and positive change in 1 Beat. There are no changes in the remaining 48 Beats.

Details of forest cover changes in these 28 Beats are shown in Table 4.22.3.

Table 4.22.2: Forest Cover change matrix **(Area in Km^2)**

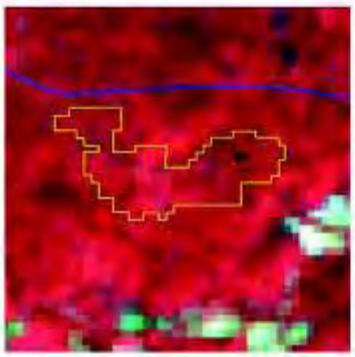
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.04	0.00	0.00	0.00	0.00	0.00	**0.04**
Moderately Dense Forest	0.00	349.31	0.00	0.00	4.65	0.00	**353.96**
Open Forest	0.00	0.00	578.51	0.00	6.03	0.00	**584.54**
Scrub	0.00	0.00	0.00	451.67	0.12	0.00	**451.79**
Non-Forest	0.00	0.00	0.00	0.51	289.53	0.00	**290.04**
Water	0.00	0.00	0.00	0.00	0.00	3.51	**3.51**
Total of 2011	**0.04**	**349.31**	**578.51**	**452.18**	**300.33**	**3.51**	**1683.88**
Net Change	0.00	-4.65	-6.03	0.39	10.29	0.00	

Table 4.22.3: List of Beats with change in Forest Cover **(Area in ha)**

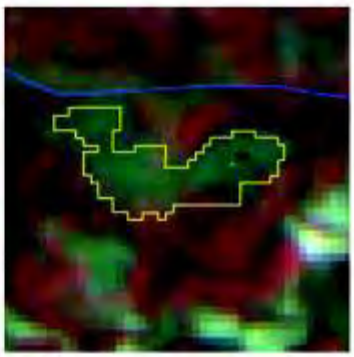
Beat	VDF	MDF	OF	Scrub	NF	WB	Total	Net Change	Encroa-chment
Bayyaram Range									
Miryalapenta	0.00	484.34	625.95	468.07	289.51	1.78	1869.65	-8.15	8.15
Motlatimmapuram (s)	0.00	689.00	896.91	656.80	233.71	35.17	2511.59	-15.36	15.36
Total	**0.00**	**1173.34**	**1522.86**	**1124.87**	**523.22**	**36.95**	**4381.24**	**-23.51**	**23.51**
Gundal Range									
Adiviramavaram	0.00	2857.51	1148.75	153.70	5.09	0.00	4165.05	-2.00	2.00
Damaratogu North	0.00	1373.47	1031.57	189.91	66.53	0.00	2661.48	-7.85	7.85
Damaratogu West	0.00	1364.77	1143.72	387.01	61.46	0.00	2956.96	-2.85	2.85
Dongatogu	0.00	3317.23	1464.90	525.78	222.40	10.76	5541.07	-14.87	14.87
Gundala	0.00	306.80	2893.07	1341.82	1018.14	13.52	5573.35	-85.14	85.14
Jinnelagudem	0.00	72.17	630.44	387.56	142.16	0.00	1232.33	-8.96	8.96
Kachanpalli	0.00	599.32	1412.44	1174.48	819.78	5.76	4011.78	-42.75	42.75
Karnigudem	0.00	2492.36	935.03	754.13	663.12	1.77	4846.41	-66.73	66.73
Kodavatancha	0.00	309.78	1229.48	1207.71	1013.50	12.09	3772.56	-13.86	13.86
Mamakannu	0.00	161.86	933.73	600.91	442.51	1.95	2140.96	-15.67	15.67
Narsapuram	0.00	74.40	1330.02	1004.63	304.60	0.00	2713.65	-50.04	50.04
Ravigudem	0.00	76.08	676.69	252.46	86.70	0.00	1091.93	-15.25	15.25
Suddarevu	0.00	2807.24	420.70	243.17	49.07	0.00	3520.18	-2.90	2.90
Valasala	0.00	181.79	594.48	1117.63	1014.61	10.37	2918.88	-13.64	13.64
Total	**0.00**	**15994.8**	**15845**	**9340.9**	**5909.67**	**56.22**	**47146.59**	**-342.51**	**342.51**
Komraram Range									
Anantharam	0.00	728.22	798.98	347.42	572.80	2.72	2450.14	-14.83	14.83
Chinaregulagudem	0.00	701.81	808.62	269.80	90.26	0.00	1870.49	-25.75	25.75
Manikyaram	0.00	843.13	798.64	392.01	492.67	0.00	2526.45	-10.03	10.03
Polaram	0.00	307.90	1305.07	1084.39	980.64	0.00	3678.00	-48.81	48.81
Shammunigudem	0.00	1108.71	645.34	190.01	46.55	1.43	1992.04	-1.75	1.75
Vennelbail	0.00	591.06	1363.94	261.49	136.29	0.55	2353.33	-20.94	20.94
Yedapalagudem	0.00	378.79	575.41	363.41	227.42	0.00	1545.03	-12.49	12.49
Yellapuram	0.00	553.64	1156.17	527.71	204.54	0.00	2442.06	-38.48	38.48
Total	**0.00**	**5213.26**	**7452.17**	**3436.24**	**2751.17**	**4.7**	**18857.54**	**-173.08**	**173.08**

Table 4.22.3: List of Beats with negative change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
Kothagudem Range									
Chatakonda	0.00	0.00	65.59	1072.97	691.35	2.79	1832.70	-87.49	0.00
Hemachandrapuram	0.00	0.83	-89.93	143.26	264.52	0.00	318.68	-74.21	0.00
Koppurai	0.00	398.05	660.30	942.74	495.29	11.68	2508.06	-11.68	11.68
Medlamadugu	0.00	83.16	837.54	588.59	453.19	0.00	1962.48	-132.56	0.00
Murlipad	0.00	315.89	1025.77	483.72	195.91	3.63	2024.92	-8.29	8.29
Total	**0.00**	**797.93**	**2499.27**	**3231.28**	**2100.26**	**18.1**	**8646.84**	**-314.23**	**19.97**
Ramavaram Range									
Annaram	0.00	35.51	1266.02	471.89	72.02	3.34	1848.78	-3.09	3.09
Chaparalapally_east	0.00	54.70	981.90	487.01	62.73	0.00	1586.34	-7.96	7.96
Musalivarre	0.00	172.44	1182.84	384.97	127.89	0.00	1868.14	-4.47	4.47
Penagadapa	0.00	2.28	158.57	140.74	794.95	0.00	1096.54	-80.62	0.00
Penuballi	0.00	123.00	1264.81	943.30	346.64	0.00	2677.75	0.77	8.04
Satyampet	0.00	468.47	1783.95	282.15	106.48	0.00	2641.05	-15.45	15.45
Thippanpalli	0.00	0.00	220.20	795.36	801.80	0.00	1817.36	-11.23	0.00
Total	**0.00**	**856.4**	**6858.29**	**3505.42**	**2312.51**	**3.34**	**13535.96**	**-122.05**	**39.01**
Yellandu Range									
Dharmapur	0.00	529.41	1334.64	546.41	303.95	1.72	2716.13	-24.99	24.99
Kommugudem	0.00	287.70	707.50	877.38	633.17	3.46	2509.21	-13.72	13.72
Kunterla	0.00	219.62	603.24	613.17	209.91	19.24	1665.18	-6.27	6.27
Pubally	0.00	167.69	592.61	790.35	401.28	6.41	1958.34	-7.59	2.66
Total	**0.00**	**1204.42**	**3237.99**	**2827.31**	**1548.31**	**30.83**	**8848.86**	**-52.57**	**47.64**
Grand Total	**0.00**	**25240.13**	**37415.60**	**23466.02**	**15145.14**	**150.14**	**101417.03**	**-1027.95**	**645.72**

2010



2011



Longitude	80.36176 ° E
Latitude	17.75665 ° N
Area in Ha	12.68
Change	DF TO NF
Comp No.	8
Beat	Anantaram
Range	Komraram
Division	Kothagudem

4.23 PALONCHA DIVISION

4.23.1 Introduction:

Paloncha Forest Division lies in the central part of Khammam district between latitudes 17^0 19' 4'' and 18^0 09' 10'' N and longitudes 80^0 25' 56'' and 81^0 30' 17'' E. Geographical Area of the Division is 2530 Km^2 which is 15.78 % of the geographical area of the District. The elevation varies from 12 M to 600 M above MSL in this Division. Godavari River forms the north-eastern boundary of the Division. Other rivers in the Division are Kinnerasani, Pamleru and Morredu which almost dry up in summer. Besides these rivers few big tanks like Tummalachervu, Parentalacheruvu also exist in this Division.

Land use pattern of the Division is given in Table 4.23.1

Table 4.23.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1413.37	55.86
Agriculture	813.73	32.16
Land with Scrub	54.10	2.14
Fallow Lands	77.87	3.08
Grasslands	2.06	0.08
Settlements	31.88	1.26
Vegetation outside Forest	72.76	2.88
Water Bodies	64.22	2.54
Total	**2530.00**	

The climate of this Division is generally cool, fresh and pleasant with the maximum temperature of 48^0C and the minimum of 12^0C. The annual rainfall is ranging from 934.96 to 1334 mm, received mainly from south-west monsoons.

The soil types found in this Division mainly are red sandy loam, red loam, black-cotton, alluvial and saline. The rock formations found in this Division are Quartzite, Gneiss, Sandstone, Granite, Schist and Marble. The important mineral deposit in this Division is coal. The other minerals are Barytes, Graphite, Hematite and soapstone.

Population of the Division is 0.42 million (2011 Census), per capita forest area is 0.53 Ha and the population density is 123 persons per Km^2.

4.23.2 Recorded Forest Area:

The notified forest area of the Division is **2156.62 Km^2** which is 85.24% of the geographical area. Reserved, Protected and un-classed forests constitute 1545.8 Km^2 (71.68%), 498.04 Km^2 (23.09%) and 112.78 Km^2 (5.23%) of the forest area respectively. However an area of 582.88 Km^2 of notified forests of the Division has since been transferred to constitute Paloncha WLM Division.

As per Champion and Seth's classification the forests of Division fall under Tropical Dry Deciduous, Tropical Moist Deciduous, Tropical Semi-evergreen, Dry Teak and Tropical Thorn Forest types.

4.23.3 Protected Area:

No Protected Area exists in this Division after carving out of WLM Paloncha Division.

4.23.4 Community Forest Management:

There are 137 Vana Samrakshana Samithies (VSSs) in the Division. An area of 284.24 Km^2 of forests, which is 18.66 % of notified forests , is under the management of VSSs.

4.23.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Nov 2011) is **1091.12 Km²** which is **43.13%** of the geographical area. In terms of the forest canopy density classes the Division has **38.77** Km² of Very Dense Forests, **415.71** Km² of Moderately Dense Forests and **636.64** Km² of Open Forests. The area of the Scrub is **288.85** Km², Non-Forest **139.53** Km² and Water Bodies **4.02** Km². The distribution of the forest cover of the Division is shown in Fig 4.23.1.

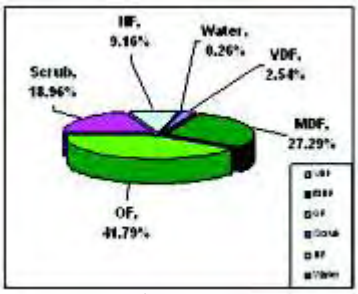


Fig 4.23.1

4.23.6 Change in Forest Cover:

The satellite images of 2010 and 2011 are shown in Figs 4.23.2 & 4.23.3 respectively and the changes during this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a **positive change of 16.69 Ha** and **negative change of 375.83 Ha.** The forest cover change matrix given in Table 4.23.2 reveals that there is a decrease of **6.77 Ha** of moderately dense forest, **352.37 Ha** of Open Forest and **350.70 Ha** of Scrub.

The total positive change (including Scrub) is **16.69 Ha** on account of growth in raised plantations. The total negative change (including Scrub) is **709.84 Ha.** Out of this **270.83 Ha** is on account of clearance of jungle growth for rising of plantations, **92.20 Ha** is on account of harvesting of plantation, and **346.81 Ha** is on account of encroachments. As clearance of jungle growth for rising of plantations, harvesting of plantations and diversion land are forest management interventions the same are not considered as loss of forest cover. Thus only the negative change due to encroachments is taken as loss of forest cover. Therefore the net loss of forest cover is **346.81 Ha** in the Division.

There are 65 Beats in the Division. Negative changes in forest Cover are noticed in 39 Beats and positive change in 1 Beat. There are no changes in the remaining 25 Beats.

Details of forest cover changes in these 40 Beats are shown in Table 4.23.3.

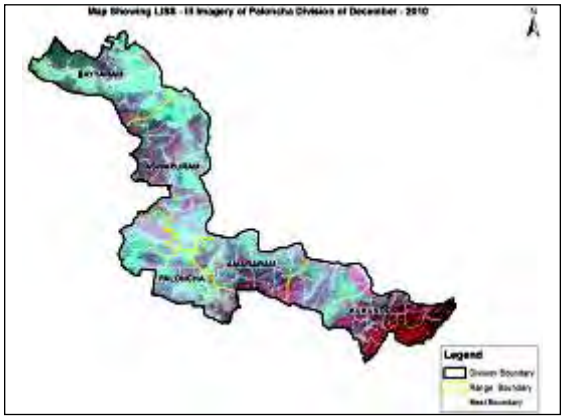


Fig 4.23.2

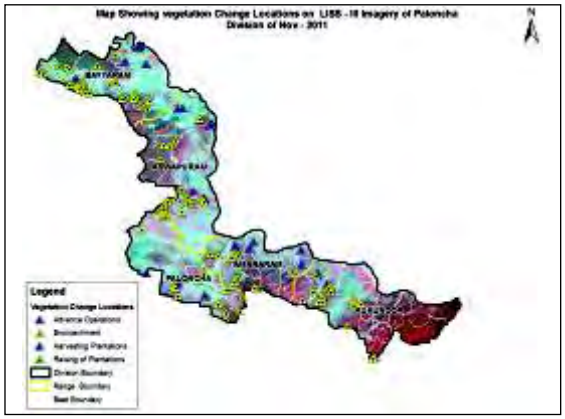


Fig 4.23.3

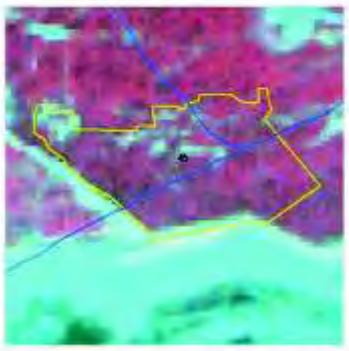
Table 4.23.2: Forest Cover change matrix **(Area in Km²)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	38.77	0.00	0.00	0.00	0.00	0.00	**38.77**
Moderately Dense Forest	0.00	415.71	0.00	0.00	0.07	0.00	**415.78**
Open Forest	0.00	0.00	636.47	0.00	3.69	0.00	**640.16**
Scrub	0.00	0.00	0.17	288.85	3.34	0.00	**292.36**
Non-Forest	0.00	0.00	0.00	0.00	132.43	0.00	**132.43**
Water	0.00	0.00	0.00	0.00	0.00	4.02	**4.02**
Total of 2011	**38.77**	**415.71**	**636.64**	**288.85**	**139.53**	**4.02**	**1523.52**
Net Change	0.00	-0.07	-3.52	-3.51	7.10	0.00	

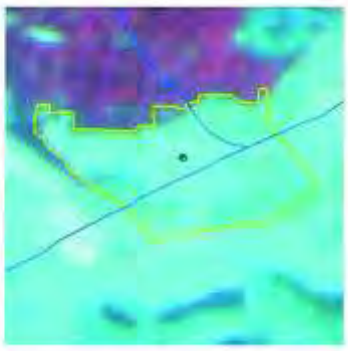
Table 4.23.3: List of Beats with negative change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
AMARARAM RANGE									
Cheeravalli	0.00	355.39	510.36	56.73	30.68	0.00	953.16	-9.96	0.93
Gundalapadu	4.69	914.51	1215.47	191.64	14.79	0.00	2341.10	-1.30	1.30
Kothur	0.00	1041.51	1722.29	390.23	177.16	2.12	3333.31	-36.46	0.00
Raigudem	3.52	99.80	1312.29	317.73	69.02	0.59	1802.95	-14.62	1.84
Sridhara	0.00	12.70	1255.12	388.16	197.27	0.00	1853.25	-1.64	1.64
Timmampet	4.91	102.11	1433.61	780.48	201.93	0.00	2523.04	-5.93	5.93
Vinjaram	0.00	282.93	763.78	186.36	68.15	0.00	1301.22	-6.28	0.00
Total	**13.12**	**2808.95**	**8212.92**	**2311.33**	**759.00**	**2.71**	**14108.03**	**-76.19**	**11.64**
ASWAPURAM Range									
Eravendi	0.00	247.42	363.71	215.34	25.61	0.00	852.08	-5.98	5.98
Kistasagar	0.00	444.66	1064.59	458.56	152.57	0.00	2120.38	-10.08	10.08
Manubothulapadu	0.00	1099.88	4002.10	852.76	73.71	0.00	6028.45	-6.93	6.93
Manuguru South	0.00	797.72	939.32	1033.66	917.24	22.29	3710.23	-24.14	10.62
Manuguru West	0.00	54.15	1113.44	1516.41	2207.49	19.70	4911.19	-68.73	0.00
Musalimadugu	0.00	232.39	1062.49	331.08	34.90	0.00	1660.86	-1.70	1.70
Nellipaka	0.00	276.96	963.56	800.22	393.45	1.13	2435.32	-25.65	3.95
Sarapaka	0.00	193.55	535.30	1070.69	569.48	0.00	2369.02	-1.17	1.17
Total	**0.00**	**3346.73**	**10044.51**	**6278.72**	**4374.45**	**43.12**	**24087.53**	**-144.38**	**40.43**
BAYYARAM Range									
Anantharam	1.07	52.96	389.13	576.64	444.30	4.76	1468.86	-7.17	7.17
Chirumalla	0.00	958.41	2783.90	1204.78	96.83	10.91	5054.83	-11.07	11.07
Gopalraopet	4.75	502.95	851.27	230.93	146.93	0.00	1736.83	-6.73	6.73
Janampet	0.00	598.17	673.50	543.44	487.63	14.46	2317.20	-42.41	3.36
Kalvalnagaram	1.73	227.30	838.99	1038.71	320.96	9.87	2437.56	-3.58	3.58
Karakagudem	5.72	764.29	758.59	403.64	261.15	0.00	2193.39	-76.79	60.02
Pagaderu	16.01	1429.14	959.20	108.95	5.19	0.00	2518.49	-3.26	3.26
Pathareddipalem	0.00	172.36	494.79	219.33	73.25	2.61	962.34	-22.49	0.00
Raghunathapalem	0.00	270.52	2367.90	1374.47	257.83	12.83	4283.55	-35.77	35.77
Seethampet	0.00	942.75	1088.84	348.74	347.76	4.77	2732.86	-11.60	11.60
Total	**29.28**	**5918.85**	**11206.11**	**6049.63**	**2441.83**	**60.21**	**25705.91**	**-220.87**	**142.56**
KUKUNOOR Range									
Gollagudem	30.44	1080.57	638.16	99.34	38.45	0.00	1886.96	-6.06	6.06
Goparaju Gudem	0.00	105.80	469.71	172.92	120.33	0.00	868.76	-21.77	3.55
Gummadapally	11.41	1659.96	1592.34	1074.19	452.84	7.90	4798.64	-6.92	6.92
Gundambore	0.00	127.39	855.46	422.98	69.58	2.65	1478.06	-5.12	5.12
Kantlam	356.22	1347.59	261.93	91.68	9.38	0.00	2066.80	-5.32	5.32
Kukunoor	0.00	455.45	1114.01	262.26	70.94	0.00	1902.66	-21.42	15.62
Lankalapally	0.00	167.88	563.71	238.89	66.12	1.06	1037.66	-1.58	1.58
Nandipadu	6.31	1904.10	1538.37	194.08	18.93	0.00	3661.79	-0.57	0.57
Total	**404.38**	**6848.74**	**7033.69**	**2556.34**	**846.57**	**11.61**	**17701.33**	**-68.76**	**44.74**

Table 4.23.3: List of Beats with negative change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
PALONCHA Range									
Bangarujal	0.00	0.00	23.85	194.90	187.06	3.29	409.10	-8.92	0.00
Lingareddipalli	0.00	105.03	1281.61	333.98	445.38	0.00	2166.00	8.64	8.05
Madharam	0.00	127.78	2070.81	396.44	259.48	0.00	2854.51	-17.67	6.70
Mulakalapally	0.00	35.37	929.90	857.00	597.39	1.17	2420.83	-72.31	0.00
Muthyalampadu	0.00	940.31	1478.29	737.05	260.51	15.44	3431.60	-8.66	8.66
Suraram	0.00	0.00	42.56	262.33	484.45	156.86	946.20	-82.28	82.28
Uppusaka	0.00	48.61	637.94	1299.46	728.04	12.71	2726.76	-1.75	1.75
Total	**0.00**	**1257.10**	**6464.96**	**4081.16**	**2962.31**	**189.47**	**14955.00**	**-182.95**	**107.44**
Grand Total	**446.78**	**20180.37**	**42962.19**	**21277.18**	**11384.16**	**307.12**	**96557.80**	**-693.15**	**346.81**

2010



2011



Longitude	80.78935 ° E
Latitude	17.9596 ° N
Area in Ha	49.18
Change	SF TO NF
Comp No.	6
Beat	Manuguru West
Range	Ashwapuram
Division	Paloncha

4.24 PALONCHA WLM DIVISION

4.24.1 Introduction:

Paloncha WLM Forest Division lies in the central part of Khammam district between latitudes 17^0 35' 11'' and 17^0 59' 54'' N and longitudes 80^0 27' 14'' and 80^0 47' 20'' E. Geographical Area of the Division is 825 Km^2 which is 5.15 % of the geographical area of district. The elevation varies from 12 M to 600 M above Mean Sea Level in this Division. Kinnerasani, Pamleru and Morredu are the important rivers of the district.

Land use pattern of the Division is given in Table 4.24.1

The climate of this Division is generally cool, fresh and pleasant ranging from 10^0C to 49^0C and the annual rainfall is about 1334 mm, received mainly from southwest monsoons.

The soil types found mainly in this Division are red Sandy loam, red loam, black-cotton, alluvium and saline. The rock formations found in this Division are Quartzite, Gneiss, Sandstone, Granite, Schist and Marble. The minerals found in this Division are Barytes, Graphite, Hematite (Iron ore) and soapstone.

Table 4.24.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	622.00	75.39
Agriculture	137.65	16.69
Land with Scrub	20.08	2.43
Fallow Lands	4.29	0.52
Grasslands	0.12	0.01
Settlements	0.38	0.05
Vegetation outside Forest	17.29	2.10
Water Bodies	23.19	2.81
Total	**825.00**	

4.24.2 Recorded Forest Area:

The notified forest area of the Division is **686.38 Km^2,** which is 83.20% of the geographical area.

As per Champion and Seth's classification the forests of Division fall under Tropical dry deciduous, Tropical moist deciduous, Tropical Semi-evergreen, Dry Teak and Tropical Thorn Forest types.

4.24.3 Protected Area:

Entire forest area of the Division is included in Kinnersani WLS.

4.24.4 Community Forest Management:

There are 50 Vana Samrakshana Samities (VSSs) in the Division. 199.33 Km^2 of notified forests, which constitutes 29.04 % of forest area, is under the management of VSSs.

4.24.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Nov 2011) is 492.13 Km^2 which is 59.65% of the geographical area. In terms of the forest canopy density classes the Division has 1.43 Km^2 of Very Dense Forests, 220.42 Km^2 of Moderately Dense Forests and 270.28 Km^2 of Open Forest. The area of the Scrub is 125.79 Km^2, Non-Forest 55.71 Km^2 and Water Bodies 12.75 Km^2. The distribution of the forest cover of the Division is shown in Fig 4.24.1.

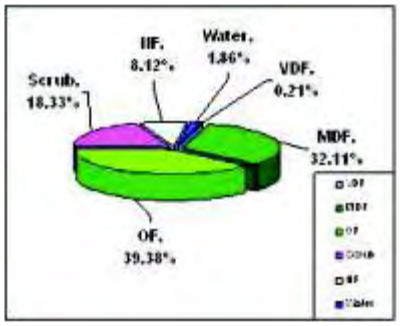


Fig 4.24.1

4.24.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 are shown in Figs 4.24.2 & 4.24.3 respectively and the changes during this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a **negative change of 137.76 Ha.** The forest cover change matrix, given in Table 4.24.2 reveals that there is a decrease of **21.55 Ha** of Moderately Dense Forest and **116.21 Ha** of Open Forest and **5.20 Ha** of Scrub.

The total negative change (including scrub) is **142.96** is on account of encroachments. Therefore the **net loss of forest cover is 142.96 Ha.**

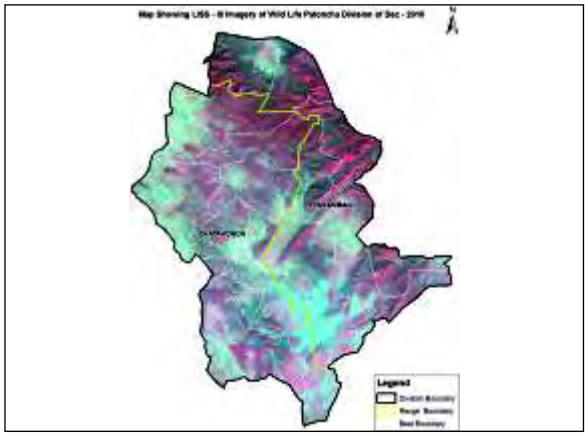


Fig 4.24.2

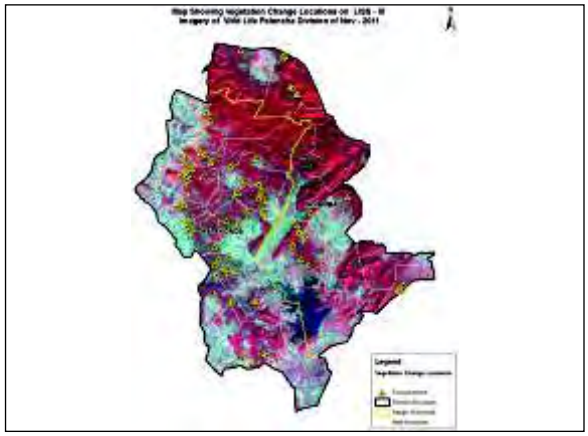


Fig 4.24.3

There are 20 Beats in the Division. Negative change in forest cover are noticed in 15 Beats. There are no changes in the remaining 5 Beats.

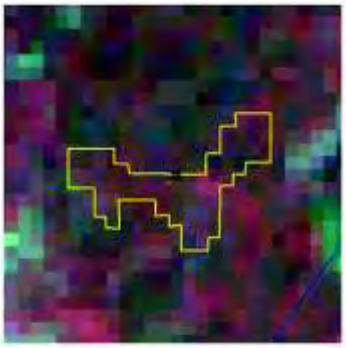
Details of forest cover changes in these 15 Beats are shown in Table 4.24.3.

Table 4.24.2: Forest Cover change matrix **(Area in Km^2)**

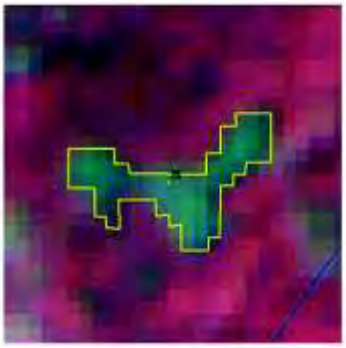
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	1.43	0.00	0.00	0.00	0.00	0.00	**1.43**
Moderately Dense Forest	0.00	220.42	0.00	0.00	0.22	0.00	**220.64**
Open Forest	0.00	0.00	270.28	0.00	1.16	0.00	**271.44**
Scrub	0.00	0.00	0.00	125.79	0.05	0.00	**125.84**
Non-Forest	0.00	0.00	0.00	0.00	54.28	0.00	**54.28**
Water	0.00	0.00	0.00	0.00	0.00	12.75	**12.75**
Total of 2011	**1.43**	**220.42**	**270.28**	**125.79**	**55.71**	**12.75**	**686.38**
Net Change	0.00	-0.22	-1.16	-0.05	1.43	0.00	

Table 4.24.3: List of Beats with negative change in Forest Cover								(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**Total**	**Net Change**	**Encroa-chment**
CHATAKONDA Range								
Allapally	0	977.12	1524.85	1428.26	919.64	4861.49	-34.76	34.76
Chinthakunta	0	487.25	2540.24	1325.34	696.47	5059.98	-12.63	12.63
Gangaram	0.67	469.5	825.36	340.16	293.18	1928.87	-3.48	3.48
Gattumalla	3	1111.51	1919.75	940.81	212.57	4187.66	-13.77	13.77
Gollagudem	0	196.81	843.7	772.71	452.95	2347.12	-10.33	10.33
Kothasingaram	2.46	2285.77	1348.88	190.33	23.73	3851.17	-6.06	6.06
Markode	16.16	3085.91	1454.09	686.06	281.28	5524.63	-6.39	6.39
Punukula Chelaka	0	127.07	713.77	396.64	185.4	1422.88	-5.16	5.16
Venkatapuram	0	1202.77	2184.9	684.49	238.53	4311.3	-14.19	14.19
Total	**22.29**	**9943.71**	**13355.5**	**6764.8**	**3303.75**	**33495.1**	**-106.77**	**106.77**
YANAMBAIL Range								
Bangaru Chelaka	0	409.01	2205.9	1069.92	476.56	4415.97	-16.99	16.99
Karegattu	3.13	1424.19	1757.83	626.15	119.88	3946.35	-6.02	6.02
Mallaram	1.06	794.4	1622.74	644.83	300.06	3364.76	-3.84	3.84
Pagidapur	20.43	2517.07	1043.18	116.86	16.88	3714.42	-8.21	8.21
Regalla	33.77	1963.33	1489.68	255.46	18.81	3761.05	-0.56	0.56
Ulvachelaka	51.08	2176.1	1782.63	141.58	2.02	4153.41	-0.57	0.57
Total	**109.47**	**9284.1**	**9901.96**	**2854.8**	**934.21**	**23356**	**-36.19**	**36.19**
Grand Total	**131.76**	**19227.8**	**23257.5**	**9619.6**	**4237.96**	**56851.1**	**-142.96**	**142.96**

2010



2011



Longitude	80.63949 ° E
Latitude	17.75723 ° N
Area in Ha	3.75
Change	DF TO NF
Comp No.	8
Beat	Bangaruchilka
Range	Yanambail
Division	WLM Paloncha

4.25 KADAPA DIVISION

4.25.1 Introduction:

Kadapa Forest Division lies in the middle of Kadapa district between latitudes 13^0 50' 40'' and 14^0 40' 37'' N and longitudes 78^0 13' 9'' and 79^0 14' 39'' E. Geographical area of the Division is 4521 Km^2 which is 29.44 % of the area of district. This Division lies on the Deccan Plateau. Altitude of northern, eastern and south-eastern region is less while that of the southern and south-western regions is more with altitude of 760 M. The main rivers that flow through Kadapa Division are Penna, Papagni and Mandavi.

Land use pattern of the Division is given in Table 4.25.1

The climate of this Division is generally dry with temperatures ranging from 25^0C to 40^0C and the annual rainfall is about 661.22mm.

The soil types found mainly are red loamy, black cotton and red sandy. The mineral resources in this Division are Granites, Barytes, Asbestos and Lime stone.

Population of the Division is 0.903 million (2011 Census), per capita forest area is 0.19 Ha and the population density is 202 persons per Km^2.

Table 4.25.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1625.45	35.95
Agriculture	1721.55	38.08
Land with Scrub	359.63	7.95
Fallow Lands	602.52	13.33
Grasslands	0.25	0.01
Settlements	19.64	0.43
Vegetation outside Forest	140.98	3.12
Water Bodies	50.97	1.13
Total	**4521.00**	

4.25.2 Recorded Forest Area:

The notified forest area of the Division is **1928.69 Km^2** which is 25.63% of the geographical area. Reserved and Protected Forests constitute 1,914.08 Km^2 (99.24%) and 14.61 Km^2 (0.76%) of the forest area respectively.

As per Champion and Seth's classification the forests of Division fall under Southern Tropical Dry Deciduous, Southern Tropical Thorn Mixed, Tropical Dry Ever green and Dry Red Sanders bearing forest types. Red Sanders (***Pterocarpus santalinus***), an endemic tree species is available in plenty in this Division.

4.25.3 Protected Area:

Parts of Sri Lankamalleswara Wildlife Sanctuary (LWS) and Sri Penusila Narasimha Wildlife Sanctuary (PNS) each fall in this Division. An area of 246.30 Km^2 is included in Sri Lankamalleswara WLS and an area of 272.53 Km^2 is included in Sri Penusila Narasimha WLS.

4.25.4 Community Forest Management:

There are 118 Vana Samrakshana Samithies (VSSs) in the Division. 394.08 Km^2 forest area, which constitutes 22.96 % of the forest area, is under the management of the VSSs.

4.25.5 Forest Cover:

The forest cover in the Division, based on the interpretation of IRS P6 LISS III 2011 data (Jan/Feb 2012) is **1138.22 Km²** which is **25.18%** of the geographical area. In terms of the forest canopy density classes the Division consists of **0.03** Km² of Very Dense Forest, **164.81** Km² of Moderately Dense Forest and **973.38** Km² of Open Forest. The area of the Scrub is **483.66** Km², Non-Forest is 92.35 Km2 and Water Bodies is **2.32** Km². The distribution of the forest cover of the Division is shown in Fig 4.25.1

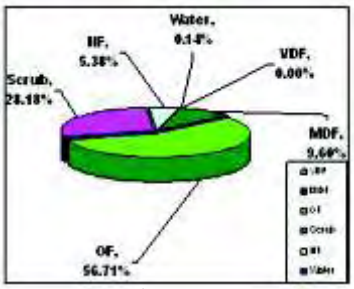


Fig 4.25.1

4.25.6 Change in Forest Cover:

The satellite images of 2010 and 2011 are shown in Figs 4.25.2 & 4.25.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows **no change in forest cover.** The forest cover change matrix, given in Table 4.25.2 reveals that there is a decrease of **109.94 Ha** of Scrub.

The total positive change (including Scrub) **5.75 Ha** is on account of raising of plantations and the total negative change (including Scrub) of **115.69 Ha** is on account of clearance of jungle growth for raising of plantations. As raising of plantations is a forest management intervention the same is not considered as **loss of forest cover.** Therefore there is no loss of forest cover in this Division.

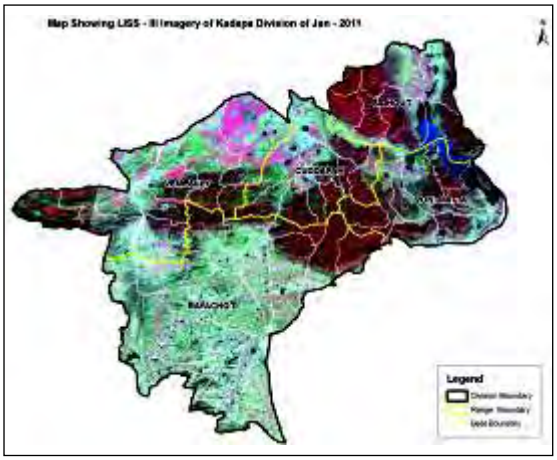


Fig 4.25.2

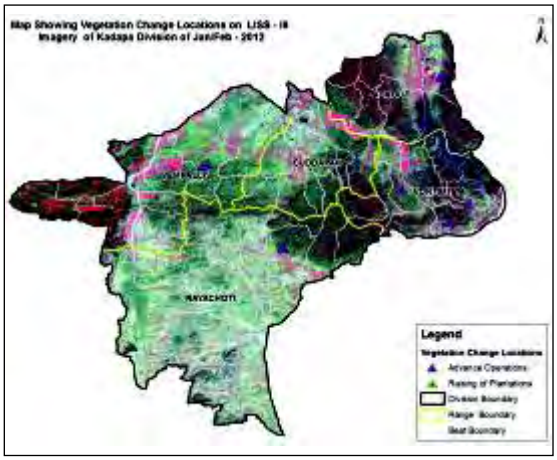


Fig 4.25.3

There are 44 Beats in the Division. Negative changes in forest cover are noticed in 10 Beats. There are no changes in the remaining 34 Beats.

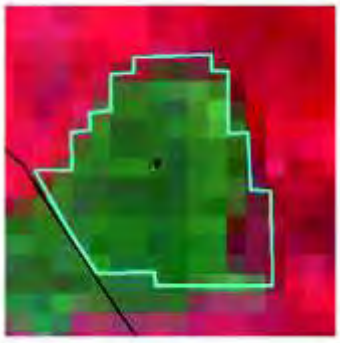
Details of forest cover changes in these 10 Beats are shown in Table 4.25.3

Table 4.25.2: Forest Cover change matrix **(Area in Km²)**

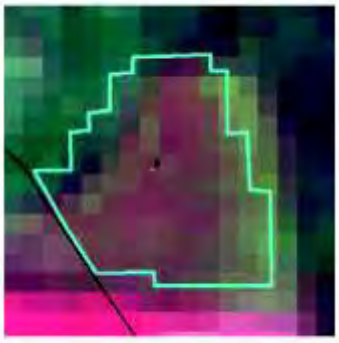
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.03	0.00	0.00	0.00	0.00	0.00	**0.03**
Moderately Dense Forest	0.00	164.81	0.00	0.00	0.00	0.00	**164.81**
Open Forest	0.00	0.00	973.38	0.00	0.00	0.00	**973.38**
Scrub	0.00	0.00	0.00	483.60	1.16	0.00	**484.76**
Non-Forest	0.00	0.00	0.00	0.06	91.19	0.00	**91.25**
Water	0.00	0.00	0.00	0.00	0.00	2.32	**2.32**
Total of 2011	**0.03**	**164.81**	**973.38**	**483.66**	**92.35**	**2.32**	**1716.55**
Net Change	0.00	0.00	0.00	-1.10	1.10	0.00	

Table 4.25.3: List of Beats with change in Forest Cover								(Area in ha)	
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
CUDDAPAH RANGE									
Bhakarapet	0.00	243.87	2639.27	126.33	13.71	0.00	3023.18	-6.05	0.00
Total	**0.00**	**243.87**	**2639.27**	**126.33**	**13.71**	**0.00**	**3023.18**	**-6.05**	**0.00**
RAYACHOTI RANGE									
Saraswathipally	0.00	753.74	3180.99	1128.66	148.00	0.00	5211.39	-10.86	0.00
Total	**0.00**	**753.74**	**3180.99**	**1128.66**	**148.00**	**0.00**	**5211.39**	**-10.86**	**0.00**
SIDHOUTT RANGE									
Gollapalli	0.00	1785.58	2532.92	316.98	5.96	0.00	4641.44	5.75	0.00
Muthukur	0.00	65.66	2027.10	1603.88	531.72	0.00	4228.36	-28.64	0.00
Total	**0.00**	**1851.24**	**4560.02**	**1920.86**	**537.68**	**0.00**	**8869.80**	**-22.89**	**0.00**
VEMPALLY RANGE									
Yellatur	0.00	446.67	3282.67	657.18	59.86	0.01	4446.39	-20.63	0.00
Total	**0.00**	**446.67**	**3282.67**	**657.18**	**59.86**	**0.01**	**4446.39**	**-20.63**	**0.00**
VONTIMITTA RANGE									
Chintalakunta	0.00	44.62	1178.87	826.67	43.92	95.92	2190.00	-11.41	0.00
Mantapampalli	0.00	4.30	1263.92	969.37	48.53	5.75	2291.87	-9.24	0.00
Nadimpally	0.00	16.86	1920.43	837.77	125.07	0.00	2900.13	-11.45	0.00
Nandalur	0.00	42.80	1787.45	888.47	217.93	0.45	2937.10	-11.10	0.00
Vontimitta	0.00	4.62	2183.33	1957.24	57.11	5.89	4208.19	-6.31	0.00
Total	**0.00**	**113.20**	**8334.00**	**5479.52**	**492.56**	**108.01**	**14527.29**	**-49.51**	**0.00**
Grand Total	**0.00**	**3408.72**	**21996.95**	**9312.55**	**1251.81**	**108.02**	**36078.05**	**-109.94**	**0.00**

2010



2011



Longitude	78.88346 ° E
Latitude	14.52556 ° N
Area in Ha	5.75
Change	NF TO SF
Comp No.	400
Beat	Gorlapalli
Range	Sidhout
Division	Kadapa

4.26 KURNOOL DIVISION

4.26.1 Introduction:

Kurnool Forest Division lies in the western part of Kurnool district between latitudes 14^0 56'49.56" and $15^0$57'49.68"N and longitudes $76^0$58'26.04" and $78^0$29'22.56"E. Geographical area of the Division is 12,904 Km^2 which is 73.07 % of the area of district. The rock formation consists of Shales, Limestone and Quartzite. The elevation in the Division varies from 305 to 579.5 M above MSL. The elevation of Kurnool town is about 288 M above MSL. The River Tungabhadra, a tributary of River Krishna, forms the northern boundary of the Division.

Land use pattern of the Division is given in Table 4.26.1

Table 4.26.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	634.11	4.92
Agriculture	10048.40	77.84
Land with Scrub	705.85	5.47
Fallow Lands	1031.6	7.99
Grasslands	83.82	0.65
Settlements	113.53	0.88
Vegetation outside Forest	71.55	0.55
Water Bodies	215.14	1.67
Total	**12904.00**	

The climate of this Division is inland tropical monsoonic type with 3 distinct seasons. Temperature ranges from 12^0C to 45^0C and the average annual rainfall in the Division is about 523.24 mm.

Important minerals and rocks found in the Division are Limestone, Iron, Red and yellow ochres, Barytes, Diamond, Black and pink granite. The soil types found mainly are black cotton, red and saline.

Population of the Division is 3.12 million (2011 Census). The per capita forest area is 0.04 Ha and the population density is 241 persons per Km^2.

4.26.2 Recorded Forest Area:

The notified forest area of the Division is **1202.55 Km^2** which is 9.58 % of the geographical area. Reserved, Protected and un-classed forests constitute 1154.45 Km^2 (96%), 37.17 Km^2 (3.09%) and 10.93 Km^2 (0.91%) of the forest area respectively.

As per Champion and Seth's classification the forests of Division fall under Tropical Dry Deciduous and Tropical Thorn Forest types.

4.26.3 Protected Area:

There is no Protected Area in the Division.

4.26.4 Community Forest Management:

There are 149 VSSs in the Division. An area of 392.62 Km^2 forests, which constitutes 32.65 % of forest area, is under CFM.

4.26.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Jan 2012) is **269.65 Km^2** which is **2.09%** of the geographical area. In terms of the forest canopy cover density classes the Division has **0.56** Km^2 of Moderately Dense Forests and **269.09** Km^2 of Open Forests. The area of the Scrub is **364.04** Km^2, Non-Forests **565.97** Km^2 and Water Bodies **2.89** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.26.1

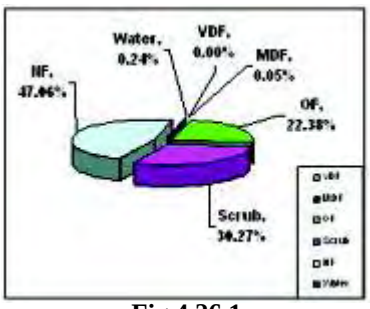


Fig 4.26.1

4.26.6 Change in Forest Cover:

The satellite images of 2010 and 2011 are shown in Figs 4.26.2 & 4.26.3 respectively.

Comparison of the current forest cover with that of previous assessment year shows **no change in the forest cover.** The forest cover change matrix given in Table 4.26.2.

Therefore there is **no net loss of forest cover** in the Division.

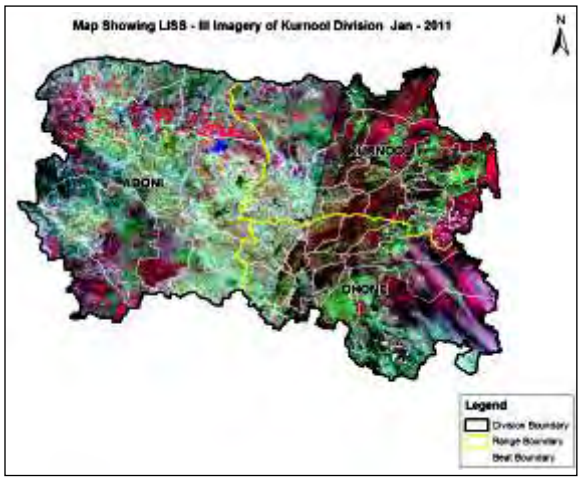


Fig 4.26.2

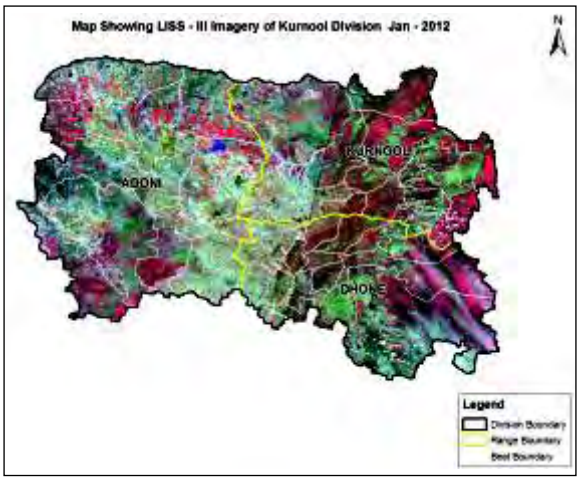


Fig 4.26.3

There are 40 Beats in the Division. There are no changes in the forest cover during the period in any 40 Beats.

Table 4.26.2: Forest Cover change matrix **(Area in Km^2)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	0.56	0.00	0.00	0.00	0.00	**0.56**
Open Forest	0.00	0.00	269.09	0.00	0.00	0.00	**269.09**
Scrub	0.00	0.00	0.00	364.04	0.00	0.00	**364.04**
Non-Forest	0.00	0.00	0.00	0.00	565.97	0.00	**565.97**
Water	0.00	0.00	0.00	0.00	0.00	2.89	**2.89**
Total of 2011	**0.00**	**0.56**	**269.09**	**364.04**	**565.97**	**2.89**	**1202.55**
Net Change	0.00	0.00	0.00	0.00	0.00	0.00	

4.27 NANDYAL DIVISION

4.27.1 Introduction:

Nandyal Forest Division lies in the south-eastern part of Kurnool district between latitudes $14^0$53'58.56" and $15^0$40'58.08"N and longitudes $78^0$20'27.6" and $78^0$46'40.08" E. Geographical area of the Division is 2,600 Km^2 which is 14.73 % of the geographical area of district. The rock formation consists of purple shaley lime stone, shale flags, grey lime stone and flags. The maximum elevation in the Division is 908.68 M above MSL. Important Rivers in this Division are Kundu & Gundlakamma.

Land use pattern of the Division is given in Table 4.27.1

The climate of this Division is generally dry with temperatures ranging from 20^0C to 40^0C and the average annual rainfall is about 914 mm received mainly from South-west monsoons.

The soil types found mainly are Black cotton, Alluvial, Brown loamy and Red.

Population of the Division is 0.62 million (2011 Census). The per capita forest area is 0.17 Ha and the population density is 239 persons per Km^2.

Table 4.27.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	999.59	38.45
Agriculture	1498.64	57.63
Land with Scrub	48.75	1.87
Fallow Lands	7.41	0.29
Grasslands	0.00	0.00
Settlements	11.86	0.46
Vegetation outside Forest	14.21	0.55
Water bodies	19.54	0.75
Total	**2600.00**	

4.27.2 Recorded Forest Area:

The notified forest area of the Division is 1066.46 Km^2 which is 41.02 % of the geographical area. The entire forest area is Reserved Forest.

As per Champion and Seth's classification, the forests of Division fall under Tropical Dry Deciduous, Tropical Moist Deciduous and Tropical Thorn Forest types.

4.27.3 Protected Area:

A part of Gundla Brahmeswaram (GBM) Wildlife Sanctuary falls in this Division. Out of the total area 1,066.46 Km^2 of notified forests, an area of 371.81 Km^2 is included in the GBM WLS.

4.27.4 Community Forest Management:

There are 51 Vana Samrakshana Samities (VSSs) or Joint Forest Protection Committees (JFPCs) in the Division. An area of 166.84 Km2 forests, which is 15.64 % of the notified forests, is under the management of the VSSs.

4.27.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Jan-2012) is **927.75 Km²** which is **35.68 %** of the geographical area. In terms of the forest canopy density classes the Division has **40.71** Km^2 of Very Dense Forests, **595.10** Km^2 of Moderately Dense Forests and **291.94** Km^2 of Open Forests. The area of the Scrub is **67.67** Km^2, Non-Forest **67.61** Km^2 and Water Bodies **3.43** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.27.1

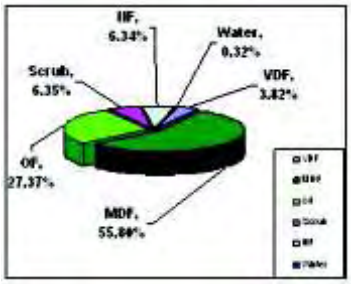


Fig 4.27.1

4.27.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 have been shown in Fig (4.27.2 & Fig 4.27.3) and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a **negative change of 204.25 Ha.** The forest cover change matrix given in Table 4.27.2 reveals that there is a decrease of **204.25 Ha** in Open Forest.

The total negative change (including Scrub) of **204.25 Ha,** a change of **204.25 Ha** is on account of clearance of jungle growth for raising of plantations. As clearance of jungle growth for raising of plantations are forest management interventions the same are not considered as loss of forest cover. Thus only the negative change due to encroachment is taken as loss of forest cover. Therefore there is **no net loss in forest cover.**

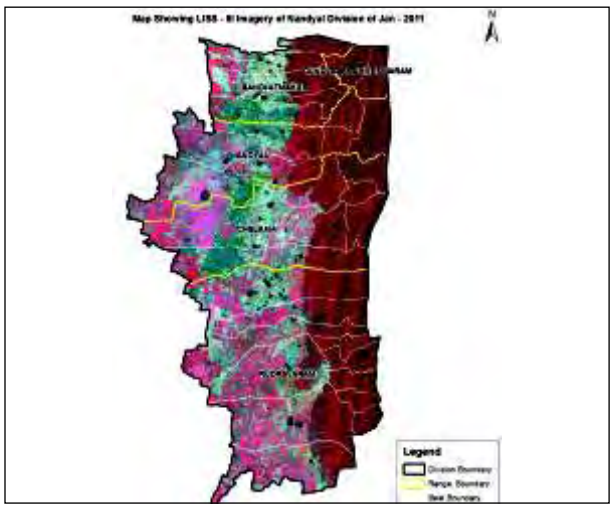


Fig 4.27.2

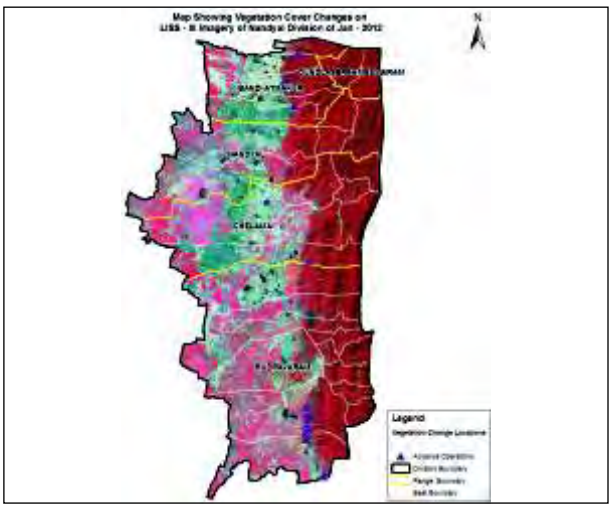


Fig 4.27.3

There are 29 Beats in the Division. Negative changes in forest cover are noticed in 7 Beats. There are no changes in remaining 22 Beats.

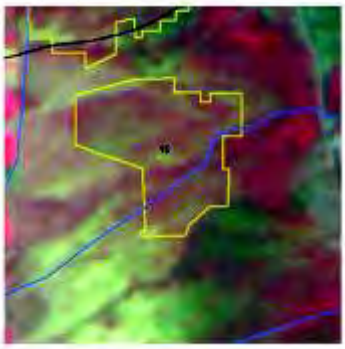
Details of forest cover changes in the 7 Beats mentioned above are shown in Table 4.27.3

Table 4.27.2: Forest Cover change matrix **(Area in Km^2)**

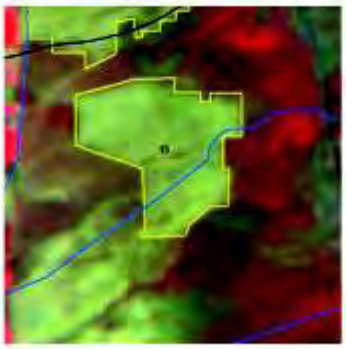
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	40.71	0.00	0.00	0.00	0.00	0.00	**40.71**
Moderately Dense Forest	0.00	595.10	0.00	0.00	0.00	0.00	**595.10**
Open Forest	0.00	0.00	291.94	0.00	2.04	0.00	**293.98**
Scrub	0.00	0.00	0.00	67.67	0.00	0.00	**67.67**
Non-Forest	0.00	0.00	0.00	0.00	65.57	0.00	**65.57**
Water	0.00	0.00	0.00	0.00	0.00	3.43	**3.43**
Total of 2011	**40.71**	**595.10**	**291.94**	**67.67**	**67.61**	**3.43**	**1066.46**
Net Change	0.00	0.00	-2.04	0.00	2.04	0.00	

Table 4.27.3: List of Beats with negative change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
Bandi Atmakur Range									
G.c.palem	39.86	2,131.00	1,426.79	311.18	329.42	0.00	4,238.25	-5.80	0.00
Honkaram_ North	107.71	1,489.35	662.05	75.42	42.17	0.00	2,376.70	-4.39	0.00
Narapureddy_kunta_s	5.10	1,142.48	639.61	121.28	112.14	0.00	2,020.61	-6.83	0.00
Total	**152.67**	**4,762.83**	**2,728.45**	**507.88**	**483.73**	**0.00**	**8,635.56**	**-17.02**	**0.00**
Chelama Range									
Peddakambalur	213.31	3,203.22	855.07	88.87	188.38	1.46	4,550.31	-4.42	0.00
Total	**213.31**	**3,203.22**	**855.07**	**88.87**	**188.38**	**1.46**	**4,550.31**	**-4.42**	**0.00**
Nandyal Range									
Thimmapuram	70.19	1,615.75	537.78	91.77	11.46	0.00	2,326.95	-0.95	0.00
Total	**70.19**	**1,615.75**	**537.78**	**91.77**	**11.46**	**0.00**	**2,326.95**	**-0.95**	**0.00**
Rudravaram Range									
D.V. Penta	412.78	2,951.08	2,013.28	774.20	665.48	12.23	6,829.05	-93.88	0.00
Peddavangli	219.35	1,662.43	891.95	695.73	1,090.86	42.88	4,603.20	-87.98	0.00
Total	**632.13**	**4,613.51**	**2,905.23**	**1,469.93**	**1,756.34**	**55.11**	**11,432.25**	**-181.86**	**0.00**
Division Total	**1,068.30**	**14,195.31**	**7,026.53**	**2,158.45**	**2,439.91**	**56.57**	**26,945.07**	**-204.25**	**0.00**

2010



2011



Longitude	78.64541 ° E
Latitude	15.00009 ° N
Area in Ha	64.06
Change	OF TO NF
Comp No.	375
Beat	Peddavangali
Range	Rudravaram
Division	Nandyal

4.28 PRODDUTUR DIVISION

4.28.1 Introduction:

Proddutur Forest Division lies in the northern part of Kadapa district between latitudes 14^0 19' 37'' and 15^0 13'43'' N and longitudes 77^0 56' 43'' and 79^0 17' 38'' E. Geographical area of the Division is 7,524 Km^2 which is 48.99 % of the geographical area of the district. The main rivers that flow through the Division are Penna, Chitravathi, Kunderu, Papaghni, Sagileru and Mogamneru.

Land use pattern of the Division is given in Table 4.28.1

Table 4.28.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1285.95	17.09
Agriculture	4343.95	57.73
Land with Scrub	500.77	6.66
Fallow Lands	1101.21	14.64
Grasslands	1.56	0.02
Settlements	31.78	0.42
Vegetation outside Forest	115.58	1.54
Water Bodies	143.20	1.90
Total	**7524.00**	

The climate of this Division is generally dry with temperatures ranging from 25^0C to 40^0C and the annual rainfall is about 661.22mm, received mainly from south-west monsoons.

The soil types found mainly are red loamy, black cotton & red sandy. The important minerals available are Granites, Barytes, Asbestos and Lime stone.

Population of the Division is 1.34 million (2011 Census), the per capita forest area is 0.12 Ha and the population density is 184 persons per Km^2.

4.28.2 Recorded Forest Area:

The notified forest area of the Division is **1663.35 Km^2** which is 39.13% of the geographical area. Reserved and Protected Forests constitute 1,549.48 Km^2 (93.15%) and 114.07 Km^2 (6.86%) of the forest area respectively.

As per Champion and Seth's classification the Forests of Division fall under Southern Tropical Dry Deciduous, Southern Tropical Thorn Mixed, Tropical Dry Ever green and Dry Red Sanders bearing forest types. Red Sanders (***Pterocarpus santalinus***), a highly endemic tree species, is found in plenty in this Division.

4.28.3 Protected Area:

Parts of two PAs fall in this Division. An area of 218.12 Km^2 is included in Sri Lankamalleswara WLS and an area of 133.74 Km^2 is included in Sri Penisula Narasimha WLS. Besides, Rajiv Gandhi National Park is also located in this Division. It covers an area of 3.82 Km^2.

4.28.4 Community Forest Management:

There are 128 Vana Samrakshana Samities (VSSs) in the Division. An area of 456.38 Km^2, which is 28.97% of the notified forest area, is under the management of the VSSs.

4.28.5 Forest Cover:

The forest cover in the Division based on the Interpretation of IRS P6 LISS III 2011 data (Jan/Feb 2012) is **982.11 Km^2** which is **13.05%** of the geographic area. In terms of the forest canopy density classes the Division has **3.58** Km^2 of Very Dense Forests and **426.38** Km^2 of Moderately Dense Forests and **552.15** Km^2 of Open Forests. The area of the Scrub is of **301.49** Km^2, Non-Forest of **282.56** Km^2 and Water Bodies of **8.95** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.28.1

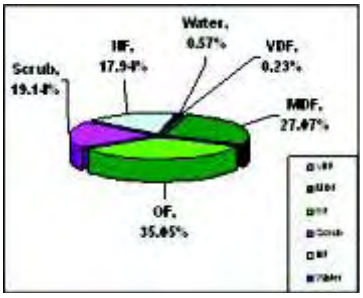


Fig 4.28.1

4.28.6 Change in Forest Cover:

The satellite images of 2010 and 2011 are shown in Figs 4.28.2 & 4.28.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of the previous assessment year shows **no change** in forest cover. The forest cover change matrix given in table 4.28.2 reveals that there is a decrease of **21.11 Ha** in scrub.

This negative change (including scrub) of **21.11 Ha** is on account of clearance of jungle growth for raising of plantations. As clearance of jungle growth for raising of plantations is a forest management intervention, the same is not considered as loss of forest Cover. Therefore there is **no net loss of forest cover** in the Division.

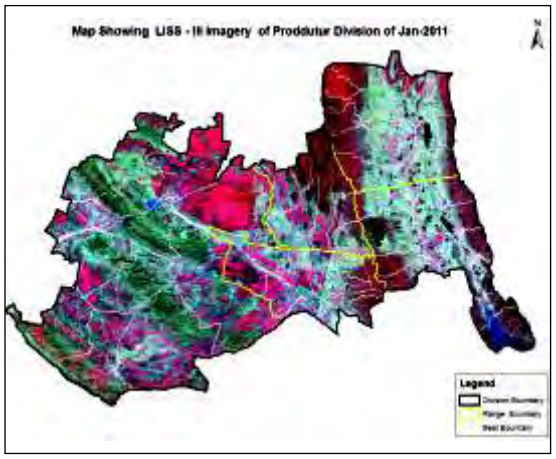


Fig 4.28.2

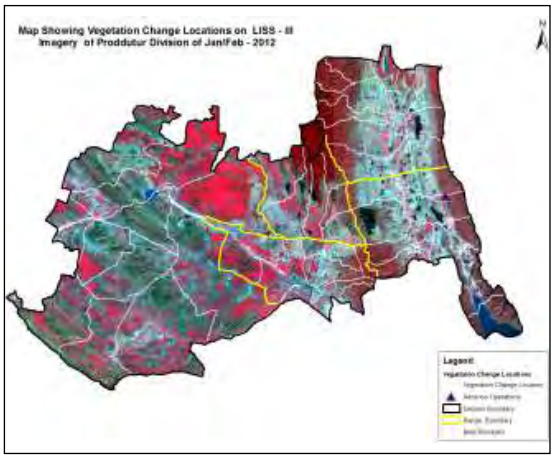


Fig 4.28.3

There are 45 Beats in the Division. Negative changes in forest cover are noticed only in 1 Beat. There are no changes in the remaining 44 Beats.

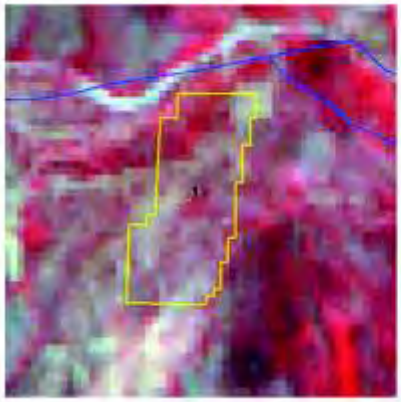
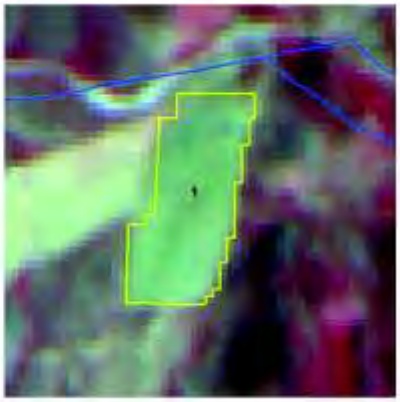
Details of forest cover changes in the above mentioned 1 Beat are shown in Table 4.28.3.

Table 4.28.2: Forest Cover change matrix **(Area in Km^2)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	3.58	0.00	0.00	0.00	0.00	0.00	**3.58**
Moderately Dense Forest	0.00	426.38	0.00	0.00	0.00	0.00	**426.38**
Open Forest	0.00	0.00	552.15	0.00	0.00	0.00	**552.15**
Scrub	0.00	0.00	0.00	301.49	0.21	0.00	**301.70**
Non-Forest	0.00	0.00	0.00	0.00	282.35	0.00	**282.35**
Water	0.00	0.00	0.00	0.00	0.00	8.95	**8.95**
Total of 2011	**3.58**	**426.38**	**552.15**	**301.49**	**282.56**	**8.95**	**1575.11**
Net Change	0.00	0.00	0.00	-0.21	0.21	0.00	

Table 4.28.3: List of Beats with negative change in Forest Cover **(Area in Ha)**

Beat	VDF	MDF	OF	Scrub	NF	WB	Total	Net Change	Encroa-chment
BADVEL RANGE									
Boyanapalli	0.00	121.43	2816.53	1513.52	235.00	2.67	4689.15	-21.11	0.00
Total	**0.00**	**121.43**	**2816.53**	**1513.52**	**235.00**	**2.67**	**4689.15**	**-21.11**	0.00
Grand Total	**0.00**	**121.43**	**2816.53**	**1513.52**	**235.00**	**2.67**	**4689.15**	**-21.11**	0.00

2010	2011
	

Longitude	79.09384 ° E
Latitude	14.83523 ° N
Area in Ha	21.11
Change	SF TO NF
Comp No.	340
Beat	Boyanapalli
Range	Badvel
Division	Proddutur

4.29 KAMAREDDY DIVISION

4.29.1 Introduction:

Kamareddy Forest Division lies in the south-eastern part of Nizamabad district between latitudes 18^0 3' 34'' and 18^0 42' 11'' N and longitudes 77^0 53' 45'' and 78^0 34' 17'' E. Geographical area of the Division is 2,732 Km^2 which is 34.04% of the geographical area of district. This Division lies on the Deccan plateau. Manjira River flowing from Medak District enters Kamareddy Division at Nizam sagar reservoir and flows in northern direction to join river Godavari at the north-western corner of the district. Kappalavagu and Peddavagu are other two important streams of the Division. The rivers and streams of the district form part of Godavari basin. The altitude varies from 335M to 490M above MSL. The highest peak is 635M above MSL situated in Gandhari block.

Land use pattern of the Division is given in Table 4.29.1

Table 4.29.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	903.57	33.01
Agriculture	1613.07	58.94
Land with Scrub	84.61	3.09
Fallow Lands	22.45	0.82
Grasslands	0.00	0.00
Settlements	3.00	0.11
Vegetation outside Forest	32.42	1.18
Water Bodies	77.88	2.85
Total	**2732.00**	

The climate of this Division is generally dry with temperatures ranging from 13^0C to 47^0C. The north and north-western regions of the Division receive above 1000 mm of rainfall while north-eastern, south-eastern and southern regions receive less than 900 mm of rainfall from south-west monsoons.

The soil types found mainly are black cotton and sandy loams. The economic minerals known from this Division are the building material-clay, Iron-ore, Manganese ore, Mica, semi-precious stones, Talc and Soap-stones.

Population of the Division is 1.01 million (2011 Census), per capita forest area is 0.1Ha and the population density is 371 persons per Km^2.

4.29.2 Recorded Forest Area:

The notified forest area of the Division is **940 Km^2** which is 34.40% of the geographical area. Reserved, Protected and un-classed forests constitute 598.56 Km^2 (63.71%), 252 Km^2 (26.84%) and 88.84 Km^2 (9.45%) of the forest area respectively.

As per Champion and Seth's classification the Forests of Division fall under Tropical Dry Deciduous type.

4.29.3 Protected Area:

One PA, viz., Pocharam WLS is situated in this Division. An area of 86.76 Km^2 is included in the PA.

4.29.4 Community Forest Management:

There are 112 Vana Samrakshana Samities (VSSs) in the Division. An area of 325.66 Km^2, which is 33.19% of the notified forest area, is under the management of the VSSs.

4.29.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Oct/Nov 2011) is **816.23 Km²** which is **29.88%** of the geographical area. In terms of the forest canopy density classes the Division has **327.40** Km² of Moderately Dense Forests and **488.83** Km² of Open Forests. The area of the Scrub is **84.94** Km², Non-Forest **76.12** Km² and Water Bodies **4.00** Km². The distribution of the forest cover of the Division is shown in Fig 4.29.1

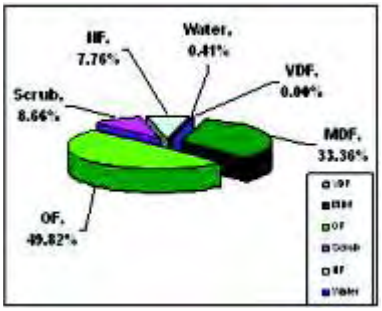


Fig 4.29.1

4.29.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 are shown in Figs 4.29.2 & Fig 4.29.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a **negative change of 54.49 Ha.** The forest cover change matrix given in Table **4.29.2** reveals that there is a decrease of **54.49 Ha** of Open Forest, **13.23 Ha** of Scrub.

The entire negative change (including Scrub) of **67.72 Ha** is on account of encroachments. Therefore the **net loss of forest cover is 67.72 Ha.**

There are 66 Beats in the Division. Negative changes in forest cover are noticed in 5 Beats. There are no changes in the remaining 61 Beats.

Details of forest cover changes in the above mentioned 5 Beats are shown in Table 4.29.3

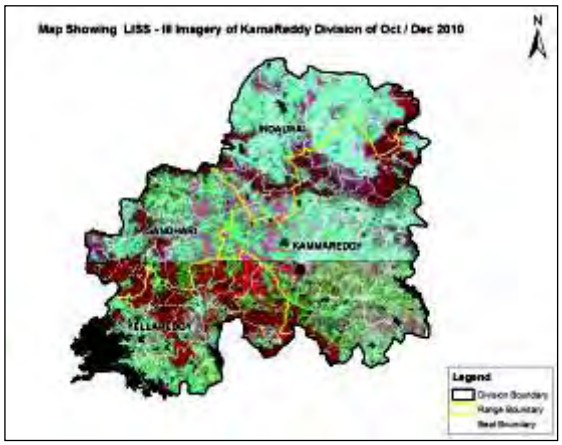


Fig 4.29.2

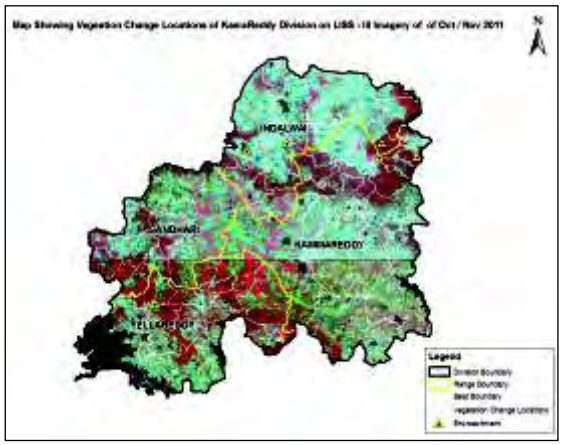


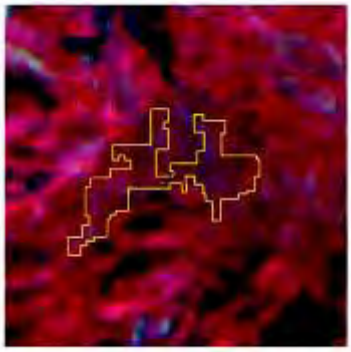
Fig 4.29.3

Table 4.29.2: Forest Cover change matrix **(Area in Km²)**

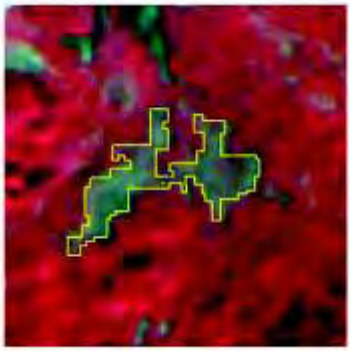
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	327.40	0.00	0.00	0.00	0.00	**327.40**
Open Forest	0.00	0.00	488.83	0.00	0.55	0.00	**489.38**
Scrub	0.00	0.00	0.00	84.94	0.13	0.00	**85.07**
Non-Forest	0.00	0.00	0.00	0.00	75.44	0.00	**75.44**
Water	0.00	0.00	0.00	0.00	0.00	4.00	**4.00**
Total of 2011	**0.00**	**327.40**	**488.83**	**84.94**	**76.12**	**4.00**	**981.29**
Net Change	0.00	0.00	-0.55	-0.13	0.68	0.00	

Table 4.29.3: List of Beat wise Forest Cover								(Area in ha)	
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
INDALWAI Range									
Gowraram	0.00	433.97	996.46	87.40	141.64	2.33	1661.80	-13.23	13.23
Indalwai	0.00	871.08	999.90	113.54	40.79	3.89	2029.20	-2.74	2.74
Sirikonda	0.00	1072.90	269.77	10.93	32.99	14.42	1401.01	-25.19	25.19
Total	**0.00**	**2377.95**	**2266.13**	**211.87**	**215.42**	**20.64**	**5092.01**	**-41.16**	**41.16**
KAMAREDDY Range									
Pakhal (North)	0.00	1166.15	910.75	188.08	204.11	0.00	2469.08	-20.02	20.02
Total	**0.00**	**1166.15**	**910.75**	**188.08**	**204.11**	**0.00**	**2469.08**	**-20.02**	**20.02**
YELLAREDDY Range									
Jaldepally	0.00	232.16	550.20	9.41	17.70	4.92	814.39	-6.54	6.54
Total	**0.00**	**232.16**	**550.20**	**9.41**	**17.70**	**4.92**	**814.39**	**-6.54**	**6.54**
Division total	**0.00**	**3776.26**	**3727.08**	**409.36**	**437.23**	**25.56**	**8375.48**	**-67.72**	**67.72**

2010



2011



Longitude	78.4794 ° E
Latitude	18.54034 ° N
Area in Ha	25.19
Change	OF TO NF
Comp No.	406
Beat	Srikonda
Range	Indalwai
Division	Kamareddy

4.30 MEDAK DIVISION

4.30.1 Introduction:

Medak is located in the north-western part of Andhra Pradesh State between latitudes 17^0 25' 36'' and 18^0 17' 7'' N and longitudes 77^0 26' 43'' and 79^0 7' 37'' E. Geographical area of the Division (& District) is 9,699 Km^2. District forms a part of the table land of Deccan plateau and is criss crossed by different ranges of hills. The ground is mostly flat and undulating with gentle slope. The elevation of ground varies from 500 M to 600M above MSL with occasional hills up to 638M above MSL. Medak falls under semi-arid region of peninsular India.

Land use of the Division is given in Table 4.30.1.

The climate of this Division is generally dry with temperatures ranging from 6^0C to 46^0C and the annual rainfall is about 700 mm, received mainly from Southwest monsoons.

Red earths comprising loamy sands, sandy loams and sandy clay loams; regar or black cotton soil comprising clay loams, clay and silt clay are present.

Manjeera River, which is a tributary of Godavari River, is the main source of water supply. Haldivagu or Pasupuvagu- a tributary of Manjeera and Kudlair- a tributary of Manair River, are also water sources in the district and all these remains dry in the summer.

Table 4.30.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	923.13	9.52
Agriculture	7591.99	78.28
Land with Scrub	561.88	5.79
Fallow Lands	11.42	0.12
Settlements	50.71	0.52
Vegetation outside forest	293.88	3.03
Waterbody	265.99	2.74
Total	**9699.00**	

Population of the Division is 3.03 million (2011 Census), per capita forest area is 0.03Ha and the population density is 312 persons per Km^2.

4.30.2 Recorded Forest Area:

The notified forest area of the Division is **905.94 Km^2** which is 9.96% of the geographical area. Reserved, Protected and un-classed forests constitute 634.22 Km^2 (70%), 255.63 Km^2 (28.2%) and 16.09 Km^2 (0.018%) of the forest area respectively.

As per Champion and Seth's classification the forests of Division fall under Tropical Dry Deciduous and Tropical Thorn Forest types.

4.30.3 Protected Area:

A part of Pocharam WLS falls in this Division. An area of 55.47 Km^2 is included in Pocharam WLS.

4.30.4 Community Forest Management:

There are 251 Vana Samrakshana Samities (VSSs) in the Division. An area of 678.04 Km^2 of forests, which is 75% of notified forest area, is under the management of VSSs.

4.30.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Oct/Nov-2011) is **583.60 km²** which is **6.02%** of the geographical area. In terms of the forest canopy density classes the Division has **92.653** Km² of Moderately Dense Forests and **490.95** Km² of Open Forests. The area of the Scrub is **277.08** Km², Non-Forests **53.22** Km² and Water Bodies **2.68** Km². The distribution of the forest cover of the division is shown in Fig 4.30.1

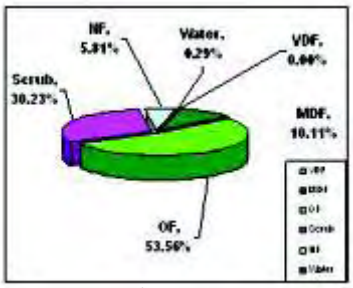


Fig 4.30.1

4.30.6 Change in Forest Cover:

The Satellite image of 2010 and 2011 are shown in Figs 4.30.2 & 4.30.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a negative change of **495.80 Ha** and positive change of **40.59 Ha.** The forest cover change matrix given in Table 4.30.2 reveals that there is a decrease of **455.21 Ha** in Open Forest and a decrease of **268.52 Ha** in Scrub.

The total positive change (including Scrub) of **40.59 Ha,** is on account of raising of plantations and total negative change (including Scrub) of **764.32 Ha,** a change of **352.99 Ha** is on account of clearance of jungle growth for raising of plantations, **353.16 Ha** on account of harvesting of matured plantations and **58.17 Ha** is on account of encroachments . As harvesting of plantations and clearance of jungle growth for raising of plantations are forest management interventions the same are not considered as loss of forest cover. Thus only the negative change due to encroachment is taken as loss of forest cover. Therefore the **net loss of forest cover** is **58.17 Ha** only.

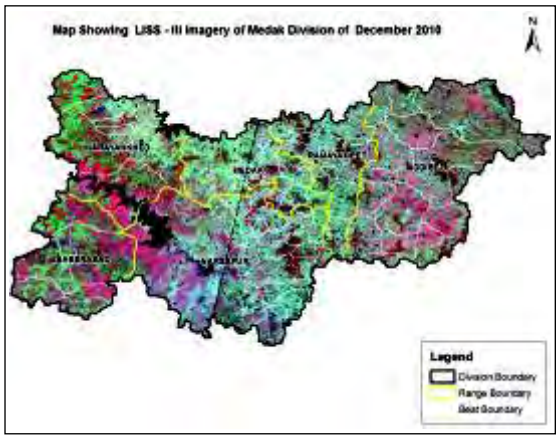


Fig 4.30.2

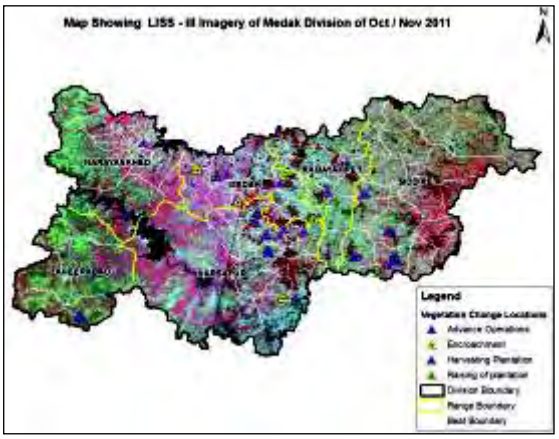


Fig 4.30.3

There are 92 Beats in the Division. Negative changes in forest cover are noticed in 22 Beats and positive changes in 1 Beat. There are no changes in remaining 69 Beats.

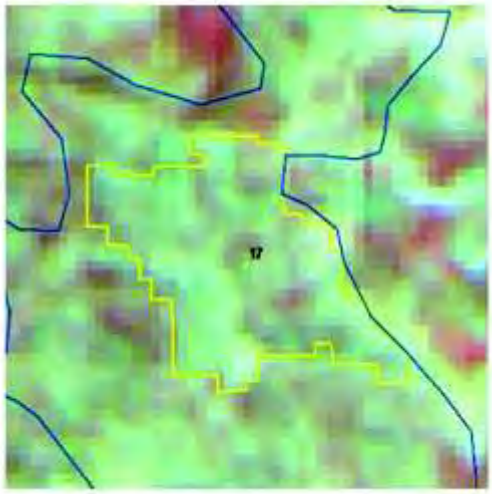
Details of forest cover changes in the 23 Beats mentioned above are shown in Table 4.30.3

Table 4.30.2: Forest Cover change matrix **(Area in Km²)**

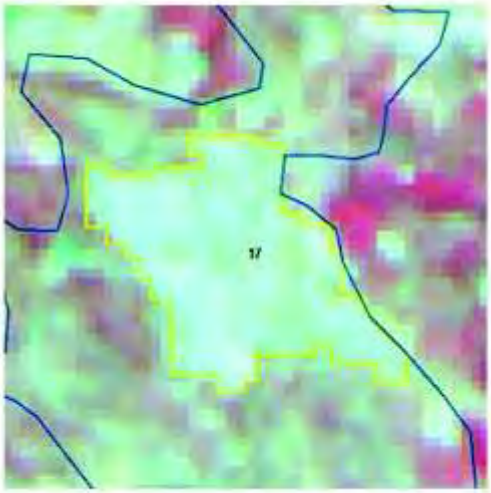
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	92.65	0.00	0.00	0.00	0.00	**92.65**
Open Forest	0.00	0.00	490.54	0.00	4.96	0.00	**495.50**
Scrub	0.00	0.00	0.00	277.08	2.69	0.00	**279.77**
Non-Forest	0.00	0.00	0.41	0.00	45.57	0.00	**45.98**
Water	0.00	0.00	0.00	0.00	0.00	2.68	**2.68**
Total of 2011	**0.00**	**92.65**	**490.95**	**277.08**	**53.22**	**2.68**	**916.58**
Net Change	0.00	0.00	-4.55	-2.69	7.24	0.00	

Table 4.30.3: List of Beats with negative change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
MEDAK RANGE									
Annaram	0.00	118.36	810.72	210.09	80.37	2.00	1221.54	-47.65	3.42
Arkela	0.00	1.22	240.98	449.77	45.60	0.00	737.57	-19.01	19.01
Mangalparthy	0.00	178.95	979.96	253.99	82.99	0.00	1495.89	-15.55	0.00
S.Kondapur	0.00	135.04	891.68	235.42	16.30	1.62	1280.06	-3.70	3.70
Shetpally	0.00	141.93	1241.88	510.09	191.04	16.06	2101.00	-35.04	0.00
Tekmal	0.00	9.23	656.57	194.05	28.46	0.00	888.31	-12.25	12.25
Wariguntham	0.00	81.78	329.93	84.61	18.86	0.00	515.18	-7.87	3.00
Yeldurthy	0.00	317.30	1403.44	315.28	53.36	1.90	2091.28	-2.23	2.23
Total	**0.00**	**983.81**	**6555.16**	**2253.30**	**516.98**	**21.58**	**10330.80**	**-143.30**	**43.61**
NARAYANKHED RANGE									
Nizampet	0.00	0.00	210.16	415.91	73.54	5.63	705.24	-28.07	0.00
Total	**0.00**	**0.00**	**210.16**	**415.91**	**73.54**	**5.63**	**705.24**	**-28.07**	**0.00**
NARSAPUR RANGE									
Mohammadanagar	0.00	583.30	516.17	41.05	53.02	0.00	1193.54	-34.30	0.00
Narayanapoor	0.00	3.10	222.53	248.81	103.52	0.00	577.96	-69.49	0.00
Ratnapur	0.00	135.17	1081.09	163.26	25.96	5.56	1411.04	-17.62	0.00
Tirumalpur	0.00	0.50	321.15	409.86	78.62	0.00	810.13	-31.36	0.00
Wailal	0.00	74.25	484.25	274.30	130.18	0.00	962.98	-30.76	14.56
Total	**0.00**	**796.32**	**2625.19**	**1137.28**	**391.30**	**5.56**	**4955.65**	**-183.53**	**14.56**
RAMAYAMPET RANGE									
Ibrahimpur	0.00	251.29	739.70	61.60	44.62	0.00	1097.21	-24.09	0.00
Waddiaram	0.00	17.66	369.26	172.34	51.11	9.74	620.11	-24.78	0.00
Total	**0.00**	**268.95**	**1108.96**	**233.94**	**95.73**	**9.74**	**1717.32**	**-48.87**	**0.00**
SIDDIPET Range									
Chilasagar	0.00	9.40	337.95	473.90	14.33	11.90	847.48	40.59	0.00
Gajwel	0.00	1.79	723.25	649.41	96.25	9.40	1480.10	-38.30	0.00
Godgupally	0.00	0.00	202.48	298.98	23.98	0.00	525.44	-18.86	0.00
Meenajipet	0.00	1.79	752.34	1019.69	217.15	0.36	1991.33	-102.47	0.00
Mulug	0.00	24.54	746.86	541.62	230.97	4.70	1548.69	-112.98	0.00
Total	**0.00**	**37.52**	**2762.88**	**2983.60**	**582.68**	**26.36**	**6393.04**	**-232.02**	**0.00**
ZAHEERABAD RANGE									
Gudgarpally	0.00	398.05	636.13	194.75	156.61	24.32	1409.86	-49.86	0.00
Pichargad	0.00	59.81	590.44	615.76	361.06	13.86	1640.93	-38.08	0.00
Total	**0.00**	**457.86**	**1226.57**	**810.51**	**517.67**	**38.18**	**3050.79**	**-87.94**	**0.00**
Grand Total	**0.00**	**2544.46**	**14488.90**	**7834.54**	**2177.90**	**107.05**	**27152.90**	**-723.73**	**58.17**

2010



2011



Longitude	77.86207 ° E
Latitude	18.10589 ° N
Area in Ha	28.07
Change	SF TO NF
Comp No.	415
Beat	Nizampet
Range	Medak
Division	Medak

4.31 MEDAK WLM DIVISION

4.31.1 Introduction:

WLM Division Medak is located in the north-western part of Andhra Pradesh State between latitudes 18^0 6' 59'' and 18^0 12' 55'' N and longitudes 78^0 10' 10'' and 78^0 22' 4'' E. Geographical Area of the Division is 90.70 Km^2. The ground is mostly flat and undulating with gentle slope. The elevation of ground varies from 500M to 600M with occasional hills up to 638 M above MSL. Medak falls under semi-arid region of peninsular India.

Land use pattern of the Division is given in Table 4.31.1

The climate of this Division is generally dry with temperatures ranging from 6^0C to 46^0C and the annual rainfall is about 700 mm, received mainly from south-west monsoons.

Red earths comprising loamy sands, sandy loams and sandy clay loams; regar or black cotton soil comprising clay loams, clay and silt clay are present.

Table 4.31.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forests including Scrub	45.82	50.52
Agriculture	26.68	29.41
Land with Scrub	5.90	6.50
Settlements	0.29	0.32
Not available for cultivation	11.77	12.98
Water bodies	0.24	0.26
Total	**90.70**	

4.31.2 Recorded Forest Area:

The notified forest area of the Division is **46.71 Km^2** which is 51.51% of the geographical area. Reserved and protected forests constitute 4.605 Km^2 (9.86%) and 42.107 Km^2 (90.15%) of the forest area respectively.

As per Champion and Seth's classification the forests of Division fall under Mixed Dry Deciduous and Tropical Thorn Forest types.

4.31.3 Protected Area:

Out of 46.71 Km^2 of notified forests an area of 42.11 Km^2 is included in Pocharam WLS, which constitutes 90.15% of notified forests.

4.31.4 Community Forest Management:

There are 11 Vana Samrakshana Samities (VSSs) in the Division. An area of 21.50 Km^2 forests, which is 46.02% of notified forest area, is under the management of VSSs.

4.31.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Oct/Nov 2011) is **42.24 Km^2** which is **46.57%** of the geographical area. In terms of the forest canopy density classes the Division has **20.56** Km^2 of Moderately Dense Forests and **21.68** Km^2 of Open Forests. The area of the Scrub is **3.58** Km^2, Non-Forests **0.70** Km^2 and Water Bodies **0.02** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.31.1

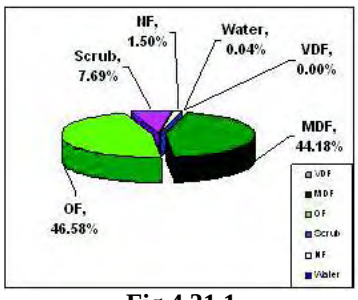


Fig 4.31.1

4.31.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 are shown in Figs 4.31.2 & 4.31.3 respectively.

Comparison of the current forest cover with that of previous assessment year shows that there is no change in the forest cover during this period. The forest cover change matrix is given in Table 4.31.2.

There are 3 Beats in the Division.There are no changes in forest cover in any of the 3 Beats.

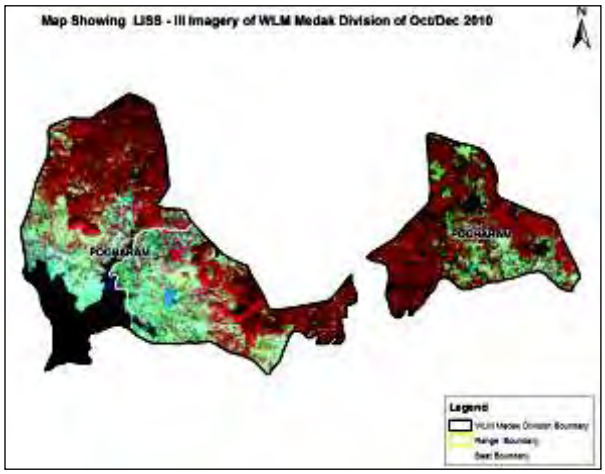


Fig 4.31.2

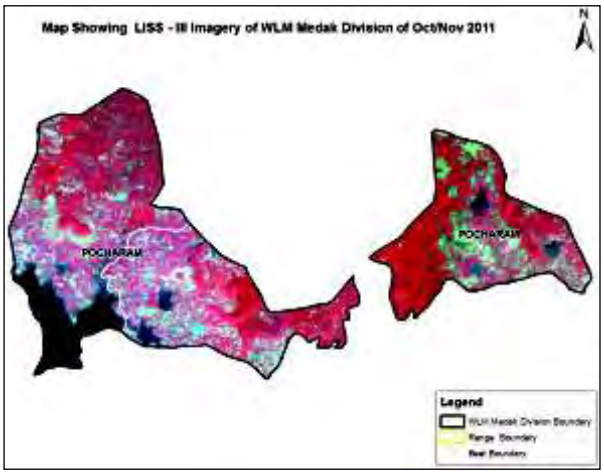


Fig 4.31.3

Table 4.31.2: Forest Cover change matrix **(Area in Km^2)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	20.56	0.00	0.00	0.00	0.00	**20.56**
Open Forest	0.00	0.00	21.68	0.00	0.00	0.00	**21.68**
Scrub	0.00	0.00	0.00	3.58	0.00	0.00	**3.58**
Non-Forest	0.00	0.00	0.00	0.00	0.70	0.00	**0.70**
Water	0.00	0.00	0.00	0.00	0.00	0.02	**0.02**
Total of 2011	**0.00**	**20.56**	**21.68**	**3.58**	**0.70**	**0.02**	**46.54**
Net Change	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**

4.32 NIZAMABAD DIVISION

4.32.1 Introduction:

Nizamabad Forest Division lies in the north-western part of Nizamabad district between latitudes 18^0 10' 10'' and 19^0 00' 55'' N and longitudes 77^0 31' 17'' and 78^0 40' 17'' E. Geographical Area of the Division is 5,219 Km^2 which is 65.59 % of the area of district. This region lies on deccan plateau. Godavari river enters Andhra Pradesh at Kandhakurthi in Nizamabad Division. Manjira River, which flows in north-west direction through thick forests of Nizamabad and Kamareddy Divisions, joins Godavari at Kandhakurthi.

Land use pattern of the Division is given in Table 4.32.1

Table 4.32.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	705.71	13.52
Agriculture	3809.14	72.99
Land with Scrub	192.54	3.69
Fallow Lands	31.84	0.61
Grasslands	0.00	0.00
Settlements	31.74	0.61
Vegetation outside Forest	45.00	0.86
Water Bodies	402.76	7.72
Total	**5219.00**	

The climate of this Division is generally dry with temperatures ranging from 13^0C to 47^0C and the annual rainfall is about 1033.7mm, received mainly from south-west monsoons.

Red soils are extensive followed by black soils in Nizamabad Division. Alluvial and lateritic soils are found occasionally and in small extent. Along the banks of Godavari and other big streams soil is loamy or alluvial and more fertile, hence support better forests. Most of the soils have morrum underneath at different depths, which support some of the good Teak forests in the Division.

Variety of colored granites and the deccan trap rocks and economically valuable minerals are available in this Division.

Population of the Division is 1.54 million (2011 Census), per capita forest area is 0.05 Ha and the population density is 294 persons per Km^2.

4.32.2 Recorded Forest Area:

The notified forest area of the Division is **872 Km^2** which is 16.7% of the geographical area. Reserved, Protected and un-classed forests constitute 530.36 Km^2 (60.84%), 319 Km^2 (36.61%) and 22.26 Km^2 (2.5%) of the forest area respectively.

As per Champion and Seth's classification the forests of Division fall under Tropical Dry Deciduous type.

4.32.3 Protected Area:

There is no Protected Area in the Division.

4.32.4 Community Forest Management:

There are 148 Vana Samrakshana Samities (VSSs) in the Division. An area of 423.48Km^2 forests, which is 48.56% of forest area, is under the management of the VSSs.

4.32.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Oct/Dec 2011) is **618.84 Km^2** which is **11.86%** of the geographical area. In terms of the forest canopy density classes the Division has **309.20** Km^2 of Moderately Dense Forests and **309.64** Km^2 of Open Forests. The area of the Scrub is **80.03** Km^2, Non-forests **82.94** Km^2 and Water Bodies **5.32** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.32.1.

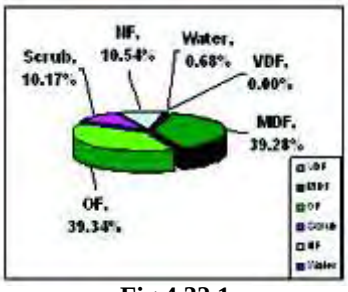


Fig 4.32.1

4.32.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 are shown in Figs. 4.32.2 & Fig 4.32.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a negative change in forest cover of **48.21** Ha. The forest cover change matrix given in Table **4.32.2** reveals that there is a decrease of **48.21** Ha of Open Forest, **34.29** Ha of Scrub.

The total negative change (including Scrub) of **82.50** Ha, is on account of encroachments, which is a loss of forest cover. Therefore, the net loss of forest cover in this Division is **82.50** Ha.

There are 55 Beats in the Division. Negative changes in forest cover are noticed in 7 Beats. There are no changes in the remaining 48 Beats.

Details of forest cover changes in these 7 Beats are shown in Table 4.32.3

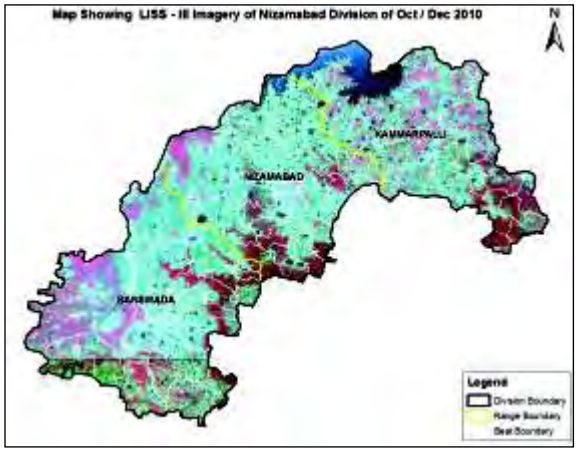


Fig 4.32.2

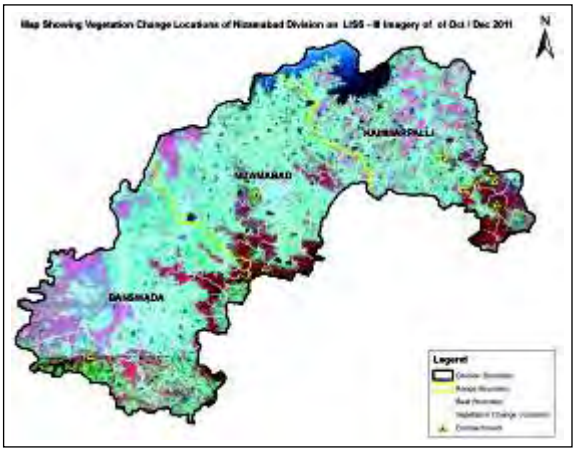


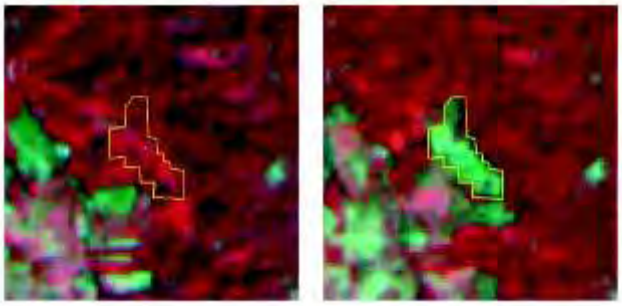
Fig 4.32.3

Table 4.32.2: Forest Cover change matrix **(Area in Km^2)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	309.20	0.00	0.00	0.00	0.00	**309.20**
Open Forest	0.00	0.00	309.64	0.00	0.48	0.00	**310.12**
Scrub	0.00	0.00	0.00	80.03	0.34	0.00	**80.37**
Non-Forest	0.00	0.00	0.00	0.00	82.12	0.00	**82.12**
Water	0.00	0.00	0.00	0.00	0.00	5.32	**5.32**
Total of 2011	**0.00**	**309.20**	**309.64**	**80.03**	**82.94**	**5.32**	**787.13**
Net Change	0.00	0.00	-0.48	-0.34	0.82	0.00	

Table 4.32.3: List of Beats with negative change in Forest Cover								(Area in ha)	
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
BANSWADA Range									
Kowlas	0.00	26.84	1540.18	396.22	367.75	1.68	2332.67	-0.68	0.68
Total	**0.00**	**26.84**	**1540.18**	**396.22**	**367.75**	**1.68**	**2332.67**	**-0.68**	**0.68**
KAMMARPALLI Range									
Bheemgal	0.00	962.16	864.44	321.25	246.29	13.67	2407.81	-7.35	7.35
Bheemnagar	0.00	1363.60	477.12	101.42	218.88	20.92	2181.94	-13.85	13.85
Konapur (n)	0.00	1452.88	1330.98	70.17	47.86	34.07	2935.96	-8.58	8.58
Mendora	0.00	418.99	227.49	48.24	117.82	-0.01	812.53	-15.32	15.32
Total	**0.00**	**4197.63**	**2900.03**	**541.08**	**630.85**	**68.65**	**8338.24**	**-45.10**	**45.10**
NIZAMABAD Range									
Kalpole	0.00	1054.67	711.61	37.70	111.03	0.01	1915.02	-23.04	23.04
Thanakalan	0.00	316.35	1194.53	326.47	138.98	30.04	2006.37	-13.68	13.68
Total	**0.00**	**1371.02**	**1906.14**	**364.17**	**250.01**	**30.05**	**3921.39**	**-36.72**	**36.72**
Division Total	**0.00**	**5595.49**	**6346.35**	**1301.47**	**1248.61**	**100.38**	**14592.30**	**-82.50**	**82.50**

2010 **2011**



Longitude	78.58863 ° E
Latitude	18.65471 ° N
Area in Ha	13.85
Change	OF TO NF
Comp No.	34
Beat	Bheemnagar
Range	Kamarpally
Division	Nizamabad

4.33 ELURU DIVISION

4.33.1 Introduction:

Eluru Forest Division lies in the north-eastern part of Andhra Pradesh between latitude16^0 18' 05" and 17^0 28' 52"N and longitude 80^0 52' 04"and 81^0 51' 31"E. Geographical area of the Division (and the District) is 7742 km^2. The Division has two physiographic zones, the plains and Hills. The climate of Eluru Division is characterized by high humidity nearly all the year round with oppressive summer and good seasonal rainfall. The major rivers falling in the Division are Godavari, Gauthami and Vasita.

Land use pattern of the Division is given in Table 4.33.1

Deccan traps, Alluvial deposits, Lower or upper Gondwana sediments, Khondalites and Charcolites occupy the districts. Loamy soils, Lateritic and black cotton soils are found in the District. Temperature ranges from 17^{0}C to 45^{0}C and the annual rainfall is about 1076mm. South-West monsoon gives more rain than North East monsoon.

The population of the Division (District) is 3.93 million (2011 census), per capita forest 0.02 Ha and the population density is 508 per Km^2.

Table 4.33.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	739.36	9.55
Agriculture	5591.9	72.23
Land with Scrub	58.92	0.75
Fallow Lands	40.77	0.53
Grasslands	0.00	0.00
Settlements	143.74	1.86
Vegetation outside forest	417.04	5.39
Water Bodies	750.27	9.69
Total	**7742.00**	

4.33.2 Recorded Forest Area:

The notified forest area of the Division is **773.03 Km^2** which is 10% of the geographical area. Reserved and Protected forests constitute 732.11 Km^2 (95%) and Km^2 40.9(5%) of the forest area respectively.

As per the Champion and Seth's classification forest types found in the Division are Tropical Moist Mixed Deciduous Forests. Tropical Dry Deciduous Scrub Forests and Tropical Dry Evergreen Scrub Forests.

4.33.3 Protected Area:

Two Protected Areas, viz., Kolleru and Papikonda Wild Life Sanctuaries fall partly in this Division. An area of 308.55 Km^2 is included in the Kolleru WLS which is the largest fresh water lake in the Country and also a Ramsar site. Papikonda Wild Life Sanctuary occupies 591 Km^2 of the forest area of the Division.

4.33.4 Community Forest Management:

There are 213 VSSs in the Division. An area of 414.54 Km^2 of forests, which constitutes 53% of forest area, is under the management of VSSs.

4.33.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Oct /Nov 2011) is **659.94 Km^2** which is **8.52%** of the geographical area. In terms of the forest canopy cover density classes the Division has **512.15** Km^2 of Moderately Dense Forests and **147.79** Km^2 of Open Forests. The area of the Scrub is **52.11** Km^2, Non-Forest **60.38** Km^2 and Water Bodies **0.59** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.33.1.

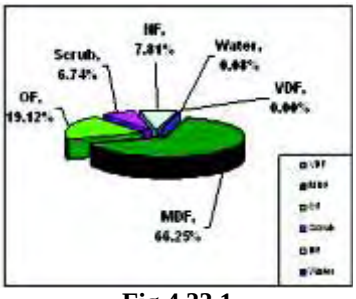


Fig 4.33.1

4.33.6 Change in Forest Cover:

The satellite images of 2010 and 2011 are shown in Figs 4.33.2 & 4.33.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a **negative change of 961.85 Ha** and **positive change of 85.38 Ha.** The forest cover change matrix given in Table 4.33.2 reveals that there is a decrease of **876.47 Ha** of Open Forest and **130.06** Ha of Scrub.

The total positive change (including Scrub) of **149.30 Ha** is on account of growth in raised plantations. The total negative change (including Scrub) is **1140.87 Ha.** Out of this **323.75 Ha** is on account of clearance of jungle growth for raising of plantations, **414.60 Ha** is on account of harvesting of plantation and **402.52 Ha** is on account of encroachments. As clearance of jungle growth for raising of plantations and harvesting of plantations are forest management interventions the same are not considered as loss of forest cover. Thus only the negative change due to encroachments is taken as loss of forest cover. Therefore the **net loss of forest cover is 402.52 Ha** in the Division.

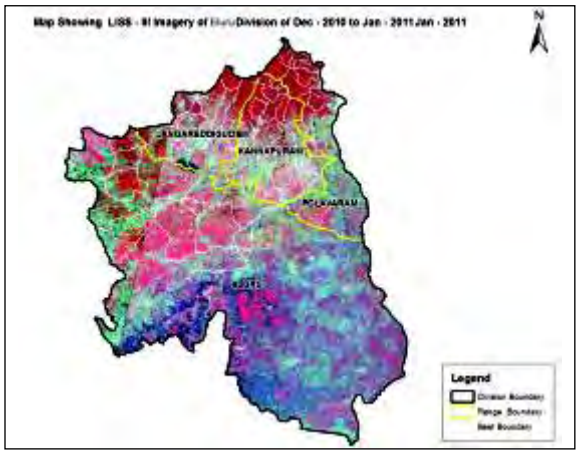


Fig 4.33.2

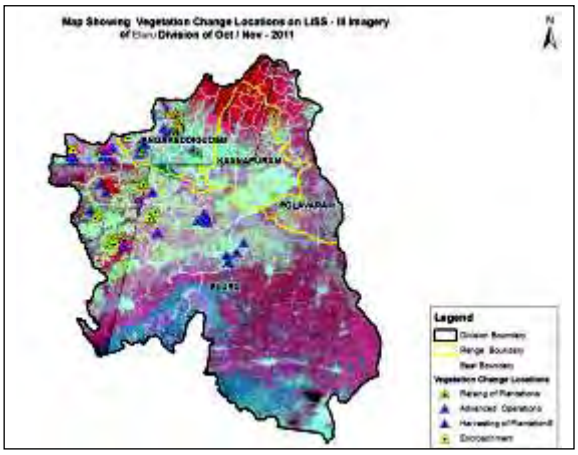


Fig 4.33.3

There are 43 Beats in the Division. Negative changes in forest cover are seen in 18 Beats. There is no change in the remaining 25 Beats.

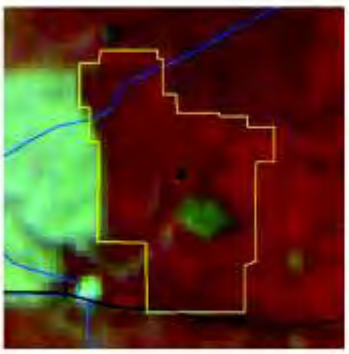
Details of forest cover changes in these 18 Beats is shown in Table 4.33.3.

Table 4.33.2: Forest Cover change matrix **(Area in Km^2)**

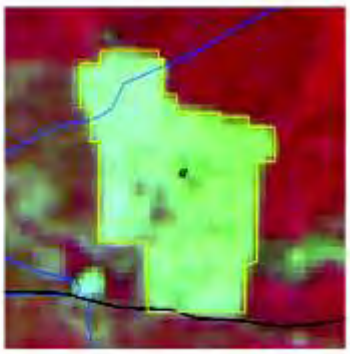
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	512.15	0.00	0.00	0.00	0.00	**512.15**
Open Forest	0.00	0.00	146.93	0.32	9.30	0.00	**156.55**
Scrub	0.00	0.00	0.47	51.15	1.79	0.00	**53.41**
Non-Forest	0.00	0.00	0.39	0.64	49.29	0.00	**50.32**
Water	0.00	0.00	0.00	0.00	0.00	0.59	**0.59**
Total of 2011	**0.00**	**512.15**	**147.79**	**52.11**	**60.38**	**0.59**	**773.02**
Net Change	0.00	0.00	-8.76	-1.30	10.06	0.00	

Table 4.33.3: List of Beats with negative change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
Eluru Range									
A R Palem	0.00	430.24	930.29	172.58	163.18	0.00	1696.29	-38.05	15.19
Barrikonda	0.00	239.35	812.46	306.15	154.93	2.55	1515.43	-50.81	20.63
Bhogole	0.00	332.90	491.10	497.82	313.35	0.00	1635.17	-98.67	98.67
Chintalapudi	0.00	1,374.72	759.71	26.37	135.67	0.00	2296.46	-49.69	0.00
Dubacherla	0.00	410.20	637.12	129.34	93.35	0.00	1270.00	-83.97	0.00
M.v.gudem	0.00	1,116.05	715.25	384.73	290.62	0.00	2506.65	-20.79	0.00
R.s.varam	0.00	261.92	748.45	83.58	287.29	0.00	1381.24	-11.27	0.00
Thadikelapudi	0.00	47.31	840.52	384.81	259.27	0.00	1531.9	-20.87	9.48
V.r.gudem	0.00	-39.17	175.59	503.79	572.28	0.89	1213.37	-57.92	0.00
Velagalapalli	0.00	38.12	493.70	283.31	1,192.27	3.36	2010.75	-92.36	29.16
Yerraguntapalli	0.00	376.48	504.04	95.16	265.26	0.00	1240.95	-55.51	0.00
Total	**7.00**	**4,588.11**	**7,108.23**	**2,867.64**	**3,727.47**	**6.80**	**18,298.21**	**-579.91**	**173.13**
Jangareddigudem Range									
Ankannagudem	0.00	991.54	142.66	21.10	68.79	0.00	1224.09	-22.20	22.20
Darbhagudem	0.00	12.85	640.64	330.08	345.06	0.00	1328.63	-95.95	0.00
Jeelugumilli	0.00	256.18	801.92	387.05	61.89	0.00	1507.03	-4.93	4.93
Kamaiahpalem	0.00	899.52	713.24	223.46	248.46	0.00	2084.68	-3.42	3.42
Marlagudem	0.00	122.90	486.04	25.93	189.45	0.00	824.31	-1.50	0.00
Mulagalampalli	0.00	577.34	503.03	408.71	1,037.96	0.00	2527.04	-281.82	197.00
Total	**0.00**	**2,860.33**	**3,287.53**	**1,396.33**	**1,951.61**	**0.00**	**9,495.78**	**-409.82**	**227.55**
Kannapuram Range									
Kunkala	0.00	2,221.53	151.60	4.58	10.01	0.00	2387.72	-1.84	1.84
Total	**0.00**	**2,221.53**	**151.60**	**4.58**	**10.01**	**0.00**	**2,387.72**	**-1.84**	**1.84**
Grand Total	**7.00**	**9,669.98**	**10,547.36**	**4,268.55**	**5,689.09**	**6.80**	**30,181.71**	**-991.57**	**402.52**

2010



2011



Longitude	81.03673 ° E
Latitude	17.15883 ° N
Area in Ha	44.79
Change	OF to NF
Comp No.	175
Beat	MVGudem
Range	Eluru
Division	Eluru

4.34. KAKINADA DIVISION

4.34.1 Introduction:

Kakinada Forest Division comprises of the entire district of East Godavari and lies in the north eastern part of Andhra Pradesh between latitudes16^0 18' 04'' and 18^0 00' 54''N and longitude 81^0 30' 08'' and 82^0 36' 17'' E. Geographical area of the Division is 10807 Km^2. The Division can be broadly classified into 3 natural regions namely the Delta, upland and Agency or hill tracts. The general elevation of the district varies from a few meters near the sea-coast to about 300 M above MSL in the hills of the agency. The Eastern Ghats rise by gradations from the level of the coast and spread throughout the erstwhile agency Taluks of Rampachodavaram and Yellavaram. The delta portion constituting the whole of Konaseema and portions of erstwhile Taluks of Kakinada, Ramachandrapuram and Rajahmundry, presents a vast expanse of rice-fields surrounded by plantains, betel, coconut gardens and innumerable palmyrahs. The erstwhile Taluks of Tuni, Pithapuram, Peddapuram and portions of Kakinada, Ramachandrapuram and Rajahmundry constitute the upland areas. The main soils in the district are alluvial (clay loamy) red soil, sandy loam and sandy clay. There is mostly alluvial soil in Godavari delta and sandy clay soil at the tail end portions of river Godavari, red loamy soil in upland and agency area of the district. The major rivers falling in the Division are Godavari, Pampa and Yeleru.

Land use pattern of the Division is given in Table 4.34.1.

The region mostly has a tropical climate like the rest of the Coastal Andhra region. The summers (March-June) are very hot and humid. The rainy season (July-Jan) is the best time to visit this place with the fields brilliantly green with paddy crops, rivulets flowing with water and the sun shining brightly but not burning as it does in the summer. Temperature ranging from 10^{0}C to 48^{0}C and the annual rainfall is about 1280 mm.

Population of the Division is 5.15 million (2011 Census), per capita forest is 0.06 Ha and the population density is 477 persons per Km^2.

Table 4.34.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	2971.09	27.49
Agriculture	5574.51	51.58
Land with Scrub	331.78	3.07
Fallow Lands	224.00	2.07
Grasslands	22.00	0.2
Settlements	130.19	1.2
Vegetation outside forest	1149.41	10.64
Water Bodies	404.02	3.75
Total	**10807.00**	

4.34.2 Recorded Forest Area:

The notified forest area of the Division is **3235.39 Km^2** which is 32.71% of the geographical area. Reserved and Protected Forests constitute 2701.31Km^2 (83.3%) and 531.13 Km^2 (22.7%) of the forest area respectively.

As per Champion and Seth's classification the forest types found in the Division are Tropical Moist Mixed Deciduous Forests and Tropical Dry Deciduous Scrub Forests.

4.34.3 Protected Area:

The Division has Coringa Wild Life Sanctuary- the largest surviving patch of Mangrove forests in the State with more than 65 Mangrove tree species and a home for the rare and endangered Smooth Indian Otter, Fishing Cat and Estuarine Crocodile; and a part of Papikonda Wild Life Sanctuary in its fold. Out of the 3235.39 Km^2 of forest area, the Coringa WLS occupies an area of 235.7 Km^2 and Papikonda Wild Life Sanctuary 591 Km^2.

4.34.4 Community Forest Management:

There are 529 Vana Samrakshana Samities (VSSs) in the Division with an area of 1148.05 Km^2 of forests, which is 35.4% of the forest area.

4.34.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Data of Oct 2011) is **2777.05 Km^2** which is **25.70%** of the geographical area. In terms of the forest canopy density classes the Division has **203.04** Km^2 of Very Dense Forests, **2355.54** Km^2 of Moderately Dense Forests and **218.47** Km^2 of Open Forests. The area of the Scrub is **182.94** Km^2, Non-Forest **106.34** Km^2 and Water Bodies **169.06** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.34.1.

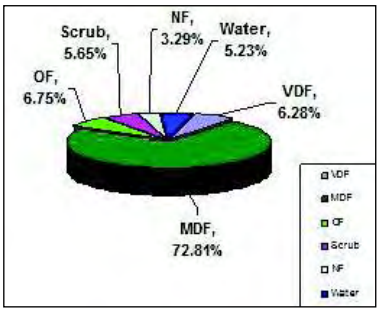


Fig 4.34.1

4.34.6 Change in Forest Cover:

The satellite images of 2010 and 2011 seasons are shown in Fig 4.34.2 and Fig 4.34.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a **negative change** in forest cover of **247.11 Ha** and a **positive change of 36.55 Ha.** The forest cover change matrix given in Table 4.34.2 reveals that there is a decrease of **34.83 Ha** of Moderately Dense Forest, **174.54 Ha** of Open Forest and **272.60 Ha** of Scrub.

The positive change (including Scrub) is **36.55 Ha** on account of growth in raised plantations. The total negative change (including Scrub) is **524.58 Ha.** Out of this **188.28 Ha** is on account of clearance of jungle growth for raising of plantations, **195.50 Ha** is on account of harvesting of plantation, **4.74 Ha** is an account of diversion of forest lands for non forestry purpose and **136.06 Ha** is on account of encroachments. As clearance of jungle growth for raising of plantations, harvesting of plantations and diversion of forest lands are forest management interventions the same are not considered as loss of forest cover. Thus only the negative change due to encroachments is taken as loss of forest cover. Therefore the **net loss of forest cover is 136.06 Ha** in the Division.

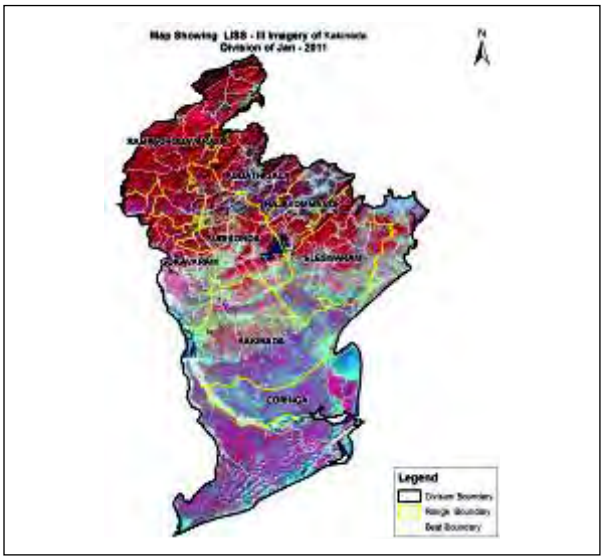


Fig 4.34.2

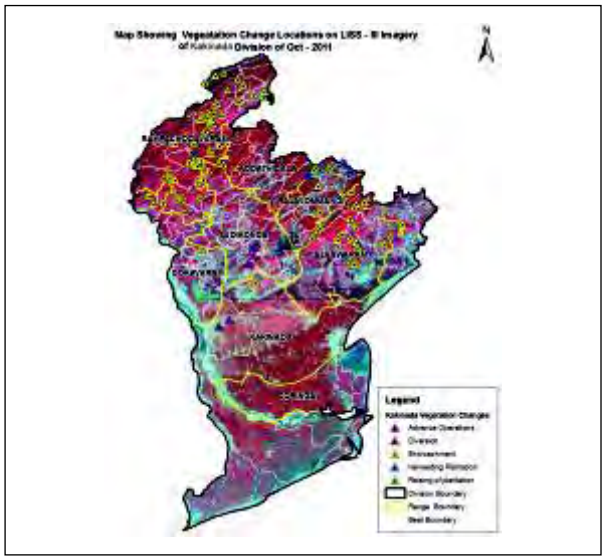


Fig 4.34.3

There are 99 Beats in the Division. Negative changes in forest cover are seen in 43 Beats and positive changes in 1 Beat. There are no changes in the remaining 55 Beats.

Details of forest cover changes in the 44 Beats mentioned above are shown in Table 4.34.3.

Table 4.34.2: Forest Cover change matrix **(Area in Km^2)**

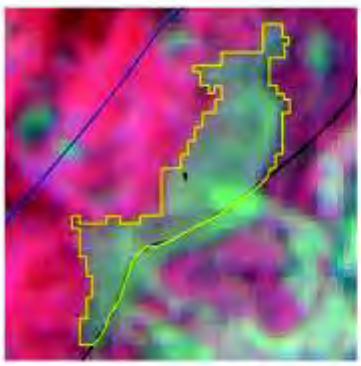
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	203.04	0.00	0.00	0.00	0.00	0.00	**203.04**
Moderately Dense Forest	0.00	2355.63	0.01	0.00	0.34	0.00	**2355.89**
Open Forest	0.00	0.00	218.01	0.05	2.07	0.00	**220.21**
Scrub	0.00	0.00	0.00	182.89	2.77	0.00	**185.66**
Non-Forest	0.00	0.00	0.37	0.00	101.15	0.00	**101.53**
Water	0.00	0.00	0.00	0.00	0.00	169.06	**169.06**
Total of 2011	**203.04**	**2355.54**	**218.47**	**182.94**	**106.34**	**169.06**	**3235.39**
Net Change	0.00	-0.35	-1.74	-2.72	4.81	0.00	

Table 4.34.3: List of Beats with negative change in Forest Cover **(Area in ha)**

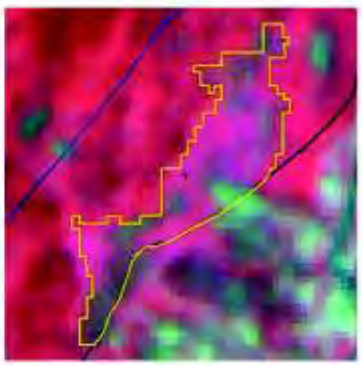
Beat	VDF	MDF	OF	Scrub	NF	WB	Total	Net Change	Encroa-chment
Addathigala Range									
Chavitidibbalu	206.96	2488.17	119.21	257.51	77.75	0.00	3149.60	-1.38	1.38
Kalimamidi	10.53	3340.92	374.83	311.30	55.26	0.00	4092.84	17.10	0.00
P.yerragonda	1351.87	6199.69	302.64	374.03	94.80	21.68	8344.71	-1.46	1.46
Perikivalasa	1254.30	4431.62	255.39	442.03	697.19	0.00	7080.53	-1.54	1.54
Total	**2823.66**	**16460.4**	**1052.07**	**1384.87**	**925.00**	**21.68**	**22667.68**	**12.72**	**4.38**
Eleswaram Range									
Anantharam	3.66	2048.06	299.32	139.16	45.94	0.00	2536.14	-3.25	1.68
Bavuruvaka	37.11	2083.54	85.13	52.20	33.39	7.03	2298.40	-2.41	2.41
Kothuru	0.72	2344.48	293.52	176.59	50.16	0.00	2865.47	-6.92	6.92
Lododdi	72.57	1964.59	149.29	126.31	69.61	0.00	2382.37	-0.50	0.50
Pedamallapuram	178.51	3650.52	461.24	257.01	61.10	0.00	4608.38	-9.88	9.88
Peddipalem	199.75	5111.98	339.56	215.64	74.43	20.39	5961.75	-0.53	0.53
Raghavapatnam	29.02	1207.29	199.86	173.91	38.18	0.00	1648.26	-1.62	1.62
S.agraharam	20.94	1735.07	228.03	184.21	76.39	0.00	2244.64	-3.67	3.67
Vatangi	33.93	1693.44	0.00	331.19	43.52	1.72	2103.80	-12.57	2.04
Total	**576.21**	**21838.97**	**2055.95**	**1656.22**	**492.72**	**29.14**	**26649.21**	**-41.35**	**29.25**
Gokavaram Range									
Dandangi North	0.00	969.17	33.09	6.13	8.82	0.00	1017.21	-0.97	0.97
Kondamodalu	339.59	4629.81	153.04	134.39	102.26	53.53	5412.62	-2.69	2.69
Teliperu	357.70	4005.78	122.10	128.11	20.10	0.00	4633.79	-3.28	3.28
Total	**697.29**	**9604.76**	**308.23**	**268.63**	**131.18**	**53.53**	**11063.62**	**-6.94**	**6.94**
Kakinada Range									
Dewancheruvu	0.00	508.13	53.73	97.39	107.88	0.00	767.13	-48.62	0.00
Murari	24.25	533.66	0.00	9.15	39.92	0.00	606.98	-7.48	7.48
Rajupeta	18.36	2851.40	349.77	161.40	58.97	5.53	3445.43	-5.72	0.86
Total	**42.61**	**3893.19**	**403.5**	**267.94**	**206.77**	**5.53**	**4819.54**	**-61.82**	**8.34**
Rajavommangi Range									
Badadanapalli	0.00	1681.98	178.99	100.83	375.08	0.00	2336.88	-163.40	0.00
Doramamidi	0.00	2569.63	276.96	165.17	62.76	0.00	3074.52	-2.56	2.56

Table 4.34.3: List of Beats with negative change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
Jaddangi	0.00	2409.93	861.85	661.63	327.61	0.00	4261.02	-1.32	1.32
Labbarthi	0.00	3102.21	529.74	434.07	139.48	0.00	4205.50	-0.58	0.58
Lagarai	0.00	739.98	87.56	84.00	105.13	0.00	1016.67	-1.93	1.93
Laxmipuram	1.44	904.33	251.56	96.99	6.07	3.51	1263.90	-3.24	3.24
Total	**1.44**	**11408.06**	**2186.66**	**1542.69**	**1016.13**	**3.51**	**16158.49**	**-173.03**	**9.63**
Rampachodavaram Range									
Akumamidikota	1869.97	9420.18	438.71	439.57	538.81	7.04	12714.28	-22.75	18.01
Chintalapudi	756.33	1984.05	64.22	119.09	27.81	0.00	2951.50	-1.34	1.34
Daragadda	131.57	1598.25	153.39	399.39	176.75	0.00	2459.35	-1.19	1.19
Devarapalli	812.46	6093.56	512.88	541.24	112.31	0.00	8072.45	-3.65	3.65
Donkarai	243.39	8108.61	1208.73	802.09	421.62	962.31	11746.75	-9.15	9.15
Geddada	520.82	6357.64	925.92	1574.15	331.56	13.51	9723.60	-1.90	1.90
Gurthedu	164.02	2071.60	185.59	411.13	229.56	0.00	3061.90	-3.92	3.92
Kakuru	1061.92	8329.62	162.80	162.40	75.85	111.13	9903.72	-23.61	14.36
Kutrawada	1166.59	14561.90	662.08	484.59	310.61	115.68	17301.45	-5.53	5.53
Maredumilli North	582.92	3509.81	41.78	10.40	3.18	48.31	4196.40	-1.00	1.00
Maredumilli South	979.95	6676.36	84.70	69.17	11.02	2.60	7823.80	-6.41	6.41
Palagondi	391.68	2412.33	225.55	179.75	97.01	0.00	3306.32	-3.37	3.37
Pindukuruvalasa	781.69	8347.84	262.88	281.18	95.25	205.80	9974.64	-3.83	3.83
Valamuru	1538.75	8461.35	252.36	159.77	63.72	65.00	10540.95	-0.72	0.72
Total	**11002.06**	**87933.1**	**5181.59**	**5633.92**	**2495.06**	**1531.38**	**113777.11**	**-88.37**	**74.38**
Sudikonda Range									
D.Velamalakota	827.97	6193.54	612.29	1056.37	295.95	5.30	8991.42	-3.14	3.14
Matlapadu	10.25	1144.28	79.48	0.00	61.73	13.92	1309.66	-61.36	0.00
Sudikonda North	0.00	829.62	153.97	161.46	142.74	0.00	1287.79	-55.45	0.00
Sudikonda South	0.61	453.02	77.47	51.16	28.83	0.00	611.09	-3.28	0.00
Tirumalayapalem	149.64	559.50	2.00	78.45	332.28	0.00	1121.87	-6.01	0.00
Total	**988.47**	**9179.96**	**925.21**	**1347.44**	**861.53**	**19.22**	**13321.83**	**-129.24**	**3.14**
Grand Total	**16131.74**	**160318.44**	**12113.21**	**12101.71**	**6128.39**	**1663.99**	**208457.48**	**-488.03**	**136.06**

2010



2011



Longitude	82.17058 ° E
Latitude	17.6021 ° N
Area in Ha	24.16
Change	NFTO OF
Comp No.	502
Beat	Kalimamidi
Range	Addathigala
Division	Kakinada

4.35 KRISHNA DIVISION

4.35.1 Introduction:

Krishna Forest Division comprises of the entire Krishna district lies in the North eastern part of Andhra Pradesh between latitudes 15^0 42' 19'' and 17^0 9' 10'' N and longitudes 80^0 00'07'' and 81^0 33' 13''E. Geographical area of the Division is 8,727 km^2. The Division has 2 physiographic zones- the plains and the hills. The major rivers falling in the division are Krishna, Keesara, Tammileru and Budameru.

Land use pattern of the Division is given in Table 4.35.1

The temperature varies from17^0C in December to 45^0C in the summer and the average annual rainfall is 1028 mm.

Deccan traps, alluvial deposits, lower or upper Gondwana sediments, khondalites and chalcolites occupy the districts. Soils found in the Division are loamy, lateritic and black cotton.

Population of the Division is 4.52 million (2011 Census), per capita forest is 0.01 Ha and the population density is 519 per Km^2.

Table 4.35.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	504.73	5.78
Agriculture	6089.71	69.78
Land with Scrub	137.42	1.57
Fallow Lands	528.28	6.05
Grasslands	0.00	0.00
Settlements	252.16	2.89
Vegetation outside Forest	386.23	4.43
Water Bodies	828.47	9.50
Total	**8727.00**	

4.35.2 Recorded Forest Area:

The notified forest area of the Division is **644.52 Km^2,** which is 7.3% of the geographical area. Reserved and Protected Forests constitute an area of 417.44 Km^2 (65%) and 227.07 Km^2 (35%) of the forest area respectively.

As per Champion and Seth's classification the forests of this Division can be classified as Dry Deciduous Scrub Forests, Tropical Thorn Forest, Tropical Evergreen Scrub Forest and Tropical Tidal Swamp Mangrove Forests.

4.35.3 Protected Area:

Two Protected Areas, viz., Kolleru and Krishna Wild Life Sanctuaries fall in the Division. An area of 308.55 Km^2 of forest area of this Division forms a part of Kolleru WLS and 194.81 Km^2 of Krishna WLS.

4.35.4 Community Forest Management:

There are 68 Vana Samrakshana Samithies (VSSs) in the Division. An area of 624.80 Km^2 forests, which constitutes 96.8% of forest area, is under the management of the VSSs.

4.35.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Oct/Nov2011 - Feb2012) is **287.25 Km^2** which is **3.29%** of the geographical area. In terms of the forest canopy density classes the Division has **1.74** Km^2 of Moderately Dense Forests and **285.51** Km^2 of Open Forests. The area of the Scrub is **210.61** Km^2, that of Non-Forest **73.20** Km^2 and Water Bodies **73.46** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.35.1

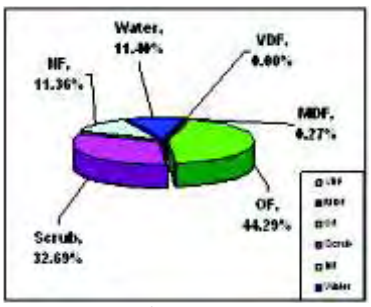


Fig 4.35.1

4.35.6 Change in Forest Cover:

The satellite images of 2010 and 2011 seasons are shown in Figs 4.35.2 & 4.35.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a negative change of **7.54 Ha**. The forest cover change matrix of given in Table 4.35.2 reveals that there is a decrease of **7.54 Ha** of Open Forest.

The entire negative change (including Scrub) of **7.54 Ha,** is on account of encroachments, which is a loss of forest cover. Therefore, the net loss of forest cover in this Division is **7.54 Ha.**

There are 34 Beats in the Division. Negative changes in forest cover are noticed in 2 Beats. There are no changes in the remaining 32 Beats.

Details of forest cover changes in these 2 Beats are shown in Table 4.35.3.

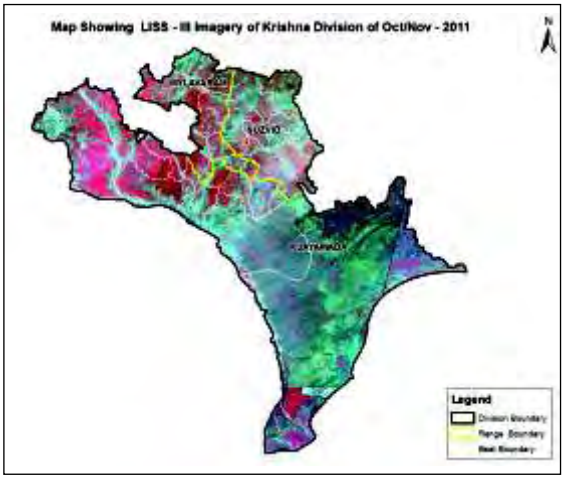


Fig 4.35.2

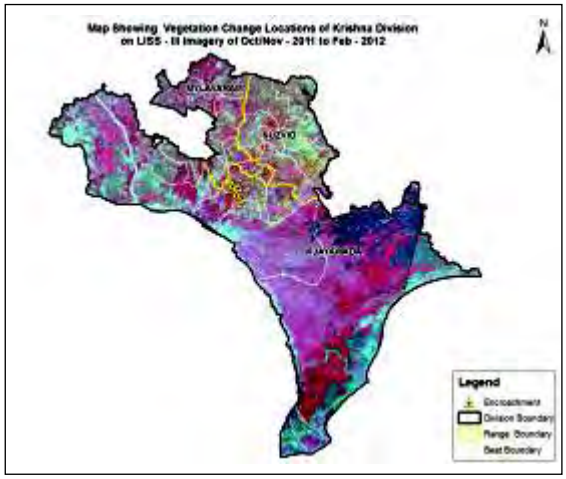


Fig 4.35.3

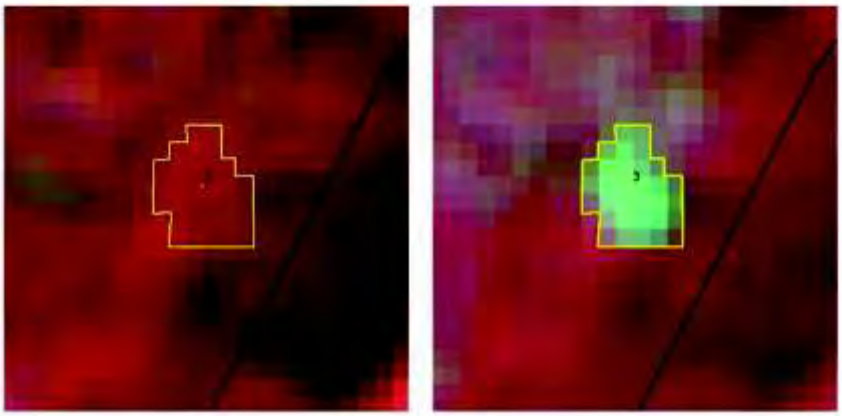
Table 4.35.2: Forest Cover change matrix **(Area in Km^2)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	1.74	0.00	0.00	0.00	0.00	**1.74**
Open Forest	0.00	0.00	285.43	0.00	0.08	0.00	**285.59**
Scrub	0.00	0.00	0.00	210.69	0.00	0.00	**210.61**
Non-Forest	0.00	0.00	0.00	0.00	73.12	0.00	**73.12**
Water	0.00	0.00	0.00	0.00	0.00	73.46	**73.46**
Total of 2011	**0.00**	**1.74**	**285.51**	**210.61**	**73.20**	**73.46**	**644.52**
Net Change	0.00	0.00	-0.08	0.00	0.08	0.00	

Table 4.35.3: List of Beats with change in Forest Cover **(Area in Ha)**

Beat	VDF	MDF	OF	Scrub	NF	WB	Total	Net Change	Encroa-chment
VIJAYAWADA RANGE									
Koduru	0	0	1079.77	577.13	28.46	1685.36	3370.72	-3.49	3.49
Nunna	0	11.02	943.86	142.4	4.69	1101.97	2203.94	-4.05	4.05
Total	**0**	**11.02**	**2023.63**	**719.53**	**33.15**	**2787.33**	**5574.66**	**-7.54**	**7.54**
Grand Total	**0**	**11.02**	**2023.63**	**719.53**	**33.15**	**2787.33**	**5574.66**	**-7.54**	**7.54**

2010 **2011**



Longitude	80.68016 ° E
Latitude	16.67138 ° N
Area in Ha	1.77
Change	OF TO NF
Comp No.	45
Beat	Konduru
Range	Vijayawada
Division	Krishna

4.36. NARSIPATNAM DIVISION

4.36.1 Introduction:

Narsipatnam Forest Division lies in the north-eastern part of Andhra Pradesh between latitudes 17^0 27' 33" and 18^0 07' 02" N and longitudes 81^0 51'47" and 82^0 47' 59" E. Geographical area of the Division is 3754.99 Km^2 which is 30.95% of the geographical area of the district .The Division has two physiographic zones- the plains and the hills. Climate of the Division is characterized by high humidity nearly all round the year with oppressive summer and good seasonal rainfall. The climate of the hill parts of the district is different from that of the plain. Altitude varies from 130 M to 1529 M above MSL. The major rivers falling in the Division are Sileru- a tributary of Godavari, Varaha and Thandava which drain in to Bay of Bengal.

Land use pattern of the Division is given in Table 4.36.1.

Table 4.36.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	2119.19	56.44
Agriculture	918.52	24.46
Land with Scrub	249.05	6.63
Fallow Lands	22.23	0.59
Grasslands	0.13	0
Settlements	8.5	0.23
Vegetation outside Forest	381.07	10.15
Water bodies	56.3	1.5
Total	**3755.00**	

The climate of the Division is characterized by three distinct seasons. i) Summer (ii) Rainy and (iii) Winter seasons. The temperature ranging from 5^0C to 45^0C and annual rainfall is about 712 mm, received mainly from Southwest monsoons.

The Divisions geology comprises of oldest formation of Charnokite series and predominant Khondalite group of rocks of Precambrian age. The rocks are essentially Khondalite group with a few Charnokite bands, Granites, Quartzites, Calcigranulites and Pegmatites. The chief mineral found is bauxite in all the high hills of the agency area; wherever grasslands exist. There are 3 soil types in the Division - sandy soils of khondalites and quartzites, clayey sands of charnokite and granites and coastal sand dunes of quartzite.

Population of the Division is 0.51 million (2011 Census), per capita forest is **0.46 Ha** and the population density is 121 persons per Km^2.

4.36.2 Recorded Forest Area:

The Notified forest area of the Division is **2353.72 Km^2** which is 62.67% of the geographical area. Reserved, Protected and un-classed forests constitute 989.92 Km^2 (42.12%), 1356.31 Km^2 (57.71%) and 4.05 Km^2 (0.17%) of the forest area respectively.

As per Champion and Seth's classification the Division has Tropical Semi Evergreen Forests, Tropical Secondary Moist Mixed Deciduous Forests, Tropical Dry Deciduous Forests, Tropical Dry Evergreen Scrub, Tropical Thorn Forests and Dry Savanna Forests.

4.36.3 Protected Area:

There is no Protected Area in this Division.

4.36.4 Community Forest Management:

There are 284 Vana Samrakshana Samities (VSSs) in the Division with an area of 231.13 Km^2 of forests, which constitutes 9.8% of the forest area.

4.36.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 (Data of Oct/Nov 2011) is **1872.74 Km²** which is **49.87 %** of the geographical area. In terms of the forest canopy density classes the Division has **32.80** Km² of Very Dense Forests, **1084.08** Km² of Moderately Dense Forests and **755.86** Km² of Open Forests. The area under Scrub is **244.93** Km², Non-Forest **235.75** Km² and Water Bodies **0.33** Km². The distribution of the forest cover of the Division is shown in Fig 4.36.1.

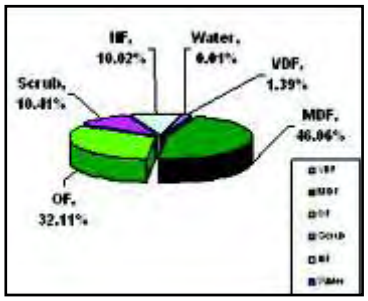


Fig 4.36.1

4.36.6 Change in Forest Cover:

The satellite image of 2010 and 2011 seasons are shown in Figs. 4.36.2 and Fig 4.36.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a **negative change in forest cover of 20.75 Ha.** The forest cover change matrix given in Table 4.36.2 reveals that there is a decrease of **12.69 Ha** of Moderately Dense Forest and **8.06 Ha** of Open Forest.

The total negative change of **20.75 Ha** is on account of encroachments; which is taken as loss of forest cover. Therefore the **net loss of forest cover** is **20.75 Ha.**

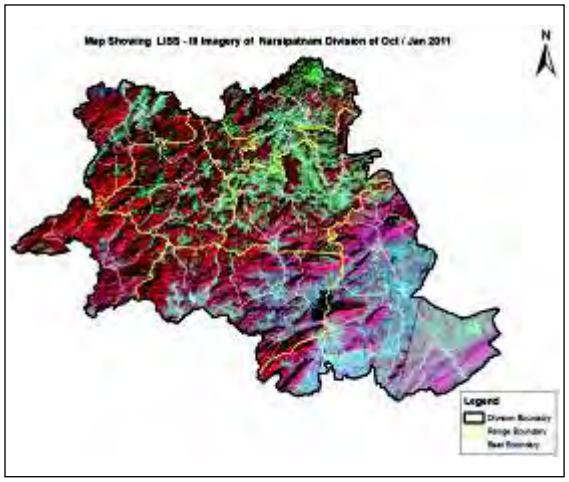


Fig 4.36.2

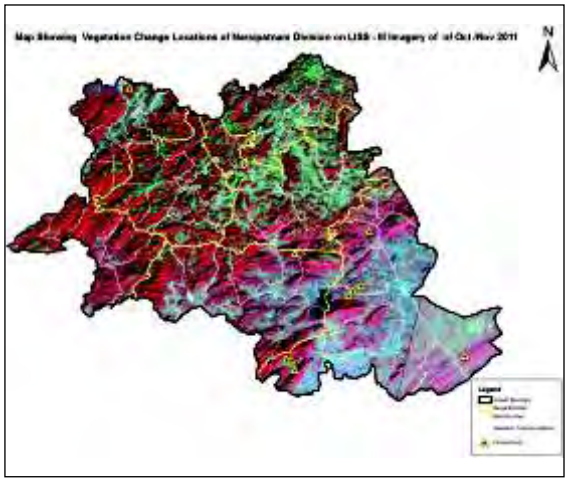


Fig 4.36.3

There are 52 Beats in the Division. Negative changes in forest cover are noticed in 7 Beats. There are no changes in the remaining 45 Beats.

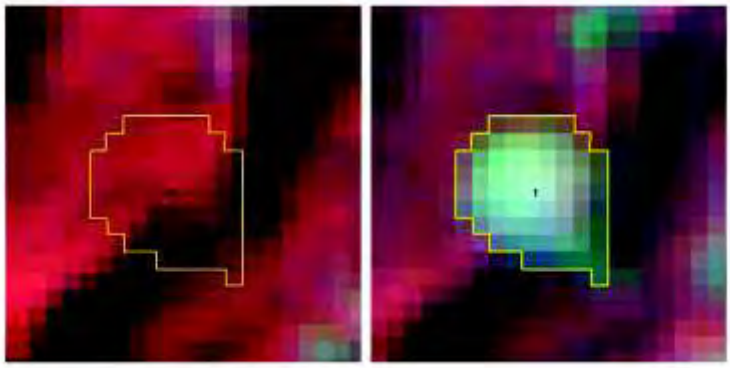
Details of forest cover changes in the 7 Beats mentioned above are shown in Table 4.36.3.

Table 4.36.2: Forest Cover change matrix **(Area in Km²)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	32.80	0.00	0.00	0.00	0.00	0.00	**32.80**
Moderately Dense Forest	0.00	1084.08	0.00	0.00	0.13	0.00	**1084.21**
Open Forest	0.00	0.00	755.86	0.00	0.08	0.00	**755.94**
Scrub	0.00	0.00	0.00	244.93	0.00	0.00	**244.93**
Non-Forest	0.00	0.00	0.00	0.00	235.54	0.00	**235.54**
Water	0.00	0.00	0.00	0.00	0.00	0.33	**0.33**
Total of 2011	**32.80**	**1084.08**	**755.86**	**244.93**	**235.75**	**0.33**	**2353.75**
Net Change	0.00	-0.13	-0.08	0.00	0.21	0.00	

Table 4.36.3: List of Beats with negative change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
K.d.peta Range									
K.d.peta	0.00	832.90	898.09	81.23	80.13	0.00	1892.35	-1.65	1.65
Total	**0.00**	**832.90**	**898.09**	**81.23**	**80.13**	**0.00**	**1892.35**	**-1.65**	**1.65**
Narsipatnam Range									
Arlova	0.00	592.89	1433.73	222.32	195.69	0.00	2444.63	-4.24	4.24
Downuru	3.72	2113.34	1398.64	212.07	81.69	0.00	3809.46	-2.51	2.51
Koduru	0.75	1294.79	1658.80	253.24	91.61	0.00	3299.19	-1.93	1.93
Narsipatnam	0.00	1568.47	1844.01	326.12	292.83	3.06	4034.49	-1.31	1.31
Vedurupalli	87.02	2341.96	1040.77	109.80	62.63	0.00	3642.18	-5.24	5.24
Total	**91.49**	**7911.45**	**7375.95**	**1123.55**	**724.45**	**3.06**	**17229.95**	**-15.23**	**15.23**
Sileru Range									
Duppulawada	0.00	741.04	1072.85	609.09	691.52	0.00	3114.50	-3.87	3.87
Total	**0.00**	**741.04**	**1072.85**	**609.09**	**691.52**	**0.00**	**3114.50**	**-3.87**	**3.87**
Grand Total	**91.49**	**9485.39**	**9346.89**	**1813.87**	**1496.10**	**3.06**	**22236.80**	**-20.75**	**20.75**

2010 **2011**



Longitude	82.09463 ° E
Latitude	18.05292 ° N
Area in Ha	3.87
Change	DF TO NF
Comp No.	1068
Beat	Duppulawa
Range	Sileru
Division	Narsipatnam

4.37 PADERU DIVISION

4.37.1 Introduction:

Paderu Forest Division lies in the northern part of Vishakhapatnam district between latitudes 17^0 55' 48'' and 18^0 32' 59'' N and longitudes 82^0 18' 41'' and 83^0 01' 04'' E. Geographical area of the Division is 2336 km^2 which is 20.93 % of the geographical area of district. The Division has two physiographic zones, the plains and the hills. The major river falling in the Division is Machkund flowing to north.

Land use pattern of the division is given in Table 4.37.1.

Table 4.37.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	776.52	33.24
Agriculture	532.22	22.78
Land with Scrub	515.51	22.07
Fallow Lands	64.99	2.78
Grasslands	3.27	0.14
Settlements	2.03	0.09
Vegetation outside Forest	348.63	14.92
Water bodies	93.04	3.98
Total	**2336.20**	

The Divisions geology comprises of oldest formation of Charnokite series and predominant Khondalite group of rocks of Pre-Cambrian age. The rocks are essentially Khondalite group with a few Charnokite bands, granites, Quartzites, Calcigranulites and Pegmatites. The soil types found in the division are sandy soils of khondalites and quartzites, clayey sands of charnokite and granites; black cotton soils come up next having sizeable chunks of area in K. Kotapadu, Devarapalli, Cheedikada, Paderu and Hukumpeta Mandals.

The climate of Paderu Division is characterized by high humidity throughout the year with oppressive summer and good seasonal rainfall. The climate of the hill parts of the Division is different from that of the plains. Altitude varies from 90 M to 1500 M above MSL. Temperature ranges from 10^0C to 35^0C and the annual rainfall is about 1320 mm.

Population of the Division is 0.32 million (2011 Census) which is 9% of the total population of the district, per capita forest is 0.32 Ha and the population density is 101 persons per Km^2.

4.37.2 Recorded Forest Area:

The notified forest area of the Division is **1011.52 Km^2** which is 43.3% of the geographical area. Reserved, Protected and un-classed forests constitute 719.52 Km^2 (71.1%), 285.2 Km^2 (28.2%) and 6.8 Km^2 (0.006%) of the forest area respectively.

As per Champion and Seth the forests of this Division fall into the following classes - Tropical Semi Evergreen Forests, Tropical Moist Mixed Deciduous Forests, Tropical Dry Deciduous Forests, Tropical Dry Evergreen Scrub, Tropical Thorn Forests and Dry Savanna Forests.

4.37.3 Protected Area:

There is no Protected Area in this Division.

4.37.4 Community Forest Management:

There are 303 VSSs in the Division with 270.90 Km^2 of forest area, which constitutes 26.65 % of forest area.

4.37.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Oct / Jan 2011) is **540.66 Km²** which is **23.14%** of geographical area. In terms of forest canopy density classes the Division has **1.91** Km² of Very Dense Forests, **140.21** Km² of Moderately Dense Forests and **398.54** Km² of Open Forests. The area of the Scrub is **234.50** Km², Non-Forest **236.25** Km² and Water Bodies **0.11** Km².The distribution of the forest cover of the Division is shown in Fig 4.37.1.

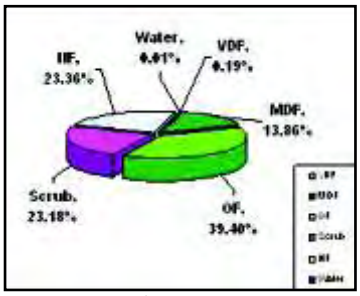


Fig 4.37.1

4.37.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 seasons are shown in Figs. 4.37.2 and 4.37.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a **negative change in forest cover of 29.40 Ha**. The forest cover change matrix given in Table 4.37.2 reveals that there is a decrease of **29.40 Ha** of Open Forest and **17.10 Ha** of Scrub.

The total negative change (including Scrub) is **46.50 Ha** is on account of encroachments. Therefore the **net loss of forest cover** is **46.50 Ha** in the Division.

There are 20 Beats in the Division. Negative changes in Forest Cover are noticed in 2 Beats only. There are no changes in the remaining 18 Beats.

Details of forest cover changes in these 2 Beats are shown in Table 4.37.3.

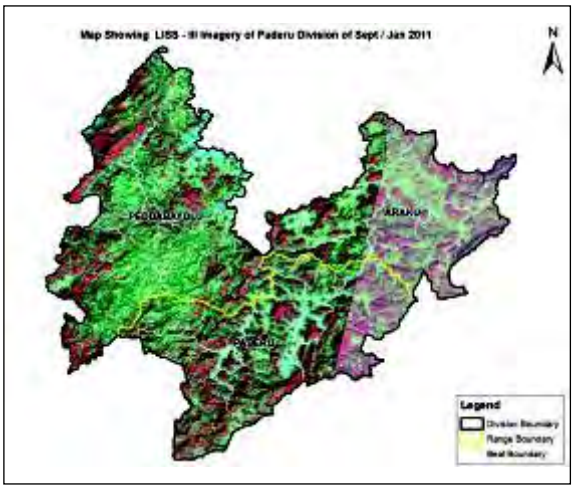


Fig 4.37.2

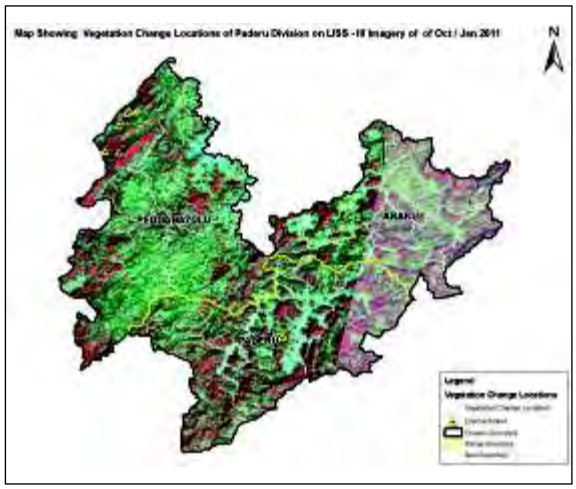


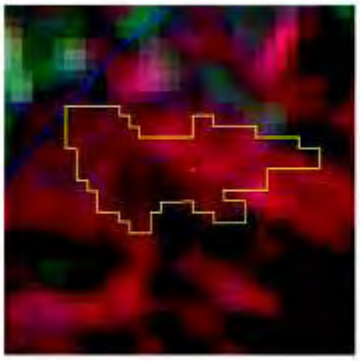
Fig 4.37.3

Table 4.37.2: Forest Cover change matrix **(Area in Km²)**

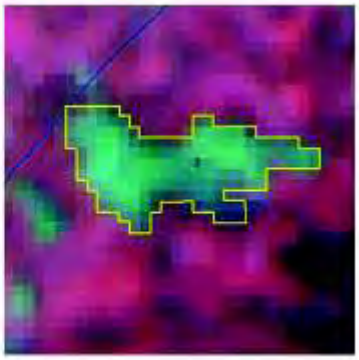
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	1.91	0.00	0.00	0.00	0.00	0.00	**1.91**
Moderately Dense Forest	0.00	140.21	0.00	0.00	0.00	0.00	**140.21**
Open Forest	0.00	0.00	398.54	0.00	0.29	0.00	**398.83**
Scrub	0.00	0.00	0.00	234.50	0.17	0.00	**234.67**
Non-Forest	0.00	0.00	0.00	0.00	235.79	0.00	**235.79**
Water	0.00	0.00	0.00	0.00	0.00	0.11	**0.11**
Total of 2011	**1.91**	**140.21**	**398.54**	**234.50**	**236.25**	**0.11**	**1011.52**
Net Change	0.00	0.00	-0.29	-0.17	0.46	0.00	

Table 4.37.3: List of Beats with change in Forest Cover								(Area in Ha)	
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
PADERU RANGE									
Paderu	32.36	1458.35	4035.42	1547.57	598.65	0.00	7672.35	-17.10	17.10
Total	**32.36**	**1458.35**	**4035.42**	**1547.57**	**598.65**	**0.00**	**7672.35**	**-17.10**	**17.10**
PEDABAYULU RANGE									
Machipuram	45.4	2426.1	4045.67	1509.73	1700.39	11.23	9738.52	-29.40	29.40
Total	**77.76**	**3884.45**	**8081.09**	**3057.3**	**2299.04**	**11.23**	**17410.9**	**-29.40**	**29.40**
Grand Total	**45.4**	**2426.1**	**4045.67**	**1509.73**	**1700.39**	**11.23**	**9738.52**	**-46.50**	**46.50**

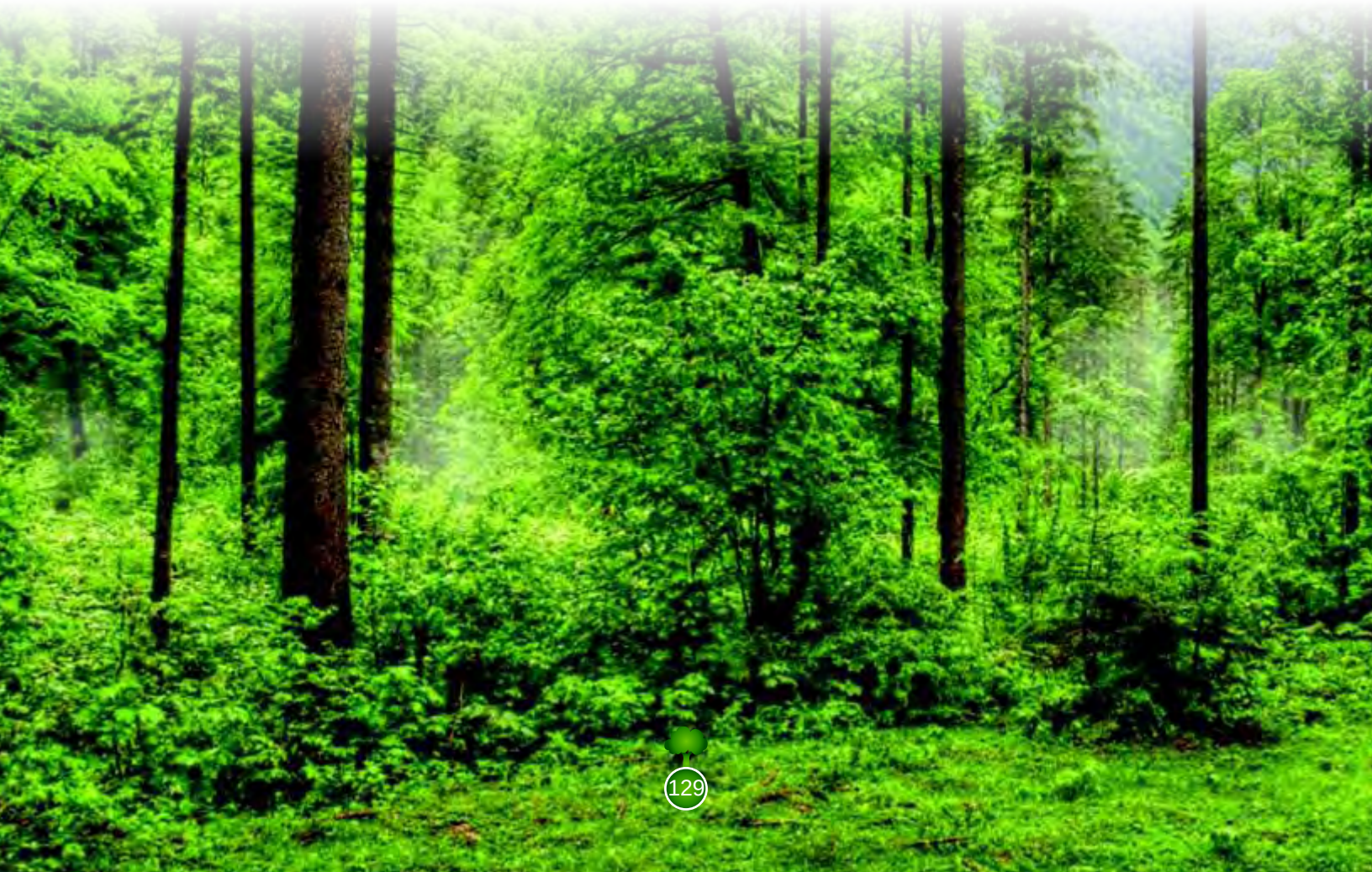
2010



2011



Longitude	82.40991 ° E
Latitude	18.45015 ° N
Area in Ha	8.98
Change	OF to NF
Comp No.	445
Beat	Manchipuram
Range	Peddabayulu
Division	Paderu



4.38 SRIKAKULAM DIVISION

4.38.1 Introduction:

Srikakulam Forest Division which is co-terminus with the district lies in the north-eastern part of Andhra Pradesh between latitudes 17^0 45'' and 19^0 30'' N and longitudes 82^0 38' and 84^0 45' E. Geographical area of the Division is 5953.50 Km^2. The Division has two physiographic zones, i.e., the hills and the plains which are known as agency and non-agency areas respectively. The altitude varies from 91 M to 1524 M above MSL. The slope is north and northwest-south and south-east. The major rivers are Nagavali and Vamshadhara.

Land use pattern of the Division is given in Table 4.38.1.

The climate of this Division is generally dry with temperatures ranging from 17^0C to 37^0C and the annual rainfall is about 1225 mm, received mainly from south-west monsoons.

Minerals like Manganese ore, Graphite, Lime stone, Iron ore & Mica occur in the Division. The soil types found are sandy and clayey formed due to weathering of underlying rocks- granite, gneisses and other allied rocks.

Population of the Division is 2.69 million (2011 Census), per capita forest area is 0.03 Ha and the population density is 462 persons per Km^2.

Table 4.38.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	677.52	11.38
Agriculture	3561.68	59.83
Land with Scrub	541.12	9.09
Fallow Lands	60.72	1.02
Orchards	321.46	5.4
Settlements	31.55	0.53
Not available for cultivation	523.86	8.8
Rivers/Streams	235.14	3.95
Total	**5953.50**	

4.38.2 Recorded Forest Area:

The total notified forest area of the Division is **721.72 km^2** which is 12.21 % of the geographical area. Reserved, Protected and Un-classed forest constitute 422.45km^2 (61%), 242.79 km^2 (35%) and 21.17 km^2 (3%) of the total forest area respectively.

As per Champion and Seth the forests of Division fall under Tropical Semi Evergreen, Tropical Moist Deciduous (Mixed, Sal, Hilly savanna), Dry Deciduous (mixed, thorn) and Tropical Dry Evergreen (Misc. forests) types.

4.38.3 Protected Area:

There is no Protected Area in this Division.

4.38.4 Community Forest Management:

There are 282 VSSs in the Division having an area of 290.20 Km^2 of forests, which constitutes 40.21 % of forest area.

4.38.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Sep 2011 – Feb 2012) is **571.48 km^2** which is **9.60%** of the geographical area. In terms of the forest canopy density classes the Division has **134.52** Km^2 of Moderately Dense Forests and **436.96** Km^2 of Open Forests. The area of the Scrub is **102.11** Km^2, Non-Forest **37.78** Km^2 and Water Bodies **10.35** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.38.1.

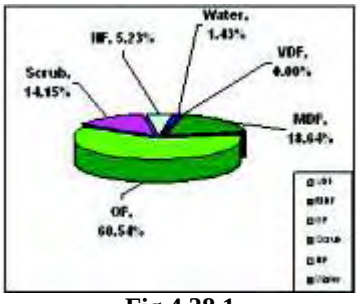


Fig 4.38.1

4.38.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 seasons are shown in Figs. 4.38.2 and 4.38.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a negative change in forest cover of **327.22 Ha**. The forest cover change matrix given in Table 4.38.2 reveals that there is a decrease of **9.57 Ha** of Moderately Dense Forest and **317.65 Ha** of Open Forest.

The total negative change (including Scrub) is **327.22 Ha.** Out of this **10.30 Ha** is on account of clearance of jungle growth for raising of plantations, **316.92 Ha** is on account of encroachments. As clearance of jungle growth for raising of plantations are Forest management interventions and hence not considered as loss of forest Cover. Thus only the negative change due to encroachments is taken as loss of forest cover. Therefore the net losses of forest cover **316.92 Ha** only.

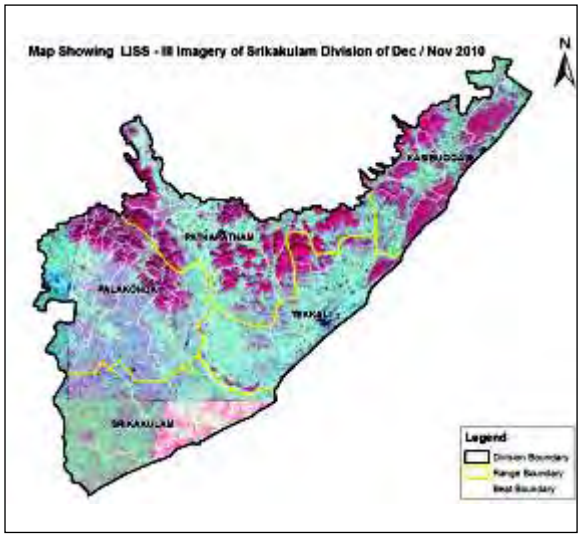


Fig 4.38.2

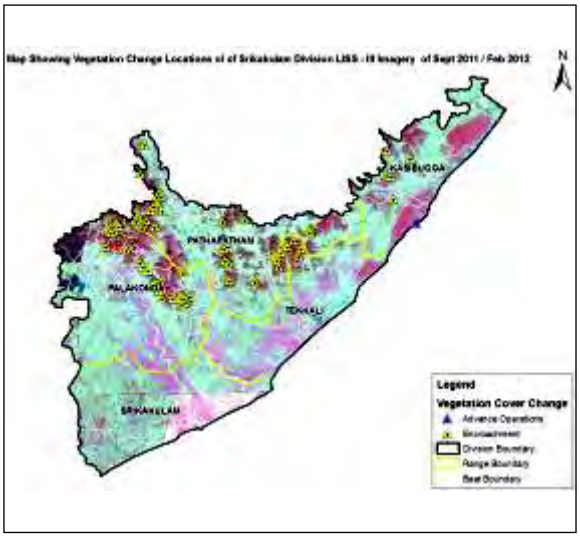


Fig 4.38.3

There are 43 Beats in the Division. Negative changes in forest cover are noticed in 23 Beats. There are no changes in the remaining 20 Beats.

Details of forest cover changes in the 23 Beats mentioned above are shown in Table 4.38.3.

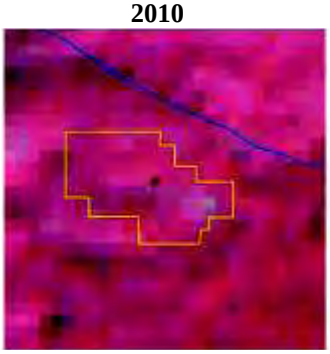
Table 4.38.2: Forest Cover change matrix **(Area in Km^2)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	134.52	0.00	0.00	0.10	0.00	**134.62**
Open Forest	0.00	0.00	436.96	0.00	3.18	0.00	**440.14**
Scrub	0.00	0.00	0.00	102.11	0.00	0.00	**102.11**
Non-Forest	0.00	0.00	0.00	0.00	34.50	0.00	**34.50**
Water	0.00	0.00	0.00	0.00	0.00	10.35	**10.35**
Total of 2011	**0.00**	**134.52**	**436.96**	**102.11**	**37.78**	**10.35**	**721.72**
Net Change	0.00	-0.10	-3.18	0.00	3.28	0.00	

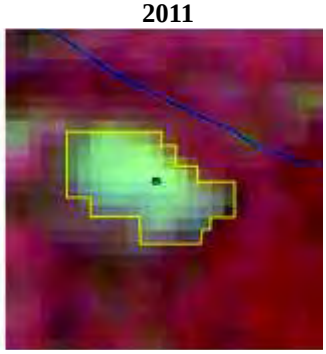
Table 4.38.3: List of Beats with negative change in Forest Cover **(Area in ha)**

Beat	VDF	MDF	OF	Scrub	NF	WB	Total	Net Change	Encroa-chment
Kasibugga Range									
Budarsingi	0.00	40.72	885.66	290.92	30.46	0.00	1247.76	-3.20	3.20
Makarajola	0.00	149.88	1056.56	550.58	78.04	0.00	1835.06	-1.66	1.66
Mandasa	0.00	19.60	1415.05	309.32	29.74	0.00	1773.71	-12.00	12.00
Metturu	0.00	0.00	25.90	273.11	72.25	4.32	375.58	-10.30	0.00
Sunkidi	0.00	2.04	790.00	163.94	14.93	0.00	970.90	-1.87	1.87
Total	**0.00**	**212.24**	**4173.16**	**1587.87**	**225.42**	**4.32**	**6203.01**	**-29.03**	**18.73**
Palakonda Range									
Antikonda	0.00	420.10	781.31	117.95	23.97	0.00	1343.33	-16.09	16.09
Bodlapadu	0.00	1055.88	477.38	49.67	38.76	0.00	1621.69	-18.7	18.70
Burna East	0.00	316.78	121.97	3.38	3.48	0.00	445.61	-3.48	3.48
Kadagandi East	0.00	338.67	970.91	90.38	56.52	1.89	1458.37	-16.81	16.81
Kadagandi West	0.00	809.45	457.72	21.77	12.53	1.76	1303.23	-12.53	12.53
Palakonda	0.00	450.97	1317.24	296.69	23.95	0.00	2088.85	-16.89	16.89
Tankidi	0.00	918.71	903.34	14.60	47.93	0.00	1884.58	-47.93	47.93
Total	**0.00**	**4310.55**	**5029.87**	**594.45**	**207.15**	**3.64**	**10145.66**	**-132.43**	**132.43**
Pathapatnam Range									
Antharaba	0.00	251.84	1720.38	246.94	22.78	0.00	2241.94	-3.99	3.99
Bagga	0.00	757.90	3045.71	293.98	46.96	0.00	4144.55	-40.41	40.41
Baleru	0.00	741.29	2626.36	256.74	44.68	2.21	3671.27	-25.68	25.68
Jadupalli	0.00	693.46	2551.56	395.12	97.35	0.00	3737.48	-18.93	18.93
Korada	0.00	797.60	3461.89	84.21	14.15	0.00	4357.84	-6.55	6.55
P0lavaram	0.00	1298.25	1620.88	46.61	28.21	0.00	2993.95	-13.72	13.72
Rugada	0.00	146.66	2312.39	705.96	66.91	0.00	3231.92	-12.15	12.15
Saravakota	0.00	73.31	1964.49	467.47	35.50	0.00	2540.77	-3.06	3.06
Sudiraikonda	0.00	376.18	2991.97	369.40	40.78	0.00	3778.34	-15.1	15.10
Temburu	0.00	196.33	1972.15	333.22	38.81	0.00	2540.51	-11.71	11.71
Total	**0.00**	**5332.81**	**24267.77**	**3199.64**	**436.14**	**2.21**	**33238.58**	**-151.30**	**151.30**
Tekkali Range									
Narsingapalli	0.00	746.87	2872.92	361.68	95.27	0.00	4076.74	-14.46	14.46
Total	**0.00**	**746.87**	**2872.92**	**361.68**	**95.27**	**0.00**	**4076.74**	**-14.46**	**14.46**
Division Total	**0.00**	**10602.48**	**36343.73**	**5743.65**	**963.97**	**10.17**	**53663.99**	**-327.22**	**316.92**

2010



2011



Longitude	84.05655 ° E
Latitude	18.77567 ° N
Area in Ha	1.97
Change	OF TO NF
Comp No.	421
Beat	Rugada
Range	Pathapatnam
Division	Srikakulam

4.39 VIZIANAGARAM DIVISION

4.39.1 Introduction:

Vizianagaram Forest Division which is co-terminus with district lies in the north-eastern part of Andhra Pradesh between latitudes 17^0 51' and 19^0 9'' N and longitude 82^0 58" and 83^0 49 E. Geographical Area of the Division is 6261 Km^2.The Division has two physiographic zones, the plains and the Hills. The major rivers in the district are Nagavali, Vegavathi, Gomuki and Suvarnamukhi.

Land use pattern of the division is given in Table 4.39.1.

The climate of this district is characterized by high humidity all round the year with oppressive summer and good seasonal rainfall. The climate of the hill parts of the district is different from that of the plains. The temperature varies from 17.1^0C to 39.6^0 C. The main soils in the district are red, sandy loams and sandy clay.

The average annual rainfall of the Division is 1,131 mm. The Division gets the benefit of both the south-west and north-east monsoon.

Population of the Division is 2.34 million as per 2011 census and the per capita forest is 0.05 Ha. The population density is 358 persons per Km^2.

Table 4.39.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1187.91	18.97
Agriculture	3244.78	51.82
Land with Scrub	777.07	12.41
Fallow Lands	23.79	0.38
Grasslands	0.63	0.01
Settlements	25.67	0.41
Not available for cultivation	869.74	13.89
Rivers/Streams	132.12	2.11
Total	**6261.64**	

4.39.2 Recorded Forest Area:

The area of notified forests of the Division is **1219.28 Km^2** which is 18.24% of the geographical area. Reserved, Protected and un-classed forests constitute 716.27 Km^2 (60%), 420.10 Km^2 (35.2%) and 56.66 Km^2 (0.047%) of the forest area respectively.

As per Champion and Seth's classification the forests of the Division fall under Southern Tropical Moist Mixed Deciduous Forests, Northern Tropical Dry Deciduous Forests, Southern Tropical Dry Mixed Deciduous Forests and Tropical Dry Evergreen Forests.

4.39.3 Protected Area:

There is no Protected Area in this Division.

4.39.4 Community Forest Management:

There are 265 VSSs in the Division. An area of 305.59 Km^2 of forest area, which is 25% of the forest area is under the management of communities.

4.39.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Sep/Nov 2011) is **1120.53 Km^2** which is **17.90%** of the geographical area. In terms of the forest canopy density classes the Division has **595.98** Km^2 of Moderately Dense Forests and **524.55** Km^2 of Open Forests. The area of the Scrub is **61.36** Km^2, Non-Forest **36.92** Km^2 and Water Bodies **0.44** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.39.1.

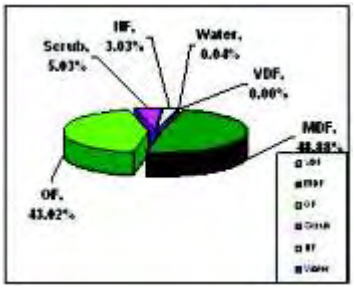


Fig 4.39.1

4.39.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 seasons are shown in Figs. 4.39.2 and 4.39.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a **negative change in forest cover of 14.10 Ha.** The forest cover change matrix given in Table 4.39.2 reveals that there is a decrease of **14.10 Ha** of Open Forest and **149.17 Ha** of Scrub.

The total negative change (including Scrub) of **163.27 Ha** is on account of encroachments. Therefore the **net loss of forest cover in the Division is 163.27 Ha.**

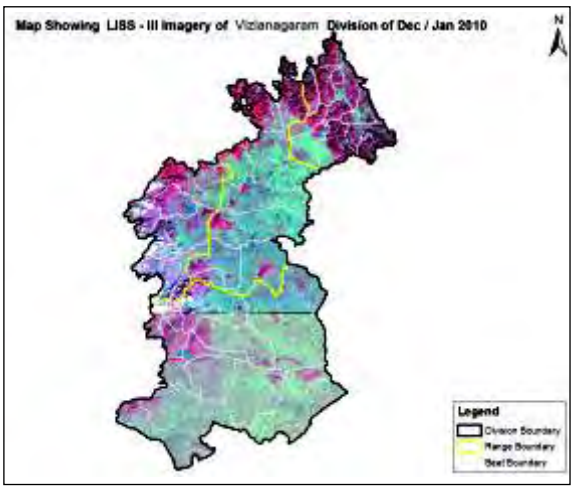


Fig 4.39.2

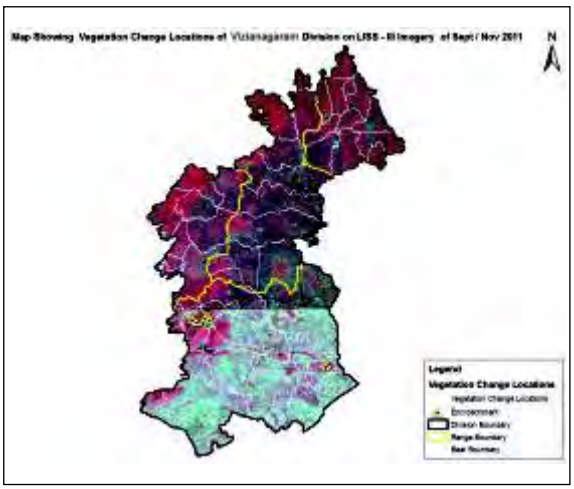


Fig 4.39.3

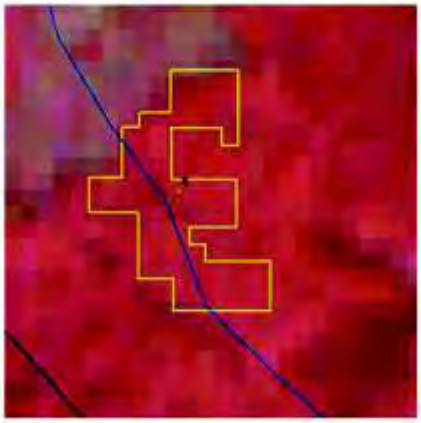
Table 4.39.2: Forest Cover change matrix **(Area in Km²)**

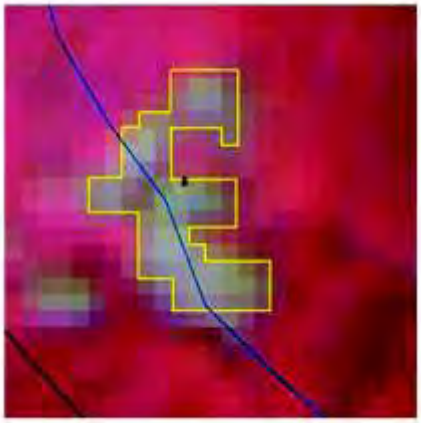
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	595.98	0.00	0.00	0.00	0.00	**595.98**
Open Forest	0.00	0.00	524.55	0.00	0.14	0.00	**524.69**
Scrub	0.00	0.00	0.00	61.36	1.49	0.00	**62.85**
Non-Forest	0.00	0.00	0.00	0.00	35.29	0.00	**35.29**
Water	0.00	0.00	0.00	0.00	0.00	0.44	**0.44**
Total of 2011	**0.00**	**595.98**	**524.55**	**61.36**	**36.92**	**0.44**	**1219.25**
Net Change	0.00	0.00	-0.14	-1.49	1.63	0.00	

Table 4.39.3: List of Beats with change in Forest Cover **(Area in Ha)**

Beat	VDF	MDF	OF	Scrub	NF	WB	Total	Net Change	Encroa-chment
VIZIANAGARAM RANGE									
Bhimaram	0.00	1,967.06	633.38	62.36	226.80	0.09	2,889.70	-129.07	129.07
Kancheru	0.00	1,036.26	407.39	12.07	83.39	0.00	1,539.11	-27.74	27.74
Kumili	0.00	843.64	555.71	89.71	30.32	0.34	1,519.72	-6.46	6.46
Total	**0.00**	**3,846.96**	**1,596.48**	**164.14**	**340.51**	**0.43**	**5,948.53**	**-163.27**	**163.27**
Grand Total	**0.00**	**3,846.96**	**1,596.48**	**164.14**	**340.51**	**0.43**	**5,948.53**	**-163.27**	**163.27**

2010 **2011**





Longitude	83.14254 ° E
Latitude	18.28757 ° N
Area in Ha	4.53
Change	OF to NF
Comp No.	306
Beat	Kancheru
Range	Vizianagaram
Division	Vizianagaram

4.40 Vishakhapatnam Division

4.40.1 Introduction:

Vishakhapatnam Forest Division lies in the southern part of Vishakhapatnam district between latitudes 17^0 15' 00'' and 18^0 26' 25'' N and longitudes 82^0 31' 04'' and 83^0 27' 40'' E. Geographical area of the Division is 5069 Km^2 which is 45 % of the geographical area of district. The Division has two physiographic zones, the plains and the Hills. The major rivers falling in the Division are Thandava, Varaha and Sharada.

Land use pattern of the division is given in Table 4.40.1.

There are 3 major soil types in the Division. These are sandy, clayey sands and coastal sand dunes.

The climate of Vishakhapatnam Division is characterized by high humidity nearly all through the year with oppressive summer and good seasonal rainfall. The climate of the hill parts of the Division is different from that of the plains. Altitude varies from 90 M to 1500 M above MSL. Temperatures range from 18^0C to 45^0C and the annual rainfall is about 1202mm, received mainly from south-west and north-east monsoons.

Population of the Division is 3.45 million (2011 Census) which is 79% of the population of the district.

Table 4.40.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1162.63	22.93
Agriculture	2085.9	41.14
Land with Scrub	495.36	9.77
Fallow Lands	407.97	8.05
Grasslands	0.49	0.01
Settlements	78.09	1.54
Vegetation outside Forest	616.29	12.16
Water bodies	223.05	4.4
Total	**5069.80**	

The per capita forest is 0.04 Ha and the population density of the Division is 916 persons per Km^2.

4.40.2 Recorded Forest Area:

The notified forest area of the Division is **1266.09 Km^2** which is 25% of the geographical area. Reserved, Protected and Un-classed forests constitute 586.6 Km^2 (46%), 678.65 Km2 (53%) and 0.74 Km^2 (0.06%) of the forest area respectively.

As per Champion and Seth's classification the forest types in the Division are Southern Tropical Semi Evergreen Forests, Southern Tropical Moist Mixed Deciduous Forests, Southern Tropical Dry Deciduous Forests, Tropical Dry Evergreen Scrub, Tropical Thorn Forests and Dry Savanna Forest.

4.40.3 Protected Area:

There is one Protected Area, viz., Kambalakonda WLS in the Division having an area of 70.70 km^2. This is large and sprawling greenery around the Vizag City harbouring diverse flora & fauna.

4.40.4 Community Forest Management:

There are 321 Vana Samrakshana Samities (VSSs) in the Division. An area of 271.93 Km^2 of notified forests, which is 21 % of forest area, is under the management of VSSs.

4.40.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS- III 2011 (Data of Nov 2011) is **959.79 Km^2** which is **18.93%** of the geographical area. In terms of the forest canopy density classes the Division has **0.15** Km^2 of Very Dense Forests, **431.98** Km^2 of Moderately Dense Forests and **527.66** Km^2 of Open Forests.The area of the scrub is **199.52** Km^2, Non-Forest **105.52** Km^2 and Water Bodies **1.23** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.40.1.

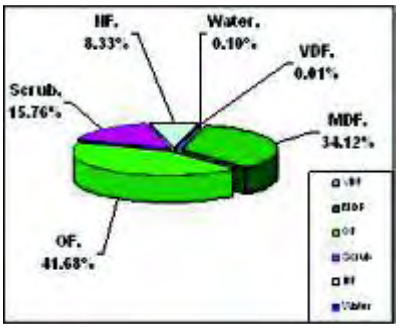


Fig 4.40.1

4.40.6 Change in Forest Cover:

The satellite image of 2010 and 2011 seasons are shown in Figs. 4.40.2 and 4.40.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a **negative change in forest cover of 33.74 Ha**. The change matrix given in Table 4.40.2 reveals that there is a decrease of **25.67 Ha** of Moderately Dense Forest, **8.07 Ha** of Open Forest and **1.65 Ha** of Scrub.

The total negative change (including Scrub) of **35.39 Ha.** out of this **1.13 Ha** is on account of clearance of jungle growth for raising of plantations, **34.26 Ha** is on account of encroachments. As clearance of jungle growth for raising of plantations is a Forest management intervention and hence not considered as loss of forest cover. Thus only the negative change due to encroachment is taken as loss of forest cover. Therefore the **net loss of forest cover is 34.26 Ha** only.

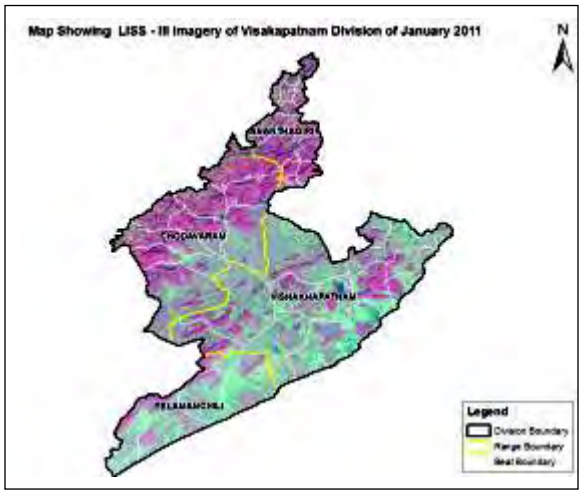


Fig 4.40.2

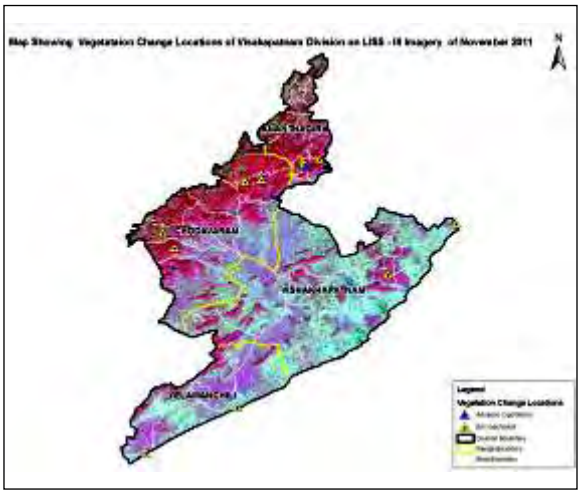


Fig 4.40.3

There are 40 Beats in the Division. Negative changes in forest cover are seen in 10 Beats and there are no changes in the remaining 30 Beats.

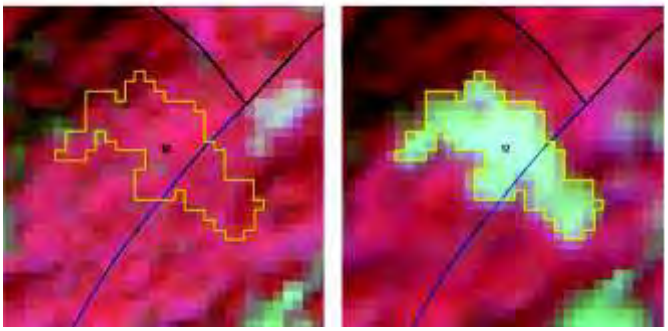
Details of forest cover changes in the 10 Beats are shown in Table 4.40.3.

Table 4.40.2: Forest Cover change matrix **(Area in Km^2)**

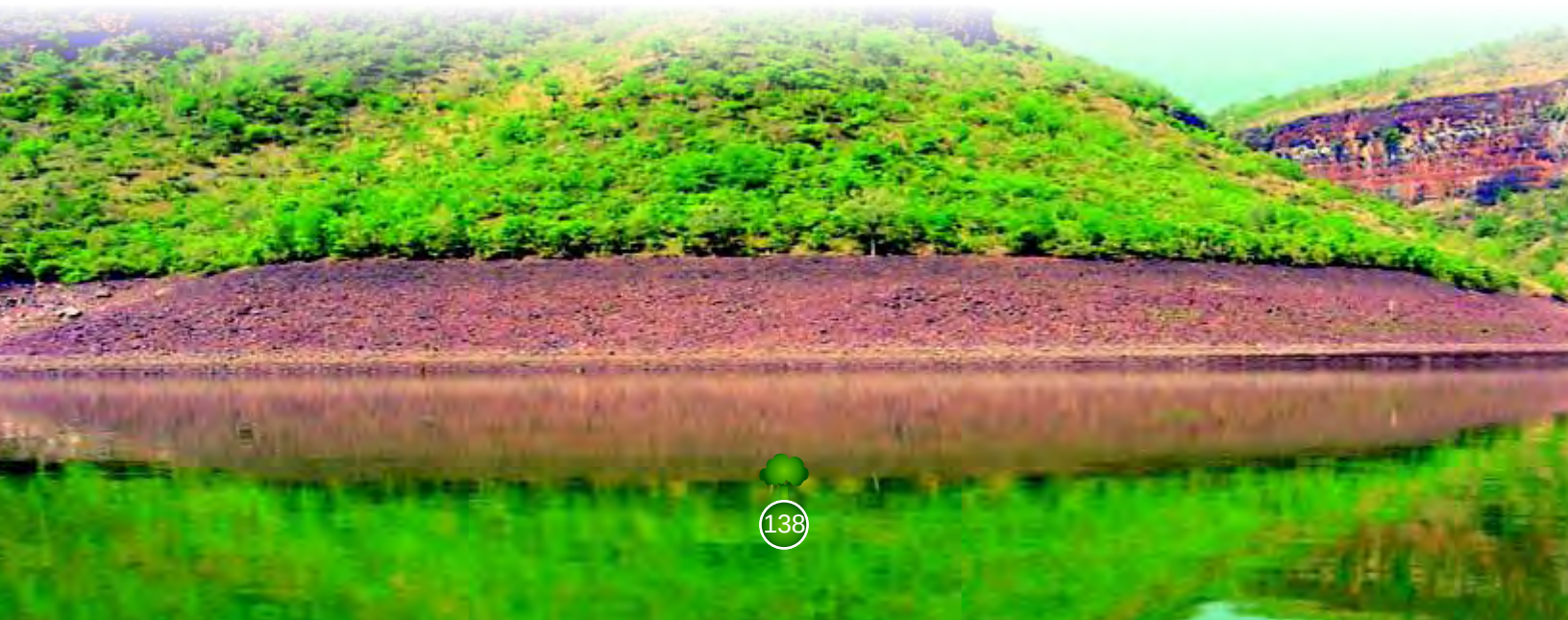
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.15	0.00	0.00	0.00	0.00	0.00	**0.15**
Moderately Dense Forest	0.00	431.98	0.00	0.00	0.26	0.00	**432.24**
Open Forest	0.00	0.00	527.66	0.00	0.08	0.00	**527.74**
Scrub	0.00	0.00	0.00	199.52	0.02	0.00	**199.54**
Non-Forest	0.00	0.00	0.00	0.00	105.16	0.00	**105.16**
Water	0.00	0.00	0.00	0.00	0.00	1.23	**1.23**
Total of 2011	**0.15**	**431.98**	**527.66**	**199.52**	**105.52**	**1.23**	**1266.06**
Net Change	0.00	-0.26	-0.08	-0.02	0.36	0.00	

Table 4.40.3: List of Beats with negative change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
ANANTHAGIRI RANGE									
Ananthagiri	0.00	309.17	1006.01	851.50	597.45	0.00	2764.13	-1.29	1.29
Chintalapudi	0.00	1238.53	741.84	74.11	74.09	0.00	2128.57	-13.32	12.19
Kuridi	0.00	1326.30	1670.85	271.89	164.53	0.00	3433.57	-2.11	2.11
Total	**0.00**	**2874.00**	**3418.70**	**1197.50**	**836.07**	**0.00**	**8326.27**	**-16.72**	**15.59**
CHODAVARAM RANGE									
Jeenabadu	1.10	4464.71	2949.17	440.28	152.60	0.00	8007.86	-6.96	6.96
Kasipuram	2.15	3017.19	3474.37	1163.55	460.91	0.00	8118.17	-2.39	2.39
Kinthali	0.52	3276.89	2104.14	381.74	176.97	1.95	5942.21	-1.68	1.68
Total	**3.77**	**10758.79**	**8527.68**	**1985.57**	**790.48**	**1.95**	**22068.24**	**-11.03**	**11.03**
VISHAKHAPATNAM RANGE									
Amanam	0.00	1.39	93.41	218.00	360.82	8.87	682.49	-1.65	1.65
Mudasarlova	0.00	1525.84	1791.95	569.55	256.41	0.00	4143.75	-1.99	1.99
Total	**0.00**	**1527.23**	**1885.36**	**787.55**	**617.23**	**8.87**	**4826.24**	**-3.64**	**3.64**
YELAMANCHILI RANGE									
Payakaraopet	4.27	1113.55	352.78	97.71	64.91	2.64	1635.86	-2.76	2.76
Regupalem	0.00	804.85	1023.25	386.52	334.02	32.23	2580.87	-1.24	1.24
Total	**4.27**	**1918.40**	**1376.03**	**484.23**	**398.93**	**34.87**	**4216.73**	**-4.00**	**4.00**
Grand Total	**8.04**	**17078.42**	**15207.77**	**4454.85**	**2642.71**	**45.69**	**39437.48**	**-35.39**	**34.26**

2010 **2011**



Longitude	83.04841 ° E
Latitude	18.12937 ° N
Area in Ha	8.46
Change	DF TO NF
Comp No.	509
Beat	Chintalapudi
Range	Ananthagiri II RF
Division	Vishakapatnam



4.41 KARIM NAGAR EAST DIVISION

4.41.1 Introduction:

Karim Nagar East Forest Division lies in the eastern part of Karim Nagar district between latitudes 18^0 20' 53'' and 18^0 52' 14'' N and longitudes 79^0 10' 48'' and 80^0 20' 44'' E. Geographical area of the Division is 3,814 Km^2 which is 32.25% of the geographical area of district. This Division lies on deccan plateau. The River Godavari forms the northern- and eastern boundaries of the Division as wells as the district. Godavari and Maneru are main rivers of Karimnagar East Division.

Land use pattern of the Division is given in Table 4.41.1.

The climate of this Division is generally dry with temperatures ranging from 20^0C to 44^0C and the annual rainfall is about 756 mm, received mainly from Southwest monsoons.

The soil types found mainly are black cotton, sandy loam, alluvial and lateritic with less humus in top layer.

Population of the Division is 1.12 million (2011 Census), Per capita forest area is 0.12 Ha and the population density is 542 persons per Km^2.

Table 4.41.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1333.62	34.97
Agriculture	1292.93	33.90
Land with Scrub	314.00	8.23
Fallow Lands	217.32	5.70
Settlements	32.87	0.86
Vegetation outside Forest	548.56	14.38
Water bodies	74.65	1.96
Total	**3814.00**	

4.41.2 Recorded Forest Area:

The notified forest area of the Division is **1432.1 Km^2** which is 37.55% of the geographical area. Reserved, Protected and un-classed forests constitute 1382.13 Km^2 (96.51%), 27.43 Km^2 (1.913%) and 22.54 Km^2 (1.573%) of the forest area respectively.

As per Champion and Seth's classification forests of Division fall under Tropical Dry Deciduous and Tropical Thorn Forest types.

4.41.3 Protected Area:

A portion of the Sivaram Wildlife Sanctuary is included in this Division. An area of 19.15 Km^2 is included in the WLS.

4.41.4 Community Forest Management:

There are 127 Vana Samrakshana Samities (VSSs) in the Division spread over an area of 314.05 Km^2 of forest area, which is 21.93 % of the forest area.

4.41.5 Forest Cover:

The forest cover in the Division based the interpretation of IRS P6 LISS- III 2011 data (Oct/Dec 2011) is **1063.26 Km^2** which is **27.88%** of the geographical area. In terms of the forest canopy density classes the Division has **657.93** Km^2 of Moderately Dense Forests and **405.33** Km^2 of Open Forests. The area of the Scrub is **258.72** Km^2; Non-Forest **58.57** Km^2 and Water Bodies **6.26** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.41.1.

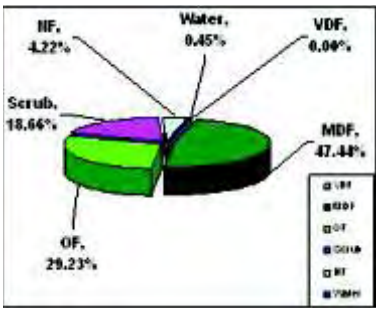


Fig 4.41.1

4.41.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 seasons are shown in Figs 4.41.2 and Fig 4.41.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a negative change of **826.43 Ha.** The forest cover change matrix given in Table 4.41.2 reveals that there is a decrease of **826.43** of Open Forest.

The negative change (including Scrub) of **826.43 Ha** out of this **14.58 Ha** is on account of clearance of jungle growth for raising of plantations, **811.85 Ha** is on account of encroachments. As clearance of jungle growth for raising of plantations is a Forest management intervention and hence not considered as loss of forest cover. Thus only the negative change due to encroachment is taken as loss of forest cover. Therefore the net loss of forest cover is **811.85 Ha** only.

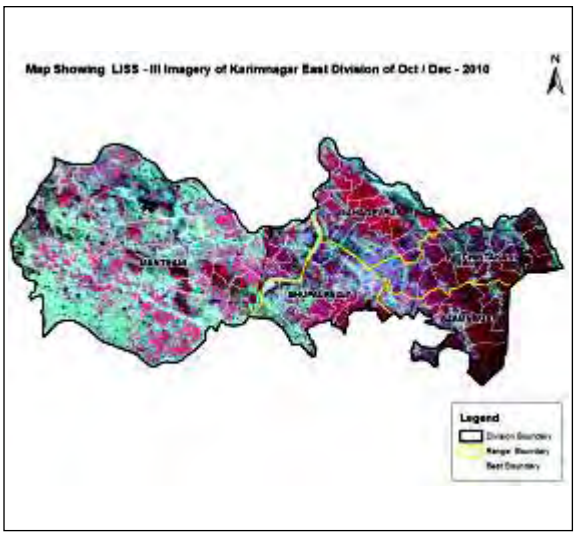


Fig 4.41.2

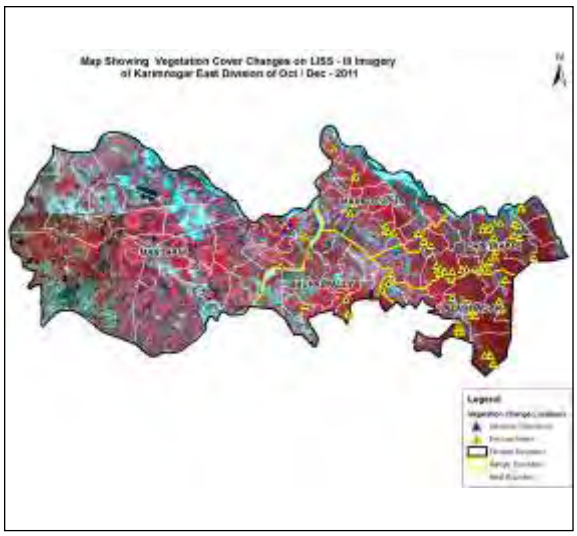


Fig 4.41.3

There are 78 Beats in the Division. Negative changes in forest cover are noticed in 32 Beats only. There are no changes in the remaining 46 Beats.

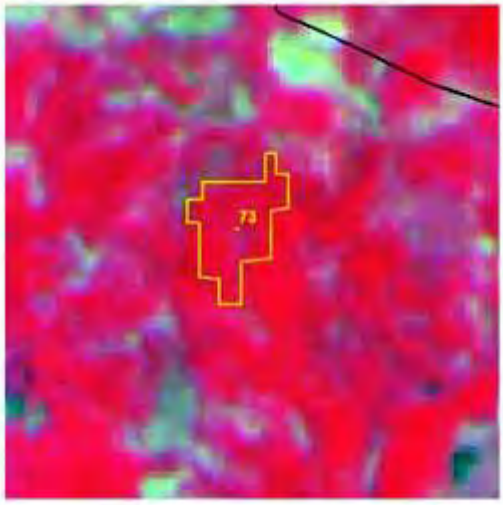
Details of forest cover changes in 32 Beats mentioned above are shown in Table 4.41.3.

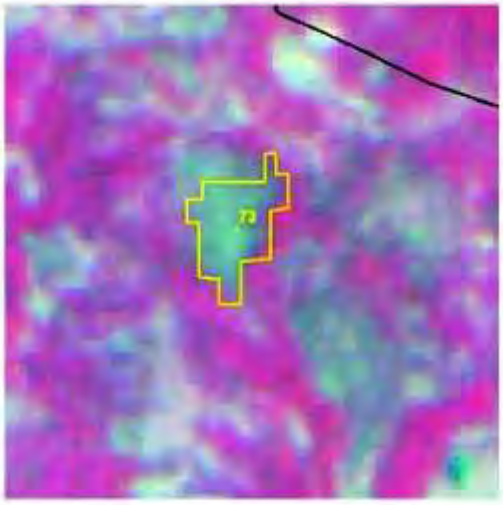
Table 4.41.2: Forest Cover change matrix **(Area in Km^2)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	657.93	0.00	0.00	0.00	0.00	**657.93**
Open Forest	0.00	0.00	405.33	0.00	8.26	0.00	**413.59**
Scrub	0.00	0.00	0.00	258.72	0.00	0.00	**258.72**
Non-Forest	0.00	0.00	0.00	0.00	50.31	0.00	**50.31**
Water	0.00	0.00	0.00	0.00	0.00	6.26	**6.26**
Total of 2011	**0.00**	**657.93**	**405.33**	**258.72**	**58.57**	**6.26**	**1386.81**
Net Change	0.00	0.00	-8.26	0.00	8.26	0.00	

Table 4.41.3: List of Beats with change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
Azamnagar Range									
Borlaguda	0.00	882.19	267.75	82.27	193.86	0.78	1,426.85	-116.24	116.24
Erraram	0.00	219.69	329.09	469.94	420.04	2.13	1,440.90	-8.11	8.11
Kanakanoor	0.00	1,318.66	419.17	153.54	13.72	1.57	1,906.66	-2.49	2.49
Khammampally	0.00	2,958.35	811.95	183.49	102.83	0.00	4,056.63	-9.63	9.63
Nandigoan	0.00	496.37	137.43	396.05	166.48	1.50	1,197.83	-60.22	60.22
Polaram	0.00	188.23	422.02	531.24	192.32	1.27	1,335.08	-28.35	28.35
Reddypally	0.00	2,204.64	800.90	230.26	85.36	0.00	3,321.16	-57.86	57.86
Singaram	0.00	4,444.02	1,008.82	187.21	73.62	7.18	5,720.85	-46.67	46.67
Total	**0.00**	**12,712.15**	**4,197.13**	**2,234.01**	**1,248.23**	**14.44**	**20,405.95**	**-329.57**	**329.57**
Bhupalpally Range									
Bhupalpally	0.00	759.28	311.44	81.25	36.26	0.00	1,188.23	-21.46	21.46
Mallaram	0.00	1,106.30	1,388.51	1,036.43	111.73	4.65	3,647.62	-4.28	4.28
Shatrajpally	0.00	463.67	529.04	604.29	235.71	0.00	1,832.71	-2.86	2.86
Vallamkunta	0.00	9.35	28.09	39.17	11.34	0.34	88.30	-8.26	4.76
Total	**0.00**	**2,338.61**	**2,257.08**	**1,761.14**	**395.04**	**4.99**	**6,756.86**	**-36.86**	**33.36**
Chintakani Range									
Ethnaram	0.00	1,892.54	358.91	112.50	56.58	0.00	2,420.53	-32.89	32.89
Khamanpally	0.00	2,452.71	1,038.33	385.02	40.58	0.00	3,916.64	-26.2	26.2
Lingapur	0.00	1,405.08	393.08	92.65	44.42	1.75	1,936.98	-27.05	27.05
Muknoor	0.00	1,679.60	211.97	68.29	5.34	0.00	1,965.20	-4.72	4.72
Nimmaguda	0.00	2,141.24	825.12	338.48	54.86	0.00	3,359.70	-40.75	40.75
Pankena	0.00	1,989.04	1,429.19	295.27	74.72	12.76	3,800.97	-32.06	32.06
Panmalla	0.00	669.77	1,223.60	591.93	43.62	4.79	2,533.70	-8.11	8.11
Sarvaipet	0.00	962.91	669.73	154.73	7.87	0.00	1,795.24	-5.23	5.23
Singampally	0.00	2,197.58	397.33	158.54	54.42	0.60	2,808.46	-30.54	30.54
Yamanpally	0.00	1,239.13	359.83	180.55	85.09	0.00	1,864.60	-74.46	74.46
Total	**0.00**	**16,629.59**	**6,907.08**	**2,377.96**	**467.49**	**19.90**	**26,402.02**	**-282.01**	**282.01**
Mahadevpur Range									
Gummallapally	0.00	1,157.74	682.35	808.94	167.42	2.33	2,818.79	-84.61	84.61
Heerapur	0.00	957.65	472.43	301.96	29.39	12.91	1,774.35	-17.33	17.33
Kaleshwar	0.00	872.10	500.40	182.19	23.00	19.13	1,596.82	-8.48	8.48
Kataram	0.00	431.86	59.55	54.78	16.80	0.00	562.99	-16.8	16.8
Palgul	0.00	443.94	485.90	398.12	53.11	0.00	1,381.07	-1.11	1.11
Pratapgiri	0.00	663.86	286.51	91.77	35.28	0.49	1,077.91	-20.37	20.37
Rapallykota	0.00	558.55	680.46	184.75	18.81	7.01	1,449.58	-6.04	6.04
Total	**0.00**	**5,085.70**	**3,167.61**	**2,022.51**	**343.81**	**41.88**	**10,661.51**	**-154.74**	**154.74**
Manthini Range									
Arinda	0.00	17.14	464.44	650.79	74.27	1.32	1,207.96	-11.95	3.86
Gopalpur	0.00	343.90	719.33	525.83	59.61	8.83	1,657.51	-5.92	5.92
Khansaipet	0.00	55.37	536.00	807.98	29.79	0.00	1,429.13	-5.38	2.39
Total	**0.00**	**416.41**	**1,719.77**	**1,984.60**	**163.67**	**10.15**	**4,294.60**	**-23.25**	**12.17**
Grand Total	**0.00**	**37,182.47**	**18,248.68**	**10,380.22**	**2,618.23**	**91.35**	**68,520.95**	**-826.43**	**811.85**

2010 **2011**





Longitude	79.90036 ° E
Latitude	18.70749 ° N
Area in Ha	11.21
Change	OF TO NF
Comp No.	229
Beat	Heerapur
Range	Mahadevpur
Division	Karimnagar East

4.42 KARIM NAGAR WEST DIVISION

4.42.1 Introduction:

Karim Nagar West Forest Division lies in the western part of Karim Nagar district between latitudes 17^0 58' 58'' and 19^0 4' 37''N and longitudes 78^0 30' 56'' and 79^0 36' 54''E. Geographical area of the Division is 8,009 Km^2 which is 77.75% of the geographical area of district. This Division lies on deccan plateau. The River Godavari forms Northern boundary of the Division. Godavari and Maneru are main rivers of Karimnagar West Division.

Land use pattern of the Division is given in Table 4.42.1.

The climate of this Division is generally dry with temperatures ranging from 20^0C to 44^0C and the annual rainfall is about 756 mm, received mainly from south-west monsoons.

The soil types found in the Division are mainly are clayey loam, sandy loam and red chalkas interspersed with black cotton soils.

Population of the Division is 2.69 million (2011 Census), per capita forest area is 0.04 Ha and the population density is 276 persons per Km^2.

Table 4.42.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	959.19	11.98
Agriculture	5315.40	66.37
Land with Scrub	705.84	8.81
Fallow Lands	246.07	3.07
Settlements	123.64	1.54
Vegetation outside Forest	426.79	5.33
Waterbodies	232.06	2.90
Total	**8009.00**	

4.42.2 Recorded Forest Area:

The notified forest area of the Division is **1044.71 Km^2** which is 13.04% of the geographical area. Reserved, Protected and un-classed forests constitute 864.29 Km^2 (82.73%), 168.72 Km^2 (16.15%) and 11.70 Km^2 (1.12%) of the forest area respectively.

As per Champion and Seth's classification the forests of Division fall under Tropical Dry Deciduous and Tropical Thorn Forest types.

4.42.3 Protected Area:

There are no Protected Areas in the Division.

4.42.4 Community Forest Management:

There are 236 Vana Samrakshana Samities (VSSs) or JFPCs in the Division. An area of 554.499 Km^2 forests, which is 44.4 % of forest area, is under the management of VSSs.

4.42.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Oct/Nov 2011) is **836.85 Km^2** which is **10.45%** of the geographical area. In terms of the forest canopy density classes, the Division has 501.42 Km^2 of Moderately Dense Forests and 335.43 Km^2 of Open Forests. The area of the Scrub is 120.07 Km^2, Non-Forest 15.77 Km^2 and Water Bodies 1.78 Km^2. The distribution of the forest cover of the Division is shown in Fig 4.42.1

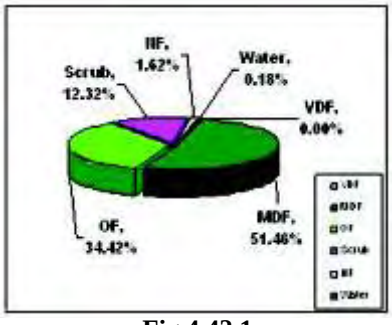


Fig 4.42.1

4.42.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 seasons are shown in Figs 4.42.2 and 4.42.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a negative change of **84.20 Ha.** The forest cover change matrix given in Table 4.42.2 reveals that there is a decrease of **84.20 Ha** of Open Forest and **23.72 Ha** of Scrub.

The negative change (including Scrub) of **107.92 Ha** out of this **7.00 Ha** is on account of clearance of jungle growth for raising of plantations, **100.92 Ha** is on account of encroachments. As clearance of jungle growth for raising of plantations is a forest management intervention and hence not considered as loss of forest cover. Thus only the negative change due to encroachment is taken as loss of forest cover. Therefore the **net loss of forest cover is 100.92 Ha** only.

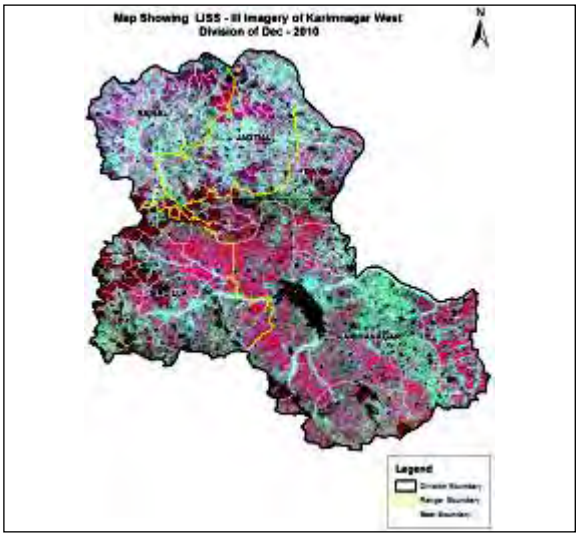


Fig 4.42.2

Fig 4.42.3

There are 106 Beats in the Division. Negative changes in forest cover are noticed in 8 Beats only. There are no changes in the remaining 98 Beats.

Details of forest cover changes in 8 Beats mentioned above are shown in Table 4.42.3.

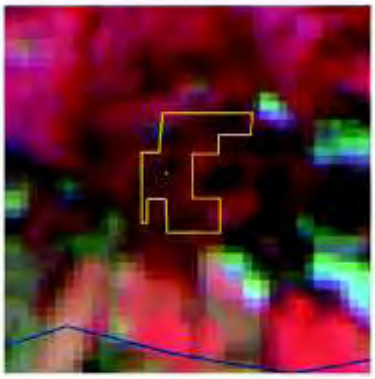
The forest cover change matrix is given in Table 4.42.2.

Table 4.42.2: Forest Cover change matrix **(Area in Km^2)**

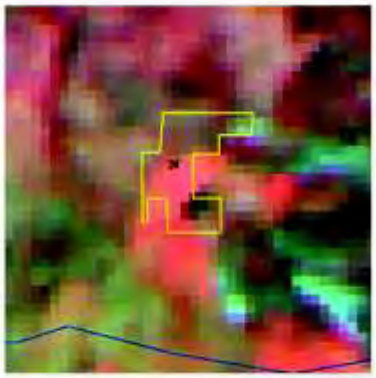
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	501.42	0.00	0.00	0.00	0.00	**501.42**
Open Forest	0.00	0.00	335.43	0.00	0.84	0.00	**336.27**
Scrub	0.00	0.00	0.00	120.07	0.24	0.00	**120.31**
Non-Forest	0.00	0.00	0.00	0.00	14.69	0.00	**14.69**
Water	0.00	0.00	0.00	0.00	0.00	1.78	**1.78**
Total of 2011	**0.00**	**501.42**	**335.43**	**120.07**	**15.77**	**1.78**	**974.47**
Net Change	0.00	0.00	-0.84	-0.24	1.08	0.00	

Table 4.42.3: List of Beats with change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
Raikal Range									
Ibrahimpatnam	0.00	268.97	244.51	119.48	24.35	6.27	663.58	-14.65	-14.65
Rangaraopet	0.00	669.65	285.22	108.04	11.81	0.87	1075.59	-3.49	-3.49
Total	**0.00**	**938.62**	**529.73**	**227.52**	**36.16**	**7.14**	**1739.2**	**-18.14**	**-18.14**
Siricilla Range									
Garjanpally	0.00	318.03	393.24	194.41	37.22	72.79	1015.68	-17.43	-17.43
Gollapally	0.00	163.09	903.35	199.62	8.42	0.00	1274.48	-5.12	-5.12
Gorintial	0.00	249.06	682.76	233.86	34.61	1.00	1201.29	-18.25	-18.25
Jillella	0.00	49.97	665.71	567.83	78.55	0.50	1362.56	-2.07	-2.07
Marrimadla_South	0.00	165.7	547.75	144.36	31.04	5.23	894.09	-7.00	0.00
Vanpally	0.00	269.54	430.38	119.33	39.91	0.00	859.16	-39.91	-39.91
Total	**0.00**	**1215.39**	**3623.19**	**1459.41**	**229.75**	**79.53**	**6607.26**	**-89.78**	**-82.78**
Garand Total	**0.00**	**2154.01**	**4152.92**	**1686.93**	**265.91**	**86.668**	**8346.43**	**-107.92**	**-100.92**

2010



2011



Longitude	78.62841 ° E
Latitude	18.42109 ° N
Area in Ha	5.12
Change	OF TO NF
Comp No.	421
Beat	Gollapally
Range	Sircilla
Division	Karimnagar_west

4.43 WARANGAL NORTH DIVISION

4.43.1 Introduction:

Warangal North Forest Division lies in the north-western part of Warangal district between latitudes 17^0 29' 16'' and 18^0 36' 20'' N and longitudes 78^0 49' 49'' and 80^0 40' 13'' E. Geographical area of the Division is 8687 Km^2 which is 75.96% of the geographical area of the district. The elevation of the terrain Ranges from 266 to 518 M above Mean Sea level (MSL). The general slope of the land is towards south-east, the surplus water draining into Godavari River. Dayyam vagu is one of the important rivulets flowing in the Division and passes mostly through forest area.

Land use pattern of the Division is given in Table 4.43.1

The climate of this Division is generally dry with temperature ranging from 13.5^0C to 39.6^0C and the annual rainfall is about 1015.8 mm, received mainly from South-west monsoons.

The soil types found mainly are black cotton, loamy, sandy and alluvial. The rocks found in this Division are Archaens, Granites, Gneisses and Dykes. The mineral resources in this Division are Iron ore, Lime stone and Coal.

Population of the Division is 2.57 million (2011 Census), per capita forest area is 0.09 Ha and the population density is 286 persons per Km^2.

Table 4.43.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	2062.96	23.75
Agriculture	5402.94	62.19
Land with Scrub	370.82	4.27
Fallow Lands	308.13	3.55
Grasslands	0.00	0.00
Settlements	103.8	1.19
Vegetation outside Forest	171.84	1.98
Water Bodies	267.32	3.07
Total	**8687.81**	

4.43.2 Recorded Forest Area:

The notified forest area of the Division is **2310.25 Km^2** which is 26.59% of the geographical area. Reserved, Protected and un-classed forests constitute 1579.06 Km^2 (68.35%), 709.02 Km^2 (30.69%) and 22.18 Km^2 (0.95%) of the forest area respectively.

As per Champion and Seth's classification the forests of this Division fall under Tropical Dry Deciduous Teak Forests and Tropical Moist Deciduous Forests.

4.43.3 Protected Area:

There is no Protected Area in the Division after carving out of Warangal WLM Division containing Eturnagaram and Pakhal WLSs.

4.43.4 Community Forest Management:

There are 127 Vana Samrakshana Samities (VSSs) in the Division. 332.38 Km^2 of forest area, which is 8.95 % of the notified forests, is under the management of the VSSs.

4.43.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS- III 2011 data (Nov 2011 - Feb 2012) is **1966.90 Km^2** which is **22.64%** of the geographical area. In terms of the forest canopy density classes the Division has **950.81** Km^2 of Moderately Dense Forests and **1016.09** Km^2 Open Forests. The area of the Scrub is **90.32** Km^2, Non-Forests **246.30** Km^2 and Water Bodies **6.73** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.43.1

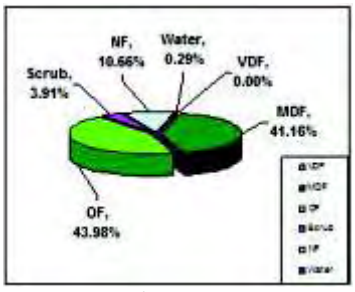


Fig 4.43.1

4.43.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 seasons are shown in Figs. 4.43.2 and 4.43.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a **negative change** in forest cover of **126.70 Ha** and **positive change of 301.07 Ha.** The forest cover change matrix given in Table 4.43.2 reveals that there is a decrease of **94.06 Ha** of Moderately Dense Forest and **148.25 Ha** of Scrub.

The total positive change (including Scrub) **412.40 Ha** is on account of growth in raised plantations and rejuvenation in evicted encroachments. The total negative change (including Scrub) of **131.41 Ha.** Out of this is **58.55 Ha** on account of clearance of jungle growth for raising of plantations, and **72.86 Ha** on account of encroachments. As clearance of jungle growth for raising of plantations is a forest management intervention the same is not considered as loss of forest cover. Thus only the negative change due to encroachment is taken as loss of forest cover. Hence the **net loss of forest cover** in the Division is **72.86 Ha.**

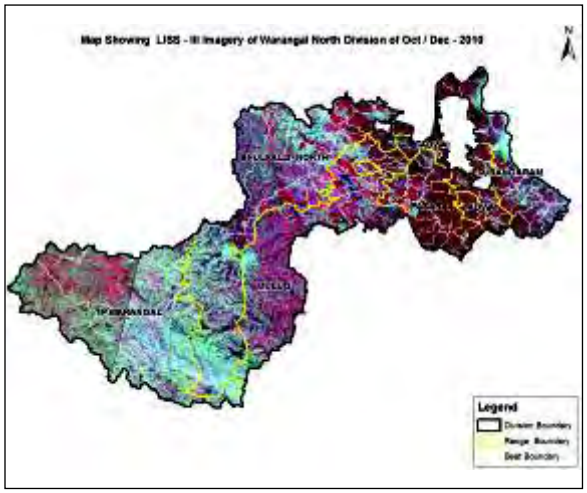


Fig 4.43.2

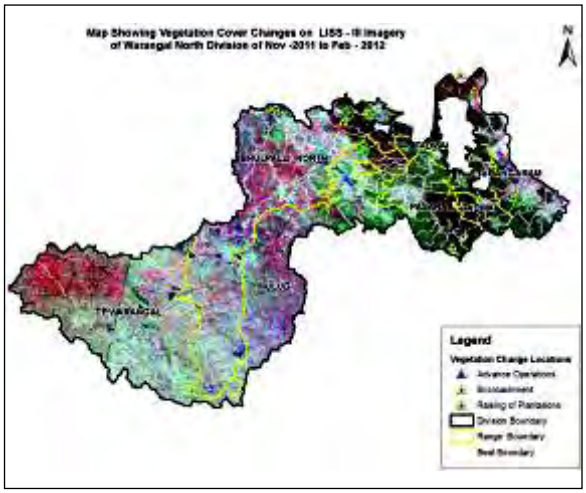


Fig 4.43.3

There are 84 Beats in the Division. Negative changes in the forest cover are noticed in 9 Beats and positive change in 4 Beats only. There are no changes in remaining 71 Beats.

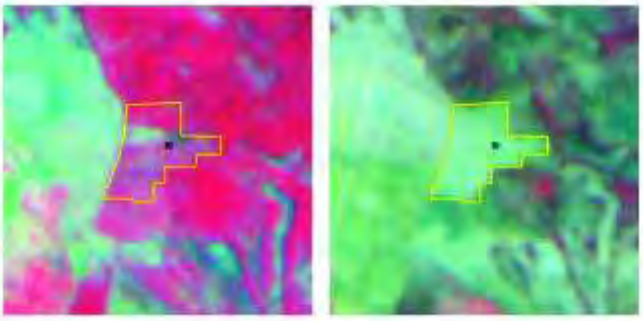
Details of forest cover changes in the 13 Beats mentioned above are shown in Table 4.43.3

Table 4.43.2: Forest Cover change matrix **(Area in Km^2)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	950.81	0.00	0.29	0.65	0.00	**951.75**
Open Forest	0.00	0.00	1013.08	0.03	0.30	0.00	**1013.41**
Scrub	0.00	0.00	2.86	88.89	0.05	0.00	**91.80**
Non-Forest	0.00	0.00	0.15	1.11	245.30	0.00	**246.56**
Water	0.00	0.00	0.00	0.00	0.00	6.73	**6.73**
Total of 2011	**0.00**	**950.81**	**1016.09**	**90.32**	**246.30**	**6.73**	**2310.25**
Net Change	0.00	-0.94	2.68	-1.48	-0.26	0.00	

Table 4.43.3: List of Beats with negative change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
Bhupalapalli North Range									
Andukthanda	0.00	235.40	473.22	82.24	167.99	0.00	958.85	-22.38	0.00
Kamalapur	0.00	981.59	2231.97	143.03	364.63	7.26	3728.48	54.61	0.00
Peddapur I	0.00	1225.35	818.70	18.80	19.17	0.00	2082.02	-4.71	4.71
Rampur N	0.00	437.25	1321.58	85.95	195.10	0.00	2039.88	-31.74	31.74
Vencharam	0.00	66.45	935.31	289.44	956.69	0.00	2247.88	-10.88	10.88
Total	**0.00**	**2,946.04**	**5,780.78**	**619.45**	**1,703.58**	**7.26**	**11,057.11**	**-15.10**	**47.33**
Eturangaram Range									
Eturnagaram	0.00	778.78	876.21	103.56	293.20	0.00	2,051.75	-3.66	3.66
Gurvella	0.00	1,419.84	902.08	52.87	386.78	23.48	2,785.04	-2.59	2.59
Narsimhasagar	0.00	575.97	1,440.20	52.10	654.04	30.06	2,752.37	49.77	0
Thimmampet	0.00	925.70	2,096.99	199.76	1,082.17	10.43	4,315.06	70.96	4.85
Tupakulaguda	0.00	423.32	1,057.04	27.36	144.83	12.10	1,664.64	-6.46	6.46
Total	**0.00**	**4,123.61**	**6,372.52**	**435.65**	**2,561.02**	**76.07**	**13,568.85**	**108.02**	**17.56**
Mulugu Range									
Narayanpur	0.00	803.14	1,154.03	-30.00	302.65	5.01	2,234.84	196.04	0.00
Total	**0.00**	**803.14**	**1,154.03**	**-30.00**	**302.65**	**5.01**	**2,234.84**	**196.04**	**0.00**
Pasara Range									
Lingal	0.00	2,459.60	1,737.36	121.49	473.83	2.15	4,794.43	-2.80	2.80
Total	0.00	2,459.60	1,737.36	121.49	473.83	2.15	4,794.43	-2.80	2.80
Tadwai Range									
Shahpalli	0.00	2,088.05	1,478.43	92.97	265.78	21.90	3,947.14	-5.17	5.17
Total	**0.00**	**2,088.05**	**1,478.43**	**92.97**	**265.78**	**21.90**	**3,947.14**	**-5.17**	**5.17**
Division Total	**0.00**	**12,420.44**	**16,523.12**	**1,239.55**	**5,306.86**	**112.39**	**35,602.36**	**280.99**	**72.86**

2010 **2011**



Longitude	79.68798 ° E
Latitude	18.45168 ° N
Area in Ha	22.38
Change	OF TO NF
Comp No.	463
Beat	Anduktanda
Range	Bhupalpally North
Division	Waranagl North

4.44 WARANGAL SOUTH DIVISION

4.44.1 Introduction:

Warangal South Forest Division lies in the south-eastern part of Warangal district between latitudes 17^0 19' 05'' and 18^0 07' 04'' N and longitudes 79^0 35' 32'' and 80^0 18' 32'' E. Geographical area of the Division is 3,618 Km^2 which is 29.3% of the geographical area of the district. The Division is having an altitude of 420 to 658 M and the plains having an altitude of 302 M above MSL.

Land use pattern of the Division is given in Table 4.44.1

The climate of this Division is generally dry with temperatures ranging from 13.5^0C to 39.6^0C and the annual rainfall is about 1015.8 mm, received mainly from Southwest monsoons.

The soil types found mainly are black cotton, red and brown sandy loam.

Population of the Division is 0.95 million (2011 Census), per capita forest area is 0.18 Ha and the population density is 246 persons per Km^2.

Table 4.44.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	815.16	22.53
Agriculture	2296.34	63.47
Land with Scrub	174.21	4.81
Fallow Lands	77.86	2.15
Grasslands	0.00	0.00
Settlements	13.11	0.36
Vegetation outside Forest	94.3	2.61
Water Bodies	147.15	4.07
Total	**3618.13**	

4.44.2 Recorded Forest Area:

The notified forest area of the Division is **1174 Km^2** which is 32.4% of the geographical area. Reserved, Protected and un-classed forests constitute 572.8 Km^2 (48.79%), 598 Km^2 (51.03%) and 2.11 Km^2 (0.18%) of the forest area respectively.

As per Champion and Seth's classification the forests of Division fall under Dry Deciduous Teak Forests, Tropical Dry Deciduous Mixed Forests, Bamboo and Tropical Dry Mixed Teak Forests.

4.44.3 Protected Area:

There is no Protected Area in the Division after carving out of Warangal WLM Division consisting of Pakhal WLS.

4.44.4 Community Forest Management:

There are 147 Vana Samrakshana Samities (VSSs) in the Division. An area of 339.46 Km^2 forests, which is 19.89 % of notified forest area, is under the management of the VSSs.

4.44.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Feb 2012) is **731.80 Km^2** which is **20.23%** of the geographical area. In terms of the forest canopy density classes the Division has **306.44** Km^2 of Moderately Dense Forests and **425.36** Km^2 of Open Forests. The area of the Scrub is **78.76** Km^2, Non-Forest **341.80** Km^2 and Water Bodies **22.29** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.44.1

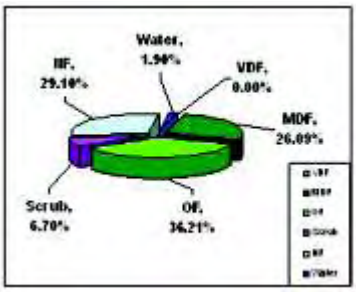


Fig 4.44.1

4.44.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 seasons are shown in Figs. 4.44.2 and 4.44.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a negative change in forest cover of **62.18 Ha.** The forest cover change matrix given in Table 4.44.2 reveals that there is a decrease of **59.20 Ha** of Moderately Dense Forest and **2.98 Ha** of Open Forest.

The entire negative change (including Scrub) of **62.18 Ha** is on account of encroachments. Therefore the net loss of forest cover is **62.18 Ha.**

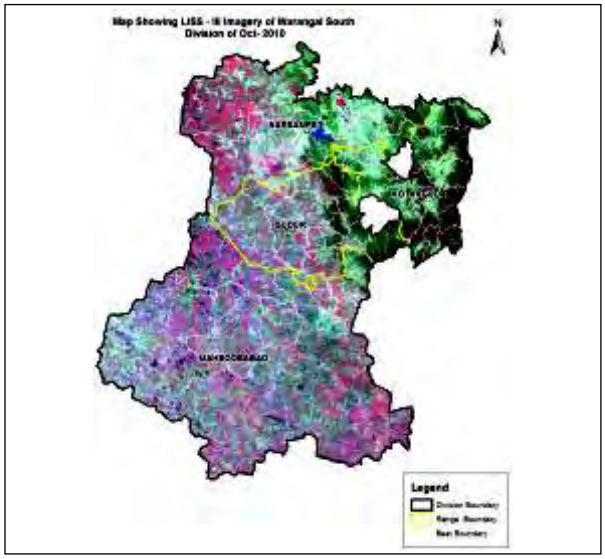


Fig 4.44.2

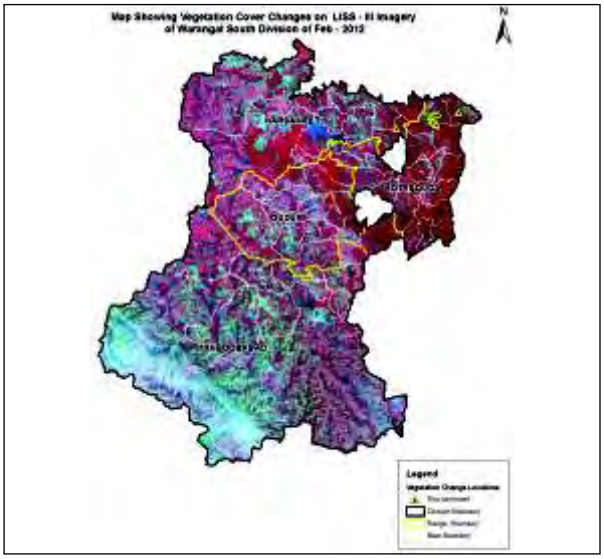


Fig 4.44.3

There are 56 Beats in the Division. Negative changes in forest cover are noticed in 4 Beats. There are no changes in the remaining 52 Beats.

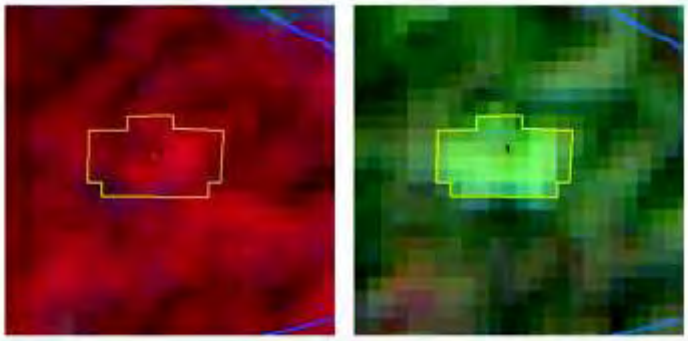
Details of forest cover changes in the 4 Beats mentioned above are shown in Table 4.44.3

Table 4.44.2: Forest Cover change matrix **(Area in Km^2)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	306.44	0.00	0.00	0.59	0.00	**307.03**
Open Forest	0.00	0.00	425.36	0.00	0.03	0.00	**425.39**
Scrub	0.00	0.00	0.00	78.76	0.00	0.00	**78.76**
Non-Forest	0.00	0.00	0.00	0.00	341.18	0.00	**341.18**
Water	0.00	0.00	0.00	0.00	0.00	22.29	**22.29**
Total of 2011	**0.00**	**306.44**	**425.36**	**78.76**	**341.80**	**22.29**	**1174.65**
Net Change	0.00	-0.59	-0.03	0.00	0.62	0.00	

Table 4.44.3: List of Beats with change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
KOTHAGUDA RANGE									
Jangalapally	0.00	1817.26	1242.98	141.84	313.87	1.29	3517.24	-9.71	9.71
Kamaram	0.00	878.67	2322.66	95.29	563.97	16.99	3877.58	-46.54	46.54
Mamidiguda	0.00	972.52	1092.79	68.47	467.14	2.37	2603.29	-2.95	2.95
Total	**0.00**	**3668.45**	**4658.43**	**305.60**	**1344.98**	**20.65**	**9998.11**	**-59.20**	**59.20**
NARSAMPET RANGE									
Musimi_ii	0.00	448.75	1347.06	90.76	173.14	4.73	2064.44	-2.98	2.98
Total	**0.00**	**448.75**	**1347.06**	**90.76**	**173.14**	**4.73**	**2064.44**	**-2.98**	**2.98**
Division Total	**0.00**	**4117.20**	**6005.49**	**396.36**	**1518.12**	**25.38**	**12062.55**	**-62.18**	**62.18**

2010 **2011**



Longitude	80.27037 ° E
Latitude	17.98327 ° N
Area in Ha	2.95
Change	DF to NF
Comp No.	921
Beat	Mamidiguda
Range	Kothaguda North
Division	Waranagl South

4.45 WARANGAL WLM DIVISION

4.45.1 Introduction:

Warangal WLM Forest Division lies in the north-western and south-eastern parts of Warangal district between latitudes 17^0 29' 16'' and 18^0 36' 20'' N and longitudes 78^0 49' 49'' and 80^0 40' 13'' E. Geographical Area of the Division is 540 Km^2.

Land use pattern of the Division is given in Table 4.45.1.

The climate of this Division is generally dry with temperatures ranging from 13.5^0C to 39.6^0C and the annual rainfall is about 1015.8 mm, received mainly from South-west monsoons.

Population of the Division is 0.039 million (2011 Census), per capita forest area is 1.38 Ha and the population density is 72 persons per Km^2.

Table 4.45.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	511.55	94.72
Agriculture	6.86	1.27
Land with Scrub	5.41	1.00
Fallow Lands	0.19	0.04
Grasslands	0.00	0.00
Settlements	0.00	0.00
Vegetation outside Forest	14.99	2.78
Water Bodies	1.04	0.19
Total	**540.04**	

4.45.2 Recorded Forest Area:

The notified forest area of the Division is **538.55 Km^2.**

As per Champion and Seth's classification the forests of Division fall under Tropical Dry Deciduous, Tropical Moist Deciduous, Tropical Semi Evergreen and Tropical Thorn Forest types.

4.45.3 Protected Area:

The Division consists of two Protected Areas - Eturnagaram and Pakhal wildlife Sanctuaries.

4.45.4 Community Forest Management:

There are 43 Vana Samrakshana Samities (VSSs) in the Division. An area of 100.67 Km^2 forest area which is 18.69% of the notified forests is under the management of the VSSs.

4.45.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Feb 2012) is **494.89 Km^2** which is **91.64%** of the geographical area. In terms of the forest canopy density classes the Division has **218.50** Km^2 of Moderately Dense Forests and **276.39** Km^2 of Open Forests. The area of the Scrub is **15.30** Km^2, Non-Forests **26.59** Km^2 and Water Bodies **1.77** Km^2. The distribution of the forest cover of the Division is shown in Fig 4.45.1

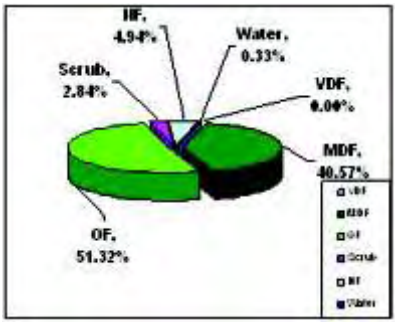


Fig 4.45.1

4.45.6 Change in Forest Cover:

The Satellite images of 2010 and 2011 seasons are shown in Figs. 4.45.2 and 4.45.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a negative change in forest cover of **46.33 Ha.** The forest cover change matrix given in Table 4.45.2 reveals that there is a decrease of **41.21 Ha** of Moderately Dense Forest and **5.12 Ha** of Open Forest.

The entire negative change (including Scrub) of **46.33 Ha** is on account of encroachments which is a loss of forest cover. Therefore, the net loss of forest cover in this Division is **46.33 Ha.**

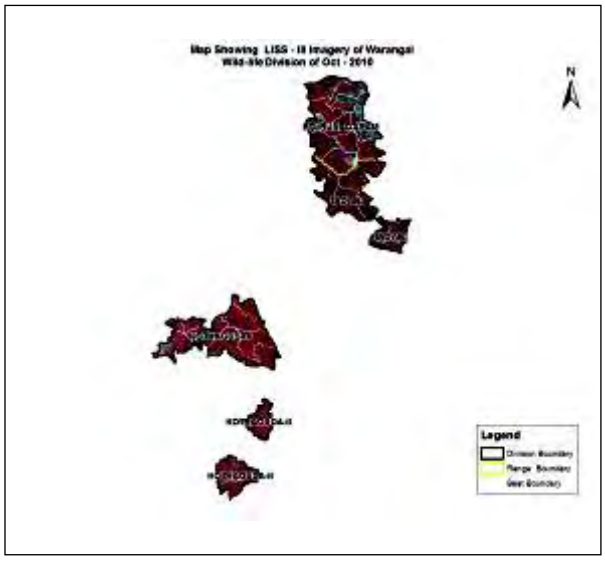


Fig 4.45.2

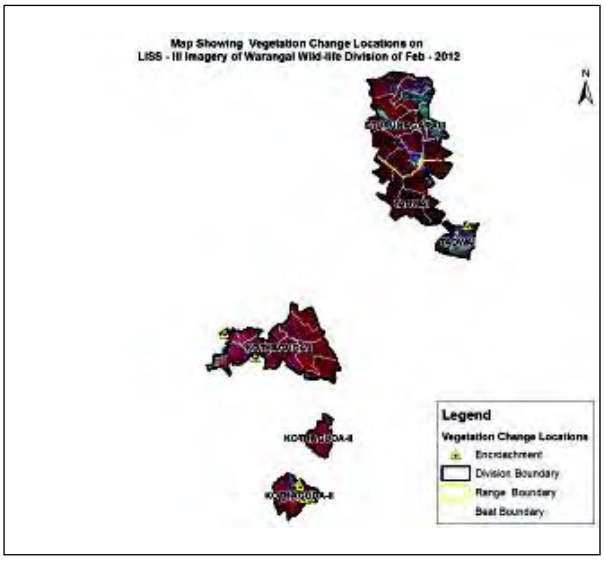


Fig 4.45.3

There are 30 Beats in the Division. Negative changes in forest cover are noticed in 5 Beats.There are no changes in the remaining 25 Beats.

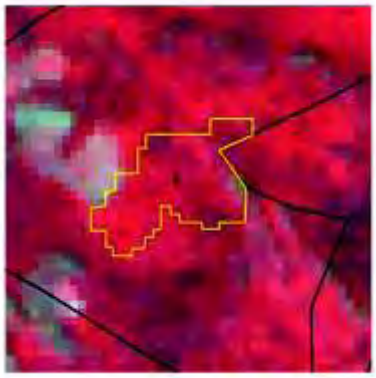
Details of forest cover changes in these 5 Beats are shown in Table 4.45.3.

Table 4.45.2: Forest Cover change matrix **(Area in Km^2)**

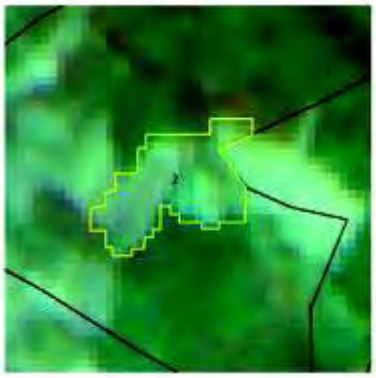
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	218.50	0.00	0.00	0.41	0.00	**218.91**
Open Forest	0.00	0.00	276.39	0.00	0.05	0.00	**276.44**
Scrub	0.00	0.00	0.00	15.30	0.00	0.00	**15.30**
Non-Forest	0.00	0.00	0.00	0.00	26.13	0.00	**26.13**
Water	0.00	0.00	0.00	0.00	0.00	1.77	**1.77**
Total of 2011	**0.00**	**218.50**	**276.39**	**15.30**	**26.59**	**1.77**	**538.55**
Net Change	0.00	-0.41	-0.05	0.00	0.46	0.00	

Table 4.45.3: List of Beats with change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
Kothaguda-i Range									
Konapur	0.00	41.63	1313.94	157.69	31.13	0.00	1544.39	-8.40	-8.40
Kondapur	0.00	150.48	307.19	13.67	26.58	0.00	497.92	-11.08	-11.08
Total	**0.00**	**192.11**	**1621.13**	**171.36**	**57.71**	**0.00**	**2042.31**	**-19.48**	**-19.48**
Kothaguda-ii Range									
Karlai	0.00	404.34	1483.68	95.02	534.12	13.79	2530.95	-15.69	-15.69
Ootla	0.00	485.16	730.19	21.91	36.86	3.75	1277.87	-6.04	-6.04
Total	**0.00**	**889.50**	**2213.87**	**116.93**	**570.98**	**17.54**	**3808.82**	**-21.73**	**-21.73**
Tadwai Range									
Heerapur	0.00	608.38	611.35	45.78	22.20	0.00	1287.71	-5.12	-5.12
Total	**0.00**	**608.38**	**611.35**	**45.78**	**22.20**	**0.00**	**1287.71**	**-5.12**	**-5.12**
Division Total	**0.00**	**1689.99**	**4446.35**	**334.07**	**650.89**	**17.54**	**7138.84**	**-46.33**	**-46.33**

2010



2011



Longitude	79.99054 ° E
Latitude	18.07693 ° N
Area in Ha	11.08
Change	DF TO NF
Comp No.	796
Beat	Kondapur
Range	Kothaguda- I
Division	WLM -Waranagl

4.46 CHITTOOR EAST WL DIVISION

4.45.1 Introduction:

Chittoor East WL Forest Division lies in the south of Andhra Pradesh and eastern Part of Chittoor District between latitudes 13^0 1' 7.32" and 13^0 55'28.56" N and longitudes 78^0 46' 50.88"and 80^0 03' 10.44" E. The Geographical Area of the Division is 6,769.18 Km^2 which is 44.58 % of the area of the District. The Eastern Ghats are predominant in the western region and they gradually bend towards the sacred Sheshachalam hills of Tirupati, passing through Chandragiri, erstwhile taluk and entering into Nellore district. There is a plateau of average height of 800 M above MSL. The rivers flowing in the Division are non-perennial in nature. Important rivers in the Division are Bheema- a tributary of river Swarnamukhi, Pincha , Tumbur kona, Kalangi, Arani and Ponnai.

Land use pattern of the Division is given in Table 4.46.1

The climate of this Division is healthy and pleasant. The temperatures ranging from 16^0C to 46^0C and the rain fall of the Division is received both from the South-West and North-East Monsoons. Annual rainfall is about 880 mm (average of past 12 years), only 450 mm is received from the South-West Monsoon.

The major portion of the Division is covered by red loamy and sandy soils with portions of alluvial soil. The sandy loams constitute 55% of the soils in the Division; sandy clay loams 30% to 32%, clay soils 3% and the balance by Red clay soils and black sandy soils.

The population of the Division is 1.86 million (2001 Census), per capita forest area is 0.11 Ha. The Population density is 274 persons per Km^2.

Table 4.46.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1809.48	26.73
Agriculture	3371.05	49.80
Land with Scrub	903.77	13.35
Fallow Lands	299.68	4.43
Grasslands	30.62	0.45
Settlements	24.06	0.36
Vegetation outside forest	121.06	1.79
Water Bodies	209.45	3.09
Total	**6769.18**	

4.46.2 Recorded Forest Area:

The notified forest area of the Division is **2452.08 Km^2** which is 36.22% of the geographical area. Reserved and Protected Forests constitute 1976.68 Km^2 (80.61%) and 475.4 Km^2 (19.39%) of the forest area respectively.

As per Champion and Seth's classification the Forests of Division fall under Tropical Dry Mixed Deciduous Forests, Tropical Cutch Thorn Forest groups & Tropical Dry Evergreen Forest types.

4.46.3 Protected Area:

There is no Protected Area in the Division.

4.46.4 Community Forest Management:

There are 225 Vana Samrakshana Samities (VSSs) in the Division. An area of 567.7 Km^2 forests, which constitutes 28.37 % of the notified forests, is under the management of the VSSs.

4.46.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2011 data (Feb/Mar 2012) is **1441.29 Km^2** which is **21.29%** of the Geographical area. In terms of the forest canopy density classes the Division has **0.02** Km^2 of Very Dense Forest, **114.71** Km^2 of Moderately Dense Forest and **1326.56** Km^2 of Open Forest. The area of the Scrub is **361.29** Km^2, Non-Forest **198.28** $Km^2$and Water Bodies **0.45** Km^2. The Distribution of the forest cover of the Division is shown in fig 4.46.1.

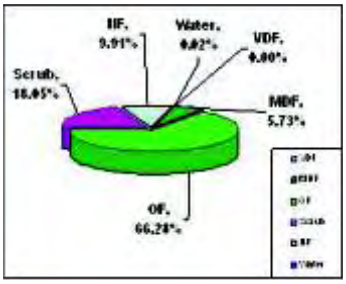


Fig 4.46.1

4.46.6 Change in Forest Cover:

The satellite images of 2010 and 2011 are shown in Figs 4.46.2 & 4.46.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a negative change of **216.11 Ha** .The forest cover change matrix given in Table 4.46.2 reveals that there has been a decrease of **216.11 Ha** Open Forest, **352.08 Ha** of Scrub.

The total positive change is (including Scrub) **16.22 Ha** on account of growth in raised plantations. The total negative change (including Scrub) is **584.41 Ha** is on account of clearance of jungle growth for raising of plantations. As clearance of jungle growth for raising of plantations are forest management interventions the same are not considered as loss of forest cover. Thus only the negative change due to encroachments is taken as loss of forest cover. Therefore there is no net loss of forest cover.

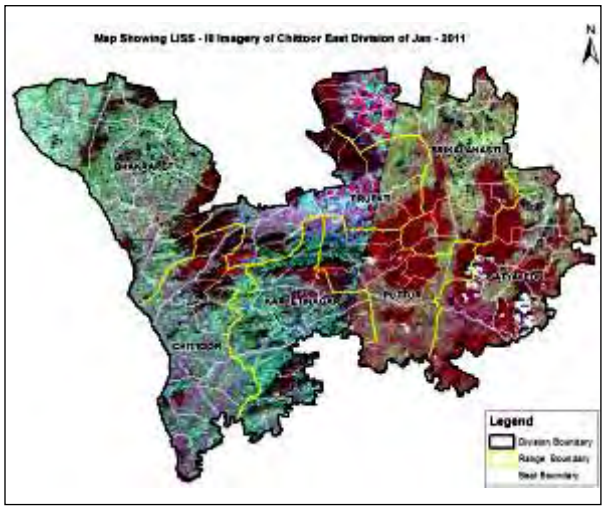


Fig 4.46.2

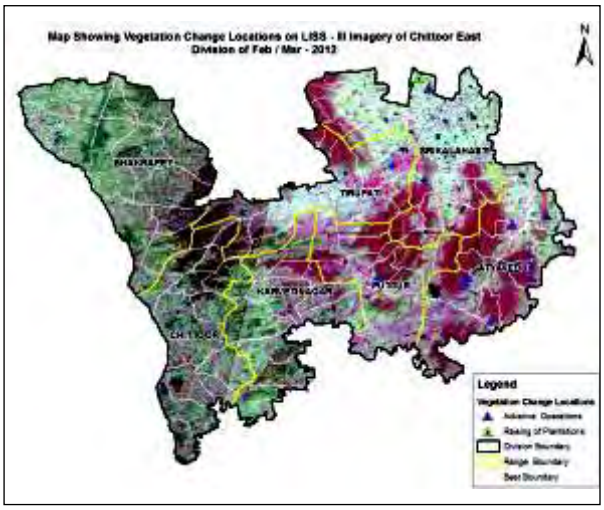


Fig 4.46.3

There are 78 Beats in the Division. Negative change in forest cover is noticed in 8 Beat and positive in 1 Beat only, i.e., Vadmalpet. There is no change in the remaining 69 Beats.

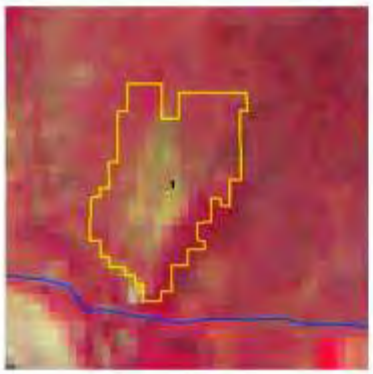
Details of forest cover changes in the 9 Beat mentioned above, is shown in Table

Table 4.46.2: Forest Cover change matrix **(Area in Km^2)**

2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.02	0.00	0.00	0.00	0.00	0.00	**0.02**
Moderately Dense Forest	0.00	114.71	0.00	0.00	0.00	0.00	**114.71**
Open Forest	0.00	0.00	1326.56	0.00	2.16	0.00	**1328.72**
Scrub	0.00	0.00	0.00	361.13	3.68	0.00	**364.81**
Non-Forest	0.00	0.00	0.00	0.16	192.44	0.00	**192.60**
Water	0.00	0.00	0.00	0.00	0.00	0.45	**0.45**
Total of 2011	**0.02**	**114.71**	**1326.56**	**361.29**	**198.28**	**0.45**	**2001.31**
Net Change	0.00	0.00	-2.16	-3.52	5.68	0.00	

Table 4.46.3: List of Beats with change in Forest Cover							(Area in ha)		
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
Puttur Range									
Puttur Moolapalem	0.00	414.46	2,187.01	124.16	104.97	0.00	2,830.60	-4.23	0.00
Total	**0.00**	**414.46**	**2,187.01**	**124.16**	**104.97**	**0.00**	**2,830.60**	**-4.23**	**0.00**
Satyavedu Range									
Kadur	0.00	0.00	985.86	1,202.31	895.86	0.00	3,084.03	-181.34	0.00
Nagalapuram	0.00	322.39	3,279.26	161.75	147.98	0.00	3,911.38	-50.86	0.00
Nandanam	0.00	13.70	2,469.99	768.59	287.01	0.00	3,539.29	-8.33	0.00
Pandur	0.00	9.78	1,251.34	912.20	590.05	0.00	2,763.37	-102.19	0.00
Satyavedu	0.00	24.09	2,495.05	303.18	368.30	0.00	3,190.62	-216.11	0.00
Vanallur	0.00	0.00	1,367.33	537.55	423.37	0.00	2,328.25	-13.77	0.00
Total	**0.00**	**369.96**	**11,848.83**	**3,885.57**	**2,712.57**	**0.00**	**18,816.93**	**-572.60**	**0.00**
Srikalahasti Range									
Kasaram	0.00	0.76	2.19	42.11	1,193.44	0.00	1,238.50	8.64	0.00
Total	**0.00**	**0.76**	**2.19**	**42.11**	**1,193.44**	**0.00**	**1,238.50**	**8.64**	**0.00**
Grand Total	**0.00**	**785.18**	**14,038.03**	**4,051.84**	**4,010.98**	**0.00**	**22,886.03**	**-568.19**	**0.00**

2010



2011

Longitude	79.69438 ° E
Latitude	13.90015 ° N
Area in Ha	16.22
Change	NF TO SF
Comp No.	197
Beat	Kasaram
Range	Srikalahasthi
Division	Chittoor East

4.47 TIRUPATI WLM DIVISION

4.47.1 Introduction:

Tirupati WLM Division spreads over part of 2 districts, i.e., Chittoor and Kadapa. It lies in the southern part of Andhra Pradesh and north-eastern part of Chittoor district and south-eastern part of Kadapa district between latitudes 13^0 36' 18'' and 13^0 56' 55.68'' N and longitudes 79^0 07' 51.96'' and 79^0 30' 18.36" E. Geographical area of the Division is 755.17 Km^2.

Land use pattern of the Division is given in Table 4.47.1

The climate of this Division is generally dry with temperatures ranging from 19^0C to 40^0C and the annual rainfall is about 934 mm, received mainly from north-east monsoons.

Population of the Division is 0.38 million (2011 Census), per capita forest area is 0.18 Ha and the population density is 507 persons per Km^2.

Table 4.47.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	689.81	91.34
Agriculture	0.00	0.00
Land with Scrub	3.82	0.51
Fallow Lands	35.73	4.73
Grasslands	0.00	0.00
Settlements	4.39	0.58
Vegetation outside forest	19.18	2.53
Water Bodies	2.31	0.31
Total	**755.17**	

4.47.2 Recorded Forest Area:

The notified forest area of the Division is **714.33 Km^2** which is 98.38% of the geographical area.

As per Champion and Seth's classification the forests of Division fall under Tropical Dry Mixed Deciduous Forests, Tropical Dry Deciduous Forests, Tropical Cutch thorn Forest &Tropical Dry Evergreen Forest types. Its most important species is the famous *Pterocarpus santalinus* or Red Sanders.

4.47.3 Protected Area:

The Division consists of the Sri Venkateswara Wildlife Sanctuary and Sri Venkateswara National Park.

4.47.4 Community Forest Management:

There are 42 Vana Samrakshana Samities (VSSs) in the Division. An area of 107.44 Km^2, which constitutes 15.04% of the notified forests, is under the management of the VSSs.

4.47.5 Forest Cover:

The forest cover in the Division based on the interpretation of IRS P6 LISS III 2010 data (Feb 2012) is **494.18 Km^2** which is **65.44 %** of the geographical area. In terms of the forest canopy density classes the Division has **3.16** Km^2 of Very Dense Forests, **86.64** Km^2 of Moderately Dense Forests and **404.38** Km^2 of Open Forest. The area of the Scrub is **194.35** Km^2, Non-Forests **23.38** Km^2 and water Bodies **2.41** Km^2 .The distribution of the forest cover of the Division is shown in Fig 4.47.1.

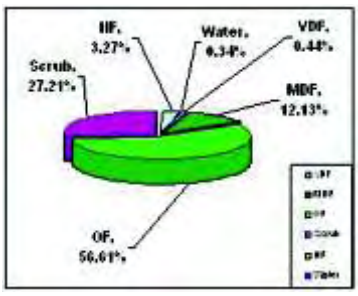


Fig 4.47.1

4.47.6 Change in Forest Cover:

The satellite images of 2010 and 2011 seasons are shown in Figs 4.47.2 & 4.47.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a negative change in forest cover of **3.44 Ha.** The forest cover change matrix given in Table 4.47.2 reveals that there is a decrease of **3.44 Ha** of Open Forest.

The total negative change of **3.44 Ha** is on account of clearance of jungle growth for raising of plantations. As clearance of jungle growth for raising of plantations is a forest management intervention and hence not considered as loss of forest cover Therefore the net loss of forest cover is Nil.

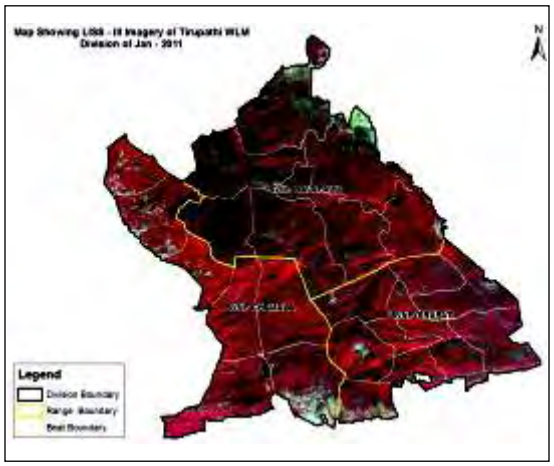


Fig 4.47.2

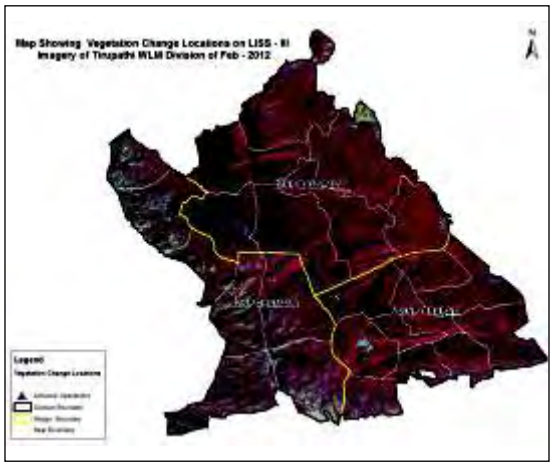


Fig 4.47.3

There are 25 Beats in the Division. Negative changes in forest cover is seen in only 1 Beat and there are no changes in the remaining 24 Beats.

Details of forest cover changes in 1 Beat mentioned above is shown in Table 4.47.3.

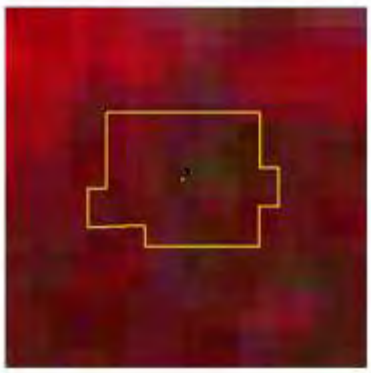
Table 4.47.2: Forest Cover change matrix **(Area in Km^2)**

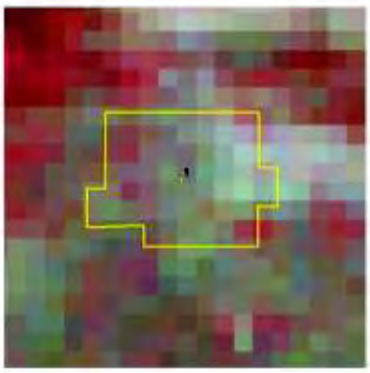
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	3.16	0.00	0.00	0.00	0.00	0.00	**3.16**
Moderately Dense Forest	0.00	86.64	0.00	0.00	0.00	0.00	**86.64**
Open Forest	0.00	0.00	404.38	0.00	0.03	0.00	**404.41**
Scrub	0.00	0.00	0.00	194.35	0.00	0.00	**194.35**
Non-Forest	0.00	0.00	0.00	0.00	23.35	0.00	**23.35**
Water	0.00	0.00	0.00	0.00	0.00	2.41	**2.41**
Total of 2011	**3.16**	**86.64**	**404.38**	**194.35**	**23.38**	**2.41**	**714.32**
Net Change	0.00	0.00	-0.03	0.00	0.03	0.00	

Table 4.47.3: List of Beats with negative change in Forest Cover **(Area in Ha)**

Beat	VDF	MDF	OF	Scrub	NF	WB	Total	Net Change	Encroa-chment
BALAPALLY RANGE									
Dasettipalli	0.00	40.44	2264.44	799.19	147.56	0.00	3251.63	-3.44	0.00
Total	**0.00**	**40.44**	**2264.44**	**799.19**	**147.56**	**0.00**	**3251.63**	**-3.44**	**0.00**
Grand Total	**0.00**	**40.44**	**2264.44**	**799.19**	**147.56**	**0.00**	**3251.63**	**-3.44**	**0.00**

2010 **2011**





Longitude	79.28583 ° E
Latitude	13.91465 ° N
Area in Ha	3.44
Change	OF TO NF
Comp No.	1187
Beat	Desettipalli
Range	SVNP Balapalli
Division	WLM Tirupati

4.48 RAJAMPET WLM DIVISION

4.48.1 Introduction:

Rajampet WL Forest Division lies in the south-eastern part of Kadapa district between latitudes 13^0 46' 45'' and 14^0 23' 35'' N and longitudes 78^0 44' 44'' and 79^0 28' 22'' E. Geographical area of the Division is 3,027 Km^2 which is 19.71% of the geographical area of the district. The Division is having an altitude of 378.7 M. The rivers Penna, Chitravathi, Kundu, Papaghni, Sagileru, Mandvya, Gunjaneru and Cheyyeru fall in this Division.

Land use pattern of the Division is given in Table 4.48.1

The climate of this Division is generally dry with temperatures ranging from 25^0C to 40^0C and the annual rainfall is about 700 mm with uneven isolated rains received mainly from south-west monsoons.

The soils of the Division are red ferrugenous and black. These two classes can be sub divided into clay & loamy sand with finer distinctions. They range from poor to fertile. Red soils occupy most of the Division area and are under cultivation. These soils have a low nutrient status. The minerals like Barytes, China clay, White clay, Copper, Manganese Black Granite and Lime stone are available.

Table 4.48.1: Land use Pattern

Land use	Area in Sq km	Percentage
Forest including Scrub	1397.35	46.16
Agriculture	845.79	27.94
Land with Scrub	185.17	6.12
Fallow Lands	382.88	12.65
Grasslands	6.00	0.20
Settlements	7.65	0.25
Orchids 158.72	5.24	
water bodies	43.43	1.43
Total	**3027.00**	

Population of the Division is 0.49 million (2011 Census), per capita forest area is 0.3 Ha and the population density is 148 persons per Km^2.

4.48.2 Recorded Forest Area:

The notified forest area of the Division is **1437.03 Km^2** which is 47.47% of the geographical area. Reserved and Un-classed forests constitute 1,410.71 Km^2 (98.17%) and 26.32 Km^2 (1.83%) of the forest area respectively.

As per Champion and Seth's classification the forests of Division falls under Tropical dry Deciduous forest type. Its most important species is the famous *Pterocarpus santalinus* or Red Sanders. These forests fall under three zones those of Terai or Fuel Forests up to an elevation of 250 M, hill forests or Red Sanders lying between the elevation of 250 - 700 M and Shorea eugenia occupying elevations above 700 M feet.

4.48.3 Protected Area:

A part of Sri Penusila Narasimha Swamy WLS falls in this Division.

4.48.4 Community Forest Management:

There are 178 Vana Samrakshana Samities (VSSs) in the Division. An area of 445.55 Km^2 of forests, which is 31% of the notified forests, is under the management of the VSSs.

4.48.5 Forest Cover:

The forest cover in the Division is based on the interpretation of IRS P6 LISS III 2011 data (Feb 2012) is **1031.69 Km^2** which is **34.08%** of the geographical area. In terms of the forest canopy density classes the Division has **55.71** Km^2 of Moderately Dense Forest and **975.98** Km^2 of Open Forest. The area of the Scrub is **363.21** Km^2, Non-Forest **54.13** Km^2 and Water Bodies **2.91** Km^2.The distribution of the forest cover of the Division is shown in Fig 4.48.1.

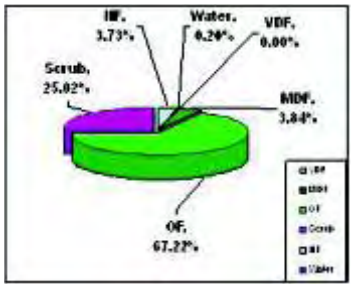


Fig 4.48.1

4.48.6 Change in Forest Cover:

The satellite images of 2010 and 2011 seasons are shown in Figs 4.48.2 & 4.48.3 respectively and the changes between this period are shown on the image of 2011.

Comparison of the current forest cover with that of previous assessment year shows a negative change in forest cover of **4.77 Ha**. The Forest cover change matrix given in Table 4.48.2 shows that there is a decrease of **4.77 Ha** of Open Forest and **0.12 Ha** of Scrub.

The total positive change (including Scrub) is **36.75 Ha** is on account of raising of plantations. The total negative change (including Scrub) is **41.64 Ha** on account of clearance of jungle growth for raising of plantations. As raising of plantations is a forest management intervention the same is not considered as loss of forest cover. Therefore there is no net loss of forest cover in the Division.

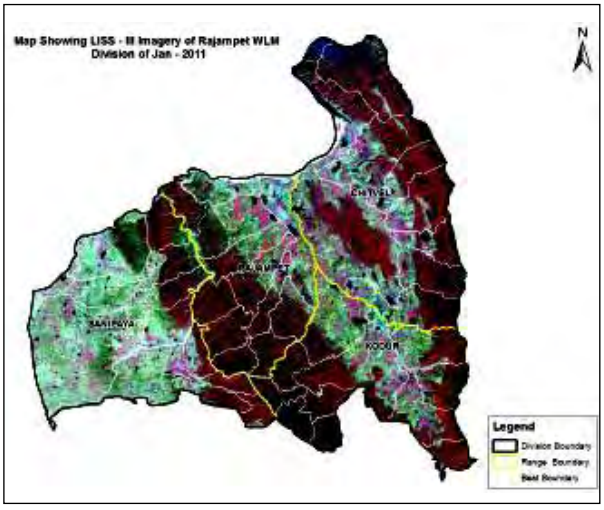


Fig 4.48.2

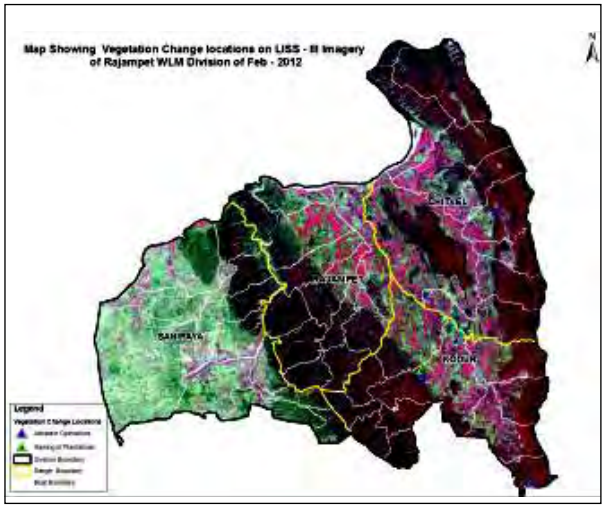


Fig 4.48.3

There are 32 Beats in the Division. Negative changes in forest cover are noticed in 3 Beats only .There are no changes in the remaining 29 Beats.

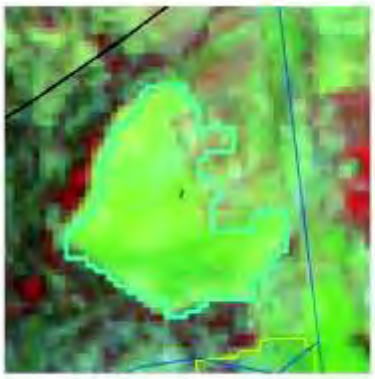
Details of forest cover changes in the 3 Beats mentioned above are shown in Table 4.48.3.

Table 4.48.2: Forest Cover change matrix **(Area in Km^2)**

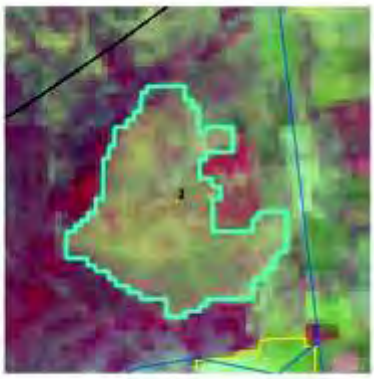
2010	2011						Total of 2010
	VDF	MDF	OF	Scrub	NF	WB	
Very Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
Moderately Dense Forest	0.00	55.71	0.00	0.00	0.00	0.00	**55.71**
Open Forest	0.00	0.00	975.98	0.00	0.05	0.00	**976.03**
Scrub	0.00	0.00	0.00	363.21	0.37	0.00	**363.21**
Non-Forest	0.00	0.00	0.00	0.37	54.08	0.00	**54.08**
Water	0.00	0.00	0.00	0.00	0.00	2.91	**2.91**
Total of 2011	**0.00**	**55.71**	**975.98**	**363.21**	**54.13**	**2.91**	**1451.94**
Net Change	0.00	0.00	-0.05	0.00	0.05	0.00	

Table 4.48.3: List of Beats with change in Forest Cover									(Area in ha)
Beat	**VDF**	**MDF**	**OF**	**Scrub**	**NF**	**WB**	**Total**	**Net Change**	**Encroa-chment**
CHITVEL RANGE									
Rajukunta	0.00	459.45	4179.42	821.32	269.68	16.97	5746.84	-3.30	0.00
Total	**0.00**	**459.45**	**4179.42**	**821.32**	**269.68**	**16.97**	**5746.84**	**-3.30**	**0.00**
KODUR RANGE									
Balapalli	0.00	32.56	1982.89	554.22	86.27	2.03	2655.03	-1.47	0.00
K.V.Bhavi_North	0.00	149.40	3662.94	703.11	133.95	0.00	4649.40	-0.12	0.00
Total	**0.00**	**181.96**	**5645.83**	**1257.33**	**220.22**	**2.03**	**7304.43**	**-1.59**	**0.00**
Grand Total	**0.00**	**641.41**	**9825.25**	**2078.65**	**489.90**	**19.00**	**13051.27**	**-4.89**	**0.00**

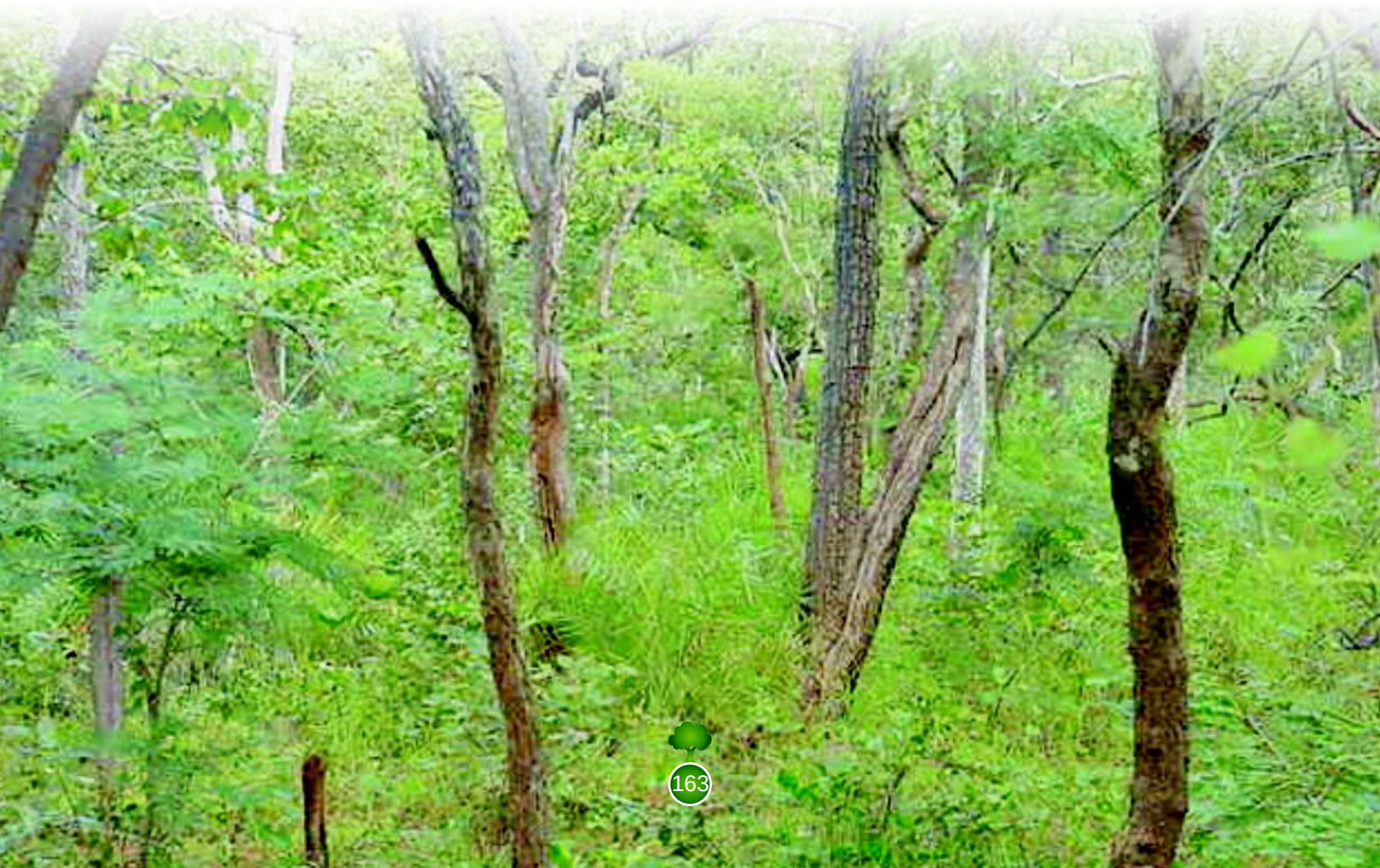
2010



2011



Longitude	79.25934 ° E
Latitude	13.96387 ° N
Area in Ha	36.75
Change	NF TO SF
Comp No.	1122
Beat	K.V.Bhavi_North
Range	Kodur
Division	Rajampet



Chapter – V

Forest Cover Statistics in Protected Areas

5.1. Introduction

India being situated in the tropical region harbors rich Bio-Diversity. With just 2% of the world's land area India supports about 10% of the world's Biological Diversity making it the 7th richest Bio-Diversity country in the world. This distinction bestows a great responsibility on the Government to protect and conserve its rich floral, faunal and ecological diversity. This is sought to be done by establishing a network of Protected Areas. The term Protected Areas is commonly used to describe areas of ecological and biological importance like Wildlife Sanctuaries, National Parks, Zoos, Game reserves etc. An area qualifies to be declared as Protected Area when it bears some floral or faunal species of great significance, which need to be conserved or has an ecological system, which is fragile and needs to be protected. India is one of the 12 mega-biodiversity countries of the World.

The Andhra Pradesh state has coastline of about 1000 km. The State has wide and varied vegetation types enriched by a variety of flora and fauna. Andhra Pradesh being located strategically in the central region of the Indian sub-continent has representatives of the magnificent Indian plant and animal life. Its varied topography ranging from the hills of Eastern Ghats and Nallamallais to the shores of Bay of Bengal supports varied ecotypes, which in turn support a rich diversity of flora and fauna. The vegetation found in the state is largely of dry deciduous type with a mixture of Teak, Terminalias, Dalbergias, Pterocarpus, Anogeissus etc. The hills of Eastern Ghats add greatly to the Biological Diversity and provide centers of endemism for plants, birds and lesser forms of animal life. The varied habitat harbors a diversity of fauna which includes Tiger, Panther, Wolf, Wild Dog, Hyena, Sloth Bear, Gaur, Black Buck, Chinkara, Chowsingha, Nilgai, Cheetal, Sambar and a number of Birds and Reptiles. The long sea coast provides the nesting ground for sea turtles, the back waters of Pulicat lake are the feeding grounds for Flamingoes and Grey Pelicans, the estuaries of river Godavari and Krishna support rich mangrove forests with Fishing Cat and Otters as keystone species. The State is a proud possessor of some rare and endemic plants like *Cycas beddomei, Pterocarpus santalinus, Terminalia pallida, Syzygium alternifolium, Shorea talura, Shorea tumbuggia, Psilotum nudam* etc. Similarly, the Double banded or the Jerdon's Courser, the Golden Gecko and the Slender Loris are rare, endangered and endemic fauna in the State.

Over the years the digital interpretation of Satellite data had been done independently, as a result changes in Forest cover were prone to subjectivity results in interpretational errors. Therefore, APFD has switched over to vector based approach like the FSI from 2007 in which forest cover is mapped in polygons (Vector) by defining clusters of pixels with boundaries. This improves the cartographic presentation of the output, helps in mapping the changes more accurately and makes the output available for use by protection staff. Both positive and negative changes were captured for about 1500 locations and communicated to field staff for verification & feedback.

5.2. Protected Area Network in AP

The State has 27 Protected Areas – 6 National Parks, 21 Wildlife Sanctuaries, which includes 2 Tiger Reserves i.e. Nagarjuna Sagar – Srisailam Tiger Reserve (NSTR), the biggest Tiger Reserve of India and Kawal Tiger Reserve in Adilabad District . Out of 63814 Km^2 of notified forest area, 14876.54 Km^2 is included in the PA network, covering an area of about 23.9% of the notified forests and 5.53% of Geographical area of the State.

The State with its rich forests and diverse flora and fauna provides ample scope for promoting Eco-Tourism. The natural beauty of the state has not been fully exposed to the visitors till now. The Government has drawn up a plan to open up the Protected Area Network of the State for visitors under the scheme of Community based Eco-tourism Project (CBET). Each of the Wildlife Sanctuary and National Park of the State has its own significance and has something unique to offer to the visitors.

5.3. Forest Cover in Protected Areas

The forest cover in the Protected Areas based on the interpretation of IRS P6 LISS III 2011 data is 9917.19 Km^2 , i.e. 3.6% of the Geographical area. In terms of the forest canopy density classes the PA Network has 208.37 Km^2 of Very

Dense Forest, 3911.94 Km^2 of Moderately Dense Forest and 5796.88 Km^2 of Open Forests. The area of the Scrub included is 2831.40 Km^2, Non-Forest 1271.87 Km^2 and Water Bodies 856.08 Km^2.

Comparison of the forest cover of 2011 with that of 2010 shows a net loss of 2.28 Km^2 of forest cover. Maximum habitat loss of 1.41 Km^2 has occurred in Kinnerasani Wild Life Sanctuary and the least loss of 0.01 Km^2 in Kawal sanctuary. There is no Net gain in any sanctuary. There is no loss of habitat (forest cover) in the remaining 15 PAs.

Protected Area wise forest cover in different forest canopy density classes along with the changes compared to 2010 assessment is given in **Table 5.1.**

Table 5.1 Protected Area-wise Forest Cover 2011 **(Area In Km^2)**

S. No.	Sanctuary	VDF	MDF	OF	Net Change	SF	NF	WB	Total	Encroa-chment
1	Eturnagaram	0.00	416.94	349.63	-0.23	23.98	76.00	4.11	870.66	0.23
2	GBM Wls	23.38	760.07	295.24	-0.06	52.59	17.99	0.95	1150.22	0.00
3	Kambalakonda WLS	0.00	26.17	37.97	-0.02	11.78	3.97	0.12	80.01	0.02
4	Kawal WLS	48.26	332.03	300.57	-0.01	93.15	115.19	3.80	893.00	0.00
5	KBR_NP	0.00	0.04	0.03	0.00	1.11	0.25	0.00	1.43	0.00
6	Kinnerasani WLS	1.54	227.66	286.49	-1.41	182.39	112.39	15.28	825.74	0.69
7	Kolleru Lake WLS	**This Sanctuary is out of RF**								
8	Koringa WLS	12.87	89.26	13.99	0.00	1.91	6.23	125.56	249.82	0.00
9	Rayala Elephant Reserve(including Koundinya Wls)	0.01	112.88	453.32	0.00	190.51	57.79	0.99	815.50	0.00
10	Krishna WLS	0.00	0.00	80.14	0.00	66.80	49.64	121.82	318.40	0.00
11	Lankamalleswara	0.11	157.59	233.40	0.00	103.03	11.37	0.10	505.60	0.00
12	Mahavir Harina Vanasthali_NP	0.00	0.18	0.49	0.00	11.95	2.45	0.00	15.07	0.00
13	Manjeera	**This Sanctuary is out of RF**								
14	Chilkur Mrugavani-NP	0.00	0.00	0.04	0.00	0.00	4.48	0.45	4.97	0.00
15	Nelapattu WLS	0.00	0.03	5.05	0.00	1.20	3.22	0.07	9.57	0.00
16	NSTR	1.08	731.70	1970.38	0.00	1371.61	351.20	96.36	4522.33	0.22
17	Pakhal WLS	0.00	144.94	402.31	-0.44	66.05	191.43	23.21	827.94	0.36
18	Papikonda NP	79.97	636.38	110.42	-0.03	20.64	5.95	3.23	856.59	0.02
19	Penusila WLS	0.00	84.35	798.92	0.00	320.87	29.84	37.55	1271.53	0.08
20	Pochram WLS	38.19	82.89	13.38	0.00	7.63	0.13	0.16	142.38	0.00
21	Pranahita WLS	0.00	22.48	17.45	0.00	23.27	4.94	0.24	68.38	0.00
22	Pulicat Lake	0.09	2.33	41.54	0.00	87.66	205.39	420.33	757.34	0.00
23	Rajivgandhi_NP	0.00	0.00	0.30	0.00	1.81	1.71	0.00	3.82	0.00
24	Rollapadu WLS	0.00	0.00	0.01	0.00	0.04	5.16	0.00	5.21	0.00
25	Sivaram WLS	0.00	4.00	19.12	-0.05	16.12	0.81	0.04	40.09	0.02
26	Sri Venkateshwara WLS (Including SVNP)	2.87	80.02	366.70	-0.03	175.31	14.33	1.71	640.94	0.03
	AP_Total	**208.37**	**3911.94**	**5796.88**	**-2.28**	**2831.40**	**1271.87**	**856.08**	**14876.54.**	**1.68**

*** Water Bodies inclusive of outside notified forests in Pulicat, Kolleru Lake & Koringa WLS.*

**Net Change in Forest Cover Only i.e., VDF, MDF and OF to Scrub or Non-Forest between 2010 and 2011.*

Chapter – VI

Forest Cover Statistics in Joint Forest Management Areas

6.1. Introduction

Andhra Pradesh is one of the pioneering Forest Departments in India in implementing the Community Forest Management (CFM). Joint Forest Management (JFM) was introduced in AP in 1994 for protecting forests, to improve their productivity and to alleviate rural poverty in consonance with the National Forest Policy 1988 and GOI circular of June 1990 on people's participation in forest management. This strategy proved effective in restoring forest cover in degraded forest lands and improved access to the forest resources by communities living in forest fringe areas. Considering the potential of the forests to contribute towards poverty alleviation the Government of Andhra Pradesh adopted a proactive stance by transforming JFM into CFM during 2002.

The difference between JFM and CFM is that while JFM uses participation of communities mainly for forest protection by giving them the rights to non-timber forest products (NTFP) and modest benefit-sharing in timber with limited involvement in forest management. Whereas CFM aims to improve forests both in coverage and productivity by empowering VSSs to take more autonomous decisions regarding the management and use the forest resources in livelihood development. This means a greater devolution of power and responsibilities to VSSs in planning, management and decision making on the forest areas marked for the VSSs, at the same time redefining roles of APFD frontline staff to act as facilitators. It is important to note that Andhra Pradesh is the only State in the country which has adopted CFM and provided 100% of net revenue generated from the VSS forest areas with a minimum of 50% of it being required to be ploughed back in forest development works, as per the key strategy to address the use of forest resources for poverty alleviation.

6.2. Numbers & Area under VSSs

There are 7,718 Vana Samrakshana Samities (VSSs) or JFPCs in the State. 15,200 Km^2 forest area, which constitutes 23.8 % of forest area, is under CFM. 15.39 lakh members are involved in CFM which includes 4.65 lakh members belonging to Scheduled Tribes and 3.23 lakh members belonging to Scheduled Castes.

6.3. Forest Cover in VSS Areas

The forest cover in the VSS areas based on the interpretation of IRS P6 LISS III 2011 data is 9265.13 Km^2, which is 3.36% of the Geographical area. In terms of the forest canopy density classes the VSSs managed forests in the State consists of 76.78 Km^2 of Very Dense Forest, 3773.06 Km^2 of Moderately Dense Forest and 5384.27 Km^2 of Open Forest. The area of the Scrub is 3786.43 Km^2, Non-Forest is 2131.07 Km^2 and Water Bodies is 48.47 Km^2.

Comparison of the forest cover of 2011 with that of 2010 shows a net loss of 30.63 Km^2 of forest cover. It is seen that contribution of encroachments in the loss of forest cover in VSS areas is 12.30 Km^2.

Division wise forest cover in VSSs in different forest canopy density classes along with the changes compared to 2010 assessment is given in **Table 6.1.**

Table 6.1:Division wise Forest Cover change in VSS areas IN 2010-2011											(Area in Km^2)
S. No.	Division	VDF	MDF	OF	Net Change	SF	NF	WB	Total	Encroa-chment	Net change (SF TO NF)
ADILABAD CIRCLE											
1	Adilabad	1.10	112.21	157.50	-0.03	39.76	48.33	0.45	359.34	0.03	0.00
2	Bellampally	2.33	100.35	71.10	-0.48	13.27	19.46	0.41	206.92	0.02	-0.06
3	Kagaznagar	3.95	62.46	51.08	-0.25	15.21	14.87	0.84	148.41	0.22	-0.04
4	Mancherial	0.56	47.88	55.31	-0.11	21.08	12.34	0.51	137.68	0.00	0.07
5	Nirmal	0.29	107.34	122.92	-0.16	29.37	21.90	0.68	282.50	0.03	0.00
	Total	**8.23**	**430.24**	**457.91**	**-1.03**	**118.68**	**116.90**	**2.89**	**1134.85**	**0.30**	**-0.03**
ANANTHAPUR CIRCLE											
6	Anathapur	0.00	0.35	78.73	-0.11	241.37	307.79	0.11	628.36	0.00	-0.53
	Total	**0.00**	**0.35**	**78.73**	**-0.11**	**241.37**	**307.79**	**0.11**	**628.36**	**0.00**	**-0.53**
GUNTUR CIRCLE											
7	Giddalur	0.15	10.11	35.54	0.00	113.39	124.77	3.12	287.08	0.03	-1.28
8	Guntur	0.00	0.00	24.43	-0.29	199.39	35.00	1.99	260.81	0.00	-0.04
9	Nellore	0.00	6.60	123.44	-0.04	288.46	226.05	1.40	645.94	0.00	-1.67
	Total	**0.15**	**16.71**	**183.40**	**-0.34**	**601.23**	**385.82**	**6.51**	**1193.83**	**0.03**	**-3.00**
HYDERABAD CIRCLE											
10	Hyderabad	0.00	65.18	113.58	-0.11	161.84	11.86	1.03	353.49	0.00	-0.20
11	Mahabubnagar	0.00	13.74	246.34	0.00	223.56	1.69	0.09	485.42	0.00	-0.05
12	Nalgonda	0.00	0.21	23.31	0.00	134.02	55.89	0.32	213.75	0.00	-0.03
	Total	**0.00**	**79.13**	**383.23**	**-0.11**	**519.42**	**69.44**	**1.44**	**1052.66**	**0.00**	**-0.28**
KHAMMAM CIRCLE											
13	Bhadrachalam North	0.01	30.49	42.14	-1.35	28.53	17.32	0.33	118.82	0.88	0.00
14	Bhadrachalam South	0.90	35.13	36.07	-0.36	12.60	2.08	0.09	86.87	0.26	0.00
15	Khammam	0.10	47.69	94.79	-0.99	68.48	26.93	0.76	238.75	0.85	-0.59
16	Kothagudem	0.00	25.13	102.15	-1.98	71.85	39.33	0.17	238.63	1.16	-0.01
17	Paloncha	0.34	51.89	143.87	-1.30	63.70	24.29	0.16	284.26	0.94	-1.02
18	Paloncha WLM	0.44	60.11	75.61	-0.49	41.36	19.69	2.13	199.34	0.53	-0.04
	Total	**1.79**	**250.44**	**494.63**	**-6.47**	**286.53**	**129.64**	**3.64**	**1166.67**	**4.62**	**-1.66**
KURNOOL CIRCLE											
19	Kadapa	0.00	11.21	180.70	0.00	168.77	33.20	0.21	394.09	0.00	-0.51
20	Nandyal	1.29	62.43	51.53	-1.94	20.11	30.52	0.96	166.84	0.00	0.00
21	Proddatur	0.00	46.02	148.15	0.00	153.67	106.76	1.77	456.37	0.00	-0.04
	Total	1.29	119.66	380.38	-1.94	342.55	170.48	2.94	1017.30	0.00	-0.55
NIZAMABAD CIRCLE											
22	Kamareddy	0.00	83.48	177.28	-0.15	34.65	28.96	1.28	325.65	0.15	0.00
23	Medak	0.00	69.29	360.11	-1.01	178.89	18.53	1.02	627.83	0.19	-1.66
24	Nizamabad	0.00	131.07	183.34	-0.06	46.59	41.85	2.54	405.39	0.09	-0.03
	Total	**0.00**	**283.84**	**720.73**	**-1.21**	**260.12**	**89.34**	**4.84**	**1358.87**	**0.43**	**-1.70**

Table 6.1:Division wise Forest Cover change in VSS areas IN 2010-2011										(Area in Km^2)	
S. No.	Division	VDF	MDF	OF	Net Change	SF	NF	WB	Total	Encroa-chment	Net change (SF TO NF)
RAJAMUNDRY CIRCLE											
25	Eluru	0.03	260.37	93.25	-5.18	27.54	33.30	0.06	414.55	2.93	-0.31
26	Kakinada	61.19	905.26	88.67	-0.35	52.65	29.93	10.35	1148.05	0.45	-1.38
	Total	**61.22**	**1165.63**	**181.92**	**-5.54**	**80.19**	**63.23**	**10.41**	**1562.60**	**3.38**	**-1.68**
FDPET SRISAILAM CIRLCE											
27	Achampet	0.01	42.35	102.64	0.00	83.76	4.60	3.60	236.96	0.00	-0.18
28	Atmakur	0.02	8.30	29.68	-0.45	19.34	76.85	1.12	135.31	0.45	0.00
29	Markapur WLM	0.28	39.87	118.75	-0.31	133.62	54.42	0.21	347.15	0.00	-1.61
	Total	**0.31**	**90.52**	**251.08**	**-0.75**	**236.72**	**135.87**	**4.93**	**719.42**	**0.45**	**-1.79**
TIRUPATHI WLM CIRCLE											
30	Chittoor East	0.02	17.20	321.53	-0.22	141.86	86.92	0.17	567.70	0.00	-0.36
31	Rajampet	0.00	4.29	131.00	0.00	117.20	36.36	0.08	288.93	0.00	-0.37
32	Tirupathi WLM	0.94	16.18	57.85	-0.03	24.17	8.10	0.21	107.45	0.00	0.00
	Total	**0.96**	**37.67**	**510.38**	**-0.25**	**283.23**	**131.38**	**0.46**	**964.08**	**0.00**	**-0.73**
VIZAG CIRCLE											
33	Narsipatnam	0.87	99.27	95.67	-0.06	20.28	15.04	0.00	231.13	0.06	0.00
34	Srikakulam	0.00	41.32	187.98	-1.06	41.61	16.78	2.54	290.22	1.02	0.00
35	Visakhapatnam	0.00	102.22	114.14	-0.05	35.30	20.07	0.22	271.95	0.05	0.00
36	Vizianagaram	0.00	172.44	114.85	-0.08	15.33	12.29	0.02	314.93	0.09	-0.01
	Total	**0.87**	**415.25**	**512.63**	**-1.24**	**112.52**	**64.17**	**2.78**	**1108.23**	**1.22**	**-0.01**
WARANGAL CIRCLE											
37	Karimnagar East	0.00	382.61	169.89	-1.47	60.37	8.90	0.45	622.22	1.44	0.00
38	Karimnagar West	0.00	120.28	118.09	-0.12	83.80	10.25	1.30	333.72	0.12	0.00
39	Warangal South	0.00	85.09	136.38	-0.02	28.70	88.12	1.19	339.48	0.02	0.00
40	Warangal WLM	0.00	33.63	56.84	-0.12	3.13	6.46	0.59	100.65	0.12	0.00
41	Warangl North .	0.00	106.89	151.00	0.70	18.65	55.17	0.67	332.37	0.18	0.00
	Total	**0.00**	**728.50**	**632.21**	**-1.02**	**194.65**	**168.89**	**4.20**	**1728.44**	**1.87**	**0.00**
	Grand Total	**74.82**	**3617.93**	**4787.23**	**-20.02**	**3277.21**	**1832.96**	**45.15**	**13635.31**	**12.30**	**-11.97**

The 15 VSSs where the most loss of forest cover was noticed (VDF,MDF, OF,SC) are Regulakunta (Eluru), Lakkavarpadu (Kakinada), K.P.Thanda (Nandyal), Nandanavaram (Giddalur), Ramanakkapeta (Eluru), Inkurthi (Nellore), Chidenapalli (Karimnagar East), Bhogolu (Eluru), Bayyannapalem(Kakinada), Abbarajukunta (Atmakur), PRC Thanda (Markapur), Y. Kota (AW) (Rajampet), Mogalapalli (Markapur), Yatalalakunta (Khammam).

Encroachments are noticed in 150 VSSs of the state,which is a matter of concern.Totally 1230 Ha of encroachment is seen in VSS areas in 19 divisions.

The 15 VSSs, where the forest cover was gained (VDF, MDF, OF, Scrub) are: Narayanapur (Warangal North), Y.Kota (AW) (Rajampet), Kindra (Kakinada), Kothapet (Warangal North), Kandrikagudem (Eluru), Yatalakunta (Khammam), Kalkhoda (Hyderabad), Gottipudi (ChittoreEast), DurgampalliSCC (Nellore), Krishnapuram (Eluru), Dampoor (Bellampelli), Kistamapeta (Mancherial), Nagaram (Bellampelli), Gajularamaram (Hyderabad), Sirrivarigudem (Eluru).

**Net Change in Forest Cover Only, i.e. VDF, MDF and OF to Scrub and Non-Forest between year 2010 and 2011.*

CHAPTER – VII

FOREST FIRES IN ANDHRA PRADESH

7.1. Introduction

There is unanimous opinion that the forest fires are to be controlled if not completely eliminated. For last several decades attempts have been made to prevent forest fires but the success was to a limited extent. Andhra Pradesh has an area of about 63,814 square kilometers of forest land under the control of Forest Department. Out of the above, excluding an area of about 350 square kilometers of mangrove vegetation, the rest of the forest area is prone to fires. The fires occurring in Andhra Pradesh (AP) are only ground fires in nature. The ground fire or surface fire occur between November and May in the state as seen from MODIS satellite images. March is the most susceptible month for the forest fires. The ground fire cause wide spread damage to the ground flora and fauna. The young regeneration is seriously affected by the fire. There are no two opinions that elimination of forest fire, which is mostly manmade, is a prerequisite for a healthy forest in the state.

7.2. Forest Fire Losses

a. National Level:

There are several papers about the forest fire in India. It is reported that during the Sixth Five-Year Plan (1980-85) 17,852 number of fire incidents were reported affecting an area of 5.7 million Ha at an annual average of 1.14 million Ha (Srivastava, 1989). Extrapolations of fire data in two representative areas, i.e. Chandrapur and Haldwani indicate that the total area burnt annually in the country may range between 2.66 and 13.95 million Ha (Saigal, 1989). As per Ministry of Environment and Forests, the forest area that is affected by annual fires could be as much as 37 million Ha.

b. State Level:

No definite study has been done in A.P. to estimate the extent of forest fires and consequent damages. After the MODIS satellite data was made available by FSI, it was found that 24 percent of the compartments (of the total number about 18,000) are prone to fire damage to various degrees in the state leaving balance 76% compartments unaffected. Total number of fire incidents in AP reported through MODIS satellite since 2004 is shown in **Table 7.1.** The details of Circle wise fire occurrences in Andhra Pradesh is given in **Table 7.2.** The Division wise details of fire occurrence in various years in Andhra Pradesh are given in **Table 7.3.**

There were **15,856** fire incidents reported in the period of 10 years. Thus on an average 1585 fire incidents take place annually in AP. A map of Andhra Pradesh showing forest fire occurrences between 2004 and 2013 is shown in Fig 7.1.

Table 7.1:
Table showing the Number of Fire Incidents observed through MODIS Data.

S.No.	Year	Forest Fires
1.	2004	**33**
2.	2005	**1084**
3.	2006	**1581**
4.	2007	**1929**
5.	2008	**1444**
6.	2009	**2454**
7.	2010	**1840**
8.	2011	**1113**
9.	2012	**2357**
10.	2013	**2021**
	Total	**15856**

(See Table 7.4 for month wise Distribution)

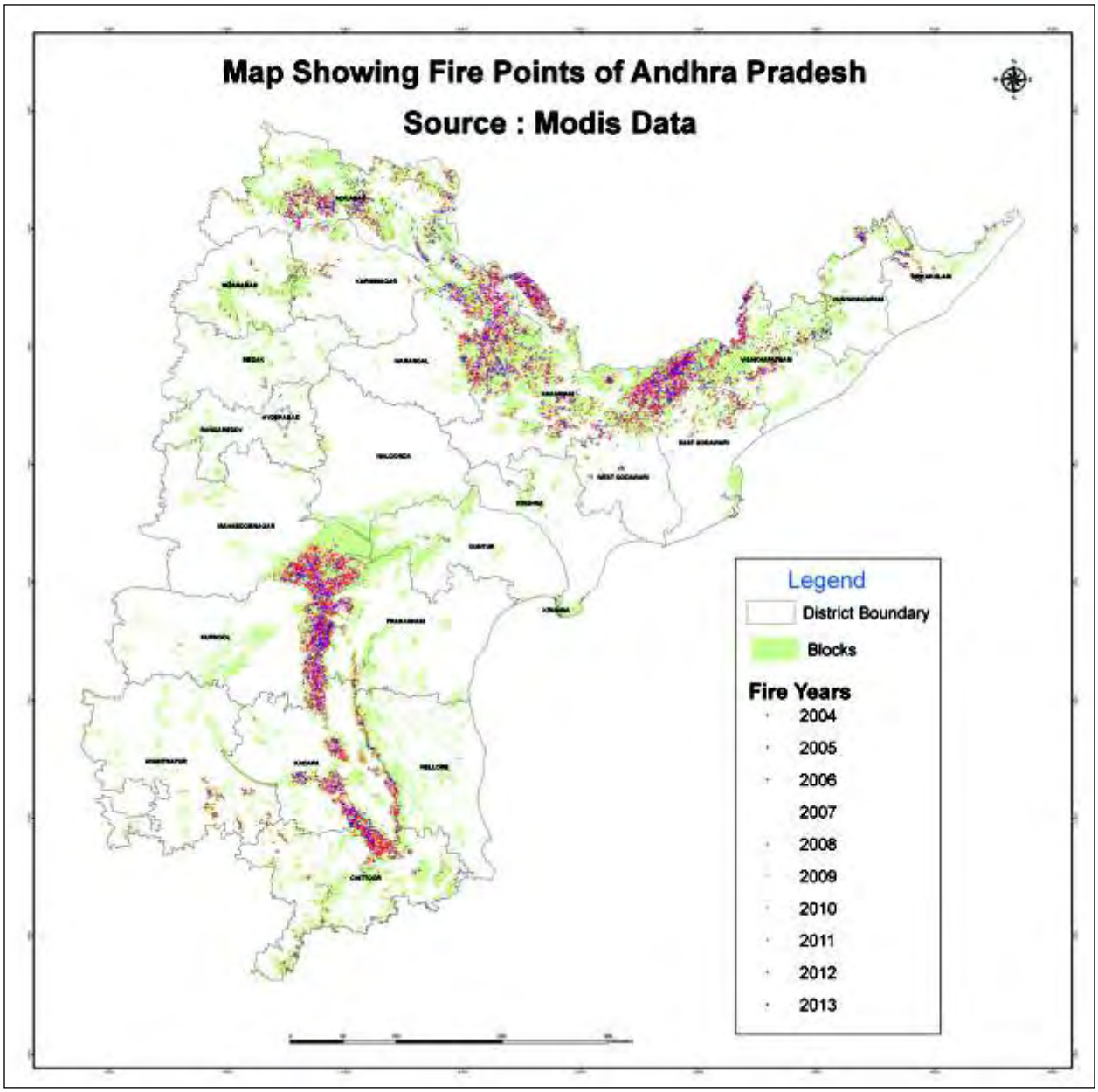

Map Showing Fire Points of Andhra Pradesh
Source : Modis Data
Legend
District Boundary
Blocks
Fire Years
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013

Fig. 7.1

The causes of most of the forest fires in AP are deliberate or incidental caused by persons for collection of NTFP including Beedi Leaf and to some extent for encroachments for cultivation purpose etc. The most severely forest-fire affected areas in the State are Khammam, Visakhapatnam, Warangal and Rajmundry circles and parts of Srisailam Project Tiger area. The Boda grass ***(Cymbopogon coloratus)*** is the main cause of forest fires in NSTR and Rayalaseema regions and the production of Tendu leaves ***(Diospyros melanoxylon)*** is major cause of forest fires In Telangana region. Another NWFP contributing to the forest fire is the Mahua ***(Madhuca indica)***. Local people in tribal belt collect Mahua flowers to produce a popular beverage or to boil with Sal seeds ***(Shorea robusta)*** as a seasonal grain substitute; by clearing the growth below the trees by burning which may spread to adjoining forests.

7.3. Forest Fire Pattern In Andhra Pradesh

Andhra Pradesh has mostly dry deciduous forests and trees start drying up from January - February onwards. Rainy season is mostly by South-West monsoon from June to September except for little area in South East Andhra Pradesh covering Chittoor, Nellore and parts of Prakasham and Kadapa districts where North East monsoon comes between October and December. Because of this character, forest fire occurs in Post monsoon period when ground contains certain materials for burning. As analyzed from MODIS data, maximum forest fire occurs in March followed by February and April.

7.4 Effects Of Fires

The most important ill effect of fires is on the young regeneration, which is killed or dies back, thereby delaying the establishment of a new crop and extending the rotation. Mortality may result from intense fires in older crops, although the trees develop thick bark that protects them. ***Eucalyptus*** appears to suffer more than the indigenous species by way of reduced stocking and lower yields at maturity. Repeated burning leads to site deterioration, changes in soil nutrient status and accelerated erosion due to the destruction of the ground flora; these also reduce the rate of growth. Not only do uncontrolled fires burn down the vegetation but the organic matter is adversely lowered, increasing the frequency of flooding and causing soil erosion. In addition, wildlife patterns and habitat may be disrupted. The situation is exacerbated by a lack of fire protection planning knowledge and incentive.

The following Pie charts (Fig. 7.2, Fig. 7.3) shows the effect of forest fire and grazing on status of regeneration and soil erosion etc in AP (Source Forest Inventory report of AP -2010).

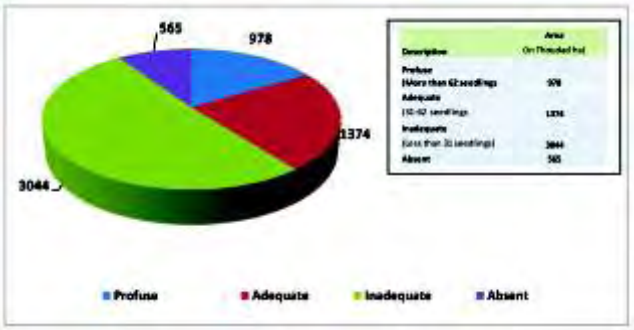


Fig 7.2 Status of Regeneration

Fig 7.3 Status of Soil Erosion

Table 7.2: Details of Circle wise Fire occurrences in Andhra Pradesh

S.no	Circle	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
1	Khammam	1	96	220	240	227	490	286	115	319	305	**2299**
2	Fdpt Srisailam	15	175	182	298	211	307	202	173	313	194	**2070**
3	Warangal	2	119	197	198	224	359	253	86	352	257	**2047**
4	Rajahmundry	1	96	197	221	218	248	254	149	306	255	**1945**
5	Kurnool	1	163	175	191	107	227	213	124	204	180	**1585**
6	Visakapatnam	3	114	182	204	85	172	224	43	191	254	**1472**
7	Tirupati	0	145	141	185	91	178	113	205	159	132	**1349**
8	Adilabad	5	27	70	156	142	270	142	71	309	197	**1389**
9	Guntur	0	93	137	151	76	130	106	99	130	192	**1114**
10	Ananthapur	3	51	59	47	37	45	35	31	53	23	**384**
11	Nizamabad	0	4	16	28	22	26	9	13	21	29	**168**
12	Hyderabad	2	1	5	10	4	2	3	4	0	3	**34**
	Total	**33**	**1084**	**1581**	**1929**	**1444**	**2454**	**1840**	**1113**	**2357**	**2021**	**15856**

Table 7.3: Details of Division wise Fire occurrences in Andhra Pradesh

S.no	Circle	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
1	Kakinada	1	85	178	189	199	214	228	141	279	231	**1745**
2	Giddalur	0	83	122	132	63	109	94	72	104	170	**949**
3	Warangal North	0	60	92	91	91	155	107	47	131	152	**926**
4	Achampet	12	52	59	124	89	128	49	52	141	45	**751**
5	Rajampet	0	83	71	92	62	93	64	105	102	98	**770**
6	Badrachalam North	0	29	89	83	77	142	90	39	87	103	**739**
7	Markapur	1	58	69	89	68	80	74	75	76	59	**649**
8	Atmakur	2	65	54	85	53	99	79	46	96	90	**669**
9	Narsipatnam	1	59	54	98	27	80	84	22	91	83	**599**
10	Kadapa	0	89	45	50	40	74	79	39	60	56	**532**
11	Nandyal	0	24	73	75	35	80	81	35	68	73	**544**
12	Proddutur	1	50	56	66	30	73	53	50	76	50	**505**
13	Wlm Tirupati	0	52	55	80	19	73	33	82	42	24	**460**
14	Kothagudem	1	23	41	26	32	136	38	15	77	77	**466**
15	Badrachalam South	0	20	23	45	46	59	82	27	46	38	**386**
16	Karimnagar East	1	15	13	22	27	60	66	6	108	35	**353**
17	Warangal South	0	22	44	30	41	73	27	12	55	46	**350**
18	Nirmal	3	8	12	48	42	87	32	27	44	61	**364**
19	Wlm Warangal	0	18	35	43	49	52	42	15	42	12	**308**
20	Paderu	1	27	49	45	20	30	49	10	44	46	**321**
21	Paloncha	0	13	24	44	31	53	44	11	49	38	**307**
22	Bellampally	0	1	22	20	30	50	40	15	73	51	**302**
23	Khammam	0	7	20	28	32	58	16	16	31	33	**241**

S.no	Circle	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
24	Ananthapur	2	24	41	13	27	24	24	17	16	13	**201**
25	Visakhapatnam	0	14	38	28	21	21	24	5	28	53	**232**
26	Kagaznagar	0	6	8	40	7	35	16	6	59	9	**186**
27	Mancherial	2	2	10	14	14	32	25	9	65	31	**204**
28	Chittoor West	1	27	18	34	10	21	11	14	37	10	**183**
29	Jannaram	0	9	13	21	12	44	24	6	39	36	**204**
30	Eluru	0	7	16	31	18	34	23	8	23	23	**183**
31	Wlm Paloncha	0	4	23	14	9	42	16	7	29	16	**160**
32	Vizianagaram	0	6	21	19	7	27	37	4	18	43	**182**
33	Adilabad	0	1	5	13	37	22	5	8	29	9	**129**
34	Nellore	0	9	13	18	13	16	10	21	19	19	**138**
35	Srikakulam	1	8	20	14	10	14	30	2	10	29	**138**
36	Chittoor East	0	10	15	13	10	12	16	18	15	10	**119**
37	Karimnagar West	1	4	13	12	16	19	11	6	16	12	**110**
38	Kamareddy	0	1	3	10	8	8	4	1	11	8	**54**
39	Nizamabad	0	0	6	11	8	14	2	3	1	12	**57**
40	Medak	0	3	7	5	5	4	3	8	8	9	**52**
41	Guntur	0	1	2	1	0	5	2	6	7	3	**27**
42	Hyderabad	0	0	5	7	3	2	2	3	0	2	**24**
43	Vijayawada	0	4	3	1	1	0	3	0	4	1	**17**
44	Mahaboobnagar	2	1	0	3	1	0	1	1	0	0	**9**
45	Wlm Medak	0	0	0	2	1	0	0	1	1	0	**5**
46	Kurnool	0	0	1	0	2	0	0	0	0	1	**4**
47	Wlm Nsagar	0	0	0	0	1	0	0	0	0	0	**1**
48	Nalgonda	0	0	0	0	0	0	0	0	0	1	**1**
	Total	**33**	**1084**	**1581**	**1929**	**1444**	**2454**	**1840**	**1113**	**2357**	**2021**	**15856**

During the year 2004 a Forest Fire Risk Zonation was carried out using satellite data taking into account certain parameters like Forest density, distance from habitation, Road, Slope, aspect etc and maps were generated up to Beat level. These were communicated to field officers for use. However after availability of MODIS fire data, new Fire Risk Zonation map has been prepared based on the actual fire occurrences.

The Fire Risk Zonation map prepared and communicated based on MODIS data between 2004 and 2013, for the use of field officers, is shown in fig. 7.4

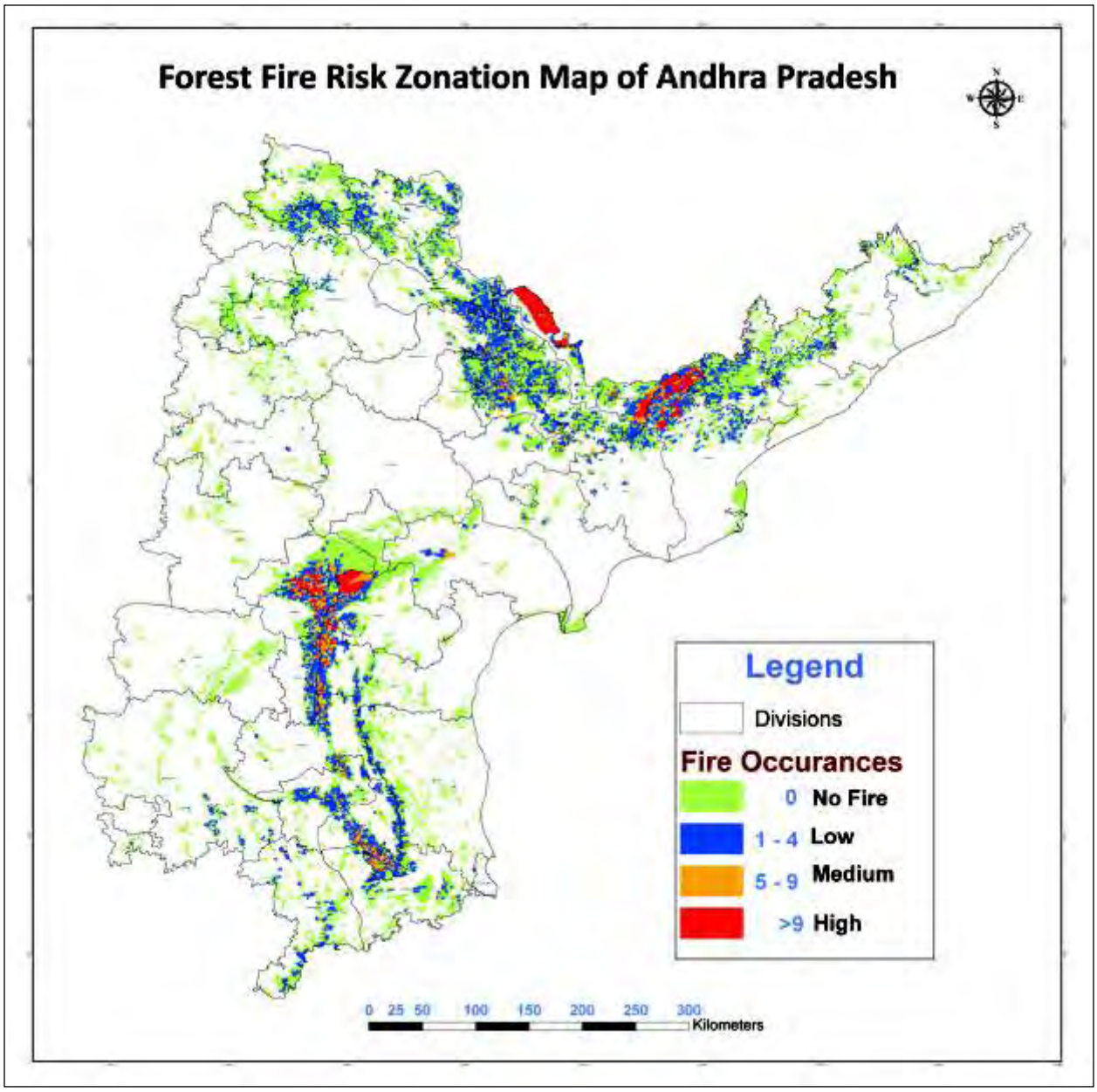

Forest Fire Risk Zonation Map of Andhra Pradesh
Legend
Divisions
Fire Occurances
0 No Fire
1 - 4 Low
5 - 9 Medium
>9 High
0 25 50 100 150 200 250 300
Kilometers

Fig. 7.4

A fire risk zonation map of Kakinada Division based on the MODIS data is shown in the Fig. 7.5

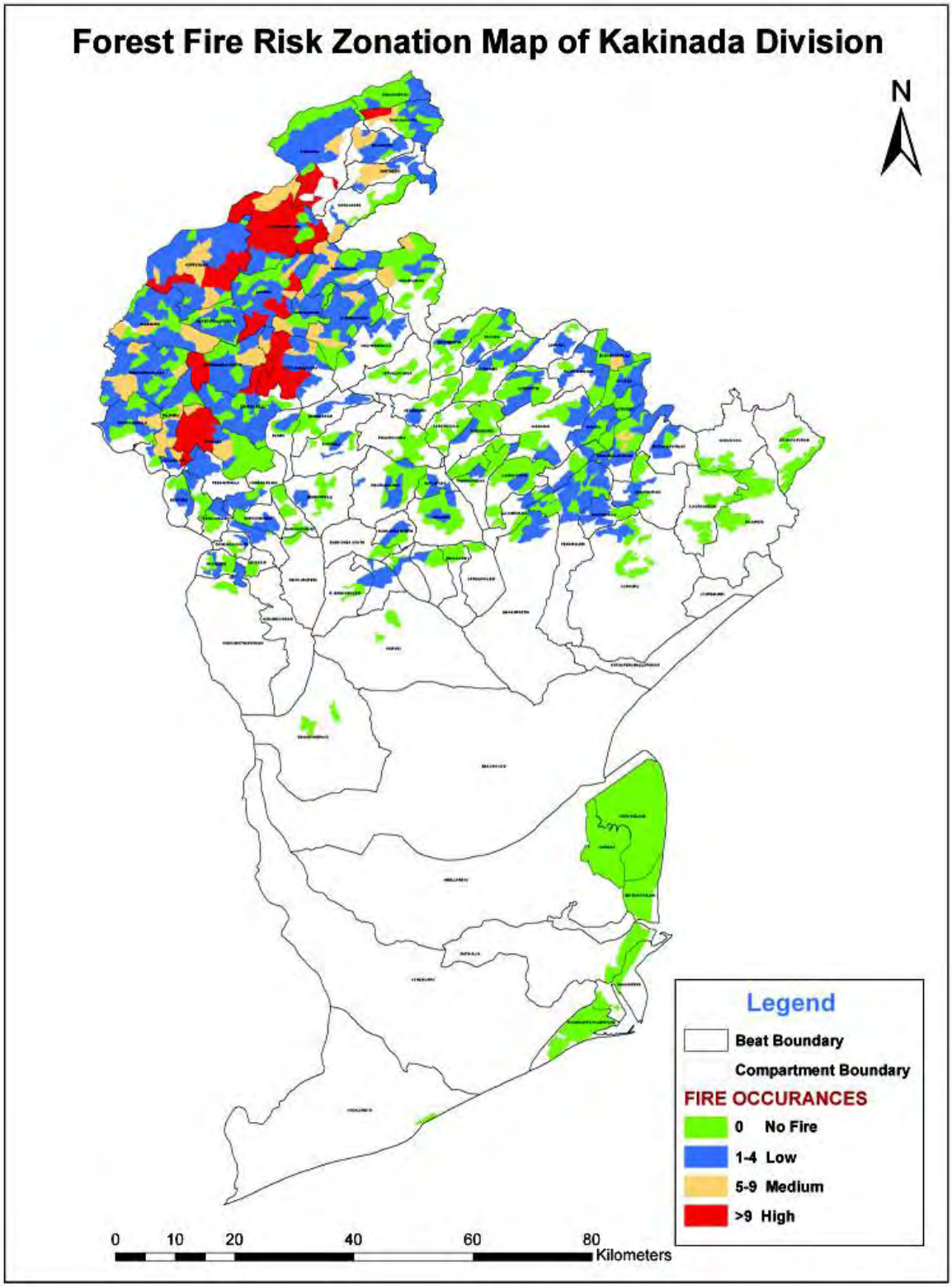


Fig. 7.5

Table 7.4: The following table shows the incidence of forest fire in different months in the State:-

Month\Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
January	1	107	14	76	82	156	37	4	54	0	**531**
February	1	707	528	572	194	625	255	2	976	116	**3976**
March	0	192	540	695	521	1335	1100	508	1079	1063	**7033**
April	2	61	435	466	141	263	378	326	212	596	**2880**
May	2	11	61	120	506	74	62	252	36	246	**1370**
June	0	5	3	0	0	1	8	19	0	0	**36**
November	3	0	0	0	0	0	0	0	0	0	**3**
December	24	1	0	0	0	0	0	2	0	0	**27**
Total	**33**	**1084**	**1581**	**1929**	**1444**	**2454**	**1840**	**1113**	**2357**	**2021**	**15856**

Month wise distribution of fire occurrences for the years 2004-2013 are shown in the fig. 7.6

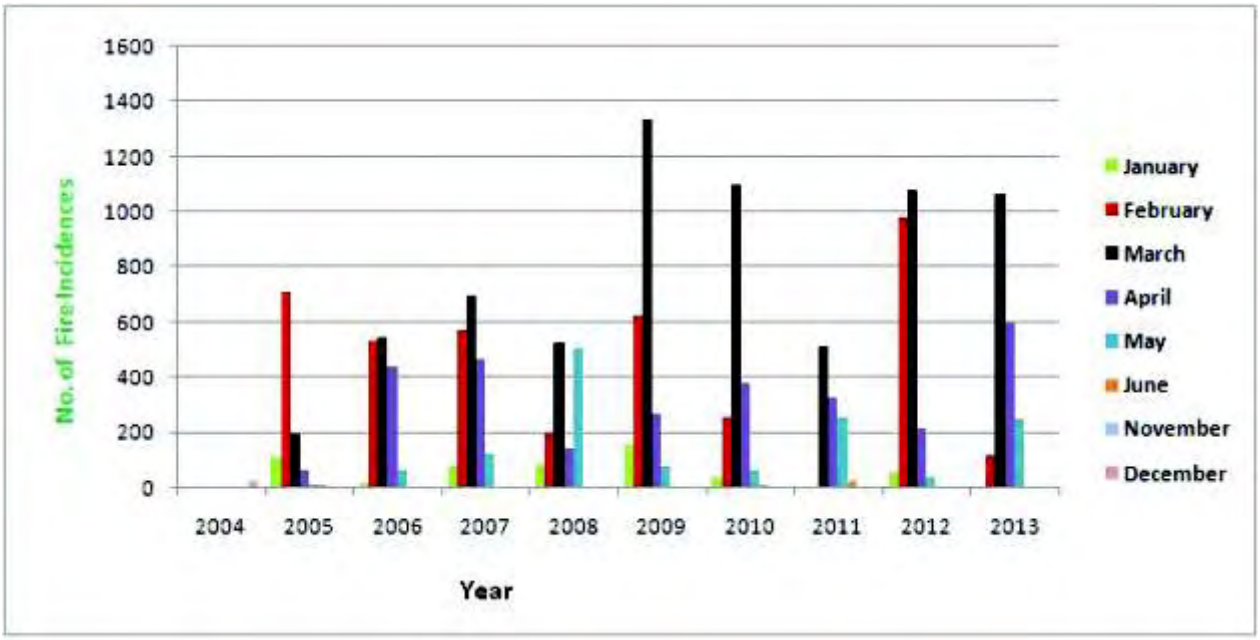


Fig. 7.6

The Division wise Fire Risk Zonation map prepared and communicated based on MODIS data between 2004 and 2013, for the use of field officers is shown in Fig. 7.7:

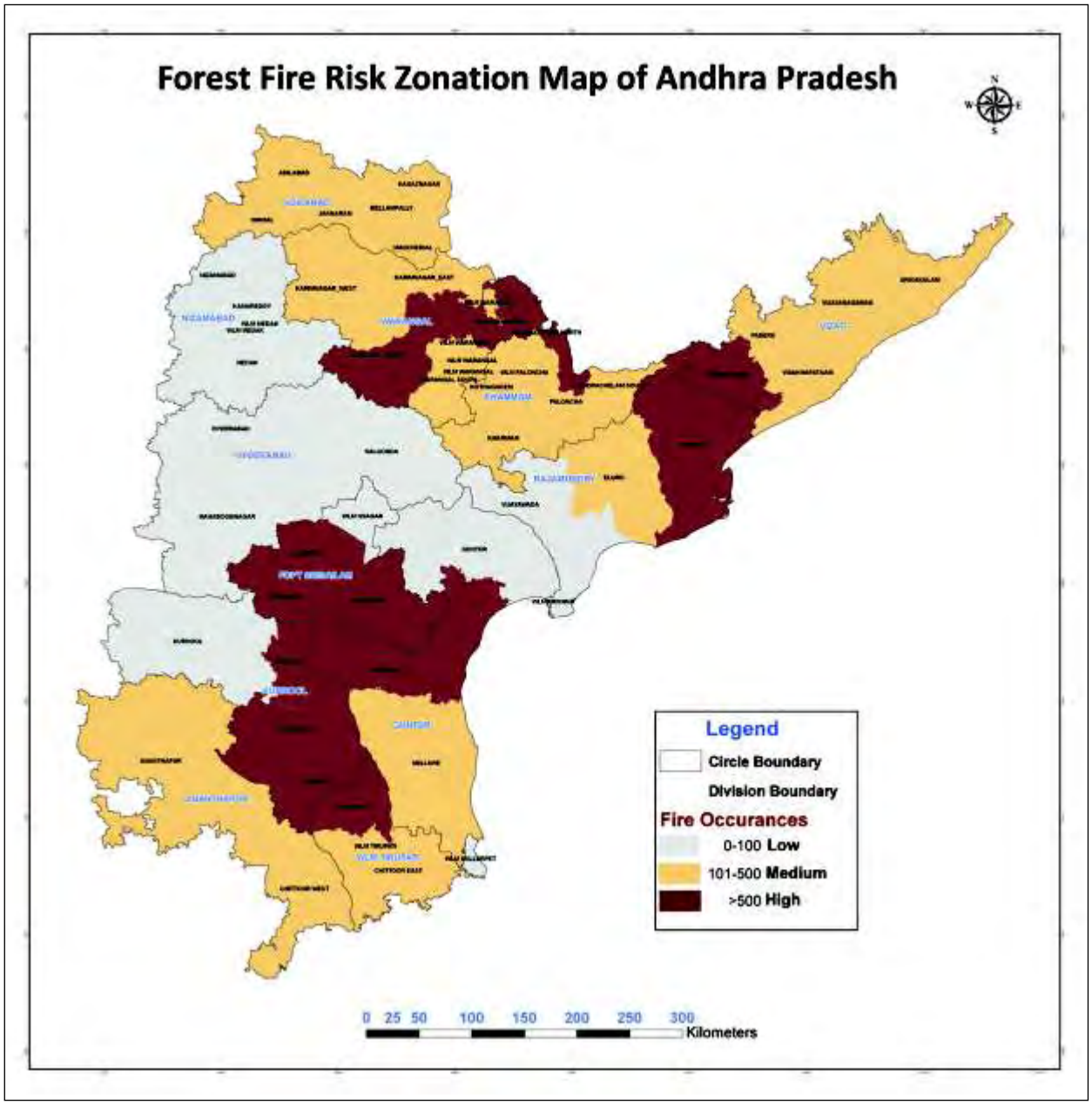


Fig 7.7

GLOSSARY OF TECHNICAL TERMS

Allowable Error: A systemic error that is 'acceptable', both statistically and analytically. The amount of error that can be tolerated without invalidating the usefulness of the analytic result.

AWiFS: Advanced Wide Field Sensor

Band: A wavelength interval in the electromagnetic spectrum. For example, in IRS images the bands designate specific wavelength intervals at which images are acquired.

Calibration: Process of comparing an instrument's measurements with a standard.

Classification: Process of assigning individual pixels of an image to categories, generally on the basis of spectral reflectance characteristics.

Classification accuracy: The extent to which a manual or automatic processing system correctly identifies selected classes.

Color Composite Image: Color image prepared by projecting individual black-and-white multi-spectral images, each through a different color filter. When the projected images are superposed, a color composite image results.

Confidence Interval: A confidence interval (CI) is a particular kind of interval estimate of a population parameter. Confidence intervals are used to indicate the reliability of an estimate. How likely the interval is to contain the parameter is determined by the confidence level or confidence coefficient. Increasing the desired confidence level will widen the confidence interval, however the estimated value will be away from the absolute value.

Consumer's accuracy: It is a measure of the reliability of an output map generated from a classification scheme. It is a statistic that can tell the user of the map what percentage of a class corresponds to the ground-truthed class.

Contrast: The ratio between the energy emitted or reflected by an object and its immediate surroundings.

Contrast enhancement: Image-processing procedure that improves the contrast ratio of images. The original narrow range of digital values is expanded to utilize the full range of available digital values.

Contrast ratio: On an image, the ratio of reflectance's between the brightest and darkest parts of an image.

Contrast stretching: Expanding a measured range of digital numbers in an image to a larger range, to improve the contrast of the image and its component parts.

Density slicing: Process of converting the continuous gray tones of an image into a series of density intervals, or slices, each corresponding to a specific digital range. The density slices are then displayed either as uniform gray tones or as colors.

Digital Image Processing: Computer manipulation of the digital-number values of an image.

Digital Number (DN): Value assigned to a pixel in a digital image

Error Matrix: A matrix or table that displays statistics for assessing image classification accuracy by showing the degree of misclassification among classes.

Errors of Commission: Pixels incorrectly assigned to a particular class that actually belong in other classes.

Errors of Omission: Pixels incorrectly excluded from a particular class.

False color image: An image produced by displaying multiple spectral bands as colors different from the spectral range they were taken in. A color image where parts of the non-visible EM spectrum are expressed as one or more of the red, green, and blue components, so that the colors produced by the Earth's surface do not correspond to normal visual experience. Also called a false color composite (FCC). The most commonly seen false-color images display the very-near infrared as red, the red as green, and the green as blue.

Forest: Land with tree crown cover (or Equivalent stocking level) of more than 10 % and area of more than 0.5 ha. The trees should be able to reach a minimum height of 5 m at maturity in situ. May consist of either closed forest formations where trees of various storeys and undergrowth cover a high proportion of the ground, or open forest formations with a continuous vegetation cover, in which tree crown cover exceeds 10 %. Young natural stands and all plantations established for forestry purposes which have yet to reach above criteria are included under forest, as are areas normally forming part of the forest area which are temporarily un stocked as a result of human intervention or natural causes but which are expected to revert to forest.(Area covered by VDF, MDF, OF area treated as forest cover).

Forest Canopy Density: Forest Canopy Density (FCD) refers to the proportion of an area in the field/ground that is covered by the crown of trees and is expressed in percentage of the total area.

Forest Type: Forest type is defined as a unit of vegetation which possess broad characteristics in physiognomy and structure sufficiently pronounced to permit its differentiation from other such units (Champion & Seth 1968)

Geographic Information System (GIS): A computer based system for capturing, storing, manipulating, analyzing and displaying data, which are spatially referenced to the earth.

Global Positioning System (GPS): The Global Positioning System (GPS) is a space-based global navigation satellite system. It provides reliable positioning, navigation, and timing services to worldwide users on a continuous basis in all weather, day and night, anywhere on or near the Earth which has an unobstructed view of four or more GPS satellites.

Good Forest and Degraded Forest: Good Forest includes VDF, MDF and OF; degraded forest includes Scrub and Non-Forest.

Green and Barren: Green includes VDF, MDF, OF and Scrub; Barren includes Non-Forest.

Ground control point (GCP): A geographic feature of known location that is recognizable on images and can be used to determine geometric corrections.

Ground truth: Information acquired by field study for the purpose of calibration and/or verification of remotely sensed data.

Geometric correction: Image-processing procedure that corrects spatial distortions in an image. The geographic correction of image data to conform to a map projection.

Histogram: A means of expressing the frequency of occurrence of values in a data set within a series of equal ranges/bins, the height of each bin representing the frequency at which values in the data set fall within the chosen range. A cumulative histogram expresses the frequency of all values falling within a bin and lower in the range. A smooth curve derived mathematically from a histogram is termed as probability density function (PDF).

Image: A pictorial representation acquired in any wavelength of the electromagnetic spectrum. Although image is a general term, it is commonly restricted to representations acquired by non-photographic methods.

Imagery: The products of image forming instruments.

Interpretation: The process in which a person extracts information from an image.

Interpretation key: Characteristic or combination of characteristics that enable an interpreter to identify an object on an image.

Kappa coefficient: A statistical measure of the agreement, beyond chance, between two maps (e.g. output map of classification and ground-truthed map). It is represented by the symbol kappa hat or Khat.

Mangroves : Salt tolerant ever green forest ecosystem found mainly in tropical and sub – tropical coastal and / or inter tidal regions.

Medium Dense Forest: All lands with forest cover having a canopy density between 70-40%

Multi-spectral classification: Identification of terrain categories by digital processing of data acquired by multi-spectral scanners.

Multi-spectral scanner: Scanner system that simultaneously acquires images of the same scene at different wavelengths.

Mid-infrared (MIR): The range of EM wavelengths from 8 to 14 micrometers dominated by emission of thermally generated radiation from materials; also known as thermal infrared.

NDVI: The Normalized Difference Vegetation Index (NDVI) is defined as the ratio of the difference in the NIR & Red radiance values to the sum of the NIR & Red radiance values.

NDWI: The Normalized Difference Water Index (NDWI) is defined as the ratio of the difference in the SWIR and NIR radiance values to the sum of the SWIR and NIR radiance values.

Near infrared (NIR): The shorter wavelength range of the infrared region of the EM spectrum, from 0.7 to 2.5 m. It is often divided into very-near infrared (VNIR) covering the range accessible to photographic emulsions (0.7 to 1.0m), and the short wavelength infrared (SWIR) covering the remainder of the NIR atmospheric window from 1.0 to 2.5m.

Noise: Random or repetitive events that obscure or interfere with the desired information.

Open Forest: Lands with forest cover having a canopy density between 40 to 10%.

Overall accuracy: The percentage of correctly classified pixels. It is a good measure of the accuracy of a classification scheme as it is not biased towards the smaller classes.

Path and Row: Path is an approximate specific orbital track of a Satellite which may vary due to drift and other factors. Row refers to the latitudinal center line of a frame of imagery.

Pixel: Contraction of picture element

Producer's accuracy: A measure of the accuracy of a particular classification scheme. It shows what percentage of a particular ground class was correctly classified.

Protected Forest (PF): An area notified under the provisions of the Indian Forest Act or other State Forest Acts, having limited degree of protection. In protected forest all activities are permitted unless prohibited.

Radiometric correction: Calibration of recorded radiance values reflected from (or emitted by) the ground scene.

Radiometric Resolution: The expected spread of variation in each estimate of scene reflectivity as observed in an image. Smaller radiometric resolution is "better". Radiometric resolution for a given image may be improved by averaging, but at the cost of spatial resolution.

Raster format: A means of representing spatial data in the from of a grid of DN, each line of which can be used to modulate the lines of a video raster.

Ratio image: An image prepared by processing digital multi-spectral data as follows: for each pixel, the value for one band is divided by that of another. The resulting digital values are displayed as an image.

Remote sensing: Collection and interpretation of information about an object with an instrument without being in physical contact with the object.

Reserved Forests (RF): An area so constituted under the provisions of the Indian Forest Act or other State Forest Acts, having full degree of protection. In Reserved forests all activities are prohibited unless permitted.

SAVI: Soil-Adjusted Vegetation Index. A vegetation index that accounts for, and minimizes, the effect of soil background conditions.

Scene: As the satellite moves along its path, the observatory instruments are continuously scanning the terrain below. The instrument signals are transmitted to Earth and correlated with telemetry ephemeris data to form individual framed images. During this process, the continuous data are segmented into individual frames of data known as scenes

Scrub: Degraded forest lands having canopy density less than 10% and areas with dwarf and stunted growth.

Spatial resolution: Ability to separate closely spaced objects on an image or photograph. A measure of the smallest angular or linear separation between two objects usually expressed in radians or meters.

Spectral resolution: The ability of a sensing system to resolve or differentiate electromagnetic radiations of different frequencies.

Standard Deviation and Variance:

In probability theory and statistics, the variance of a random variable or distribution is the expected, or mean, value of the square of the deviation of that variable from its expected value or mean. Thus the variance is a measure of the amount of variation within the values of that variable, taking account of all possible values and their probabilities or weightings (not just the extremes which give the range). The standard deviation of a statistical population, a data set, or a probability distribution is the square root of its variance. Standard deviation is a widely used measure of the variability or dispersion.

Statistic: A statistic is a single measure of some attribute of a sample (e.g. its arithmetic mean value). It is calculated by applying a function (Statistical algorithm) to the values of the items comprising the sample which are know together as a set of data. A Statistic as a function of a sample where the function itself is independent of the sample's distribution; that is, the function can be stated before realization of the data. The term statistic is used both for the function and for the value of the function on a given sample.

Stereo pair: Two overlapping images or photographs that may be viewed stereoscopically.

Supervised classification: Digital-information extraction technique in which the operator provides training-site information that the computer uses to assign pixels to categories

Tone: Each distinguishable shade of gray from white to black on an image

Training area: A sample of the Earth's surface with known properties; the statistics of the imaged data within the area are used to determine decision boundaries in classification.

Training site: Area of terrain with known properties or characteristics that is used in supervised classification.

Tree: A woody perennial with a single main stem, or in the case of coppice with several stems, having a more or less definite crown, having diameter 10 cm or more at breast height (1.37m). If there are stems below 1.37 m height then individual branch/stem which has attained 10 cm DBH will be considered as individual tree. It also includes bamboo, palms, coconut, neem, peepal, fruit trees etc.

Unsupervised classification: Digital information extraction technique in which the computer assigns pixels to categories with no instructions from the operator.

Vegetation Canopy: The layers of vegetation above the level of the ground, formed by the leaves of the plants.

Very Dense Forest: All lands with forest cover having a canopy density more than 70%

Visible radiation: Energy at wavelengths from 0.4 to 0.7mm that is detectable by the human eye.

An extract of Late Mrs. Indira Gandhi's speech at Stockholm Conference on Man And Environment, 1972

I have had the good fortune of growing up with a sense of kinship with nature in all its manifestations. Birds, plants, stones were companions and, sleeping under the star-strewn sky, I became familiar with the names and movements of the constellations. But my deep interest in this our `only earth' was not for itself but as a fit home for man.

One cannot be truly human and civilized unless one looks upon not only all fellow-men but all creation with the eyes of a friend. Throughout India, edicts carved on rocks and iron pillars are reminders that 22 centuries ago the Emperor Ashoka defined a King's duty as not merely to protect citizens and punish wrongdoers but also to preserve animal life and forest trees. Ashoka was the first and perhaps the only monarch until very recently, to forbid the killing of a large number of species of animals for sport or food, foreshadowing some of the concerns of this Conference. He went further, regretting the carnage of his military conquests and enjoining upon his successors to find "their only pleasure in the peace that comes through righteousness".

It is clear that the environmental crisis which is confronting the world, will profoundly alter the future destiny or our planet. No one among us, whatever our status, strength or circumstance can remain unaffected. The process of change challenges present international policies. Will the growing awareness of "one earth" and "one environment' guide us to the concept of "one humanity"? Will there be a more equitable sharing of environmental costs and greater international interest in the accelerated progress of the less developed world? Or, will it remain confined to a narrow concern, based on exclusive self-sufficiency?

It has been my experience that people who are at cross purposes with nature are cynical about mankind and ill-at-ease with themselves. Modern man must re-establish an unbroken link with nature and with life. He must again learn to invoke the energy of growing things and to recognize, as did the ancients in India centuries ago, that one can take from the Earth and the atmosphere only so much as one puts back into them. In their hymn to Earth, the sages of the Atharva Veda chanted-I quote,

"What of thee I dig out, let that quickly grow over, Let me
not hit thy vitals, or thy heart".
So can man himself be vital and of good heart and
conscious of his responsibility

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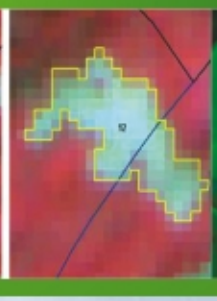


ABOUT THE STATE OF FOREST REPORT 2013

There is global concern these days to preserve the existing forests and enhance forest cover and growing stock. Our National Forest Policy advocates 33% forest against 23% existing now in Andhra Pradesh. We therefore must conserve the existing cover and measure the greening happening inside our notified forests.

To know this, recourse is taken to satellite image interpretation. This is the fourth annual report of Andhra Pradesh showing how we are moving. A truthful picture of forest growth and drain is published after a year of hard work, and it is hoped, it shall guide the Andhra Pradesh Forest Department appropriately in achieving the national objectives.