



Forest Survey of India

NEWS LETTER

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FROM THE DIRECTOR GENERAL'S PEN....

It gives me immense pleasure to bring out the latest version of Forest Survey of India (FSI) Newsletter after a gap of nearly seven years. Over the years, FSI has acquired a high degree of competence in the task of forest resource assessment that has been acknowledged by policy makers and citizens alike.

It is our goal to constantly refine our skills and add more detail and precision to the information that we provide. Fourteen cycles of the biennial assessment of forest resources published as the India State of Forest Report (ISFR) have been completed so far. Each successive report has been a painstaking attempt towards improving reliability of data. Apart from the regular assessment of forests, we have developed tools like Decision Support System (DSS) and e-Green Watch that facilitate informed decisions in matters dealing with use of forest land and resources.

The driving vision is to develop FSI into a Centre of Excellence. This involves acquisition and analysis of high resolution data, more precise inventory exercises, better monitoring of forest fires as well as special studies for bamboo and Non-Timber Forest Products (NTFPs). A high level of human and technological skills is essential to take these tasks to fruition. We have accepted this challenge and dedicated ourselves to constant improvement and innovation. I hope that this version of the quarterly Newsletter will provide the readers an insight into the activities of FSI. Your suggestions on further improvement of FSI Newsletter are welcome.

(Saibal Dasgupta)

National Forest Inventory – New Design

1st Feb 2016 – a big day for FSI.....!!

Some ordinary days herald a new beginning in the history of an organization. 1 February 2016 was clearly such a day for FSI. The day set in motion a completely new approach for field crew to execute their forest inventory exercise. The earlier approach that was adopted in the year 2002 involved the physiographic zone and district while the sampling design was based on SOI toposheets. The new NFI shifted from physiographic zones and districts to a methodology of uniformly distributed grid cells laid over the entire country. With the adoption of the new methodology the whole forest area of country will be covered in a cycle of five years while the TOF area will be covered in a cycle of ten years. Some of the parameters measured in the old design were deleted and few new ones (like invasive species) incorporated. The whole framework of NFI now resides on GIS which further enhances our capability of doing spatial analysis. The grid methodology involves laying out of 7000 plots in forest areas and 10,000 plots in TOF, about twice the number in the erstwhile district based methodology. The grid methodology is part of the Center of Excellence vision for FSI. We expect this new approach to yield many new results in forestry and its management and prove to be a milestone for the organization!!!!

Inventorisation & Monitoring of Biosphere Reserves in India using Remote Sensing & GIS Technology

GB Pant Institute of Himalayan Environment and Development developed the concept proposal and circulated among coordinating institutions-MSSRF, NRSC & FSI. FSI is working on three BRs namely: **Achanakmar-Amarkantak Biosphere Reserve, Nokrek Biosphere Reserve & Pachmarhi Biosphere Reserve**. The project envisages to (i) create Natural Resources (Land use/ Land cover) and social database using latest RS images of existing BRs in India with a focus on preparing Land use and Land cover maps. (ii) Study the temporal changes in land use dynamics (at 5-year interval, starting from 1990 or date of notification) as an impact of BR management. (iii) develop an inventory of resources in BRs (iv) to provide various GIS layers. The Project is nearing completion and report will be published soon.



e-Green Watch

The primary function of **CAMPA (Compensatory Afforestation Fund Management and Planning Authority)** is the regeneration of vegetation cover and promoting afforestation as a way of compensating for forest land which is diverted for non-forest uses.

The e-Green Watch portal (<http://www.egreenwatch.nic.in>) is a web-based system. The system is capable of showing the Compensatory Afforestation, Diverted Land, Plantations, other Plantations and Assets categories on the Google Earth. It also facilitates the temporal

change detection for proper online monitoring and evaluation.

The Project was initiated with five pilot States viz. Andhra Pradesh, Karnataka, Madhya Pradesh, Sikkim, Tripura in 2014. At present there are 26 States including UT's linked to the e-Green Watch portal.

Role of FSI:

- Monitoring of polygons on e-Green Watch portal.
- Training of SFDs along with NIC
- Monthly reporting to MoEF & CC.

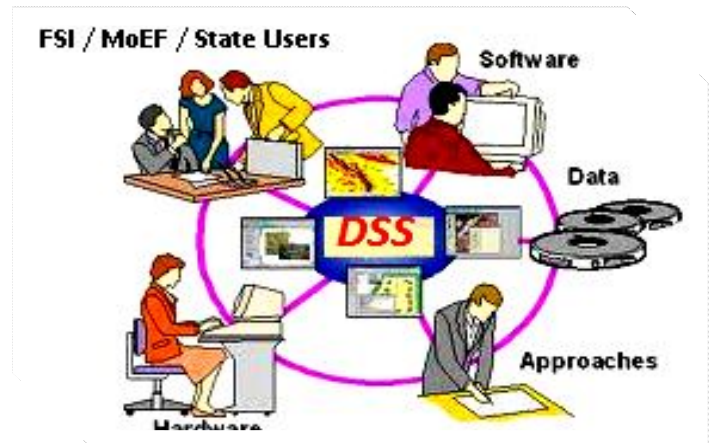
Decision Support System (DSS)

'Decision Support System (DSS) is a web based GIS System to provide qualitative, quantitative & administrative attributes of forests to facilitate, informed, unbiased and expeditious decisions on management of forest & forest clearances.'

MoEF & CC assigned the work to develop a web based GIS System to FSI for speedy disposal of cases related to Forest Conservation Act and other application. FSI started working on the project in September 2013, with ESRI as service provider. This application software has been developed using Arc GIS server software with Flex technology.

GIS LAYERS USED FOR DSS -----

- ✓ Forest Cover Map (FCM)
- ✓ Forest Type Map (FTM)
- ✓ Biological Richness (BR)
- ✓ Landscape Integrity (LI)
- ✓ Hydrological Layer -
- ✓ Protected Area (PA) -
- ✓ Tiger Reserves (TR) -

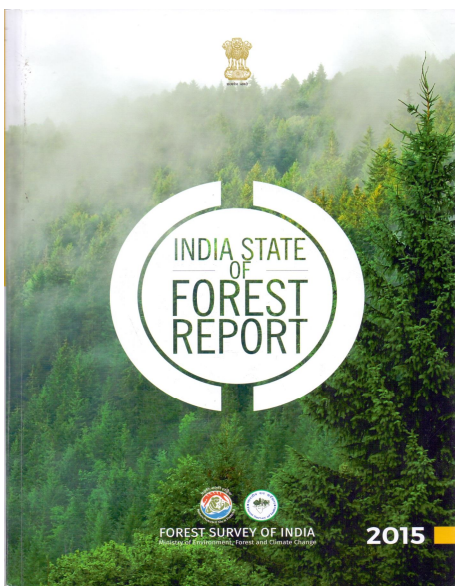


The information on different layers can be extracted for a polygon. Based on 5 scoring parameters decided by MoEF&CC the area can be declared as inviolate and not inviolate.

Forest Cover Mapping

The Fourteenth Biennial Report has been Released

The Forest Cover Mapping (FCM) was started in 1987; subsequently thirteen reports have been published by FSI. Forest cover as per 14th assessment (ISFR 2015) is 701,673 sq.km (70.17millionha) which is 21.34 percent of the geographical area of the country while the tree cover of the country is estimated to be 92,572 sq km (9.26 million ha) which is 2.82 percent of the geographical area. The India State of Forest Report (ISFR) 2015 was released by Hon'ble Minister of Environment, Forests & Climate Change (Independent charge) on 04.12.2015 at Delhi. Work on the next cycle, i.e. for ISFR 2017 has already commenced and data for the period from October, 2015 to February/March, 2016 obtained from NRSC, Hyderabad.



National Spatial Data Infrastructure (NSDI)

NSDI is a national endeavor of generating spatial data as per the standards and their integration and overlay for web supported GIS analysis. It is a collaborative program based effort to develop and integrate metadata definitions and information on spatial databases to fulfill the requirement of data sharing in between users.

Ongoing Activities

- Spatial layers for forest cover and forest type have been generated and the layers have been uploaded as WMS (Web Map Service)
- A data content standard document for forest have been generated. FSI is nodal agency of NSDI and has been working on creation of data content standard for forest theme. The document is proposed to be discussed in a national level workshop in Delhi soon
- In addition to various definitions about the different forest class, the document also contains the Forest Unified Modified Language (UML) diagram depicting the classes used in FCM data and FTM.

Forest Fire

Forest Survey of India has been carrying out near real time forest fire monitoring at national level since 2004 by using remote sensing and GIS techniques with the objective of detection of active forest fires and dissemination of information on the forest fire location to State Forest Departments through SMS and Email.

Real Time Monitoring of Forest Fire

Forest fires which are a regular phenomenon during February to June in India are monitored by FSI using MODIS sensor data that has a periodic repetitive coverage of six hours on daily basis. The signals received from the sensor are downloaded, filtered using Forest cover layer, FSI value added and disseminated to SFD using an indigenously developed module. Fully at February, 2016.

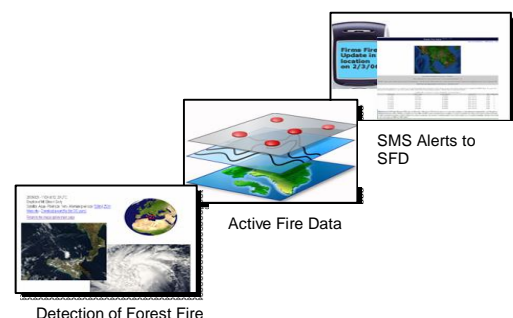


Forest Fire reported in Pauri Garhwal, Uttarakhand, 10th April 2016

The information generated in the form of table and maps are also uploaded on the official website of FSI (www.fsi.nic.in). In addition, the same information is also disseminated through SMS to the State Forest Departments registered users to our website for confirmation as well as quick remedial measures.

Pre-warning alert system for Forest Fire

FSI has undertaken the exercise and developed an indigenous methodology from the perspective to provide the pre-warning alert system for forest fire on weekly basis using forest cover map, forest type map, RFA boundary, temperature and fire historical data and disseminates the same to State Forest Department.



Burnt Area assessment

FSI is currently using AWiFS image for the identification of burnt area and their severity assessment. Most of the objectives, methodology of the project has been streamlined. However, the system is being made more robust by addition of different parameters. Burnt area assessment for the fire season 2016 is under progress.

NFI Design for Sri Lanka Forest Department

Under the Sri Lankan UN REDD Program, FSI has been assigned the task of designing the National Forest Inventory (NFI) for the Sri Lankan Forest Department. Based on the long expertise of FSI in designing and execution of NFI, a suitable sampling design will be prepared for NFI in Sri Lanka. The sampling design, field forms and manual will be prepared after discussion with concerned team of NFI in Sri Lanka.

In the first phase of the collaboration, Shri Ranjit Singh Gill, Joint Director (TFI) and Shri Rajesh Kumar, Sr. Deputy Director (FI) participated in a workshop in Colombo during 6-10 April to discuss the terms of reference for support to the design and piloting of Sri Lanka's NFI. Mr. Anura Sathurusinghe, CCF, National Programme Director, Mr. Roshan Kumar, Forestry Officer, Sri Lanka UN-REDD Programme and Luca Birigazzi from FAO HQ also participated in the discussions.



Training Courses

FSI imparts training to forestry personnel working at various levels in State Forest Departments with the aim to sensitize them with the latest advancements in application of remote sensing & GIS for preparation of Working Plans, GPS Applications in Forest Survey

and Demarcation, Application of GIS in Forest Resource Management etc. Following courses were conducted during the period between January, 2016 and April, 2016.

| Theme | Duration | Participants | |
|--|---|--------------|------------------|
| | | No | Level |
| NFI New Design | 6 th –8 th January, 2016 | 20 | FSI Field Staff |
| GPS/DGPS in Forest Surveys & Demarcation | 11 th –15 th January, 2016 | 11 | ACF/RFO |
| GIS Based Monitoring of CAMPA Activities | 4 th –5 th February, 2016 | 10 | IFS |
| GPS/DGPS in Forest Surveys & Demarcation | 22 nd –26 th February, 2016 | 8 | DCF/ACF |
| DSS & e-Green Watch | 17 th –19 th February, 2016 | 25 | FSI/Other |
| Forest & Environmental Statistics | 8 th –11 th March, 2016 | 46 | ISS Probationers |

Officers of various levels from the State Forest Department of Arunachal Pradesh, Bihar, Chhattisgarh, Gujarat, Haryana, Himachal Pradesh, Kerala, Madhya Pradesh, Maharashtra, Punjab, Tamil Nadu, Uttar Pradesh and officers from Regional Office of Ministry of Environment, Forests & Climate Change, Bangalore, Bhopal, Chandigarh, Chennai, Dehradun, Delhi, Ranchi and Shillong participated in the above training programmes.



Visitors to FSI

The activities of the organisation have always generated interest among foresters, scientists, academicians etc. It invariably figures in the itinerary of professional foresters visiting Dehradun. Scientists, researchers and students of forestry have also been among the regular visitors. Such visits have always been mutually rewarding. List of groups who visited FSI during this period is given below:

| Sl. No. | Name of organization | No. of officers | Dates |
|---------|--|---------------------------------|-------|
| 1. | Forest Guard Training School Sunder Nagar (HP) | 11 th January, 2016 | 50 |
| 2. | BSc Forestry Students from Sam Higgin Bottom Institute of Agriculture Technology & Sciences Allahabad (UP) | 27 th January, 2016 | 46 |
| 3. | Remote Sensing Application Center Lucknow (UP) | 11 th February, 2016 | 33 |
| 4. | BSc Forestry Students from Sam Higgin Bottom Institute of Agriculture Technology & Sciences Allahabad (UP) | 16 th February, 2016 | 12 |
| 5. | Forest Training School Kashmir (J&K) | 18 th February, 2016 | 28 |
| 6. | Collage of Forestry NAV Narsani Gujarat | 8 th March, 2016 | 38 |
| 7. | Central Academy of SFS Dehradun | 22 nd March, 2016 | 22 |
| 8. | RFO's from Forest Academy Coimbatore (TN) | 12 th April, 2016 | 37 |

Promotion of Hindi

1. FSI ka jktHk"kk fgnh dk ipkj&id kj , oa dk; kko; u mRrkjkrj : i l s gks jgk gSA egkfunskd egkn; dh v/; {krk e} fgnh dh frekgh ixfr fjik/ dh lehkk djus grqjktHk"kk dk; kko; u l febr dh cBd fnukd 24 Qojh] 2016 dks vk; kfr dh xbZA cBd ea ed; ky; l fjr pjka vkpyd dk; ky; ka l s ikr frekgh fjik/ dh lehkk dh xbA 31 ekr] 2016 dks l ekr frekgh ea 'd' ^[k' , oa 'x' {ks-ka dks emy : i l s fgnh ead, x, i=kpkj dk ifr'kr de'k% 91-6% 89-6% , oa 85-6% Fkk A l l Fkku ea 28 ekr] 2016 dks jktHk"kk dk; Zkkyk dk vk; kst u fd; k x; k ftl eal elr fyid oxh; de'k; ka us Hkx fy; k A l l Fkku ea dk; jr l elr vf/kdkjh , oa de'kjh viuk vf/dk'ka 'kkl dh; dk; Zfgnh ead j jgs gSA l ok iit dkvka ead ifof"V; ka vf/kdre fgnh ead tk jgh gA l Hkh ukei VV , oa ekjja nfoHk"kd gA ikrdky; ead; klr l kfgR; mi yC/k gA

Participation in Workshop, Seminars, Exchange Programs, etc.

1. Shri Ashutosh Kumar Maurya, Shri Durgesh Kumar Nagar & Shri Pradeep Kumar Kushwaha J.T.A.'s attended the training of new design of National Forest Inventory (NFI) work held in F.S.I Hqrs Dehradun from 06 -08 January, 2016.
2. Shri Intijongshi, J.T.A. attended the training on short course on Remote Sensing & Image Interpretation at Indian Institute of Remote Sending. Dehradun from 04 January to 26 February, 2016.
3. Shri Aditya Kumar Sain, J.T.A. attended the training course on Geospatial Technology & it's application in Remote Sensing and GIS at NRSC, Hyderabad from 2 November, 2015 to 26 January, 2016.
4. Shri Aditya Kumar Sain, J.T.A. attended the training course on Decision Support System and E-green watch held at F.S.I., Hqrs, Dehradun from 15-19 February, 2016.
5. Shri R.S. Gill, JD (TFI) and Shri Rajesh Kumar , Sr. DD (FI) attended a workshop in Colombo during 6-10th April, 2016 to discuss the terms of reference for support to the design and piloting of Sri Lanka's NFI.

NEWS FROM ZONES

Central Zone, Nagpur

Visit of Director General, FSI to Central Zone, Nagpur: Director General, FSI visited Zonal office from 14th to 15th January, 2016. The DG called a meeting of all the staff members to discuss targets and achievements by the zone and listened to their grievances and exhorted the field staff to work whole-heartedly to achieve the assigned targets despite severe staff crunch. The DG inaugurated the new geomatic lab at the Regional office and applauded the progress of inventory work as well as the planning for the implementation of new NFI design. The DG also appreciated the neat and clean maintenance of the office.

General:

1. A quarterly meeting of Official Language Implementation Committee of this zone was held on 28/03/2016.
2. A Hindi workshop for improving the writing of official letters in Hindi was held on 29/03/2016 at Nagpur.
3. Shri B.H. Naik, STA & AD I/c delivered lectures on Application of GPS & GIS in Forestry Operations as resource person on 4th, 11th, and 18th January, 2016 at the O/o APCCF, Working Plan (East), Nagpur.

Southern Zone, Bengaluru

Forest Cover Mapping

FCM work of Tamilnadu State for 14th cycle has been completed i.e., 20 sheets and the FCM work of Karnataka, Tamilnadu and Lakshadweep for the 15th cycle has been allotted to this zone in the month of May, 2016 and is under progress.

Training

Seven members among technical staff of this office have attended Prabodh Training conducted by Central Hindi Training sub institute, Bengaluru w.e.f. 7.9.2015 to 13.10.2015 and declared successful.

Sri K.C.Katheria, Steno. Gr.I has been nominated to attend 20 Hindi Parangat Training Programme w.e.f. 02.05.2016 to 27.05.2016 and he is attending Hindi Parangat Training at Central Hindi Training sub institute, Bengaluru-34.

Eastern Zone, Kolkata

Nagaland Project: FSI, Eastern Zone finalized the database of Forest and TOF inventory for 11 districts under the **Nagaland Project** which was primarily designed by FSI for preparation of Working Plan of the state in collaboration with the State Forest Department. This zone also imparted the field training to the State Forest officials of Nagaland and directly assisted in the field work as well.

Promotion of Hindi in Eastern Zone

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The field work of Forest inventory in collaboration with Nagaland Forest Department

Northern Zone, Shimla

Training: The training on Forest Resource Assessment was imparted to 130 personnel of Himachal Pradesh State Forest Department at Forest Training Institute, Sundernagar on 03/02/2016 and 16/02/2016, Chail on 26/02/2016 and 27/02/2016 and Northern Zone office on 18/04/2016, 19/04/2016, 25/04/2016 and 26/04/2016 by the official of Northern Zone, Shimla.

Honour: Shri S.K. Jhingta, STA/Assistant Director I/c was honoured on the occasion of Republic Day for his excellent achievements.

Promotion of Hindi in North Zone

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Repatriation/Retirement/ Joining

1. Shri Amit Ravi joined as Junior Technical Assistant in FSI Headquarters on 19th January, 2016.
2. Sh. G.S. Rawat, Assistant Director, FSI Headquarters retired from his services on superannuation on 31st January, 2016.
3. Shri. H. P. Ranganath, Deputy Ranger of South Zone, Bangaluru retired from service on superannuation on 31.01.16.
4. Shri Ajaya Kumar Naik, IFS assumed the charge of the Regional Director, FSI, NZ, Shimla w.e.f. 05.02. 2016 (AN).
5. Shri Ratan Sharma, Assistant Director retired on Superannuation from his service on 28.02.2016 in FSI, NZ, Shimla.
6. Dr. Anmol Kumar, IFS, Director General, FSI, retired from his services on superannuation on 31st March, 2016.
7. Shri Ashok Kumar Singh, Deputy Ranger, FSI, North Zone, Shimla was transferred to FSI Headquarters, Dehradun. He joined Hqrs. on 31st March, 2016.
8. Shri Arun Kundu, Deputy Ranger retired on Superannuation from his service on 31.3.2016 in FSI, NZ, Shimla.
9. Shri Tulsi Das, MTS (Safaiwala) retired on Superannuation from his service on 31.3.2016 in FSI, NZ, Shimla.
10. Shri Sukhen Pal joined as Fieldman on 06.04.2016 in FSI, NZ, Shimla.
11. Shri B. N. Roy, J.T.A. has been promoted to the post of S.T.A. on 28.04.2016 (AN) in FSI, NZ, Shimla.
12. Shri Ajay Kumar, JTA was promoted to the post of STA w.e.f 28.04.2016 (AN) in FSI, NZ, Shimla.
13. Shri Subrata Majumder, Draughtsman Gr-II has been promoted to the post of Sr. Draughtsman on 28.04.2016(A.N.) in FSI, NZ, Shimla.
14. Shri R.K. Rajvanshi, Jr. Draftsman was promoted to the post of Sr. Draftsman w.e.f. 28th April, 2016.
15. Shri. T. Venkatesh, Shri. C. B. Joshi, Shri. B. H. N. Murthy, Shri. H. P. Ranganath and Shri. L. Eswarappa of South Zone, Bangaluru have been promoted from Field Man to Deputy Ranger.

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