



CAPACITY DEVELOPMENT

One of the most fundamental ideas associated with capacity building is the idea of strengthening the capacities of institutions and individuals so that they can handle the problems associated with forests, environment, economic and social transformations. Developing institutions and individuals' capacity at national, regional and community level facilitate better governance in the area of sustainable forests management and development. MoEF&CC facilitates institutional and individual capacity building to develop skills, knowledge and the ability to engage in the forest conservation, management and utilization.

8.1 PROGRAMMES FOR CAPACITY BUILDINGS

Capacity building of forestry professionals is carried out at two levels for all the types of services (direct recruits to the IFS, SFS, Forest Range Officers (FROs), forest guards, etc.), one as induction programme while other in the mid of the service. Owing to new initiatives in technology, research and development, such capacity building programmes are essential for management of forests considering the changed paradigm of forest management. With focus having been shifted from production to conservation forestry, initiatives for increasing the forest cover of the country and various commitments towards climate change conventions, it becomes all the more important to ensure the capacity building of not only the forest managers but also of the frontline staff.

8.1.1 Indira Gandhi National Forest Academy

Induction programmes for the probationary officers of the IFS and SFS are handled by two bodies, viz., the IGNFA and the DFE. While IGNFA is providing induction and mid-career training (MCT) to the officers of the IFS, DFE is responsible for the training of the probationers of SFS and FROs.

Originating from the erstwhile Forest Research Institute and Colleges, IGNFA was carved out as an independent organization after the formation of ICFRE. The number of faculty positions in the Academy is given in Table 8.1.1.1.

Table 8.1.1.1. Faculty positions in IGNFA

S. no.	Post	Number
1.	Director	1
2.	Additional Director	1
3.	Professor	2
4.	Additional Professor	3
5.	Associate Professor	5
6.	Hockey Coach (Sports)	1

Source: IGNFA, Dehradun.



The Indian Forest Service (IFS) is one of the three All India Services, the other two being the Indian Administrative Service and the Indian Police Service. IFS was created in 1966 under the All India Services Act 1951. However, this was only a revival of a well-organized Indian Forest Service which existed during the *British Raj* from 1865 to 1935.

Today there are over 2,700 IFS officers serving in the country. Besides serving the 31 forest departments in the states and UTs managing the country's natural resources, a good number of them work in various ministries and institutions both in the state and central government.

Union Public Service Commission (UPSC), a body under the GoI, recruits the IFS Officers by conducting a competitive examination open to graduates with science background. After qualifying the written examination, the candidates must undergo an interview, a walking test (25 km for men and 14 km for women in four hours in Delhi Zoological Park) and a standard medical fitness test. The current trend in educational background of selected officers reflects high qualifications including postgraduate in sciences, engineering, agriculture and forestry. A fairly large number of officers are post graduate in various subjects. The Academy, on an average, has trained more than 75 probationers every year (including foreign probationers) from 2010 to 2017 (Table 8.1.1.2.).

Table 8.1.1.2. Number of IFS probationers in different batches

Year	No. of IFS probationers
2010	76
2011	71
2012	79
2013	77
2014	66
2015	61
2016	89
2017	97

Source: IGNFA, Dehradun.



The induction training is of 18-month while durations of MCTs vary from 2 to 3 weeks. Since 2000, the academy has been organizing short-term courses on advance forest management (AFM) for in-service IFS officers at various levels. These courses were linked to different levels of promotion in their service. For officers with 10 years of service, the course was of 3-week duration and linked to the promotion to the selection grade. After 17 years of service, the course was of 2-week duration for both those who are to be promoted to the Conservator level and those who are due for promotion to the Chief Conservator level after 21 years of service. The service rules of the IFS were also amended to make these courses essential for promotion. The courses were conducted by inviting experts/specialists in the related subjects.

In order to make the training programmes more relevant to the ever-changing and dynamic tenets of forests, the in-service training of IFS officers has been refined in December 2009 with the AFM courses being replaced by MCT programmes. These programmes are organized at the Academy under overall direction and supervision of the MoEF&CC and are designed to provide greater exposure to the serving officers. In this programme too, IFS officers of service lengths 7 to 9, 16 to 18 and 26 to 28 years participate. The course of 8-week duration is for officers with 7 to 9 years and 4 weeks for other two categories.

The focus of courses is on skill development for young officers, on management and monitoring for middle level officers and on policy formulation and evaluation for senior level officers. In addition to IGNFA, institutes like Indian Institute of Management, ICFRE, WII, FSI and those abroad have also been roped in to interact with the officers and expose them to the best practices in management of natural resources and modern management perspectives of the forestry sector. On an average, 60 officers participate in each course. Like AFM courses, MCT programmes are also mandatory and must be successfully completed before getting promotion.

8.1.2 Directorate of Forest Education

The forest rangers training in India is over 100 years old. At present, DFE, Dehradun, under the direct administrative control of MoEF&CC, takes care of all aspects of training of SFS officers and FROs. It has been organizing induction training for SFS officers apart from short-term general refresher courses and theme-based workshops for in-service SFS and FROs with the objective of updating the skills and arming them with latest knowledge. It also supplements the efforts of the state government for the training of frontline forest staff (forest guards, foresters, deputy rangers, etc.).

In order to meet the increasing demand of the SFDs and central forestry organization for trained officers, State Forest Service Colleges, namely, CASFOS, Dehradun (Uttarakhand), CASFOS, Coimbatore (Tamil Nadu), CASFOS, Burnihat (Assam), CAFE, Kurseong (West Bengal) and various forest rangers colleges run by the state government, viz., Kundal Academy of Development, Administration and Management (Forest), Maharashtra; Telangana State Forest Academy, Hyderabad; Tamil Nadu Forest Academy, Coimbatore; Forest Training Institute, Gurngargatti, Dharwad; Forest Training Institute, Sunder Nagar, Himachal Pradesh, Rangers' College, Balaghat; Uttarakhand Forest Academy, Haldwani; etc., were established.

On an average, about 97 SFS officers (Table 8.1.2.1) and 375 FROs (Table 8.1.2.2) were trained annually by the DFE and other state forest training institutes.

Table 8.1.2.1. Number of SFS trainees in the CASFOS across the country

Institute	Batch										
	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18	2017-19	2018-20		
CASFOS, Dehradun	39	41	40	0	39	35	20	42	36		
CASFOS, Coimbatore	NA	40	36	36	NA	34	36	NA	41		
CASFOS, Burnihat	NA	NA	NA	NA	NA	23	NA	31	NA		

Source: DFE, Dehradun; NA: Data not available

Table 8.1.2.2. Number of FROs trainees in the CASFOS/institutes

Institute	Year										
	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18	2017-19	2018-20		
CASFOS, Coimbatore	NA	NA	NA	36	32	NA	38	NA	NA		
CASFOS, Burnihat	40	30	40	NA	28	39	29	40	NA		
CAFE Kurseong	NA	NA	NA	NA	NA	NA	36	NA	NA		

Institute	Year										
	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17	2016-18	2017-19	2018-20		
FTI, Sunder Nagar	NA	NA	NA	NA	34	40	38	NA	30		
UFTA, Haldwani	NA	NA	NA	NA	NA	NA	38	31	26		
TN Forest Academy, Coimbatore	NA	NA	NA	NA	NA	37	39	36	29		
Telangana State Forest Academy, Dulapally	NA	NA	NA	NA	NA	66	NA	68	NA		
KADAMF, Maharashtra	NA	NA	NA	29	NA	NA	70	32	32		
KFA, Dharwad	NA	NA	NA	NA	NA	NA	71	46	NA		

Source: DFE, Dehradun; NA: Data not available

Apart from the induction trainees, around 350 in-service officers from all over the country participate in the short-term courses every year (Table 8.1.2.3.). The refresher course is of two-week duration while theme-based workshops are of one-week duration. The eligibility for the participants is a minimum of three years in service and not above 54 years of age. Refresher courses provide exposure to the important and contemporary issues in forestry while the theme-based workshops focus more on policy and legal issues, wildlife management, human resource management, training of trainers, community forestry and JFM, eco-tourism, biodiversity conservation and other themes.

Table 8.1.2.3. Number of trainees in other programmes (workshop/general refresher course, etc.)

Year	CASFOS, Dehradun		CASF	OS, Coimbatore	CASF	OS, Burnihat	CAFE, Kurseong	
teat	No.	Trainees	No.	Trainees	No.	Trainees	No.	Trainees
2010	7	131	8	99	5	44	4	45
2011	6	107	7	85	7	87	4	49
2012	6	83	7	104	5	47	5	70
2013	7	95	4	50	4	49	4	43
2014	5	68	4	44	7	56	0	0
2015	10	239	8	173	5	66	4	80
2016	9	214	9	113	1	15	3	27
2017	8	92	15	163	9	44	2	7

Source: DFE, Dehradun.

8.1.3 National Forestry Institutions for Capacity Buildings

8.1.3.1 ICFRE, Dehradun

ICFRE, a premier organization for developing the capacities of the personnel engaged in forestry and allied areas. It regularly organizes the training programmes for the stakeholders pertaining to the forestry sector. The entire nine ICFRE research institutes are organizing various training programmes not limited only to the researchers but also to the forestry user groups which includes, farmers, SFDs (FROs, foresters and forest guards, IFS officers, etc), officers from other than SFDs, rural women, frontline field functionaries, NGO', scientists, members of *Gram Panchyats*, *Mahila Mandals* etc. Some of the key areas of Institute-wise training are as follows:

FRI, Dehradun

- Agroforestry and land management
- Basic and advanced statistical methods and applications in forestry
- Bio-inoculants role and application in forestry
- Butterfly monitoring and butterfly inclusive eco-tourism as a source of livelihood.
- Classification and grading of timber
- Community-based natural resource management
- Cultivation and utilization of medicinal plants, edible mushrooms
- Forest, wildlife and environmental conservation
- GIS and remote sensing application in forest resource assessment
- Raising, managing and marketing of bamboo
- Social forestry in rural development and poverty alleviation
- Techniques of macro- and micro- propagation in forestry
- Tree seed technology
- Wood and bamboo preservatives and its utilization and wood seasoning

TFRI, Jabalpur

- · Agroforestry/NTFPs harvesting, processing and value addition/food from forests
- Bio-fertilizers and organic farming
- Carbon sequestration through afforestation
- Collection, processing and value addition of mahua/biofertilizers and biopesticides
- Development of fast food products enriched with Moringa oleifera (Drumsticks) leaves
- Disease and insect pest management in forest nurseries and plantations and their control
- Environmental awareness
- Formulation of biofertilizers consortium and their distribution to forest department
- Nutritional potential of Moringa oleifera leaves

- Pollinators / farmer friendly insects and biopesticides
- Utilization of wastelands

HFRI, Shimla

- Bamboo production, management and marketing to the farmers of Himachal Pradesh
- Biological control of insect-pests and diseases in medicinal plants
- Capacity building programme for the frontline field staff of Himachal Pradesh SFD
- Cultivation of atish (Aconitum heterophyllum) and bankakri (Podophyllum hexandrum)
- Eco-restoration of wastelands
- Mass production of Kaphal stock in the nursery
- · Planting stock improvement for productivity enhancement
- Seed and nursery techniques of juniper, conifers and high altitude medicinal plants
- Silviculture and genetics aspects of forest management
- Sustainable utilization, conservation and cultivation of medicinal plants

AFRI, Jodhpur

- Combating desertification
- Integrated approach for sustainable development of fragile desert eco-system
- Nurserymanagement
- · Production of female ardu plants through grafting technique for higher biomass production
- Wild animal rescue and rehabilitation

IFP, Ranchi

- Agroforestry and modern nursery technique to the farmers
- Bamboo handicraft for the farmers/artisans
- Diagnosis of soil for production
- Eco-restoration of waste land
- GIS application and its implication in forestry
- Lac cultivation for rural livelihood
- NTFP and medicinal plants for sustainable livelihood
- Upliftment of socio-economics of the farmers through bamboo raising, bamboo economics, lac cultivation and agroforestry

IFB, Hyderabad

- Agroforestry practices with medicinal plants to farmers
- Conservation, restoration and sustainable management of mangrove forests in India

- Forest genetic resource assessment and conservation
- Green wealth for global health

IFGTB, Coimbatore

- Bio-fertilizers production, maintenance and application in nursery and field
- Bioprospecting role of SFDs and Instrumentation methods and phytochemical analysis
- Forest genetic resources management and conservation
- Germplasm conservation and documentation
- Seed handling and nursery technology for biodiversity conservation and sustainable production
- Vegetative propagation

RFRI, Jorhat

- Agarwood: nursery and plantation management, artificial inoculation of agar tree
- Bamboo based livelihood generation and other Tree species
- Bamboo nursery disease management and bio-pesticides application
- Bamboo treatment techniques and vermicomposting technique
- Capacity building and skill development of bamboo handicrafts
- Cultivation of Bamboo and Rattan and Preparation of Bamboo charcoal
- Cultivation of wild mushrooms
- Seed grading and on-farm trials for productivity enhancement in Jhum crops

IWST, Bengaluru

- Advancements in wood products and utilization
- Bamboo: Propagation, value addition and marketing
- Field identification of timbers
- Forest, wildlife and environment conservation
- Instrumentation technique for phytochemical analysis
- Sandalwood cultivation and other forestry related aspects
- Sandalwood: Seed handling, nursery and plantation technology
- Statistical methods in forestry
- Wood protection and wood seasoning

Besides, ICFRE extends its forestry research to the user groups through the 29 established VVKs, nine demovillages, tree growers *melas*.

8.1.3.1.1 FRI Deemed to be University, Dehradun

After reorganization of forestry research in the country and creation of ICFRE in 1988, the training and research centres were given an independent status of institutes. Forest Research Institute, now one of

the institutes under ICFRE, was conferred the status of deemed university in December 1991 on the recommendations of the UGC, Ministry of Human Resource Development, Gol.

Forest Research Institute (Deemed University) runs M.Sc. programmes in four disciplines, viz., Forestry, Environmental Management, Wood Science and Technology and Cellulose and Pulp and Paper with a total intake capacity of 150 students. University also offers Ph.D. program in forestry. In addition, post graduate diploma courses on Plantation Technology, Pulp and Paper Technology and Bio-diversity Conservation are also imparted. The induction training to the newly recruited scientists/research officers/technical officers of ICFRE is also imparted by the University.

8.1.3.2 IIFM, Bhopal

IIFM conducts two year post graduate programme in forestry management (PFM, equivalent to MBA), one year post master programme in natural resource management (NRM, equivalent to M.Phil.), Management Development Programmes for industry, development sector, government sector, non-government sectors, covering forestry policy and institutional aspects, rural livelihoods, community participation, micro-finance, etc.

8.1.3.3 IPIRTI, Bengaluru

IPIRTI is imparting technical education or/and training at undergraduate, post graduate and other level of technology. The Institute is conducting one- year Post Graduate Diploma course in Wood and Panel Products Technology for young science and engineering graduates who are selected on all India merit basis. The main objective of the course is to prepare the trainees to shoulder various responsibilities in the wood-based industries. The course aims at imparting professional knowledge and skills about processing technologies for efficient utilization of wood through conversion into engineered wood and a variety of panel materials/products, viz., plywood, particle/fiber board, block board, flush door. Training is based in favour of actual transfer of skills through hands-on experience at the pilot plant of the Institute simulating the factory conditions. The course also includes processing technology on bamboo mat-based panel products and adhesive technology. Standardization aspects with respect to quality management and BIS certification are dealt with in details.

IPIRTI undertakes and organizes training programmes in different disciplines for different target groups ranging from the level of technicians to managers on sponsorship basis and for national and international students. By organizing several short-term training courses, the Institute is continuing to draw attention of several small- and medium-scale enterprises. IPIRTI primarily undertakes the short term courses for 1-5 days on the following thematic areas:

- Bamboo based housing system
- Bamboo primary processing and mat making
- Block board and flush door manufacturing
- Flitching of logs, veneer slicing, matching and knife grinding
- Good practices in carpentry and wood finishing techniques
- Knife grinding practices for peeler and slicer knives
- Plywood Manufacturing Technology-I (Veneer processing, log storage, centering, peeling, clipping, drying and knife grinding)
- Plywood Manufacturing Technology-II (Economic adhesive, resin manufacture, gluing, hot pressing)

- Preservative treatment for bamboo and processing of bamboo mat board
- Sawmilling, seasoning, finger-jointing and glulam techniques
- Testing of panel products
- Trouble shooting in plywood manufacture
- Veneer peeling techniques
- Wood seasoning

8.1.3.4 WII, Dehradun

WII, established in 1982, was entrusted with the mandate of training biologists and managers in protected area management and wildlife research. The Master of Wildlife Science course was initiated in 1988. The objective of course was to impart training in the field of wildlife science and to further the cause of wildlife conservation in India and elsewhere. Responding to the critical need for advancing heritage education, the UNESCO established Category 2 Centre at WII is introducing a 2-year residential Master's Course in Heritage Conservation and Management beginning July 2019. This interdisciplinary course, currently affiliated to Saurashtra University, Gujarat, includes theoretical and methodological integration of ecological sciences, social sciences and humanities, and heritage studies. Since its inception, WII has trained more than 1,000 field managers through its flagship programmes of 9-month post-graduate diploma course in Wildlife Management and 3-month certificate course in Wildlife Management. Besides these courses, following other regular diploma/certificate courses are run by the Institute.

8.1.3.4.1 Post-Graduate Diploma Course in Advanced Wildlife Management

With a view to develop a pool of professionals with requisite ability to manage protected area system, a 10-month post-graduate diploma course in Advanced Wildlife Management, was started in the year 1977. Thirty nine courses have been completed till date and 40th course is near completion. The 41st course will started from September 2019 with total intake of 20 trainees.

8.1.3.4.2 Certificate Course in Wildlife Management

The three-month certificate course is designed for in-service range forest officers/deputy range officers or of equivalent ranks working within wildlife and natural resource management sectors, including government, NGO's, and private organizations with interests in wildlife conservation and management. This course help in understanding modern concepts in wildlife management, conservation policies and legislation and their enforcement mechanism at global and local level, hands-on experience and training in use of modern scientific methods, techniques and tools that are required for biodiversity assessment and monitoring of conservation goals. Total of 35 such courses are completed by 2019.

8.1.3.4.3 Short Term Courses

Short term courses of one to three weeks duration and workshops are conducted on specific themes and techniques in various subject areas. It allows participants from a wide range of target groups such as from zoos and veterinary institutions, central services, law enforcement agencies and the armed forces, non-governmental organizations and others which are, otherwise, not covered by the institute's regular courses. Some such courses and workshops conducted regularly are as follows:

8.1.3.4.3.1 Capsule Courses in Wildlife Management: There are two courses of one-and two-week duration. These are compulsory for officers of the Indian Forest Service to the rank of Chief Conservator of Forests.

- 8.1.3.4.3.2 Interpretation and Conservation Education: This 10-day course is open to participants from protected areas, zoos, armed forces, NGOs, wildlife tour agencies and nature camp organizers, and formal and non-formal educators.
- 8.1.3.4.3.3 Endangered Species and Zoo Management: There are two courses, one for zoo directors/managers, institutional heads, senior veterinarians and curators, and the other for middle level zoo supervisory officers and technicians.
- 8.1.3.4.3.4 Environment and Nature Conservation: This course provides an insight into the environmental issues and problems and seeks to identify direct and indirect involvement of the various environmental groups in conservation.
- 8.1.3.4.3.5 Control of Illegal Wildlife Trade in India: The participants of this course include officers from customs, police, revenue intelligence, CBI, wildlife and forests departments, the legal profession, Coast Guards, Border Security Forces, other para-military forces, and NGOs. The course discusses the law and issues related to wildlife trade and poaching, anti-poaching measures in India and the contribution of different agencies in controlling illegal trade in wildlife.

8.1.3.5 FSI, Dehradun

The training unit of FSI involved in conducting training since 1981 to forestry personnel. It is an endeavour to disseminate knowledge and information on the modern techniques being employed in forestry survey to enable efficient planning, management, scientific and sustained forest resources. In general, there are trainings of 2-3 days, one week courses, and outreach training programmes in the states on the request of SFDs. FSI conducts the training on the following thematic areas.

- Application of Drone/DGPS in forest survey and demarcation
- Application of RS/GIS and inventory in effective forest planning and management.
- Application of RS/GIS in preparation of working plan
- Decision Support System and e-Green Watch
- Forest cover mapping
- Forest fire monitoring and damage assessment
- Forest resource/carbon inventory for preparation of working plan
- NFI design
- Sensitization course on forest resource monitoring by FSI

8.1.3.6 GBPIHED, Almora

The institute continuously working to build up the capacities of the researchers and other stakeholders engaged in environment and forestry discipline. The trainings are generally conducted on short (8-12 weeks) and long term (12-24 weeks) basis and taken up in 2 different sessions in a calendar year, one commencing from January to June, and the other from July to December. The Institute offers training in the following subjects/areas of research and development

- Analytical techniques (Chromatography, Spectroscopy, etc.)
- Biodiversity conservation and Environmental impact assessment

- Climate change
- Forest ecology and natural resource management
- Glaciology and hydrology
- Land and water management
- Mathematical modeling and computer applications
- Plant molecular biology, biotechnology, plant physiology and biochemistry
- Remote sensing and GIS
- Socio-economics and indigenous knowledge

Other types of trainings on subjects not mentioned above and/or are also arranged by the Institute on the request from the stakeholders.

8.1.3.7 ZSI, Kolkata

The ZSI is recognised by all the universities as a centre for advance research in systematics, bioecology, zoogeography, cytotaxonomy, wildlife and animal behaviour. Many of the scientists of the Survey are recognized as guides for post-graduate degrees by several universities. Under the research training programme, post-graduate students are given facilities for research and are awarded fellowships, to train them on particular group for which the ZSI needs specialist. This scheme was started with the aim to become self sufficient and have experts in all the groups of animals and it has been achieved to some extent.

The Survey also provides a short terms training in the art of taxidermy to candidates sponsored by different organizations. An annual training programme in collection, preservation and identification of insects and mites of economic importance has also been initiated since last many years and every year more than ten candidates sponsored by the universities and institutes are given this training. Keeping in view the importance of training, etc., a new Division of Training and Extension has been established at the headquarters of the Survey.

8.1.3.8 ICAR Institutes

Some of the major ICAR institutes imparting forestry training to the various stakeholders are as follows:

- 1. Central Agricultural Research Institute, Port Blair (CARI)
- Central Arid Zone Research Institute, Jodhpur (CAZRI).
- 3. Central Research Institute for Dryland Agriculture, Hyderabad (CRIDA).
- 4. Central Soil and Water Conservation Research and Training Institute (CSWCRTI), Dehradun.
- Central Soil Salinty Research Institute, Karnal (CSSRI).
- 6. ICAR Research Complex for North Eastern Hills Region, Shillong (ICAR-RC-NEH).
- Indian Grassland and Fodder Research Institute, Jhansi (IGFRI).
- 8. National Research Center for Agroforestry, Jhansi (NRCAF).
- 9. Vivekananda Parvatiya Krishi Anusandhan Sansthan, Almora (VPKAS).

8.1.3.9 Capacity Building for Forest Management and Training of Personnel

The MoEF&CC has implemented Japan International Corporation Agency (JICA) aided project 'Capacity Building for Forest Management and Training of Personnel' during 2011-18 with the objective of strengthening human resource development for sustainable forest management. Total projected cost was INR 225 Cr; out of which the soft loan component from JICA was INR 206.30 Cr and rest INR 18.70 Cr borne by central and the state governments for meeting taxes and other non-reimbursable expenses. This was a unique project in which the soft loan amount was transferred to the central academies of state forest services and 13 participating states. Important achievements of this project were as follows:

- The training syllabi and guidelines for the forestry personnel have been updated to reflect the paradigm shift in sustainable forest management.
- National training guidelines have been prepared. Based on this, the participating states have developed their own training guidelines and state training improvement plans.
- Two new state forest training institutes established at Gaya in Bihar and Hijli in West Bengal to accommodate 80 and 120 frontline staff, respectively.
- Three national level workshops, four Master Trainer's Training in Forestry Sector (MTT) and other
 trainings for the frontline staff, deputy rangers, foresters and forest guards were organized.
 Refresher training courses and thematic workshops were also organized to provide opportunities
 of vertical interaction amongst IFS officers. The IFS officers are also sponsored for long-term
 training course.
- Short-term expert activities place emphasis on improving the training curriculum for frontline forestry staff to facilitate the effective implementation of forestry projects through Joint Forest Management (JFM) approach along with local village communities.
- Improved the existing SFTI's in terms of infrastructure, laboratories, building-up a pool of master trainers etc.



