

*COURSE BROCHURE*

**Five Day National Level Training Programme on  
“Forestry, Wildlife and Disaster Risk Reduction”  
during September 16-20, 2019 at FRI Dehradun**



**National Institute of Disaster Management**

(Ministry of Home Affairs, Govt. of India)

IIPA Campus, I.P. Estate, Ring Road

New Delhi-110002

Website: [www.nidm.gov.in](http://www.nidm.gov.in)

*In collaboration with*

**Forest Research Institute**

P.O. New Forest, DehraDun-248006, (UK)

Website: [www.fri.icfre.gov.in](http://www.fri.icfre.gov.in)

## **ABOUT THE TRAINING COURSE**

### **ABOUT NIDM**

The National Institute of Disaster Management (NIDM), Ministry of Home Affairs, Government of India is a centre of excellence and learning in the field of disaster management. It is a premier resource institution for human resource development, training, capacity building, applied research, implementation and dissemination of information and theoretical knowledge to case study based practitioners approach for holistic disaster management. The institute works towards the effective application of disaster risk mitigation and management in India as well as in the region by providing technical assistance for capacity building and developing disaster management systems and institutional framework in the sector. Some of the key areas in which the institute is involved are:

- ✓ **Training:** Training programmes, training workshops, and training of trainers for officials at the national, state and district levels to prepare them to tackle natural disasters.
- ✓ **Research:** Issues, concerns and lacunae in management of disasters, Lessons learnt from past disasters and best practices in Disaster Management.
- ✓ **Documentation:** Disaster events, Impact of disasters, Situational analysis of relief and response measures, creation of database through primary surveys and secondary sources, preparation of brochures, pamphlets, posters, films etc

### **ABOUT FOREST RESEARCH INSTITUTE (FRI), DEHRADUN**

Established as Imperial Forest Research Institute in 1906, Forest Research Institute (FRI) Dehradun is a premier institution under the Indian Council of Forestry Research and Education (ICFRE). Set in the sylvan surroundings of Doon Valley, the Forest Research Institute is a proud testimony to the foresight and vision of foresters and administrators of long ago. The Institute caters, in particular, to the research needs of the Indo-Gangetic plains of Punjab, Haryana, Chandigarh, Delhi and Western Uttar Pradesh, as Well as the U.P. Himalayas. Forest research at the FRI is organized under fourteen divisions.

### **AIM OF THE PROGRAMME**

The training will primarily focus on enhancement of knowledge and skills from lecture based theoretical inputs to case study based practitioners approach to the participants to understand and respond to various issues in disaster management in Wildlife and Forestry sector. The programme aims to produce a corpus of trainers (Forest officers) who can disseminate the knowledge and skills acquired on disaster management in forestry & wildlife sectors amongst their colleagues and subordinates.

### **OBJECTIVES**

The main objectives are as follows:

- To enable the participants to understand and appreciate basic concepts of disaster management.
- To enhance understanding concerning the nature, extent of the threats and the value of counter measures to combat the adverse impact of Hydro-meteorological & Geological disasters and climate change on Indian forestry & wildlife.
- To discuss the role of GIS and early warning in forestry sector.
- To understand the significance of mitigation strategies in disaster risk reduction in forestry and wildlife.
- To develop administrative capabilities to plan and implement disaster preparedness strategies based on case studies of forestry & wildlife.
- To provide forum of interchange of ideas and views of various case studies pertaining mitigation practices for disaster risk reduction.

## TARGET GROUP

Officers from Forest offices (PCCF), Paramilitary Forces and other related sectors from Central, State and UTs Governments.

## DURATION AND VENUE

The five day full time training programme will be commenced from Monday, 16<sup>th</sup> September, 2019 and would be concluded on Friday, 20<sup>th</sup> September, 2019 at FRI, DehraDun (Uttarakhand).

## PROGRAMME SCHEDULE (Tentative)

### Day-I: 16<sup>th</sup> September 2019

Time	Topic	Speaker
10.00-10.30	Welcome Address	FRI DehraDun
10.30-10.40	About The Training Programme	NIDM
10.40-11.30	Introduction of Participants & Experience Sharing	NIDM
11.30-11.45	<b>Tea Break</b>	
11.45-1.00	Disaster Management: Basic concepts & Frame work	NIDM
<b>1.00-2.00</b>	<b>Lunch</b>	
2.00-3.15	Climate change and its impact on Indian Forestry & Wildlife	NIDM
3.15-3.30	<b>Tea Break</b>	
3.30-5.00	Meteorological aspects of disaster management and forestry	IMD, DehraDun

### Day-II: 17<sup>th</sup> September 2019

<b>IMPACT &amp; MITIGATION</b>		
10.00-11.15	Hydro meteorological disaster impact on forestry and wildlife	CWC, DehraDun
11.15-11.30	<b>Tea Break</b>	
11.30-1.00	Geological hazards impact on forest health in Himalayas	FRI
1.00-2.00	<b>Lunch</b>	

2.00-3.15	Fragmentation of forest areas and Human-wildlife conflict w.r.t. Climate change and disaster risk reduction	FRI/WII
3.15-3.30	<b>Tea Break</b>	
3.30-5.00	Role of Remote Sensing and GIS in disaster mitigation and management in Indian Forestry	IIRS

**Day-III: 18<sup>th</sup> September 2019**

	<b>PREPAREDNESS &amp; RESPONSE</b>	
10.00-11.15	Disaster preparedness tools: Recent strategies in Forestry & wildlife sectors	FRI/ NIDM
11.15-11.30	<b>Tea Break</b>	
11.30-1.00	Forest Invasive Species- Disaster in forestry sector	FRI
<b>1.00-2.00</b>	<b>Lunch</b>	
2.00-3.30	Significance of Early warning in forestry sector	FSI
3.30-3.45	<b>Tea Break</b>	
3.45- 5.00	Panel Discussion: Climate Change Adaptation and forestry & wildlife scenario	NIDM & FRI
5.00 – 5.30	Group Formations	NIDM & FRI

**Day-IV: 19<sup>th</sup> September 2019**

	<b>FIELD VISIT</b>	
10:00-10.15	Orientation to Field Visit	
10.15-1.00	Field Visit of disasters affected forest areas or communities located nearby to Dehradun/ Mock drill	NIDM
2.00-5.00	Group Exercise	NIDM & FRI

**Day-V: 20<sup>th</sup> September 2019**

	<b>Community Awareness &amp; Lessons learnt</b>	
10.00-11.15	Community based disaster management and Joint Forest Management w.r.t. Wildlife aspects	NGO,
11.15-11.30	<b>Tea Break</b>	
11.30-12.30	Presentation & Discussion on Group Exercise	Participants
12.30-1.00	Valediction	DG, FRI, DehraDun
1.00-2.00	<b>Lunch</b>	

**ACCOMMODATION**

The boarding and lodging arrangements for the participants would be arranged by the FRI, DehraDun.

**CERTIFICATE**

A Certificate will be awarded to each successful participant on the completion of the programme.

**EVALUATION OF THE PROGRAMME**

The final session will be devoted to evaluation and valediction. The participants will be supplied with an Evaluation Performa, which may be completed and handed over to the programme staff.

### LANGUAGE OF INSTRUCTION

The medium of instruction will be English. The resource person is free to choose either Hindi or English during the presentation and discussion as per the demand of the participants.

**RESOURCE PERSONS-** FRI, DehraDun

**LIST OF PARTICIPANTS-** FRI, DehraDun

### COURSE TEAM

NIDM	FRI DEHRADUN
<b>Overall Supervision</b>	
<b>Major General Manoj Kumar Bindal, VSM</b> Executive Director, National Institute of Disaster Management Ministry of Home Affairs, Govt. of India 4th Floor, NDCC-II, Jai Singh Road, New Delhi 110 001	<b>Dr. A.S. Rawat, IFS,</b> <b>Director, FRI &amp; Vice Chancellor,</b> <b>FRI University</b> P.O. New Forest, DehraDun-248006, (UK),
<b>COURSE DIRECTORS</b>	
<b>Dr. A.D. Kaushik</b> Sr. Faculty & Centre Head, Forest & Bio- diversity DRR, ECDRM Division Email: <a href="mailto:adkaushik@gmail.com">adkaushik@gmail.com</a>	<b>Ms. Arti Chaudhary, IFS</b> Head, Silviculture & FM Division, FRI Dehradun Ph off. 0135- 2757579, 0135-2224322 E- mail: <a href="mailto:head_silva@icfre.org">head_silva@icfre.org</a>
<b>Dr. Anil K. Gupta</b> Asso. Professor & Head, ECDRM Division Email: <a href="mailto:anilg.gov.in@gmail.com">anilg.gov.in@gmail.com</a>	<b>Shri S.K. Thomas</b> DCF& Asst. Silviculturist (G), Silviculture & FM Division, Email: <a href="mailto:thomassk@icfre.org">thomassk@icfre.org</a> Contact No.: 9531868898
	<b>Course Coordinator:</b> <b>Shri V. K. Dhawan</b> Forestry Expert Silviculture & FM Division, FRI Dehradun <b>Email: <a href="mailto:dhawanvk@icfre.org">dhawanvk@icfre.org</a></b> Contact no: 9412052007

# *Basic Reading Materials*

Disasters are environmental imperatives of this living world. Disaster risk is increasing with growing exposure of people and assets to natural hazards, which is known to be aggravated due to environmental changes, viz. climate change, land use changes, and natural resource degradation. Analysis shows that the substantial growth of population and assets in at-risk areas has been a biggest driver of disaster risk in recent years. Uncertainties associated with climate change impacts, as extreme events, coupled with limitations of climate projection downscaling, multi-hazard, multi-sector exposure of land, environment and resources and dependent property and people, particularly life and health called for a holistic understanding of disaster risk management. Climate change is known to aggravate natural disasters, as these comprise almost 70-80% of disasters globally in occurrence. India is one of the most forest fire prone countries in the world. Every year, Indian sub-continent witnesses forest fire in different States/UTs and caused widespread miseries to the people and other forms of life including vegetation and wild animals.

Forestry management system of India, which is more than 150 years old, has recently undergone a paradigm shift by assuming key functions of meeting subsistence requirement and supplementation of income for livelihood support to the communities, solely dependent upon the vitality and sustainability of the resource base to which they are intricately linked by their culture and traditions, since generations. Forests are also perceived as an important resource for mitigation strategy for global warming, climate change induced disasters and their ill effects. Forestry sector has also to play a key role in National missions for greening India, preservation of Himalayan eco-system and sustainability of agriculture, water resources & energy supply and also to provide ecological security for general well being of the people of the country. Besides, the sector also plays a dominant role in disaster management in many forms such as risk reduction of various disasters, conservation of wetlands, combating desertification, preservation of soil/water regime and providing a range of ecological services considered essential from the point of view of human welfare. The reach of forestry sector is now considered for expansion to include various inter-sectoral issues such as its role in disaster management and as catalyst of environmental conservation, rural development and social change.

The forestry subsector is also negatively affected by natural hazards. Twenty-six disaster events that took place between 2003 and 2013 caused USD 737 million in damage and losses to forestry, which represents 2.4 percent of all damage and losses within the agriculture sector. Hurricanes, typhoons and similar storms have the greatest impact on the forestry subsector. However, the impact of natural hazards on forestry is not always reported in the post disaster needs assessments or other types of assessments, and there is therefore limited data on damage to forests and on forest production losses caused by disasters. In addition, forest fires cause significant damage yet the impact is seldom

measured. To estimate the damage caused by forest fires FAO calculated the damage reported in the DesInventar database between 2003 and 2013, and found that forest fires damaged a total of 4.9 million hectares of crops, valued at roughly USD 689 million, the vast majority in Latin America. Taking into account the protective functions of forests such as soil, water and biodiversity conservation, the indirect impact of disasters on forestry and the livelihoods of forest dependent people is much higher than the data available and the figures reported here (<http://www.fao.org/3/a-i4434e.pdf>).

Forests face many hazards but the most common hazard is forest fire. Forest fires are as old as the forests themselves. They pose a threat not only to the forest wealth but also to the entire regime of fauna and flora seriously disturbing the bio-diversity, the ecology and environment of a region. The most vulnerable stretches of the world are the youngest mountain ranges of Himalayas. The forests of Western Himalayas are more frequent vulnerable to forest fires as compared to those in Eastern Himalayas. This is because forests of Eastern Himalayas grow in high rain density. With large scale expansion of chir (Pine) forests in many areas of Himalayas, the frequency and intensity of forest fires has been increased since 1990. The pattern of total land area, forest area recorded and total cropped areas in vulnerable Himalayan states of India are prone towards forest fire. The Himalayan forests particularly Garhwal Himalayas of Uttarakhand State have been burning regularly during the last few summers, with colossal loss of vegetation cover of that region. Forest fires can be either natural or controlled and caused by heat generated in the litter and other biomes in summer through carelessness of people (human neglect). Sometimes, forest fires purposely caused by local inhabitants.

In changing scenario of climate and land use, fire is increasingly being viewed as a major threat to many forests and their biodiversity. Rising intensity and frequency of forest fires and their spread is resulting in substantial loss of forest functions and related ecosystem services every year. Adequate measures would be taken to safeguard ecosystems from forest fires, map the vulnerable areas and develop and strengthen early warning systems and methods to control fire, based on remote sensing technology and community participation. Also, awareness will be created about causes and impacts of fire on forests and local livelihoods (National Forest Policy 2018).

Human interferences like collection of fuel wood and non timber forest produce by the local communities and indigenous tribes leads to degradation of the habitat, as well as disturbs wildlife in forest areas. Additionally, illegal grazing of cattle is also seen, which not only leads to forest degradation, but also exposes the herbivores to cattle diseases. The wildlife corridors are also home to many 45 indigenous groups who depend heavily of forest resources for their livelihood and other needs. Grazing of livestock in forest areas and collection of forest produce, exposes the communities to tiger attacks on humans as well as the livestock. Loss of livestock or human life sometimes leads to retaliation against wildlife and conservation measures. Due to an increase in the wild herbivore populations around Protected Areas, frequent crop raiding incidents have also been noticed and result in intense human-wildlife conflict. Forests falling outside the Protected Area network face serious threat of fragmentation due to developmental projects and encroachment by villagers. A large part of forest land is diverted for projects such as construction of dams, widening of highways, and construction of roads, railways, and mining. Also, expansion of villages

located in the fringe area of forests, and increase in agricultural land is shrinking the habitat for wildlife.

Wildlife conservation in India has a long history, dating back to the colonial period when it was rather very restrictive to only targeted species and that too in a defined geographical area. Then, the formation of the Wildlife Board at the national level and enactment of Wildlife Act in 1972 laid the foundation of present day “wildlife conservation” era in post-independent India. Henceforth, the Act has been amended several times and the National Wildlife Advisory Board has undergone various changes. Project Tiger in the 1970s and the Project Elephant in 1992—both with flagship species—attracted global attention. India then also became a member of all major international conservation treaties related to habitat, species and environment (like Ramsar Convention, 1971; Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973; Convention on Migratory Species, 1979; Convention on Biological Diversity, 1992, among others). Today, a chain of 41 tiger reserves and 28 elephant reserves, besides a network of 668 Protected Areas, bear testimony to the efforts of Centre. The Environmental Protection Act, 1986, and notifications issued there under made serious efforts to protect wildlife habitats and wildlife corridors.

A disaster is a high impact phenomenon, which has potential to wipe out years of development in a matter of few minutes or hours or over an extended period of time. Although disasters cannot be prevented fully, their impact on forestry can be reduced with better disaster management strategies aided by latest technological development.

Disaster, as defined in the DM Act 2005, means “a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man-made causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of, property, or damage to, or degradation of, environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area”.

According to the estimate, nearly 59% of India’s land area is prone to earthquakes of moderate to high intensity, 68% land area is susceptible to droughts, nearly 12% is flood prone, 50% forest area is prone towards forest fire, about 8% is cyclone prone, 2% is landslide prone and a long coastline is exposed to tsunamis and storm surges. Of the 35 States and Union territories, as many as 27 are disaster prone. However, these vary significantly as the situation changes every year and every season. Besides, this doesn’t account for urban floods, flash floods and cyclonic effects in non-coastal states or areas. And if the perceived threats due to other disasters such as chemical and terrorist attacks are added, every square inch of India is vulnerable, calling for immediate attention and sustained efforts.

Forestry sector plays an important role in reducing disaster risk, climate change mitigation and adaptation. Forests provide protective barrier to mitigate the force and effects of hazards like floods and landslides. Dense forest cover not only helps in arresting the force of storms and tsunami surges and thereby mitigating the effects but also provides timber (from felled trees) and space for temporary shelter and recovery. However, there is



limited evidence of this role through analysis such as on the interactions between forest types and different hazards and underlying drivers of risks or the impacts of sustainable forest management in reducing risks and strengthening resilience of the ecosystems to support resilient livelihoods.

The 2030 Agenda including the Sendai Framework for DRR (SFDRR) and Paris Agreement whereas attach great importance to strengthening resilience of the agriculture sectors and livelihoods to achieve the SDGs. This is reflected in SFDRR Target-C with a specific indicator for reducing agriculture disaster damage and loss and the related SDG indicator 1.5.2. Resilience of food and agriculture systems is instrumental for achieving several SDGs: no poverty, zero hunger, sustainable cities and communities and climate action. Concurrently, the 2030 Agenda, specifically the implementation of the SFDRR, can thus unpack the existing and anticipated risks facing the forestry sector and take stock of on-going efforts and share lessons learned by stakeholders in reducing risks to and strengthening resilience of the sector; and identify priorities in policies, programme and actions to further strengthen the resilience building efforts.

The parliament of India enacted the National Disaster Management Act in 2005, which brings about a paradigm shift in India's approach to disaster management. The centre of gravity stands visibly shifted to preparedness, prevention and planning from earlier response and relief centric approach. The proposed legislation is in the Concurrent list of constitution thus having the advantage that it will permit the States also to enact their own legislation on disaster management. According to this Act, National Disaster Management Authority (NDMA) of which the Prime Minister of India is the Chairperson has the responsibility of laying down the policies, plans and guidelines for disaster management. Similarly, State Disaster Management Authorities (SDMAs), under the Chief Minister of the State and District Disaster Management Authority (DDMAs) co-chaired by District Collector and President of the elected body of the district are being developed to take the responsibility of down the policies, plans and guidelines for disaster management at State and District levels, respectively.

The crucial role of National Institute of Disaster Management (NIDM) is to plan and promote training and research in disaster management, documentation and development of national level information base relating to disaster management policies, prevention mechanism and mitigation measures. As per provisions of the DM Act, 2005, the GOI has constituted National Disaster Response Force (NDRF) for the purpose of specialized response to disasters such as search, rescue, relief operations and rehabilitation. (<http://disastermanagement.ap.gov.in/website/download/DM%20ACT-2005.pdf>).

There are disaster management funds available to the Union, State and District Authorities to meet the immediate needs of providing rescue and relief to the victims of Disasters. National Policy on Disaster Management, 2009, also emphasized on the institutional arrangements for disaster risk management (Section 12.2.1 of DM Policy). The entire DM architecture needs to be supported by a solid foundation of frontline research and development efforts, offering sound and state-of-the-art science and

technology options in a user friendly manner.  
(<http://www.ndma.gov.in/images/guidelines/national-dm-policy2009.pdf>).

### Suggested Readings

- National Policy on Disaster Management 2009  
<http://www.ndma.gov.in/images/guidelines/national-dm-policy2009.pdf>
- Government of India, 1999. *Forest Fire Situation in India- FAO-TCP Project on Training in Forest Fire Management Planning*. Ministry of Environment and Forest, Government of India.
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<http://www.fao.org/3/a-i4434e.pdf>
- Forest Fire Disaster Management. <http://nidm.gov.in/pdf/pubs/forest%20fire.pdf>
- National Forest Policy 2018.  
<http://www.moef.nic.in/sites/default/files/Draft%20National%20Forest%20Policy%2C%202018.pdf>
- <http://www.fao.org/forestry/firemanagement/en/>
- Vulnerability of India's Forests to Fires.  
<http://weblines.co.in/fire-alert/vulnerability-of-forest-fire-february-2017.pdf>
- (<http://disastermanagement.ap.gov.in/website/download/DM%20ACT-2005.pdf>)
- <http://www.currentscience.ac.in/Volumes/112/10/2100.pdf>
- [https://www.wwf.org/about\\_wwf/critical\\_regions/satpuda\\_maikal\\_landscape/conservation\\_issues/](https://www.wwf.org/about_wwf/critical_regions/satpuda_maikal_landscape/conservation_issues/)
- <https://www.downtoearth.org.in/blog/forests/wildlife-conservation-in-india-are-we-really-serious--51505>
- [http://www.fao.org/fileadmin/user\\_upload/rap/docs/Agrisendal/Session\\_CN\\_Forestry\\_19Feb2018.pdf](http://www.fao.org/fileadmin/user_upload/rap/docs/Agrisendal/Session_CN_Forestry_19Feb2018.pdf)
- <http://www.fao.org/forestry/unasylva/70547/en/>