BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL, PRINCIPAL BENCH, NEW DELHI

I N D E X

IN

RESPONSE AFFIDAVIT

(On behalf of the Respondents No. 2, 3, 4 & 5)

(In Compliance to the Hon'ble Tribunal's Order dated 21.10.2024)

IN

O.A. No. 425 OF 2023

Deepika Khari .....Applicant

Versus

State of Uttarakhand & Ors. .....Respondents

S. No.	Particulars	P. Nos.
1.	Index	
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Dated: /11/2024

Deepak Bora
Panel Counsel
Government of Uttarakhand

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL, PRINCIPAL BENCH, NEW DELHI

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Deepika Khari .....Applicant

Versus

State of Uttarakhand & Ors. .....Respondents

Affidavit of Nishant Verma (Male), aged about 52 years, S/o Sh. Ravindra Singh, presently posted as Additional Principal Chief Conservator of Forests, Fire & Disaster Management, Uttarakhand, Dehradun.

(Deponent)

I, the above-named deponent, do hereby solemnly affirm and state on as of:

1. That the deponent is presently posted as Additional Principal Chief Conservator of Forests, Fire & Disaster Management, Uttarakhand. Though the deponent has not been arrayed as respondent but vide Order dated 21.10.2024 this Hon'ble Tribunal has arrayed the Principal Chief Conservator of Forests/HoFF, Uttarakhand as Respondent No.3

and the deponent has been authorized by the Respondent No.3 vide his letter 530/29-3(3) dated 19.11.2024, to file the present response affidavit on behalf of Respondent No. 3 & 4, as such he is fully conversant with the facts of the case.

2. That on 21.10.2024, after the course of hearing in the present matter, this Hon'ble Tribunal was pleased to pass certain directions and direct the respondents to file response to the recommendations made by the Amicus Curie in the present matter. The relevant paras of the said Order dated 21.10.2024 are being quoted here for kind perusal of this Hon'ble Tribunal:

"2. By order dated 18.04.2024, Shri Gaurav Bansal, Advocate was appointed as Amicus Curies to assist Tribunal and he has submitted a detailed report.

3. From record, we find that there is no formal impleadment of parties, though it is necessary for proper adjudication of the matter. We accordingly implead following as respondents:

1. Ministry of Environment, Forest and Climate Change, through Secretary, H6P9+377, Jor Bagh Rd, Lodi Colony, New Delhi, Delhi 110003;

2. State of Uttarakhand, through Principal Secretary, Ministry of Environment, Forest and Climate Change, 85, Rajpur Road, Dehradun, Uttarakhand;

3. Principal Chief Conservator of Forest (HoFF), Dehradun, 87, Rajpur Road, Dehradun-248 001, Uttarakhand;

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4. Chief Wildlife Warden, Dehradun, Uttarakhand, 85, Rajpur Road, Dehradun, Uttarakhand;

5. Divisional Forest Officer, Dehradun, 85, Rajpur Road, Dehradun, Uttarakhand;

6. Forest Survey of India, Dehradun, Kaulagarh Road, P.O. IPE Dehradun - 248195. Uttarakhand.

4. Mr. Deepak Bora, Advocate ace.pted notice and appearing on behalf of Respondents 2 to 5.

5. Issue notice to remaining respondents.

6. Respondents may file their response as also reply to the report submitted by Amicus Curiae within three weeks.".

In compliance to the above direction passed by this Hon'ble Tribunal and Principal Chief Conservator of Forests (HoFF), Uttarakhand, Dehradun, the response to the recommendations submitted by the Amicus Curie Sh. Gaurav Bansal, Advocate is as follows:

A. That point No. 1-7 of the recommendations are based on the matter of record and hence need no comments.

B. That in reply to the point No. 8 of the recommendations, it is submitted that as per the initial report of Dehradun Forest Division **(Annexure-1)**, the nature of the fire reported in the said matter was actually control burning which was being carried out by the field staff of Badkot Range, Dehradun Forest Division as per the prescriptions mentioned in

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the Working Plan of Dehradun Forest Division (2020-21 to 2029-30) in Para no. 19.22.1.2 (Maintenance of Fire Lines) & Table no. 19.9.4 (List of important roads which work as Fire Line).

C. That in reply to the point No. 9 of the recommendations, it is submitted that the said control burning was carried out in the Sankot Compartment-9 of Badkot Range on 11.03.2023 which is verified by the entry made on 11.03.2023 in the wireless information register of Badkot Range.

D. That the Point No. 10 of the recommendations are based on matter of records and hence need no comments.

E. That in reply to Point No. 11 of the recommendations, it is submitetd here that in the State of Uttarakhand, the Forest Fire season is notified between 15th February till 15th June or till the on set of monsoon whichever is later.

F. That the point No. 12 of the recomendation are based on matter of records hence no comments.

G. That in reply to the point No. 13, it is submitted thata as per the report of Dehradun Forest Division, it is informed that the rainfall recorded in the Badkot Range in the month of January 2023 was 18mm, that too in the later part of the month and the area, in question, was damp & moist. Due to which, the leaf fall was delayed in Sal and other trees in that area in 2023 and it was not possible to carry out control burning till 15th February, 2023. Also, it is mentioned in the Working Plan

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Para 19.22.1.1.1 - (i) – that " *However, depending on the winter rainfall pattern and moisture level of forest floor, the DFO can regulate the time of control burning.*" Due to the above mentioned circumstances, controlled burning in the said area, was being carried out on 11th March, 2023.

H. That the Point No. 14 are based on matter of records and hence need no comments.

I. That in reply to the Point No. 15, it is submitted that as per the report of Dehradun Forest Division, the records of Fire alerts recieved from FSI pertaining to Dehradun Forest Division, no fire alert was received for the area in question of Badkot Range on 11.03.2023.

J. That in reply to the Point No. 16, it is submitted that the total Forest Area of Uttarakhand State is 71.05% of the State geographical area of 53,483 sq km. The total area of forest under the management of Forest Department is 25863.18 sq km (out of which reserve forest area is 24264.65 sq. km. and the rest is Protected Forest, unclassed & vested Forest.) The State of Uttarakhand has rich diversity of Forest including various species viz. Sal, Teak, Sheesham, Oak, Pine, Deodar, Fir, Spruce etc. From the point of view of forest fire, 15.25% of Forest area is of Chir Pine dominated species which is highly vulnerable/sensitive to Forest Fire.

K. That in reply to the Point No. 17, it is submitted that in the State of Uttarakhand, the Forest Fire season is notified between 15th February

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till 15th June or till the onset of monsoon. This period has been defined due to extreme heat, high temperature decrease in moisture content, long dryspell, high winds condition etc. Well before the onset of Forest Fire season, the preparatory activities viz. Controlled Burning, Fire Line maintenance for reducing the fuel load in Forest areas, Soil & Water conservation works, extensive public awareness/sensitization campaigns/exposure visits for the local villages in the vicinity of high risk forest areas, mockdrills/training/capacity building programs for the field officials, officials of different line departments are conducted.

L. That Point No. 18 of the recommendations is not related to the Department.

M. That apart from this, the details of the efforts being made by the Forest Department at present for forest fire control/management are as follows:-

N. That in reply to the point No. 19.1 – **Fire Fighting Equipments-** it is submitted that At present, 40184 different types of fire fighting equipments are available in the Forest Department. The list is enclosed as **Annexure (2)**. The process of procuring 7145 Personal Proximity Suits is in progress under the World Bank funded U-PREPARE Project. Under the CAMPA and centrally sponsored scheme, the department is procuring 600 protective kits (Proximity Suits, Shoes, Gloves, Headlight and Waterbottle) and 158 protective kits respectively.

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Wireless Infrastructure including Satellite Phones - Under the Forest Department, 40 Master Control Rooms have been established at divisional offices. Apart from this, the Control Rooms having wireless setup at range level. A total of Repeater Sets- 48, Base Sets- 450, Walkie-Talkie Handsets- 1478, Mobile Sets- 284, GPS- 1416 and Satellite Phones - 32 are available.

Administrative Units - For the management of forest areas under Forest Department, Uttarakhand, 11 circles (10 territorials and 01 non territorial/ functional), 43 divisions (30 territorials and 13 non territorial/functional), 283 ranges (183 territorials and 100 non territorial/functional) and 2393 beats (2033 territorials and 360 non territorial/functional) have been established.

Details of vehicles – A total of 247 departmental vehicles are being used in in the field divisions for forest fire mitigation/control. In the forest fire season-2024, 154 vehicles were hired in various divisions as per their requirement for forest fire control/prevention. Apart from this, the district administration also allotted 25 vehicles during forest fire season-2024 to various field divisions for forest fire control/prevention.

Status of Crew Stations – There are total 1438 crew stations established in various forest divisions in the State, out of which, 40 crew stations have been upgraded in the form of model crew stations having facility for stay of the crew teams, toilets, kitchen, wireless communication infrastructure and vehicle for transportation. In the

model crew stations, there is separate provision for toilet facility for women crew team members. For the improvement of crew stations, budget provision has already been provided under the State sector forest protection and management scheme and also under CAMPA.

Strengthening of Forest Chowkis- Integrated forest chowkis/anti-poaching camps and offices for forest field officers are being constructed under CAMPA and State sector schemes. To ensure uniformity in the construction of forest field chowkis/anti-poaching camps and to make them compatible with all requirements, guidlines for construction including the standard design/architecture with map has been issued vide letter no. 1086/PO dated 15.02.2022 of Principal Chief Conservator of Forest, (HoFF), Uttarakhand which is annexed as **Annexure- (3).**

O. That in reply to the point No. 19.2 - **Maintenance of Fire Lines** – it is submitted that maintenance of fire line works have been proposed in the working plans of the territorial forest divisions. This activity is being undertaken so as to clear the fire lines on regular basis. Moreover, in compliance to the order passed by the Hon'ble Supreme Court, New Delhi in Writ Petition no. 202/1995 dated 18.05.2023, the concerned divisional forest officers have been issued directions (which is annexed as **Annexure –(4)** to clean/maintain the fire lines as per the provisions of Working Plans.

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P. That in reply to the point No. 19.3 – **Over burnded Territorial Beats**– It is submitted that the area of Reserved and Protected forests under the Forest Department is 25863.18 sq km. The primary unit for the management of forests is beats, There are 2393 beats (2033 territorial and 360 non -territorial /functional beats). Thus, 1272.17 hectares per beat area is estimated to be under the juridiction of the forest guard for which beat watcher is also provided for assistance.

Field Staff - The details of the posts working in Uttarakhand Forest Department in relation to the sanctioned posts at field level are as follows (as on 31-03-2024)

Sr. No.	Designation	Sanctioned Post	Working Post
1	Forest Range Officer	308	248
2	Deputy Range Officer	408	369
3	Forester	1729	1617
4	Forest Guard	3650	2658

The process is underway to fill the vacant posts at field level. Since November, 2023, around 1200 Forester/Forest Guards have been provided appointment in the Forest Department. This has helped in the

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forest protection/management interventions which includes forest fire prevention/mitigation.

Q. That in reply to point number 19.4 - **Insurance arrangement for fire watchers-** it is submitted that provision has been made for group insurance of fire watchers (daily/temporary) employed under the department for the forest fire period 2024. There are 4338 fire watchers who had been covered under the Group life insurance for the forest fire period-2024. This process will continue in the coming years as well. Apart from this, WWF, India and WTI have also made provisions for insurance of the forest personnel (permanent/temporary) of Uttarakhand Forest Department and also medical treatment in case of any injury during forest fire mitigation.

R. That in reply to point No. 19.5 - **Proposal for Forest Martyrs-** It is submitted that a proposal has been sent to the State Government regarding declaring the personnel who died in forest department while discharging Government duties, encounters with smugglers, wildlife attacks, accidents while controlling forest fires, or during risky tasks, as martyrs and providing ex-gratia assistance to their dependents. The proposal is under consideration by the State Government.

S. That in reply to point No. 19.6 – **CAG Report** – It is submitted that the action taken with respect to the recommendations provided for in the CAG Report is summarized as under:-

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I. Forest Fire Risk Zonation Mapping -

For planning and allocation of budget purposes, the identification of fire prone areas has been done using the previous 10 years forest fire alerts/incidences data all over the State. The past forest fire data was uploaded into the GIS layer and highly sensitive fire prone areas have been identified. The financial allocation to the divisions is being carried out based on divisional sensitivity and their gaps and site specific challenges. The direction issued in this regard is annexed as **Annexure (5).**

II. Timely submission of Fire Alerts to FSI –

For timely submissions of alerts received from the Forest Survey of India(FSI), the department has developed a Forest Fire Uttarakhand Mobile App in which there is a mechanism to submit feedback along with photographic evidence from the field level. Also, the directions for all the field staff given for installing mobile app in their phones and provide timely feedback of each alerts received from FSI. The forest department has developed the machanism for ensuring timely submission of fire alerts to FSI. The direction issued in this regard is annexed as **Annexure (6).**

III. The Forest Department has coordinated with Indian Institute of Remote Sensing (IIRS) Dehradun, for using the following technical tools:- a- Automated Forest Risk Advisory and b- Forest Fire Reporting Mobile App. For using these technical tools, guidelines have been issued for the field officials which is annexed as **Annexure (7).**

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IV. The department is using drones for monitoring/surveillance of the forest fire in field areas. A total of 37 drones are available in the field forest divisions.

T. That in reply to Point No. 19.7 it is submitted that Due to shortage of officers in the senior posts of Additional Principal Chief Conservator of Forest, Chief Conservator of Forest under the Forest Department, the Nodal Officer, Forest Fire and Disaster Management has also been given charge of other offices. In addition to this, during the major part of the year including specially the forest fire season, the senior officers of the Forest Department are nominated as the District Nodal Officers for ensuring full cooperation of the other line departments at the district level in forest fire control/management works.

Suggestions - The action is already have been taken by the Forest Department (with the support of the State Government) on the suggestions given by the Amicus Curie. In response to the suggestions provided, the action taken is provided as under:-

a) After analyzing the present gaps and challenges being faced by the department in forest fire control/management, a detailed project of Rs 404.01 crore of forest fire mitigation for five years (2024-25 to 2028-29) has been formulated by the forest department and after getting its approval from the State Government, it has been sent to MoEF&CC, Government of India for its approval and sanctioning of budget.

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b) Maintenance of fire line works have been proposed in the working plans of the territorial forest divisions. This activity is being undertaken so as to clear the fire lines on regular basis. Moreover, in compliance to the order passed by the Hon'ble Supreme Court, New Delhi in Writ Petition no. 202/1995 dated 18.05.2023, the concerned Divisional Forest Officers have been issued directions to clean/maintain the fire lines as per the provisions of Working Plans.

c) Since November, 2023, around 1200 Forester/Forest Guards have been provided appointment in the Forest Department. This has helped in the forest protection/management interventions which includes forest fire prevention/mitigation. The process is underway for filling up of the remaining vacant posts at the field level.

d) Group life insurance has been done for 4338 fire watchers deployed for forest fire mitigation in the forest fire period-2024. This process will continue in the coming years as well. Apart from this, WWF, India and WTI have also made provisions for insurance of the forest personnel (permanent/temporary) of Uttarakhand Forest Department and also medical treatment in case of any injury during forest fire mitigation.

e) A proposal has been sent to the State Government regarding declaring the personnel who died in forest department while discharging government duties, encounters with smugglers, wildlife attacks, accidents while controlling forest fires, or during risky tasks, as martyrs and providing ex-gratia assistance to their dependents. The proposal is under consideration by the State Government.

f) Due to shortage of officers in the senior posts of Additional Principal Chief Conservator of Forest/Chief Conservator of Forest under the Forest Department, the Nodal Officer, Forest Fire and Disaster Management has also been given charge of other offices. In addition to this, during the major part of the year including specially the forest fire season, the senior officers of the Forest Department are nominated as

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the District Nodal Officers (the said order is annexed as **Annexure (8)** for ensuring full cooperation of the other line departments at the district level in forest fire control/management works. The whole departmental setup gets actively engaged in Forest Fire prevention/mitigation activities.

U. That the deponent is a responsible government servant having highest regards for the Hon'ble Law Court's and orders passed by them. The deponent cannot even imagine to flout or to disobey the orders passed by this Hon'ble Tribunal. He has always made his sincerest efforts to carry out the orders passed by this Hon'ble Tribunal in its letter and spirit and also shall carry out in future as well.

I, the above named deponent, do hereby verify that the contents of Para nos. _____ of this affidavit are true to my personal knowledge, those of Para nos. _____ of this affidavit are based on records, those of Para nos. _____ of this affidavit are as per the legal advice received and those of Para nos. _____ of this affidavit are as per the information received which all I believe to be true. That no part of this affidavit is false and nothing material has been concealed.

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So help me God

DEPONENT

I, Avnish Gupta, Legal Assistant, Forest Department, Uttarakhand, Dehradun, do hereby identify the deponent who has produced the records of the case before me and I am satisfied that he is the same person as alleged.

Avnish Gupta

IDENTIFIER

Solemnly affirmed before me today, the 20 day of November, 2024 at 11.25 am/pm by the deponent who has been identified by the aforesaid person.

I have satisfied myself by examining the deponent that he has understood the contents of this affidavit, which have been read over and explained to him.

OATH COMMISSIONER/NOTARY

NOTARY
Rajender Singh Negi
Advocate
Dehradun District
Reg. No. 19(01)2002
GOVT. OF UTTARAKHAND (INDIA)

20/11/24

This affidavit is sworn before me by Shri Mukesh Verma

who is identified by Shri Avnish Gupta

at Dehradun on

20/11/24

(Rajender Singh Negi)
Advocate & Notary, Dehradun

Annexure-①

कार्यालय, प्रभागीय वनाधिकारी, देहरादून वन प्रभाग, देहरादून।

पत्रांक : 2056 /29-3, देहरादून, दिनांक 06, नवम्बर, 2024.

सेवा में

मुख्य वन संरक्षक,
सतर्कता एवं विधि प्रकोष्ठ
उत्तराखण्ड, देहरादून।

विषयः- मा0 राष्ट्रीय हरित अधिकरण नई दिल्ली में योजित मूल आवेदन सं0- 425/2023, दीपिका खारी बनाम यू0पी0 राज्य के सम्बन्ध में।

सन्दर्भः- मा0 राष्ट्रीय हरित अधिकरण, नई दिल्ली के आदेश दिनांक 21.10.2024.

महोदय,

उपरोक्त विषयांकित प्रकरण के सम्बन्ध में मा0 राष्ट्रीय हरित अधिकरण नई दिल्ली द्वारा दिनांक 21.10.2024 को पारित आदेश के अनुपालन में मा0 अधिकरण द्वारा नियुक्त amicus curie श्री गौरव कुमार बंसल द्वारा दिनांक-23.09.2024 को प्रशनगत स्थल आरक्षित वन कक्ष सैनकोट कम्पार्टमेन्ट सं0 9 का अधोहस्ताक्षरी व वन क्षेत्राधिकारी, बड़कोट तथा बड़कोट रेंज के सम्बन्धित फील्ड स्टॉफ के साथ स्थलीय निरीक्षण किया गया। निरीक्षण के दौरान श्री गौरव कुमार बंसल को सम्बन्धित क्षेत्र का निरीक्षण करवाया गया तथा उनके द्वारा मांगने पर देहरादून वन प्रभाग की वर्तमान प्रचलित कार्ययोजना का अवलोकन करवाया गया। विषयांकित प्रकरण में वन क्षेत्राधिकारी, बड़कोट रेंज द्वारा अपने पत्र संख्या-293/29(न्यायालय) दिनांक-05.11.2024 के द्वारा प्रस्तुत आख्या के आधार पर मा0 राष्ट्रीय हरित अधिकरण के आदेश दिनांक-21.10.2024 के बिन्दु संख्या-07 से 15, जो कि प्रभाग से सम्बन्धित है, के सम्बन्ध में बिन्दुवार आख्या निम्न प्रकार प्रेषित की जा रही है-

बिन्दु सं0-7 Matter of records. No comments.

बिन्दु सं0-8 The nature of the fire reported in the said matter was actually controlled burning which was being carried out by the staff of Badkot Range, Dehradun Forest Division as per the prescriptions mentioned in the Working Plan of Dehradun Forest Division (2020-21 to 2029-30) in Para no. 19.22.1.2 (Maintenance of Fire Lines) & Table no. 19.9.4 (List of important roads which work as Fire Line). **(Annexure-1 & 2)**

बिन्दु सं0-9 The said controlled burning was carried out in the Sankot Compartment-9 of Badkot Range on 11.03.2023 which is verified by the entry made on 11.03.2023 in the wireless information register of Badkot Range. **(Annexure-3)**

बिन्दु सं0-10 Matter of records. No comments.

बिन्दु सं0-11 Normally the fire season is considered from 15 of February to till start of Mansoon .

बिन्दु सं0-12 Matter of records. No comments.

बिन्दु सं0-13 It is to be informed that the rainfall recorded in the Badkot Range in the month of January 2023 was 18mm, and the area, in question, was damp & moist. Due to which leaf fall was delayed in Sal and other trees in that area in 2023 and it was not possible to carry out control burning till 15th February, 2023. Also it is mentioned in the Working Plan Para 19.22.1.1.1 - (i) - that " However, depending on the winter rainfall pattern and moisture level of forest floor, the DFO can regulate the time of control burning." **(Annexure-4 & 5)**

Due to the above mentioned circumstances, controlled burning in the said area, was being carried out on 11th March, 2023.

बिन्दु सं0-14 Matter of records. No comments.

बिन्दु सं0-15 As per the records of Fire alerts recieved from FSI in the Dehradun Division, no fire alert was received for the area in question of Badkot Range on 11.03.2023. **(Copy of the Fire alerts received is attached Annexure-6).**

अतः अनुरोध है कि कृपया उपरोक्तानुसार बिन्दु सं0-3 से 15 तक की प्रतिउत्तर/अनुपालन आख्या मा0 राष्ट्रीय हरित अधिकरण, नई दिल्ली में दाखिल किये जाने वाले प्रतिशपथ पत्र में सम्मिलित करने की

कृपा करें। इसके अतिरिक्त पूर्व में भी विषयांकित वाद सं० में मा० राष्ट्रीय हरित अधिकरण में प्रभागीय वनाधिकारी, देहरादून की ओर से प्रतिशपथ पत्र दायर किया जा चुका है जिसकी प्रति आपको पूर्व में ही इस कार्यालय के पत्रांक 1982/29-3, दिनांक 30.10.2024 से प्रेषित की जा चुकी है।

संलग्न–उपरोक्तानुसार।

भवदीय,

(नीरज कुमार)
प्रभागीय वनाधिकारी,
देहरादून वन प्रभाग, देहरादून।

पत्रांकः– 2913 तद्दिनांकित।

प्रतिलिपि–निम्नलिखित को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित–

1. मुख्य वन संरक्षक, मानव संसाधन विकास एवं कार्मिक प्रबन्धन, उत्तराखण्ड, देहरादून।
2. मुख्य वन संरक्षक, गढ़वाल, उत्तराखण्ड, पौड़ी।
3. वन संरक्षक, शिवालिक वृत्त, उत्तराखण्ड, देहरादून।

प्रभागीय वनाधिकारी,
देहरादून वन प्रभाग, देहरादून

	Lambirau-57	20.2000	Lambirau-55	17.8000
	Lambirau-61	14.5000	Lambirau-58	15.8000
	Lambirau-62	14.5000	Lambirau-59	26.7000
	Lambirau-63	21.8000	Lambirau-60	15.4000
	Nahi-3	150.6000	Lambirau-64	17.0000
	Nahi-4	180.5000	Lambirau-65	25.9000
	Ramnagar-28	25.5000	Lambirau-69	23.9000
	Ramnagar-29	17.4000	Malkot-1	122.0000
	Ramnagar-31	15.4000	Malkot-2	124.0000
	Ramnagar-19a	17.0000	Malkot-3	189.1000
	Ramnagar-19b	10.9000	Malkot-9	221.5500
	Sinsarukhala-1	176.9000	Nahi-5	258.9000
	Song-4	102.6400	Paled-1	144.9100
	Song-5	250.1000	Ramnagar-26	26.0000
	Bhogpur-1b	54.7000	Ramnagar-27	27.1000
	Bhogpur-2	187.3000	Ramnagar-30	31.2000
	Thano-1c	10.6000	Sinsarukhala-2	105.6000
	Lambirau-71	12.1000	Song-3	100.0000
	Nahi-2	187.5000	Bhogpur-1a	35.0000
			Ladwakot	53.6300
			Nahi-1	258.1250
	Total	2788.1138		2844.2434
	Grand total	6679.7094		6138.9854

Map 19.5 Control Burning Coupe

19.22.1.2 Maintenance of fire lines: Annual cleaning & burning of fire lines should be given top priority. A list of fire lines existing in the division is given in Appendix. Fire lines have not been maintained properly in the past years due to financial & other constraints. As a result, regeneration have been established & in the fire lines well grown trees of various species are present. Hence, it is prescribed that all the fire lines should be cleared of all trees (of any species & any diameter class) and bushes (lantana & others) and should be control burnt effectively every year well before the start of the fire season. The yield from the clearance of the fire line will not be included in the prescribed yield of the Sal working circle and miscellaneous working circle.

Table 19.9.4 List of important roads which work as fire line

S.No.	Range	Name of road	Length (in km)
1	2	3	4
1	Asharori	Dehradun-Sahranpur N.H Road	1.01
2	Barkot	Dehradun-Rishikesh N.H. 24 Road	17.00
3		Dehradun-Haridwar N.H. 72 Road	16.00
4		Ranipokhari-Laltappar PWD Road	16.00
5		Ranipokhari-Rishikesh N.H Road	6.00
6		Bhaniawala-Haridwar by pass N.H Road	2.50
7	Jhajhra	Dehradun-Herbetpur-Paonta sahib N.H Road	2.00
8		Sidhuwala-Bhauwala PWD Road	1.50
9		Manduwala-Bhauwala PWD Road	1.00
10		Manduwala-Doonga-Bidholi PWD Road	4.00
11		Kotra santoor-Aamwala PWD Road	3.00
12		Nanda ki chowki-Kandoli PWD Road	2.00
13		Polytechnic School-Kandoli Tarli PWD Road	4.00
14	Lachiwala	Mothrowala-Dudhli-Doiwala PWD Road	5.00
15		Dehradun-Lachiwala-Doiwala N.H 72 Road	7.00
16	Malsi	Galjwari-Rikholi PWD Road	4.00
17		Masandawala-Jhadiwala PWD Road	2.00
18	Rishikesh	Doiwala-Rishikesh N.H Road	2.00
19		Dehradun-Rishikesh N.H. 24 Road	4.00
20		Rishikesh-Haridwar bypass Road	9.00
21		Rishikesh-Bairaj-Haridwar PWD Road	4.00
22		Rishikesh- Haridwar PWD Road	9.00
23	Thano	Raipur-Thano PWD Road	10.00

Annexure - 3

वायरलैस सूचना का प्रारूप

माह का नाम : मार्च

प्रसारित संदेश :

क्रम सं.	दिनांक	समय	प्रसारित संदेश का विवरण	प्रसारित करने वाले कर्मचारी का नाम व पदनाम	स्टेशनों का नाम जिन्हें संदेश भेजा गया।
			प्राप्त संदेश अनुभागों से		
	[illegible]	4:06PM	बड़कोट गोल्डा कम्पार्टमेंट कक्ष सं. 16 में फायर लाइन फूकन कार्य किया गया। समाप्त समय → 6:30 pm	श्री [illegible] (वन आरक्षी)	
		4:15PM	गोलापाइ (वन विश्राम भवन कक्ष सं. 3a, 3b में फायर लाइन कार्य किया गया। 6:00 pm	श्री राजू राणा (वनदरोगा)	
		4:32PM	रानी पोखरी कक्ष सं. 6 में फायर लाइन कार्य किया गया। समापन समय → 6:05 pm	श्री [illegible] ([illegible])	
		[illegible]	सैंकोट सम्पूर्ण ऋषिकेश कक्ष सं. 4 में कड़ोल [illegible] कार्य किया गया।	श्री [illegible] (वन रक्षक)	
		5:58PM	समाप्त समय → 5:58 pm		

माह का नाम : मार्च

प्राप्त संदेश :

क्रम सं.	दिनांक	समय	प्राप्त संदेश का विवरण	भेजने वाले कर्मचारी का नाम व पदनाम	संदेश प्राप्त करने वाले कर्मचारी का नाम व पदनाम
			प्रसारित संदेश मुख्यालय कंट्रोल से		
	11/3/24	4:11PM	बड़कोट गोल्डा कम्पार्टमेंट कक्ष सं. 16 में फायर की सूचना दूरभाष द्वारा मुख्यालय रेंज दी गई।	[illegible] वन आरक्षी	अंकित 9982151597
		4:20PM	[illegible] (वन विश्राम भवन कक्ष सं. 3a, 3b में फायर भवन में सूचना दूरभाष द्वारा मुख्यालय रेंज दी गई।	[illegible] वन दरोगा	अंकित 9983151597
		4:37PM	रानी पोखरी कक्ष सं. 6 में फायर की सूचना दूरभाष द्वारा मुख्यालय रेंज दी गई।	[illegible] ([illegible])	अंकित 9983151597
		6:02PM	सैंकोट सम्पूर्ण कक्ष सं. 4 में कड़ोल [illegible] की सूचना दूरभाष द्वारा मुख्यालय रेंज को गई।	[illegible] वन रक्षक	अंकित 9983151597

छायाप्रति सत्यापित

वन क्षेत्राधिकारी
बड़कोट रेंज
देहरादून वन प्रभाग

Scanned with OKEN Scanne

Annex-4

वर्ष - 2023 (वर्षा)

तारीख	जनवरी-2023	फरवरी-23	मार्च-23	अप्रैल-23	मई-23	जून-23	जुलाई-23	अगस्त-23	सितम्बर-23	अक्टूबर-23	नवम्बर-23	दिसम्बर-23
1.	रिक्त	रिक्त	रिक्त	11 mm	4-MM	18 MM	16 MM	11 M.M	15 MM	निल	Nil	Nil
2.	"	"	"	5 MM	7.3 MM	रिक्त	2 MM	48.M.M	Nil	"	"	"
3.	"	"	"	NIL	4.MM	"	4 mm	3.MM	Nil	"	"	"
4.	"	"	"	"	16.MM	"	Nil	8.mm	Nil	"	"	"
5.	"	"	"	"	रिक्त	"	10 M.M	1.MM	8 mm	"	Nil	"
6.	"	"	"	"	"	1.MM	15 M.M	18.mm	Nil	"	"	"
7.	"	रिक्त	"	"	"	रिक्त	Nil	9.mm	Nil	"	"	"
8.	"	"	"	"	"	"	12 mm	10.m.m	12 mm	"	"	Nil
9.	"	"	"	"	"	"	13 mm	9.m.m	Nil	"	"	"
10.	"	"	"	रिक्त	"	Nil	22 mm	92.m.m	6 mm	Nil	"	"
11.	"	"	"	"	रिक्त	Nil	90 mm	80.mm	Nil	"	"	"
12.	"	रिक्त	"	"	"	Nil	5 mm	2.mm	Nil	"	NIL	"
13.	"	"	"	"	"	Nil	32 mm	22 mm	11 mm	"	"	"
14.	1.00 mm	"	रिक्त	"	"	Nil	Nil	97 mm	8 mm	"	"	"
15.	1.00 MM	"	"	"	"	Nil	3.2 mm	Nil	16 mm	"	"	"
16.	रिक्त	"	"	रिक्त	"	Nil	1.00 MM	Nil	Nil	"	"	"
17.	"	"	"	"	"	Nil	11.MM	Nil	Nil	"	"	"
18.	"	रिक्त	12:mm	"	9.mm	5.mm	17 mm	86 m.m	4.mm	Nil	"	"
19.	"	"	2.00 mm	"	रिक्त	Nil	Nil	Nil	Nil	"	"	"
20.	4.00 MM	"	5.00 mm	5.0 mm	"	Nil	2.3 MM	Nil	Nil	"	"	"
21.	रिक्त	"	13:mm	2.mm	"	2 M.M	Nil	16 mm	3 mm	"	Nil	"
22.	"	"	4.00mm	2.mm	"	Nil	14 mm	55 m.m	9 mm	"	"	हस्ताक्षरित
23.	"	"	"	"	"	11.mm	Nil	27 mm	Nil	"	"	Nil
24.	1.00 M	"	"	रिक्त	6.M.M	4.1 mm	8 mm	8.1 mm	Nil	"	"	
25.	4.00 M	रिक्त	3.5 mm	"	5.3 MM	49 mm	11.mm	12 mm	Nil	"	"	"
26.	"	"	9.00 mm	"	रिक्त	13 mm	22.mm	4 MM	Nil	"	Nil	
27.	"	"	"	"	"	Nil	Nil	Nil	Nil	"	"	वन क्षेत्राधिकारी
28.	"	"	"	0.1 mm	"	1.mm	4.4 mm	[illegible]	Nil	"	"	[illegible] रेंज
29.	"		रिक्त	"	"	1.MM	10.3 mm	8.9 MM	Nil	"	"	[illegible] वन प्रभाग
30.	7.00 M		"	"	4.1 MM	7 MM	Nil	Nil	Nil	"	"	"
31.	"		7.1 mm		1.0 MM	रिक्त	Nil	Nil	—			
Total	[illegible]	[illegible]	55.[illegible]	[illegible]	104.[illegible]	112.[illegible]	[illegible]	[illegible]	[illegible]	Nil	Nil	

cannot with stand fire, and un regenerated patches where seed bearers have been left

19.22.1 Preventive measures: A well-executed preventive plan before the onset of fire season and during the fire season are most crucial to reduce the incidences of forest fire in forest areas. There are many age-old measures and practices that are used by the division before the fire season. Some of the important measures are, control burning, fire line clearance etc.

19.22.1.1 Control Burning: The main objective of control burning is to reduce the fuel load from the forest floor so that during fire season the forest area will be less prone for serious forest fire. In the present scenario of 'Global warming & Climate change' control burning in the forest area has become a debatable issue. Control burning releases large quantity of carbon dioxide and other greenhouse gases in to the atmosphere. So, there must a serious thought and effort for alternate measures to remove fuel load from the forest floor without burning it. It is suggested that the leaf litter may be converted into compost with the active participation of local people & Gujjars. It is prescribed that DFO must try this on 'pilot basis' and if found to be successful, may be taken up on large scale. However, it is also a fact that control burning is necessary to maintain the forest ecosystem. In the following paragraphs the details about control burning has been given.

i. **In Sal areas** where regeneration is deficient, burning is effective at two stages. First to obtain recruits and second to stimulate the growth of stagnating seedling. A good burn prior to seeding is very helpful. This may have to be repeated for two years in succession but it should not be done continuously and unless a good seed year is expected. Control burning for stimulating the growth of seedling in small woody stage is required only in the later stages. Therefore, the control burning is very useful if it is done under a strict control regime.

ii. **In other areas,** cleaning & burning of existing fire lines should be done before the fire season, so that these can act as fire breaks & can be clear passages for fire control during fire season. Control burning in 10 meters belt on both sides of forest & PWD roads will helps in prevention of any accidental fire.

19.22.1.1.1 Methods of Annual Control Burning: Following broad guide lines should be followed for annual control burning:

i. Normally control burning should be done in the month of December/January and before 15th February. However, depending on the winter rainfall pattern and moisture level of forest floor the DFO can regulate the time of control burning.
ii. In hilly areas the burning should be done from top to bottom along the slopes and it should be carried out in the night or late evening.
iii. Areas where young regeneration (recruitment, whippy & sub whippy stages) which cannot with stand fire, and un regenerated patches where seed bearers have been left for inducing regeneration, should be avoided or protected during control burning.
iv. Slash produced during felling should be disposed off before control burning.
v. A 10-meter belt on both side of the roads passing through forest should be freed from inflammable material.
vi. While doing control burning the patches of fruit species and medicinal plants existing in compartment should be protected from fire.

Note: Use Left & Right Arrow Key In Desktop To Scroll Table Content

Copy Excel CSV Show 10 rows

Annex-6

क्र० सं०	वनाग्नि की दिनांक	अक्षांश	देशान्तर	वृत्त	प्रभाग	रेंज	बीट	ब्लॉक	कक्ष सं०	फीडबैक	फोटो	क्षेत्रफल	टिप्पणी/ अभिपुक्ति
61	18/04/2023	30.35189	77.97861	SHIVALIK CIRCLE	DEHRADUN	JHAJRA RANGE	PHULSENI BEAT	MAJHAUN	1	False Alarm / No Fire	No Image Submitted	0	No Fire
62	09/04/2023	30.1976	78.13913	SHIVALIK CIRCLE	DEHRADUN	LACHHIWALA RANGE	LACHHIWALA RANGE	FATEHPUR BEAT	JOLI	False Alarm / No Fire	No Image Submitted	0	False
63	17/03/2023	78.13718	30.15751	SHIVALIK CIRCLE	DEHRADUN	LACHHIWALA RANGE	FATEHPUR BEAT	FATEHPUR	Fatchpur	False Alarm / No Fire	No Image Submitted	0	False
64	17/03/2023	78.08765	30.22489	SHIVALIK CIRCLE	DEHRADUN	LACHHIWALA RANGE	SEMLAS BEAT	DUDHLI	12a	False Alarm / No Fire	No Image Submitted	0	False
65	17/03/2023	78.0793	30.22608	SHIVALIK CIRCLE	DEHRADUN	LACHHIWALA RANGE	SEMLAS BEAT	DUDHLI	11	False Alarm / No Fire	No Image Submitted	0	False
66	17/03/2023	78.0793	30.22608	SHIVALIK CIRCLE	DEHRADUN	LACHHIWALA RANGE	DUDHLI BEAT	DUDHLI	9	False Alarm / No Fire	No Image Submitted	0	False
67	11/03/2023	30.09677	78.2372	SHIVALIK CIRCLE	DEHRADUN	RISHIKESH RANGE	BIBIWALA SOUTH BEAT	BIBIWALA	9b	False Alarm / No Fire	No Image Submitted	0	False
68	11/03/2023	30.09677	78.2372	SHIVALIK CIRCLE	DEHRADUN	RISHIKESH RANGE	BIBIWALA SOUTH BEAT	BIBIWALA	9a	False Alarm / No Fire	No Image Submitted	0	False
69	11/03/2023	30.09677	78.2372	SHIVALIK CIRCLE	DEHRADUN	RISHIKESH RANGE	BIBIWALA SOUTH BEAT	BIBIWALA	7b	False Alarm / No Fire	No Image Submitted	0	False
70	11/03/2023	30.09677	78.2372	SHIVALIK CIRCLE	DEHRADUN	RISHIKESH RANGE	BIBIWALA SOUTH BEAT	BIBIWALA	7a	False Alarm / No Fire	No Image Submitted	0	False
क्र० सं०	वनाग्नि की दिनांक	अक्षांश	देशान्तर	वृत्त	प्रभाग	रेंज	बीट	ब्लॉक	कक्ष सं०	फीडबैक	फोटो	क्षेत्रफल	टिप्पणी/ अभिपुक्ति

Showing 61 to 70 of 74 entries

Previous 1 ... 4 5 6 7 8 Next

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Annexure - 2

वनाग्नि शमन हेतु उपलब्ध उपकरण का विवरण

(माह मार्च–2023 की स्थिति) :

क्र० सं०	उपकरण का नाम	उपकरणों की सं०
1	सावेल	1805
2	फायरटैक	14812
3	वाटर बोतल	5665
4	वनाग्नि प्रतिरोधक जैकेट	728
5	फेस मास्क	915
6	फायर बीटर	1697
7	फायर प्रोटेक्टिंग ग्लास (चश्मे)	376
8	पुलास्की	915
9	दूरबीन	585
10	मैक्लायड	660
11	हेलमेट	3390

क्र० सं०	उपकरण का नाम	उपकरणों की सं०
12	सर्चलाईट / टार्च	2020
13	वाटर टैंक कैम्पर छोटा	43
14	बैग	2117
15	फस्ट एड बॉक्स	712
16	डांगरी / फायर प्रोटेक्ट सूट	454
17	सैलेटाईजर	30
18	ड्रोन	37
19	लीफ ब्लोवर	340
20	अन्य (जूते व वर्दी)	857
21	बुसहुक	264
22	डबलबीट एक्स	114

क्र० सं०	उपकरण का नाम	उपकरणों की सं०
23	फायर रैजिपेंट क्लाथ	49
24	दस्ताने	48
25	फायर ड्रिल किट	64
26	फायर किट	59
27	वेदर पैक मिटर	64
28	मोबाइल फोन	68
29	फायर प्रोटेक्ट सूट	51
30	पाठल / दराँती	946
31	फावड़ा	76
32	बेलचा	172
33	दन्दाली	51
	कुल	40184

Annexure - 3

एकीकृत वन चौकी / एंटी पोचिंग कैम्प
एवं
वन क्षेत्राधिकारी कार्यालय निर्माण हेतु
मानक दिशा निर्देश एवं प्रारुप

प्रमुख वन संरक्षक (HoFF)
उत्तराखण्ड
फरवरी – 2022

कार्यालय प्रमुख वन संरक्षक (HoFF), उत्तराखण्ड,

85–राजपुर रोड, देहरादून।

पत्रांक 1084/PP देहरादून, दिनांक, 15 फरवरी, 2022

स्थायी आदेश

उत्तराखण्ड वन विभाग के अन्तर्गत विभिन्न योजनाओं में एकीकृत (Integrated) वन चौकी/एन्टीपोचिंग कैम्प एवं वन क्षेत्राधिकारी कार्यालय का निर्माण कराया जाता है। विभागीय भवनों के निर्माण में एकरूपता रहे तथा इन्हें सभी की आवश्यकताओं के अनुरूप बनाया जाये, इस हेतु यह आवश्यक है कि इनके निर्माण हेतु राज्य स्तर पर मानक प्रस्तावित किये जायें। तद्नुसार राज्य में एकीकृत (Integrated) वन चौकी/एन्टीपोचिंग कैम्प एवं वन क्षेत्राधिकारी कार्यालय निर्माण हेतु सामान्य दिशा–निर्देश निम्नानुसार होंगे–

1. भवन निर्माण हेतु स्थल का चयन करते समय यह ध्यान रखा जाये कि वहां पर ग्रामीण गोष्ठी, बैठक इत्यादि अन्य विभागीय गतिविधियों हेतु पर्याप्त खुला स्थान हो। साथ ही भविष्य में निकट में यदि आवश्यकता हो तो अन्य भवनों के निर्माण हेतु भी भूमि उपलब्ध हो।
2. वन क्षेत्राधिकारी कार्यालय हेतु न्यूनतम 750 वर्ग मीटर भूमि उपलब्ध हो। वन चौकी /एन्टीपोचिंग कैम्प हेतु न्यूनतम 500 वर्ग मीटर भूमि की उपलब्धता होनी चाहिये।
3. प्रस्तावित निर्माण स्थल हेतु ऊचांई का ऐसा स्थान चयनित किया जाये जहां से आस–पास का विहंगम दृश्य देखा जा सके। यह वनाग्नि के समय विशेष रूप से उपयोगी हो।
4. निर्माण स्थल यथा सम्भव मोटर मार्ग से जुड़ा हुआ हो तथा भवन तक वाहनों के आवागमन की सुविधा भी होना लाभकारी होगा।
5. स्थल पर पानी की पर्याप्त उपलब्धता अवश्य हो। जिन स्थलों पर जल आपूर्ति की नियमित व्यवस्था उपलब्ध न हो वहां वैकल्पिक व्यवस्था यथा हैंडपम्प की बोरिंग इत्यादि की सम्भावना का परीक्षण कर लिया जाये।
6. स्थल पर विद्युत आपूर्ति की व्यवस्था अपेक्षित होगी। जिन स्थलों पर नियमित विद्युत आपूर्ति सम्भव नहीं है वहां पर न्यूनतम 01 KW सोलर इन्वर्टर की व्यवस्था अवश्य की जाये। जिन स्थानों पर विद्युत आपूर्ति उपलब्ध हो वहां राज्य सरकार की योजना के अन्तर्गत सोलर ग्रिड अथवा सोलर इन्वर्टर स्थापित किये जायें।
7. सभी भवनों में Energy Efficient Lighting का प्रयोग अनिवार्य है। LED लाइटों का प्रयोग किया जाये। फिलामेन्ट बल्ब का प्रयोग वर्जित होगा।

8. चयनित स्थल पर धूप की पर्याप्त उपलब्धता आवश्यक है जिससे सोलर पैनल द्वारा विभिन्न उपकरणों को ऊर्जा मिल सके तथा भवन भी नैसर्गिक रूप से भी एक आराम दायक तापमान पर बने रहे। इस हेतु दक्षिणोन्मुखी ढाल पर बने भवन अधिक उपयुक्त होंगे।

9. चयनित स्थल पर वायरलैस के सिग्नल प्राप्त करने में कठिनाई न हो इसका भी ध्यान रखा जाये। Shadow Zone में स्थित स्थलों पर वायरलैस सिग्नल प्राप्त करने में कठिनाई होती है, इसलिये इस बिन्दु पर विशेष ध्यान देने की आवश्यकता है।

10. सभी भवनों के ऊपर वॉच टावर का प्राविधान है, जो वनाग्नि काल में विशेष रूप से उपयोगी होगा। वायरलैस का ऐन्टीना भी इसी वॉच टावर के ऊपर स्थापित किया जा सकता है।

11. जिन स्थानों पर मोबाईल की सुविधा उपलब्ध हो वहां स्थल चयन में इस बात का भी ध्यान रखा जाये कि वहां पर सिग्नल भली–भांति प्राप्त हो, जिससे सम्पर्क बनाये रखने में सुविधा हो।

12. भवनों में वर्षा जल संरक्षण की व्यवस्था अनिवार्य रूप से की जायेगी।

13. निर्माण में भूकम्परोधी तकनीक का प्रयोग किया जायेगा।

14. स्थल की आवश्यकतानुसार सोलर फैन्सिंग अथवा चारदीवारी का भी प्राविधान इसमें सम्मिलित होगा।

15. निर्माण कार्य की लागत में समस्त मानक फिटिंग सम्मिलित होंगे।

16. वन क्षेत्राधिकारी कार्यालय में निःशक्तजनों के आवागमन हेतु समुचित प्राविधान किये जायेंगे।

17. भवनों के निर्माण हेतु 02 प्रकार के डिजाइन तय किये गये हैं। समुद्र तल से 1500 मीटर ऊंचाई तक के स्थलों हेतु सामान्य छत वाले डिजाइन के भवन निर्मित किये जायेंगे। इससे ऊपर के स्थानों में ढालदार छत वाले डिजाइन के भवन निर्मित किये जायेंगे।

18. उच्च हिमालयी स्थानों पर जहां भारी बर्फबारी होती है, वहां हेतु पृथक से मानक प्रस्तावित किये जायेंगे।

19. वन चौकी/एन्टीपोचिंग कैम्प में दो मंजिले भवन का निर्माण किया जायेगा, जिसमें प्रत्येक तल एक स्वतंत्र इकाई के रूप में उपयोग किया जा सकेगा। एक साथ न्यूनतम दो चौकी स्थापित होने से वन संम्पदा की सुरक्षा और अच्छे तरीके से की जा सकेगी तथा अधिक संख्या बल में होने से वन कर्मियों का उच्च मनोबल भी बना रहेगा।

20. वन चौकी/एन्टीपोचिंग कैम्प में भू–तल पर एक स्टोर का भी प्राविधान किया गया है, जिसमें वनाग्नि सुरक्षा, मानव वन्यजीव संघर्ष सुरक्षा एवं अन्य यानिकी सम्बन्धित उपकरणों को रखा जा सकेगा।

21. वन विभाग में महिला कर्मियों की सुविधा को देखते हुये भवनों के प्रारूप में उनके लिये विशेष रूप से निजता का ध्यान रखते हुये प्राविधान किये गये हैं। रेंज कार्यालय में पृथक प्रसाधन का प्राविधान है जबकि वन चौकी/एन्टीपोचिंग कैम्प में प्रत्येक कक्ष के साथ पृथक प्रसाधन की व्यवस्था है।

22. भवनों में उत्तराखण्ड वन विभाग का नाम एवं लोगो प्रमुखता से अंकित किया जाना है। इस हेतु दिये गये नक्शे के अनुसार कार्यवाही की जानी है।

23. भवनों के बाहर एंव अन्दर रंगो का संयोजन भी एक मानक के अनुसार प्रत्येक भवन में एक समान रखा जाना है। भवनों के बाहर एशियन पेन्टस के Apex Ultima के शेड Balsan Brown- 8520 अथवा समकक्ष रंग का ही प्रयोग किया जाये जबकि छज्जों, ढालदार छत व अन्य निर्दिष्ट स्थानों पर Pine-N -0757 अथवा समकक्ष रंग का ही प्रयोग किया जाये। भवन के अन्दर White अथवा Ivory रंग का ही प्रयोग किया जाये। रंग संयोजन में भवनों के संलग्न नक्शों के अनुसार ही कार्यवाही की जाये तथा इससे किसी भी प्रकार का विचलन न किया जाये।

24. भवनों के मानक नक्शे, Front elevation, Side elevation एवं मानक दर इस आदेश के साथ एतत् द्वारा संलग्न है। इनका कड़ाई से अनुपालन सुनिश्चित किया जाये।

25. राज्य सरकार द्वारा विभिन्न संस्थाओं को निर्माण एजेन्सी के रूप में पूर्व में ही विनिहित किया गया है। निर्माण का कार्य इन्हीं निर्माण एजेन्सी में से किसी एक को चयनित कर उनके द्वारा किया जाना है।

26. निर्माण एजेन्सी का चयन सक्षम प्राधिकारी अपने स्तर से करेंगे। चयन करते समय सक्षम अधिकारी यह सुनिश्चित करेंगे कि जिस स्थान पर निर्माण कार्य किया जाना है वहां पर उक्त एजेन्सी की उपस्थिति है तथा यह एजेन्सी निर्धारित मानकों, अनुमोदित डिजाइन एवं उपलब्ध बजट के अनुसार निर्धारित समयावधि में कार्य पूर्ण करने में सक्षम है।

27. निर्माण हेतु सक्षम स्तर से वित्तीय, प्रशासनिक एंव तकनीकी स्वीकृति प्राप्त की जायेगी।

28. पुनः स्पष्ट किया जाता है कि निर्माण हेतु धनराशि का प्राविधान चाहे किसी भी योजना के अन्तर्गत किया गया हो, निर्माण हेतु इन्हीं मानकों के अन्तर्गत कार्यवाही की जायेगी।

यह आदेश तत्काल प्रभाव से लागू होंगे। कृपया इनका कठोरता से अनुपालन सुनिश्चित करें। यदि उपरोक्त किसी भी बिन्दु पर अतिरिक्त मार्गदर्शन की आवश्यकता प्रतीत होती हो तो सम्बन्धित अधिकारी अपने मुख्य वन संरक्षक के माध्यम से इस कार्यालय से सम्पर्क कर सकते हैं।

संलग्नक :-

1. रेंज कार्यालय का मानक फ्लोर प्लान।
2. रेंज कार्यालय परिसर का मानक लेआउट।
3. मैदानी क्षेत्रों में रेंज कार्यालय का Front तथा Side Elevation ।
4. 1500 मी0 से अधिक ऊंचाई वाले क्षेत्रों हेतु रेंज कार्यालय का Front तथा Side Elevation ।
5. एकीकृत (Integrated) वन चौकी/एन्टीपोचिंग कैम्प हेतु भू-तल का मानक फ्लोर प्लान।
6. एकीकृत (Integrated) वन चौकी/एन्टीपोचिंग कैम्प हेतु प्रथम तल का मानक फ्लोर प्लान।
7. मैदानी क्षेत्रों में एकीकृत (Integrated) वन चौकी/एन्टीपोचिंग कैम्प का Front तथा Side Elevation ।
8. 1500 मी0 से अधिक ऊंचाई वाले क्षेत्रों हेतु एकीकृत (Integrated) वन चौकी/एन्टीपोचिंग कैम्प का Front तथा Side Elevation ।
9. निर्माण हेतु मानक दर विश्लेषण

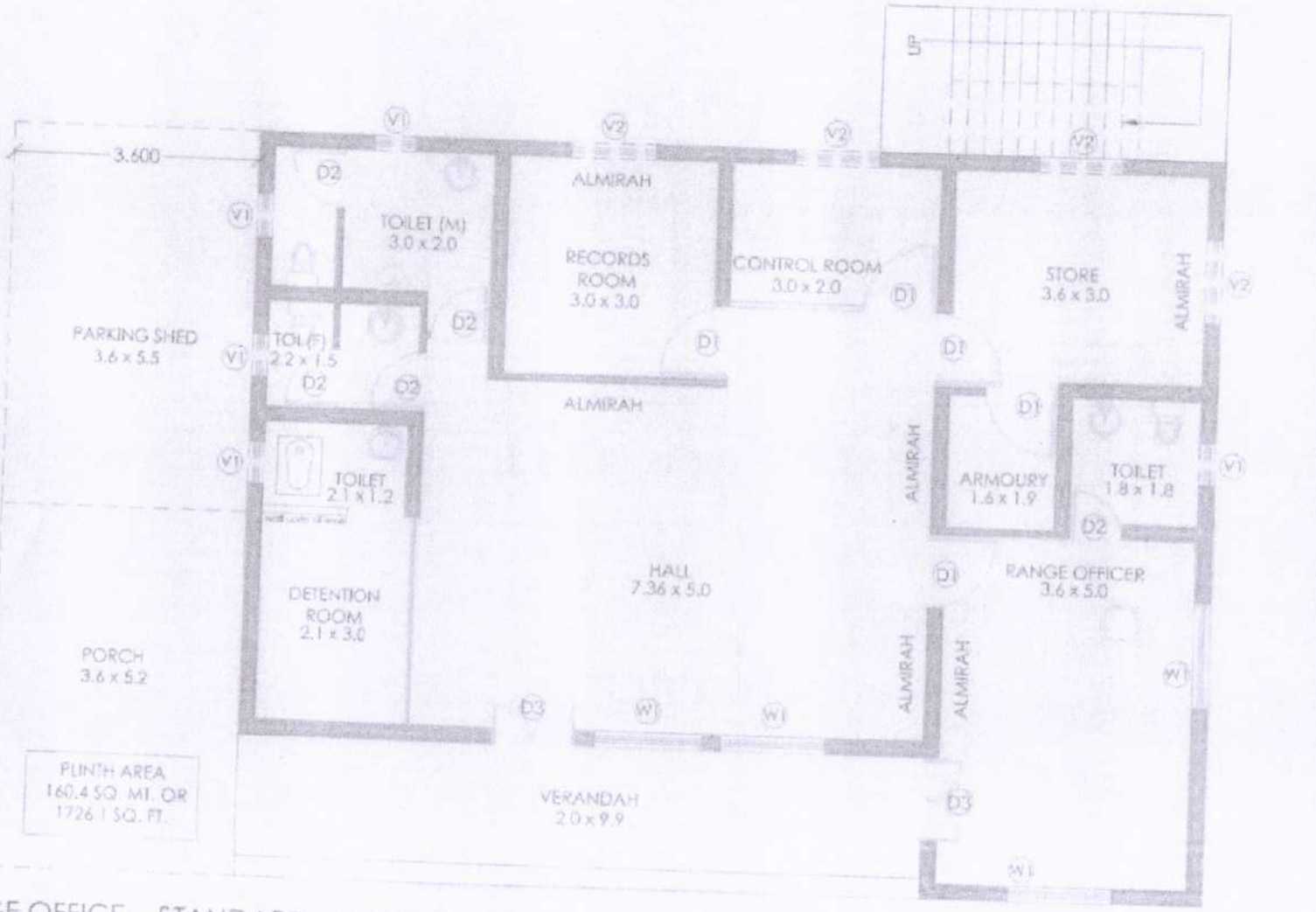
विनोद कुमार
प्रमुख वन संरक्षक (HoFF),
उत्तराखण्ड।

1. प्रतिलिपि समस्त प्रभागीय वनाधिकारी, उत्तराखण्ड को अनुपालन हेतु प्रेषित।
2. प्रतिलिपि समस्त वन संरक्षक/निदेशक, उत्तराखण्ड को अनुपालन हेतु प्रेषित।
3. प्रतिलिपि समस्त मुख्य वन संरक्षक, उत्तराखण्ड को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।
4. प्रतिलिपि समस्त अपर प्रमुख वन संरक्षक, उत्तराखण्ड को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।
5. प्रतिलिपि प्रमुख वन संरक्षक, वन्यजीव एवं प्रमुख वन संरक्षक, वन पंचायत, उत्तराखण्ड को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।

विनोद कुमार
प्रमुख वन संरक्षक (HoFF),
उत्तराखण्ड।

1. प्रतिलिपि अपर मुख्य सचिव, वन एवं पर्यावरण, उत्तराखण्ड शासन को सादर संज्ञानार्थ प्रेषित।

विनोद कुमार
प्रमुख वन संरक्षक (HoFF),
उत्तराखण्ड।



RANGE OFFICE - STANDARD LAYOUT OF FLOOR PLAN
UTTARAKHAND FOREST DEPARTMENT


RANGE OFFICE - STANDARD LAYOUT OF FLOOR PLAN FOR PLAIN AREAS
UTTARAKHAND FOREST DEPARTMENT
ROAD
28.980
25.720
10.000
4.770
3.600
4.170
4.230

RANGE OFFICE - FOR PLAIN AREAS

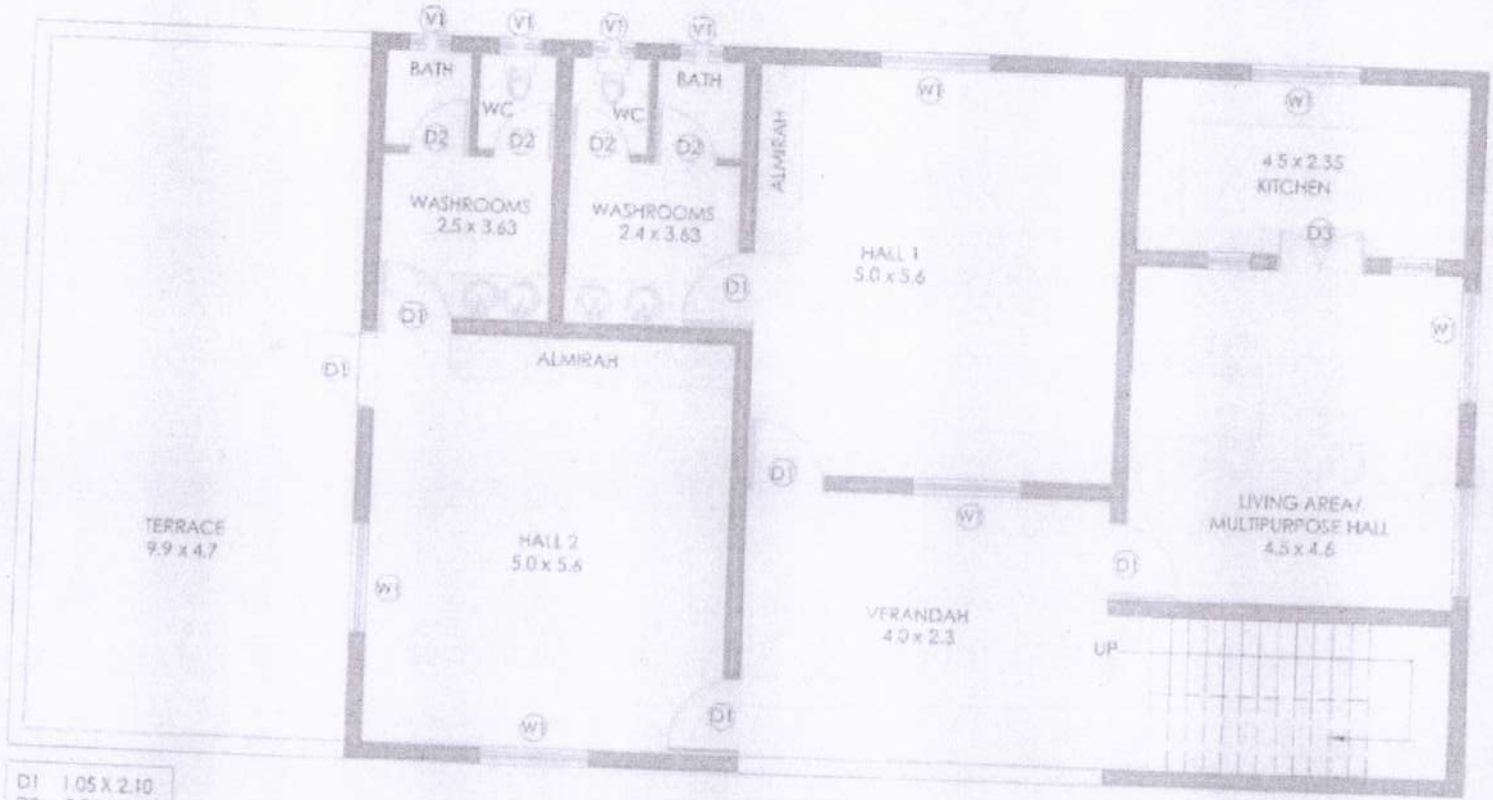
UTTARAKHAND FOREST DEPARTMENT

17.050
11.984
6.641
5.759
15.989
24.483
ROAD
RANGE OFFICE - STANDARD LAYOUT OF FLOOR PLAN FOR HILLY AREAS
UTTARAKHAND FOREST DEPARTMENT

RANGE OFFICE - FOR HILLY AREAS

UTTARAKHAND FOREST DEPARTMENT

FOREST CHOWKI - STANDARD LAYOUT OF GROUND FLOOR PLAN
UTTARAKHAND FOREST DEPARTMENT



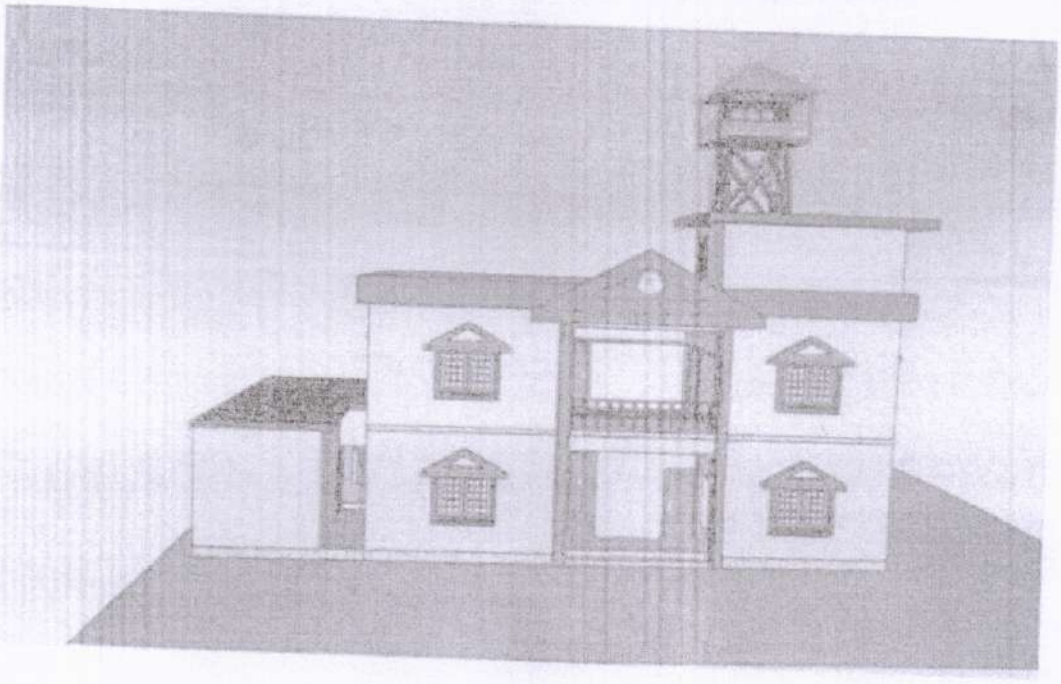
D1	1.05 X 2.10
D2	0.84 X 2.10
D3	1.20 X 2.10
W1	1.50 X 1.20
W2	1.20 X 1.20
V1	0.60 X 0.60
V2	1.20 X 0.60

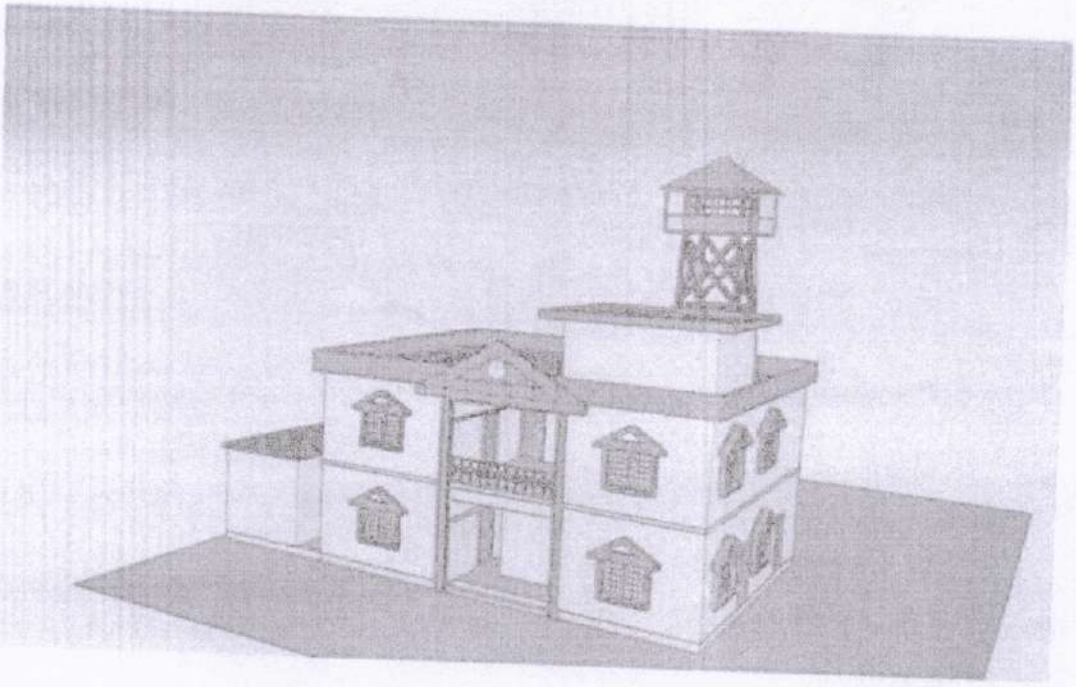
PLINTH AREA -
175.35 SQ. MT. OR
1886.9 SQ. FT

FOREST CHOWKI - STANDARD LAYOUT OF FIRST FLOOR PLAN
UTTARAKHAND FOREST DEPARTMENT

11

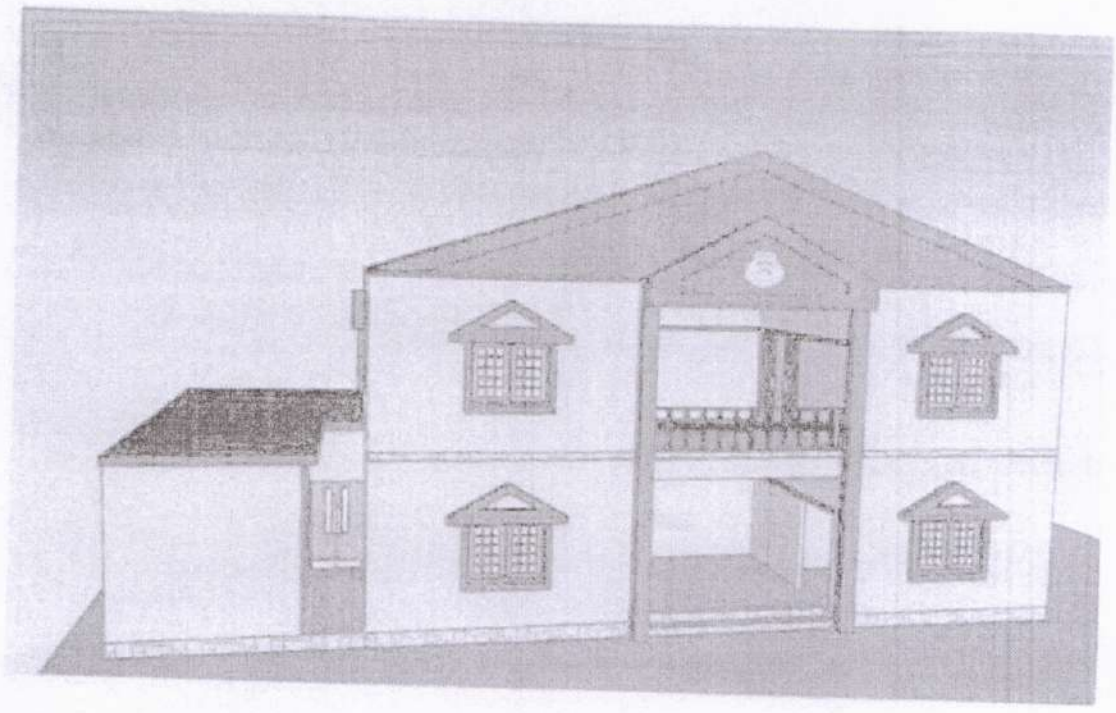
173

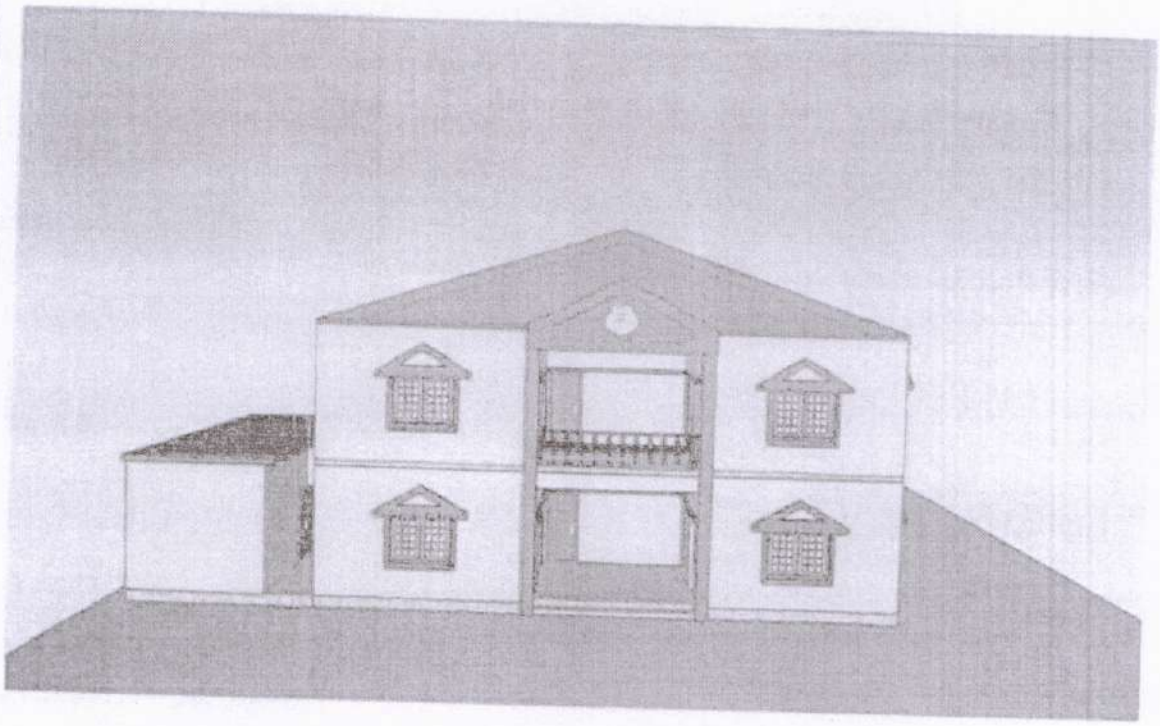




FOREST CHOWKI - FOR PLAINS

UTTARAKHAND FOREST DEPARTMENT





FOREST CHOWKI - FOR HILLS

UTTARAKHAND FOREST DEPARTMENT

Annexure-4

कार्यालय, मुख्य वन संरक्षक
वनाग्नि एवं आपदा प्रबन्धन, उत्तराखण्ड देहरादून।

चतुर्थ तल, 65, राजपुर रोड, देहरादून। दूरभा0 0135-2744359 E-mail - nodalforestfire.uk@gmail.com

पत्रांकः 241 /29-3 देहरादून, दिनांक, 07 अक्टूबर, 2024

सेवा में,

अपर प्रमुख वन संरक्षक/मु0व0सं0,
गढ़वाल मण्डल, पौड़ी।

विषयः- मा0 उच्चतम न्यायालय, नई दिल्ली द्वारा फायर लाईनों से सम्बन्धित पारित निर्णय पर कार्यवाही के सम्बन्ध में।

सन्दर्भः- प्रमुख वन संरक्षक (HoFF), उत्तराखण्ड का पत्रांक-1/97138/29-03, दिनांक 23-07-2024, महोदय,

मा0 उच्चतम न्यायालय, नई दिल्ली में विचाराधीन सिविल याचिका संख्या-202/1995, टी0एन0गोडावर्मन बनाम भारत संघ व अन्य के सम्बन्ध में प्रमुख वन संरक्षक (HoFF), उत्तराखण्ड की अध्यक्षता में दिनांक 01.06.2024 को उक्त बैठक के कार्यवृत्त में दिये गये निर्देशों के अनुपालन में फायर लाईनों के रख-रखाव हेतु क्षेत्रीय मुख्य वन सरक्षकों/वन संरक्षकों से निम्नलिखित प्रभागों के प्रस्ताव/तकनीकी नोट प्राप्त हुए हैं-

1	रुद्रप्रयाग वन प्रभाग, रुद्रप्रयाग	अपर प्रमुख वन संरक्षक/मुख्य वन संरक्षक-गढ़वाल के पत्रांक 400/29-3, दिनांक 05.09.2024 से प्राप्त।
2	भूमि संरक्षण, वन प्रभाग, कालसी	अपर प्रमुख वन संरक्षक/मुख्य वन संरक्षक-गढ़वाल के पत्रांक 399/29-3, दिनांक 05.09.2024 से प्राप्त।
3	उत्तरकाशी वन प्रभाग, उत्तरकाशी	वन सरक्षक, भागीरथी वृत्त, मुनिकीरेती का पत्रांक 395/29-3 दिनांक 30.08.2024।

प्रभागों से प्राप्त प्रस्तावों/तकनीकी नोटों का प्रमुख वन संरक्षक (HoFF), उत्तराखण्ड महोदय द्वारा मुख्यालय स्तर पर review किया गया तथा प्रकरण में निम्नानुसार अग्रेत्तर कार्यवाही के निर्देश दिये गये हैं-

1. मा0 उच्चतम न्यायालय द्वारा पारित निर्णय दिनांक 18.05.2023 के अनुपालन में नियंत्रण वर्ष 2024-25 से समस्त वन प्रभागों की कार्ययोजनाओं/वर्किंग स्कीमों के प्राविधानों के अनुसार फायर लाइनों के सफाई कार्य हेतु अग्रेत्तर कार्यवाही प्राथमिकता पर सुनिश्चित की जाए।
2. जिन प्रभागों में कार्ययोजनाओं/वर्किंग स्कीमों में किन्ही कारणवश फायर लाइनों के सफाई हेतु कार्य नही किया जाना है तो उनमे विचलन के माध्यम से सक्षम स्तर से अनुमोदन प्राप्त करने की कार्यवाही सुनिश्चित की जाए।
3. उक्तानुसार कार्य आगामी फायर सीजन से पूर्व कर लिया जाए ताकि इसका लाभ वनाग्नि नियंत्रण हेतु प्राप्त हो सके।
4. उक्त निर्देशों का अनुपालन करते हुए इसकी पाक्षिक कार्यवाही रिपोर्ट प्रमुख वन संरक्षक (HoFF), उत्तराखण्ड कार्यालय को उपलब्ध कराने का कष्ट करें।

भवदीय,

7/10/24

(निशांत वर्मा)
अपर प्रमुख वन संरक्षक,
वनाग्नि एवं आपदा प्रबन्धन,
उत्तराखण्ड।

संख्याः- 241 / 24-3 तद्दिनांकित।

प्रतिलिपि- निम्नलिखित को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषितः-

1. मुख्य वन संरक्षक, कुमाऊँ को इस निर्देश के साथ प्रेषित कि अपने अधीनस्थ वन संरक्षकों से प्रभागों में उक्तानुसार अग्रेत्तर कार्यवाही करें।
2. मुख्य वन संरक्षक, कार्ययोजना, उत्तराखण्ड, हल्द्वानी।
3. समस्त क्षेत्रीय वन संरक्षक, गढ़वाल एवं कुमाऊँ मण्डल, उत्तराखण्ड।
4. समस्त क्षेत्रीय प्रभागीय वनाधिकारी, गढ़वाल एवं कुमाऊँ मण्डल उत्तराखण्ड।

(निशांत वर्मा)
अपर प्रमुख वन संरक्षक,
वनाग्नि एवं आपदा प्रबन्धन,
उत्तराखण्ड।

Annexure 5

कार्यालय

प्रमुख वन संरक्षक,(HoFF) उत्तराखण्ड

Email: pccfuk@gmail.com Ph.No. & Fax: 0135-2746934

पत्रांक 1080 /पी0ओ0 देहरादून, दिनांकः 05 फरवरी, 2022

कार्यालय आदेश

इस कार्यालय के पत्रांक संख्या ख –491/27–1 दिनांक 16.12.2021 के [illegible] की अग्नि सुरक्षा व्यवस्था सुनिश्चित करने एवं वनाग्नि नियंत्रण/कुशल प्रबन्धन हेतु [illegible] कार्यवाही करने के लिए दिशा निर्देश संलग्न कर जारी किये जा रहे है। कृपया [illegible] 2022 तथा आगामी सत्रों में भी वनाग्नि नियंत्रण/प्रबन्धन कार्यों को इन दिशा [illegible] अनुरूप ही किया जाना सुनिश्चित करें।

संलग्नक–उपरोक्तानुसार।

ह0/–
(विनोद कुमार)
प्रमुख वन संरक्षक (HoFF)
उत्तराखण्ड।

संख्या 1080 /पी0ओ0 तद्दिनांकित।
प्रतिलिपि :–

1. प्रमुख वन संरक्षक, वन पंचायत, उत्तराखण्ड को सूचनार्थ प्रेषित।
2. प्रमुख वन संरक्षक (वन्यजीव) उत्तराखण्ड को सूचनार्थ प्रेषित।
3. अपर प्रमुख वन संरक्षक, नियोजन एवं वित्तीय प्रबन्धन, उत्तराखण्ड, देहरादून में सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।
4. मुख्य कार्यकारी अधिकारी, उत्तराखण्ड कैम्पा को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।
5. मुख्य वन सरंक्षक, कुमाऊँ एवं गढ़वाल को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।
6. मुख्य वन संरक्षक वनाग्नि एवं आपदा प्रबन्धन, उत्तराखण्ड को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।
7. समस्त निदेशक/वन संरक्षक उत्तराखण्ड को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।
8. समस्त प्रभागीय वनाधिकारी/उप निदेशक, उत्तराखण्ड को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।

ह0/–
(विनोद कुमार)
प्रमुख वन संरक्षक (HoFF)
उत्तराखण्ड।

वनाग्नि सत्र 2022 हेतु वनाग्नि नियंत्रण/प्रबन्धन कार्यों हेतु विस्तृत दिशा निर्देश

1. **Forest Fire Risk Zonation and Mapping :-**

अ) वर्ष 2011 से 2021 तक Fire Incidences की Frequency एवं विभिन्न अन्य घटकों क्रमशः वन सस्य का प्रकार, वन सस्य का घनत्व, ऊचाँई, आस्पेक्ट, स्लोप, मार्गों से दूरी, बस्तियों से समीपता आदि को दृष्टिगत रखते हुए Forest Fire Risk Zonation Maps (वन बीट स्तर पर संवदेशनशीलता दर्शाते हुए) तैयार किये गये है, जिनको मुख्य वन सरंक्षक, वनाग्नि एवं आपदा प्रबन्धन, उत्तराखण्ड के द्वारा दिनांक 27.01.2022 को ई–मेल के माध्यम से भेजा गया है। मानचित्रों में दशार्यी की गयी बीटों की संवेदनशीलता के आधार पर वनाग्नि आधार–भूत संरचना (infrastructure), क्रू–स्टेशनों में कार्मिकों की तैनाती एवं रेंजों में बजट आवंटन की कार्यवाही सुनिश्चित की जाये।

ब) वनाग्नि नियंत्रण/प्रबन्धन हेतु गतिमान राज्य सैक्टर की योजनाओं, क्रेन्द्र पोषित योजना(फारेस्ट फायर प्रिवेन्शन एन्ड मैनेजमेन्ट स्कीम) एवं कैम्पा–एन0पी0वी0 के अन्तर्गत बजट के आवंटन की कार्यवाही Forest Fire Risk Zonation तथा उक्तानुसार की गयी मैपिंग के आधार पर की जाये।

स) राज्य स्तर/जिला स्तर/प्रभाग स्तर पर तैयार किये जा रहे फायर प्लान–2022 के निरूपण में भी Fire Risk Zones का उपयोग किया जाये।

2- **Forest Fire Detection and Alerts :-**

अ) भारतीय वन सर्वेक्षण (FSI) से प्रतिदिन प्राप्त होने वाले Fire Alerts को फारेस्ट फायर रिपोर्ट मैनेजमेन्ट सिस्टम (FFRMS) पोर्टल पर अपलोड करके प्रतिदिन सम्बन्धित प्रभागीय वनाधिकारियों को भेजने की कार्यवाही गतिमान है। FSI के फारेस्ट फायर अलर्ट सिस्टम से फील्ड स्तर पर प्रत्येक वन कार्मिक को जोड़ा जाना आवश्यक है। सभी प्रभागीय वनाधिकारी यह सुनिश्चित करें कि फील्ड स्तर पर प्रत्येक वन कार्मिक का नाम–लेखन(Subscription) इस सिस्टम में हो जाये तथा रेजों/सैक्शनों/बीटों में यदि कोई फील्ड कार्मिक बदल गये है तो वर्तमान फील्ड कार्मिकों का मोबाईल नम्बर नाम–लेखन(Subscription) में अपडेट कर लिया जाये।

ब) प्राप्त फायर अलर्ट के क्रम में तत्काल ग्राउण्ड ट्रूथिंग कराते हुए फीडबैक (मौके की स्थिति के अनुसार) मय geotagged फोटोग्राफ साक्ष्य उक्त पोर्टल पर दिया जाना आवश्यक है ताकि FSI को यह फीडबैक भेजा जा सके। विगत वर्षों में यह पाया गया है कि FSI से प्राप्त होने वाले फीडबैक को अपूर्ण रूप से वनाग्नि सत्र के पश्चात भेजा गया है, जो कि उचित प्रक्रिया नहीं है। इस क्रम में यह सुनिश्चित किया जाये कि सभी सम्बन्धित प्रभागीय वनाधिकारी वनाग्नि सत्र में प्रत्येक सप्ताह में प्राप्त होने वाले फायर अलर्ट को उसके अगले सप्ताह के दिन मंगलवार तक FFRMS पोर्टल पर अपलोड कराना सुनिश्चित करेंगे। मुख्य वन संरक्षक, वनाग्नि एवं आपदा प्रबन्धन द्वारा

ऐसे सभी प्राप्त फीडबैक को प्रत्येक सप्ताह के बुधवार को FSI को भेजना सुनिश्चित करेगें।

स) फीडबैक आनॅलाईन FFRMS के माध्यम से ही प्रेषित किये जायेगे। फील्ड से प्राप्त होने वाले फीडबैको का अनुश्रवण मुख्य वन संरक्षक, वनाग्नि एवं आपदा प्रबन्धन, उत्तराखण्ड के द्वारा किया जायेगा।

घ) आरक्षित वन क्षेत्रों से बाहर वनाग्नि घटनाओं की रिपोर्ट एवं फायर अलर्ट के फीडबैक में मौके की स्थिति के अनुसार सिविल सोयम/पंचायती वन/राजस्व भूमि/नाप भूमि का स्पष्ट उल्लेख में किया जाये।

3- **Assessment of losses due to Forest Fires :-**

वनों की अग्नि से क्षति होने पर वित्तीय हानि का आंकलन मुख्य वन संरक्षक, कार्ययोजना, उत्तराखण्ड के पत्रांक 638/27–2, दिनांक 22.01.2020 (प्रति संलग्न) को स्थाई आदेश के अनुसार निर्धारण करते हुए दैनिक रिपोर्ट में वित्तीय हानि की प्रविष्टि की जाए। चीड़ वनों में वनाग्नि से लीसा घाव एवं चीड़ वृक्ष भी प्रभावित होते हैं। अतः वित्तीय हानि के आंकलन में प्रभावित लीसाघाव/वृक्षों की क्षति होने की स्थिति में तदनुसार आंकलन करते हुए वनाग्नि रिपोर्ट में प्रविष्टि की जाए।

4- **Daily Reporting :-**

वनाग्नि नियंत्रण/प्रबन्धन हेतु की जा रही प्रत्येक कार्यवाही/गतिविधियों की सूचना रिपोर्ट दिनांक 15.02.2022 से दैनिक रूप से मुख्य वन संरक्षक, वनाग्नि एवं आपदा प्रबन्धन, उत्तराखण्ड को आवश्यक एवं अग्रेत्तर कार्यवाही हेतु प्रेषित की जाये।

5- **Establishment and functioning of Model Crew Stations :-**

इस कार्यालय के पंत्राक संख्या 1359/P.O. दिनांक 15.06.2021 द्वारा मॉडल क्रू–स्टेशन की स्थापना हेतु विस्तृत दिशा निर्देश दिये गये है। अतः इन निदेर्शो के अनुरूप मॉडल क्रू–स्टेशनों की स्थापना का कार्य उच्चगुणवता सुनिश्चित करते हुए प्राथमिकता के आधार पर किया जाये ताकि वर्तमान वनाग्नि सत्र में इनका उपयोग वनाग्नि नियंत्रण एवं अन्य विभागीय कार्यों हेतु किया जा सके।

उक्त के अतिरिक्त इस कार्यालय के पत्रांक सख्या ख–491/27–1 दिनांक 16.12.2021 द्वारा जारी निर्देशों का अनुपालन सुनिश्चित किया जाये।

ह0/–
(विनोद कुमार)
प्रमुख वन संरक्षक (HoFF),
उत्तराखण्ड।

Annexure-6

सु-2701(1)/1/2024-CCF FPFFDM-FOREST DEPT

कार्यालय मुख्य वन संरक्षक, वनाग्नि एवं आपदा प्रबन्धन, उत्तराखण्ड, देहरादून।

I/126130/2024

'चतुर्थ तल' 85, राजपुर रोड, Email :-uadalforestfire.uk@gmail.com Ph. No. 0135-2744539

सेवा में,

समस्त प्रभागीय वनाधिकारी/उप निदेशक,
उत्तराखण्ड।

विषयः— Improving usage of FSI's Forest Fire Alerts System के संबंध में।

महोदया/महोदय,

उपरोक्त विषयक सन्दर्भित पत्र के क्रम में अवगत कराना है कि विगत वर्षों की भाँति एफ.एस.आई. द्वारा 01 नवम्बर 2024 से सभी राज्यों को फायर अलर्ट उपलब्ध कराने की कार्यवाही प्रारम्भ कर दी गई है, जिसके क्रम में एफ0एस0आई0 से प्राप्त फायर अलर्टों को इस कार्यालय द्वारा फील्ड वेरीफिकेशन/फीडबैक हेतु Forest Fire Uttarakhand Mobile App एवं फॉरेस्ट फायर व्हाट्सएप ग्रुप में प्रभागीय वनाधिकारियों को भेजने का कार्य किया जायेगा।

अतः आपसे अनुरोध है कि सम्बन्धित प्रभागीय वनाधिकारियों द्वारा प्राप्त अलर्टों पर फील्ड वेरीफिकेशन/तत्काल कार्यवाही करते हुए फीडबैक Forest Fire Uttarakhand Mobile App के माध्यम से प्रेषित करना सुनिश्चित करे साथ ही एफ0एस0आई0 अलर्ट सिस्टम पर प्रभाग अन्तर्गत समस्त फील्ड कार्मिक, ग्राम प्रधान, महिला मंगल दल अध्यक्ष, युवा मंगल दल अध्यक्ष एवं ग्राम पंचायत सरपंच आदि को जोडना सुनिश्चित करे।

भवदीय,

Signed by
(निशांत वर्मा)
अपर मुख्य वन संरक्षक,
वनाग्नि एवं आपदा प्रबन्धन,
उत्तराखण्ड, देहरादून
Date: 04.11.2024 18:33:32

प्रतिलिपि :—

1. प्रमुख वन संरक्षक (HoFF), उत्तराखण्ड महोदय को सादर सूचनार्थ प्रेषित।
2. अपर प्रमुख वन संरक्षक, वन्यजीव, उत्तराखण्ड को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।
3. अपर प्रमुख वन संरक्षक/मुख्य वन संरक्षक, गढ़वाल एवं कुमाऊँ, उत्तराखण्ड को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।
4. समस्त वन संरक्षक/निदेशक, उत्तराखण्ड को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।
5. प्रभागीय वनाधिकारी, हरिद्वार वन प्रभाग, हरिद्वार को इस आशय से प्रेषित की उक्त मोबाइल ऐप अपडेट करने की कार्यवाही करने का कष्ट करें ताकि समस्त प्रभागीय वनाधिकारियों द्वारा FSI से प्राप्त हो रहे अलर्ट का फीडबैक ऐप के माध्यम से किया जा सके।

Annexure-7

कार्यालय प्रमुख वन संरक्षक (HoFF), उत्तराखण्ड।

'प्रथम तल' 85, राजपुर रोड़, Email :-pccfuk@gmail.com Ph. No. 0135-2746934,2741461, Fax-2741630, 2741462

पत्रांक 1123/P.O देहरादून, दिनांक : 07 मार्च, 2022।

कार्यालय आदेश

इस कार्यालय के पत्रांक ख–491/27–1 दिनांक 16.12.2021 एवं पत्रांक 1080/P.O दिनांक 05.02.2022 के क्रम में वनों की अग्नि सुरक्षा व्यवस्था सुनिश्चित करने एवं वनाग्नि नियंत्रण/कुशल प्रबन्धन हेतु आवश्यक कार्यवाही करने हेतु दिशा निर्देश जारी किये गये है।

वर्तमान वनाग्नि सत्र 2022 में वनाग्नि नियंत्रण/प्रबन्धन के लिए भारतीय सुदूर संवेदन संस्थान ~~(IIRS)~~ (IIRS) के साथ समन्वय स्थापित कर उनके द्वारा विकसित Technological Tools को वन विभाग, उत्तराखण्ड में क्रियान्वित करने हेतु दिनांक 28.02.2022 को वन मुख्यालय में बैठक आहूत की गयी। इस बैठक में यह निर्णय लिया गया कि वनाग्नि प्रबन्धन/नियंत्रण हेतु निम्नलिखित Technological Tools को सभी वन प्रभागों में तत्काल रूप से क्रियान्वित किया जाये।

1- Automated Forest Fire Risk Advisory
2- Forest Fire Reporting Mobile App
3- Forest Fire Burnt Area Estimation

कृपया वनाग्नि सत्र 2022 तथा आगामी सत्रों में भी उक्त Tools को फील्ड में क्रियान्वित करते हुए वनाग्नि नियंत्रण/प्रबन्धन की कार्यवाही (संलग्न दिशा निर्देशों का अनुपालन करते हुए) की जाए।

संलग्नक–उपरोक्तानुसार।

भवदीय,

(विनोद कुमार)
प्रमुख वन संरक्षक, (HoFF)
उत्तराखण्ड, देहरादून।

संख्या :–
प्रतिलिपि:– तद्दिनांकित।

1. प्रमुख वन संरक्षक, वन पंचायत, उत्तराखण्ड को सूचनार्थ प्रेषित।
2. प्रमुख वन सरंक्षक (वन्यजीव) उत्तराखण्ड को सूचनार्थ प्रेषित।
3. अपर प्रमुख वन संरक्षक, नियोजन एवं वित्तीय प्रबन्धन, उत्तराखण्ड, देहरादून में सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।
4. मुख्य कार्यकारी अधिकारी, उत्तराखण्ड कैम्पा को सूचनार्थ एंव आवश्यक कार्यवाही हेतु प्रेषित।
5. मुख्य वन संरक्षक, वनाग्नि एवं आपदा प्रबन्धन, उत्तराखण्ड को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।
6. मुख्य वन सरंक्षक, कुमाऊँ एवं गढ़वाल को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।
7. समस्त निदेशक/वन सरंक्षक, उत्तराखण्ड को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।
8. समस्त प्रभागीय वनाधिकारी/उप निदेशक, उत्तराखण्ड को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।

(विनोद कुमार)
प्रमुख वन संरक्षक, (HoFF)
उत्तराखण्ड, देहरादून।

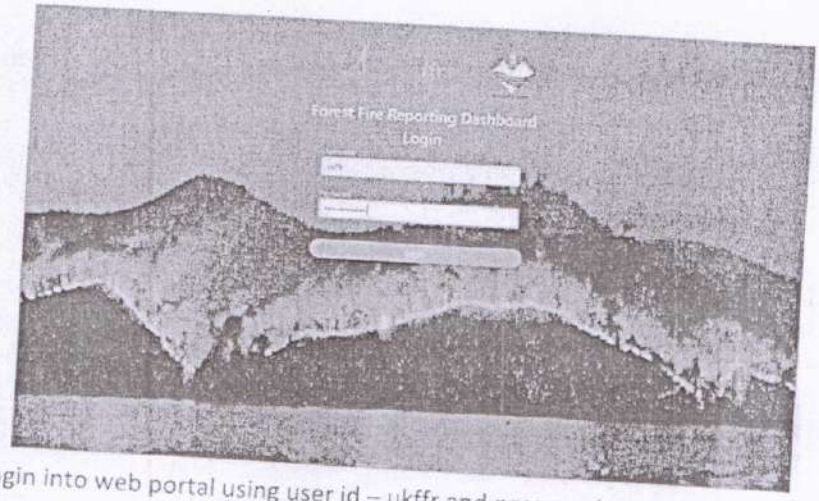
वनाग्नि सत्र 2022 हेतु वनाग्नि नियंत्रण/प्रबन्धन कार्यों हेतु दिशा निर्देश

1. **Forest Fire Reporting Mobile App.** – यह App IIRS द्वारा विकसित की गयी है, जिसमें प्रतिदिन हो रही वनाग्नि घटनाओं की जानकारी फील्ड स्तर पर वन कार्मिकों द्वारा मोबाईल पर Installed App में फीड की जा सकती है एवं प्रदेश/मण्डल/वृत्त/प्रभाग/रेंज स्तर पर हो रही वनाग्नि घटनाओं के सम्बन्ध में App के Dashboard पर जानकारी मिलेगी एवं इसका अनुश्रवण करते हुए Decision Support एवं वृत्त/मण्डल/मुख्यालय स्तर से निर्देश भी (SMS के माध्यम से) फील्ड अधिकारियों को मिल पायेगा। इसको मुख्यालय स्तर पर विकसित FFRMS से Integrate भी किया जा सकता है एवं साथ ही स्थानीय जन मानस के द्वारा किसी भी प्रकार की वनाग्नि घटना के सम्बन्ध में जानकारी प्रदान की जा सकती है। इसके अतिरिक्त Social Media पर प्राप्त जानकारी से भी इस App से Integrate किया जा सकता है।

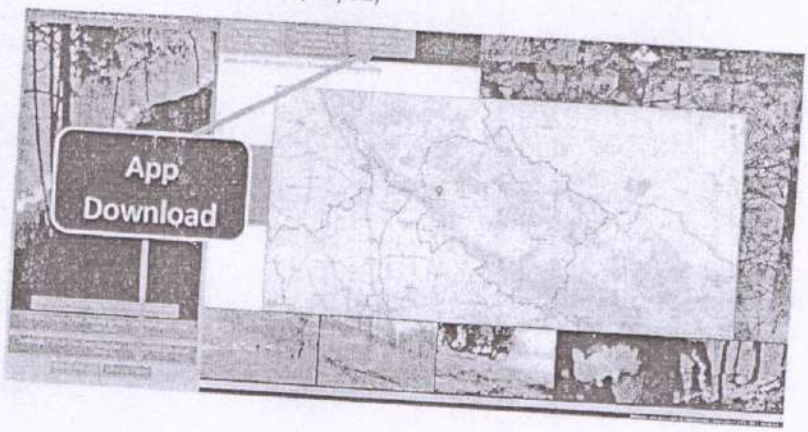
इस App को मोबाईल सेट में install करने की प्रक्रिया निम्नानुसार है :–

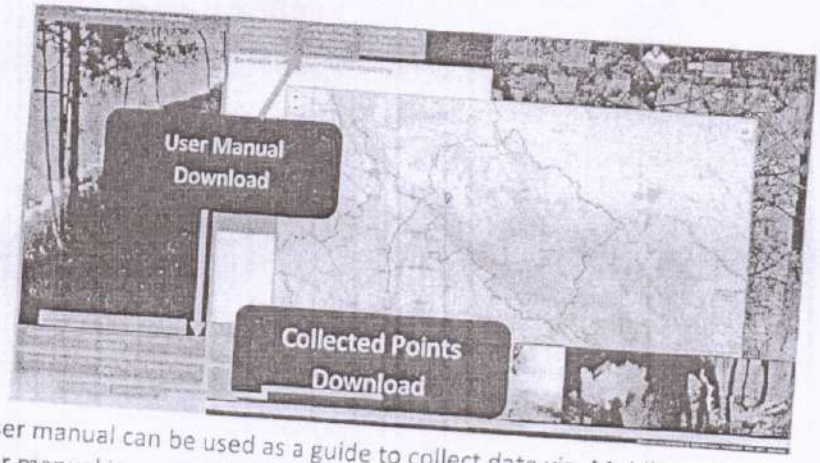
Guide to install Uttarakhand Forest Fire App

A. Open the url - https://ffr.iirs.gov.in/forestfire/ukffrlogin.php
Below login page will be displayed –



B. Login into web portal using user id – ukffr and password – Forestfire@123
C. Then below page will be displayed,





D. App user manual can be used as a guide to collect data via. Mobile application.
E. The user manual is annexed herewith.

2. **Automated Forest Fire Risk Advisory :-**
Forest Fire Risk Advisory मौसम के मापदंडों, वनस्पति के प्रकार, topographic variables एवं fuel load के अंतरिक्ष आधारित इनपुट्स का उपयोग करके तैयार किया जाता है। मॉडल आउटपुट एक सूचकांक है जिसे Forest Fire Risk Index के रूप में 5 वर्गों में विभाजित किया जाता है, जिसमें आग नहीं लगने से लेकर बहुत अधिक वनाग्नि की सम्भावना प्रदर्शित होती है। एसएमएस अलर्ट उन क्षेत्रों के लिए तैयार किए जाएगे जो केवल बहुत उच्च श्रेणी के अंतर्गत आते हैं और लगभग 3:00–3:30 बजे अपराह्न प्रतिदिन भेजे जाएगे और इसका एक सारांश मुख्य वन संरक्षक, वनाग्नि एवं आपदा प्रबन्धन, उत्तराखण्ड को SMS एवं email के माध्यम से भेजा जाएगा। सभी प्रभागीय वनाधिकारियों एवं रेंज अधिकारियों को SMS के माध्यम से प्रतिदिन Forest Fire Risk Advisory उनके प्रभाग/रेंज के अनुसार प्राप्त होगा, जिसके लिए वे सम्बन्धित रेंज/सैक्शन/बीट वन कार्मिकों को अलर्ट पर रखने के लिए आवश्यक कार्यवाही करेगें। Forest Fire Risk Advisory प्राप्त करने के लिए प्रभागीय वनाधिकारी एवं वन क्षेत्राधिकारियों के मोबाईल नम्बर IIRS को भेजे जा चुके है।

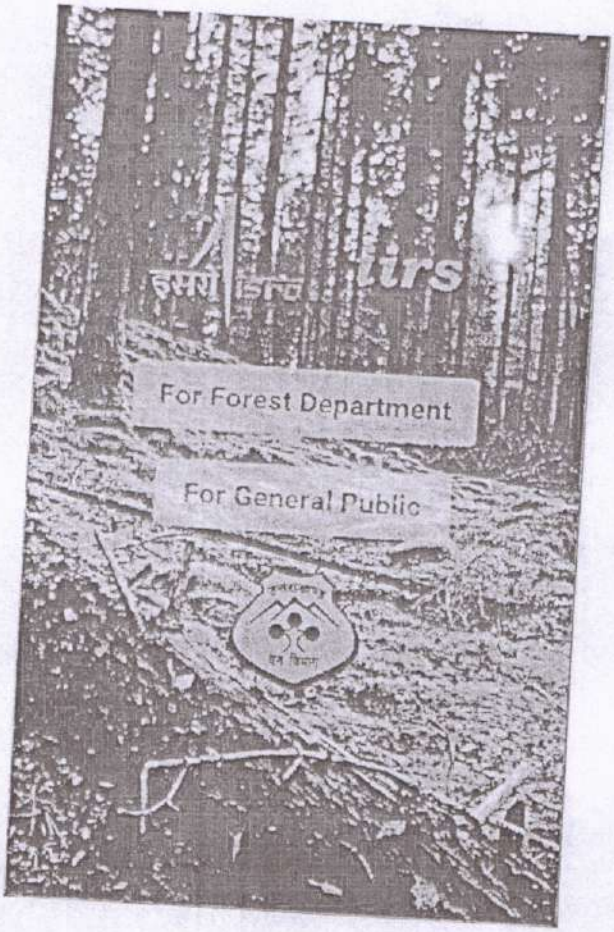
3. **Forest Fire Burnt Area Estimation** - IIRS द्वारा Forest Fire Burnt Area Severity Mapping (BASM) product Google Earth Engine के सहयोग से विकसित किया गया है। वर्तमान में Burnt Area के मौके पर आंकलन के लिए कोई पुख्ता व्यवस्था नहीं है। केवल अनुमान के रूप में ही Burnt Area का आंकलन किया जाता है। उक्त Tool के माध्यम से फील्ड आधिकारियों/रेंज अधिकारियों तक को प्रशिक्षण देने के पश्चात् स्थानीय स्तर पर इस Tool के माध्यम से प्रभावित क्षेत्रफल का आंकलन किया जा सकेगा, जो Technology Based होगा। विचार–विमर्श के दौरान यह निर्णय लिया गया कि IIRS द्वारा गढ़वाल, कुमाऊँ एवं वन्यजीव विंग के फील्ड अधिकारियों को माह मार्च, 2022 में Training of Trainers (TOT) प्रशिक्षण कार्यशालाऐं आयोजित की जाएगी।

4. प्रभागीय वनाधिकारियों द्वारा वनाग्नि नियंत्रण/रोकथाम हेतु स्थापित किये गये मास्टर कन्ट्रोल रूम, क्रू–स्टेशन, मॉडल क्रू–स्टेशन, वॉच टावर, वन विभाग की चौकियों आदि infrastructure के जी.पी.एस. कोर्डिनेटस प्राथमिकता के आधार पर मुख्य वन संरक्षक, वनाग्नि एवं आपदा प्रबन्धन, उत्तराखण्ड को उपलब्ध करा दिये जाये ताकि इनकों भी App के Dashboard पर Integrate करने की कार्यवाही की जा सके।
संलग्नक–उपरोक्तानुसार।

(विनोद कुमार)
प्रमुख वन संरक्षक, (HoFF)
उत्तराखण्ड, देहरादून।

FOREST FIRE REPORTING MOBILE APP

USER MANUAL FOR FOREST OFFICIALS



Developed by

इसरो isro

Geoinformatics Department
Indian Institute of Remote Sensing
Indian Space Research Organisation
Department of Space, Government of India
4-Kalidas Road, Dehradun
Uttarakhand - 248001

Training · Education · Research
50 iirs
Capacity Building

IMPORTANT NOTES

- It is mandatory to turn on the mobile GPS or location before proceeding else it will ask for permission.
- Camera Permission is also mandatory.
- Internet connectivity is not compulsorily required while using this mobile app. One can report the information of forest fire and upload it on server later on when he/she can have Internet/WiFi connectivity. If Internet connectivity is available at the moment the data will directly upload on server.

HOW TO USE

- While using this mobile app registration is not require. One can directly start reporting the incidence through it just entering his/her name as shown in first page of the application.

- It's a 5 step process to report the forest fire incidence.

User has to select option from home page on basis of whether he is Forest Official or a General Public. As shown in **Fig. 1(a)**, home page consist two options.

1. **For Forest Department** - If user is Forest official, he has to select this option which consist of advance level of data input.
2. **For General Public** - And if user is common public, he has to select this option which will take basic level inputs.

Step 1/5

1. **For Forest Department** -The Step 1 requires ***Name of the field staff, Staff Designation and his Mobile Number*** is need to be fill as shown in **Fig. 1(b) & (c)**. Rest of the things like ***Date & Time, Latitude, Longitude & Accuracy*** will be fetched automatically by the mobile device.
   - After filling all the fields, click on ***Next*** button.
   - One more option named ***Menu*** is available on front page of mobile app. It contains three tabs ***Home***, ***Saved Records*** and ***Dashboard***.
   - ***Home*** tab will allow you to be on 1st page of mobile app.
   - ***Saved Records*** contains the record of observations collected by field staff which can't be uploaded on the server due to the network issues or any technical issues. So one can select the observations from the list and upload it on server when internet connectivity will be available.
   - ***Dashboard*** tab will redirect to the main dashboard containing more detailed information with spatial visualization and analysis with respect to various satellite data.

Fig. 1 (a)

Fig. 1(b)

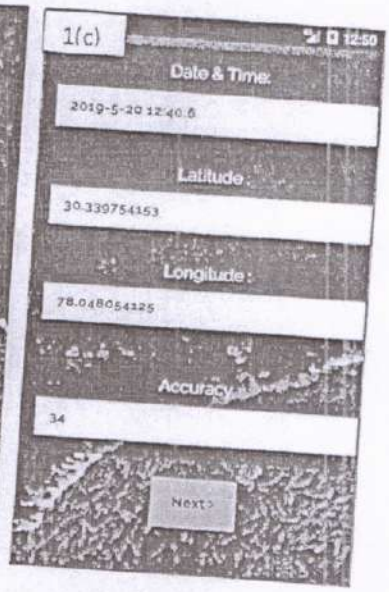


Fig. 1(c)

STEP 2/5

- This screen allows field professionals to capture the image of forest fire location through *Open Camera* or *Select from Gallery* button, as shown in fig. 2 (a).
- *Open Camera* button open the camera application of mobile device to capture the real time image.
- *Select from Gallery* button opens the native gallery of mobile device to select the image, stored locally.
- The preview will be available after capture or select image.
- Click on *Next* button.

STEP 3/5

- This step includes selection of *Name of Circle, Name of Division, Name of Range Name of Beat, Name of Block, and Compartment* in form of dropdown which makes easy for user to narrow down options as shown in **Fig. 3(a)**. In these options user need to select Circle from dropdown, based on the selection, available Divisions are available on next dropdown i.e Range then on basis of selection of Range, respective Beats are available on next dropdown

- Fore other fields such as *Type of Management Unit, Causes of Fire and Type of Fire* options are available as a dropdown selection box, as shown in **Fig. 3 (b).**

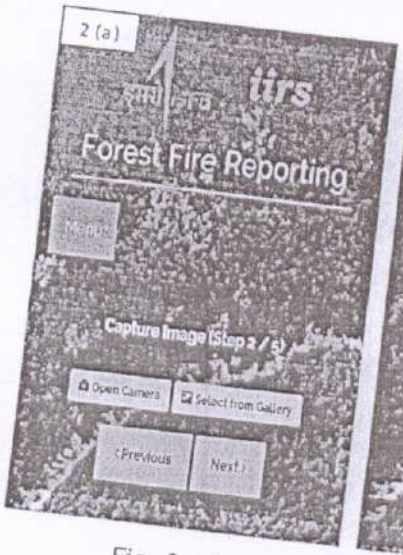


Fig. 2 (a)

Fig. 3(a)

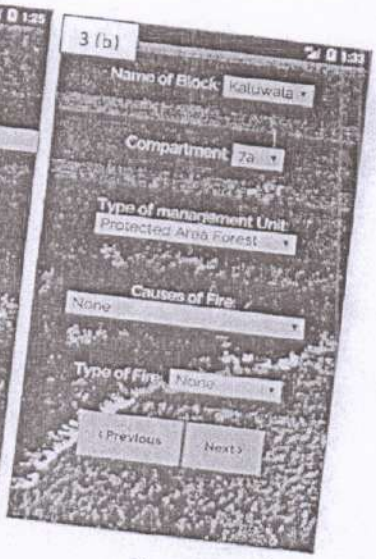


Fig. 3(b)

STEP 4/5

- This step contains dropdown fields on *Fire Location*, *Area Affected*, *Topography* and *Species Affected*, as shown in fig. 4 (a).

STEP 5/5

- This step contains dropdown fields on *Fuel/Litter Depth*, *Distance from road*, *Logistics*, *Weather Conditions* and *Type of Damage*, as shown in Fig. 4 (a).
- Final step includes "Submit" button which submits all recorded data to database.

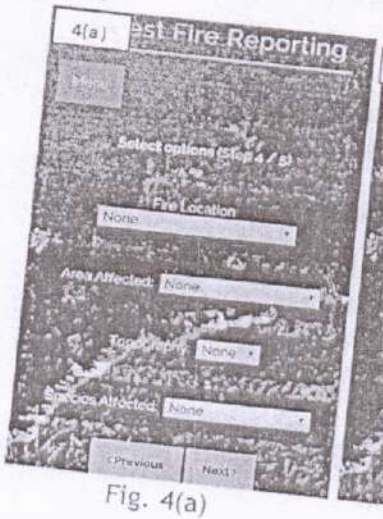


Fig. 4(a)

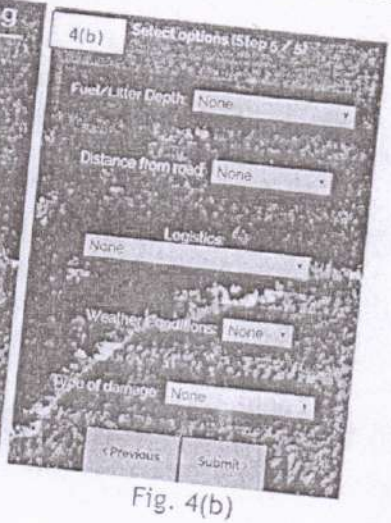


Fig. 4(b)

Annexure - 8

संख्या– 1812/X–2–2024–21(13)2022 ई–42348

प्रेषक,

रमेश कुमार सुधांशु,
प्रमुख सचिव,
उत्तराखण्ड शासन।

सेवा में,

वन महानिरीक्षक, (FPD),
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय,
भारत सरकार, नई दिल्ली।

वन अनुभाग–2

देहरादून दिनांक 08 अक्टूबर, 2024

विषयः– उत्तराखण्ड राज्य के वनाग्नि प्रबन्धन/नियंत्रण हेतु 05 वर्षीय कार्ययोजना (2024–25 से 2028–29) के संबंध में।

महोदय,

कृपया उपर्युक्त विषयक अवगत कराना है कि उत्तराखण्ड राज्य की विषम भौगोलिक संरचना के कारण वनाग्नि की दृष्टि से अत्यन्त ही संवेदनशील प्रदेश है। प्रत्येक वर्ष ग्रीष्मकाल में राज्य के विभिन्न क्षेत्रों (विशेषकर चीड़ बाहुल्य क्षेत्रों) में वनाग्नि दुर्घटनाओं के कारण राज्य की अपार जैव–विविधता एवं प्राकृतिक संसाधनों को बचाने हेतु अत्याधिक कठिनाईयों का सामना करना पड़ता है। प्रदेश में वनाग्नि घटनाओं की रोकथाम एवं प्रभावी नियंत्रण हेतु उत्तराखण्ड राज्य के वनाग्नि प्रबन्धन/नियंत्रण हेतु 05 वर्षीय कार्ययोजना (2024–25 से 2028–29) का प्रस्ताव तैयार किया गया है। इस कार्ययोजना में वनाग्नि नियंत्रण/प्रबन्धन सम्बन्धी सभी बिन्दुओं का समावेश करते हुए उत्तराखण्ड राज्य में वनाग्नि के कुशल प्रबन्धन हेतु रणनीति के तहत कार्यो को प्रस्तावित किया गया है। इसके अतिरिक्त वनाग्नि नियंत्रण/प्रबन्धन हेतु सामुदायिक सहभागिता को सुनिश्चित करने की कार्यवाही प्रस्तावित की गयी है, जो कि उत्तराखण्ड राज्य में वनाग्नि नियंत्रण/प्रबन्धन हेत अत्यन्त महत्वपूर्ण है।

2– अतः इस संबंध में प्रमुख वन संरक्षक (हॉफ), उत्तराखण्ड, देहरादून के पत्रांक 243/3–2(1) दिनांक 08.10.2024 द्वारा प्रेषित Uttarakhand Forerst Fire Mitigation project (वर्ष 2024–25 से 2028–29) संस्तुति सहित प्रेषित करते हुए मुझे यह कहने का निदेश हुआ है कि कृपया राज्यहित में प्रश्नगत प्रस्ताव पर स्वीकृति प्रदान करने का कष्ट करें।

संलग्न–यथोक्त

भवदीय,

08/10/2024

(रमेश कुमार सुधांशु)
प्रमुख सचिव

पत्रांक 243/3-2(1)/

प्रेषक,

प्रमुख वन संरक्षक (HoFF),
उत्तराखण्ड।

सेवा में,

प्रमुख सचिव,
वन एवं पर्यावरण, जलवायु परिवर्तन विभाग,
उत्तराखण्ड शासन।

देहरादून, दिनांक 08 अक्टूबर, 2024

विषय :– उत्तराखण्ड राज्य के वनाग्नि प्रबन्धन/नियंत्रण हेतु 5 वर्षीय कार्ययोजना (2024–25 से 2028–29) प्रेषित करने के सम्बन्ध में।

सन्दर्भ :– प्रमुख सचिव, वन, उत्तराखण्ड शासन के साथ दिनांक 26.09.2024 को हुई बैठक में निर्गत सुझावों के अनुपालन में।

महोदय,

उपरोक्त सन्दर्भित पत्र क्रम में अवगत कराना है कि दिनांक 26.09.2024 को हुई बैठक में प्रमुख सचिव, वन, उत्तराखण्ड शासन से हुयी वार्ता के अनुसार प्रदेश में वनाग्नि घटनाओं की रोकथाम एवं प्रभावी नियंत्रण 5 वर्षीय कार्ययोजना में आंशिक संशोधन कर Uttarakhand Forest Fire Mitigation Project (FY 2024-25 to 2028-29) का प्रस्ताव निम्नानुसार पुनः तैयार किया गया है :–

Serial	Year	Proposed Budget (In Lakh Rs.)
1	2024-25	7774.34
2	2025-26	10991.24
3	2026-27	7232.76
4	2027-28	7034.76
5	2028-29	7367.88
TOTAL		40400.98
		~40401 Lakhs

अतः अनुरोध है कि Uttarakhand Forest Fire Mitigation Project (FY 2024-25 to 2028-29) को अपने स्तर से अनुमोदित करते हुए वन महानिरीक्षक, (FPD), पर्यावरण, वन एवं जलवायु मंत्रालय, भारत सरकार को स्वीकृति हेतु प्रेषित करने का कष्ट करें।

भवदीय,

(डॉ0 धनन्जय मोहन) 05/10
प्रमुख वन संरक्षक (HoFF),
उत्तराखण्ड।

संख्या :– 243 /3-2(1) तद्दिनांकित।

प्रतिलिपि :– निम्नलिखित को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित :–

1. अपर प्रमुख वन संरक्षक, नियोजन एवं वित्तीय प्रबन्धन, उत्तराखण्ड।
2. अपर प्रमुख वन संरक्षक/मुख्य वन संरक्षक, वनाग्नि एवं आपदा प्रबन्धन, उत्तराखण्ड।

(डॉ0 धनन्जय मोहन)
प्रमुख वन संरक्षक (HoFF),
उत्तराखण्ड।

Dr. Dhananjai Mohan, IFS

Principal Chief Conservator of Forests (HoFF),
Uttarakhand
85–Rajpur Road, Dehradun.
Phone – 0135-2746934 (office)
e-mail : pccfuk@gmail.com

PREFACE

Forest Fires have emerged as a very potent threat to the natural wealth of Uttarakhand. They are unpredictable, devastating, natural catastrophes, with severe environmental consequences, causing severe environmental, infrastructure and asset losses, while also costing lives on rare occasions.

The Forest Department of Uttarakhand has been making several efforts through the past several decades, to effectively manage forest fires and to minimise the negative impacts of such fires. We have received valuable support in this from the MoEF&CC and other departments & organisations of the Govt. of India, as also various departments and agencies of the State Government of Uttarakhand. However, in recent years, also largely due to impacts of climate change, the spread of forest fires has only become more severe in nature.

The year 2024 has seen a sudden upsurge in forest fires across the State. Prolonged dry spells with poor winter precipitation have exacerbated the problem. The situation also attracted the direct intervention of the highest echelons of the Government and several agencies such as the Indian Air Force and the NDRF have lent their support to the firefighting efforts of the Forest Department.

The project draws heavily from existing policies and plans for Forest Fire mitigation including the National Action Plan on Forest Fire (NAPFF) and the Uttarakhand State Forest Fire Action Plan, it aims to go beyond these by taking a hard look on some local, site-specific issues and integrating them towards a solution. It also aims to bring in innovations and modern tools and technologies by engaging with some of the best research institutions in this field.

Most importantly, it looks at ways and means to hand over the leading role of Forest Fire mitigation to local community-based institutions viz Van Panchayat, Mahila Mangal dal, Yuva mangal dal, mahila SHGs etc and invest in their capacity building and livelihood opportunities. In effect, community and technology are the two cornerstones of this project.

This project has received valuable insight, guidance and support from several officers. Dr. Samir Sinha, Principal Chief Conservator of Forests, Wildlife/CWLW, Uttarakhand, Sri Nishant Verma, APCCF, Forest Fire & Disaster Management, Uttarakhand provided valuable inputs from time to time.

It is hoped that this document will receive approval and support from the appropriate levels of the Central and State Government so that the management of the forest fire in the State Government of Uttarakhand can be carried out efficiently and adequately. I am confident that its implementation will bring about a new focus and better and systematic resources towards meeting the challenge presented by the natural disaster of forest fire in the State of Uttarakhand.

(Dr. Dhananjai Mohan)

Nishant Verma,
IFS

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INTRODUCTION

Forests play an important role in the economy of Uttarakhand. Various industries are operating with timber, grass, fodder, fruits and flowers etc. from forests. Forests conserve soil by preventing soil erosion. Areas covered with Forests receive abundant rainfall due to which water is available in water sources throughout the year. But it is often seen that humans set fire to these Forests to get fodder for animals and grass sprouts. Apart from this, Forests catch fire due to throwing of burning bidi cigarettes and burning matchsticks in the Forests. If the fire is at controlled land, it is beneficial for biodiversity. But if this Fire takes the form of a forest fire, then this situation is harmful for plants, animals and humans. Due to this forest fire, the reproduction of trees and plants, natural habitats of Wild animals as well as human life are adversely affected, the temperature also increases.

To prevent forest fire, it is the utmost duty of all the public representatives/enlightened people of Uttarakhand along with the Forest department to take measures for the protection of Forests. So that along with strengthening the economic condition of Uttarakhand, the people of Uttarakhand can get healthy air, clean water and healthy life. Due to the high temperature in summer, the period from 15 February to 15 June or till the arrival of monsoon has been declared as Forest fire period. Most incidents of forest fire occur during summer. The Forest department, in the said period for forest fire control, along with preparing fire line maintenance, controlled burning Fire action plan, organizes seminars and rallies to train/make aware the general public in sensitive areas for forest fire prevention and forms village, block and district level Forest fire safety committees. At present, the Forest Department, in collaboration with various organizations, is trying to manufacture various

products from pine needle, so that the main factor of Forest fire in Uttarakhand, pine needle, can be reduced thereby controlling the Forest fire.

The Forest Department is thankful to all those officers/officials/fire watchers/various committees/enlightened people, who provide their cooperation in mitigating forest fire during the scorching heat without caring for their lives. Apart from this, the Forest Department also requests all the enlightened people and tourists of Uttarakhand for providing necessary cooperation to the officials of the Forest Department in prevention & mitigation of Forest Fire.

(Nishant Verma)

Executive Summary:

Background:

1. Uttarakhand is the 27th State of the Republic of India, which came into being on 9th November, 2000. Of the total geographical area of the State (53,483 sq.km), 46,035 sq.km (86.07%) is hilly.

2. Forests constitute one of the most important resources of Uttarakhand. The State has 71.05 % of its geographical area notified as forests while its forest cover is 24,303 sq. km., comprising 45.44 of its geographical area. (As per India's State of Forest Report 2021)

Forest Fires: The Problem at hand:

3. In recent times, the size, frequency, intensity, timing, number and, ecological impacts of Forest Fires have seen an upward trend across the globe. In Uttarakhand too, a large part of the forest cover of the State, especially that located in the lower and middle Himalayas is increasingly vulnerable to Forest Fires. This is also the region where Chir Pine, *Pinus roxburghii* is the dominant tree species. The thick mat of Pine needles dropped and deposited on the forest floor is a potent fuel load that contributes significantly towards enhancing the forest fire hazard.

4. Almost all forest fires in the Forest Fire Season 2023, the State had seen are of anthropomorphic origin. Every year large numbers of forest fires are increasingly becoming a major threat not only for the natural resources of the State but also for human lives and property.

In 2023 Fire season the State had seen a total of 773 incidents of forest fires, affecting a total of 933.55 hac of Forest area.

5. **Present Strategy**: The present strategy for fire mitigation includes a series of key steps as restoration and increasing of water regime in mostly affected area in monsoon or winter season. Pre-Forest Fire season Preparation. These include rotational burning/controlled burning of forest floor litter, clearing of fire lines, preparation of District Fire Management Plans, establishment of State Master Fire reporting & Control Room (MCR) and Divisional Master Control Room (MCR), establishment of crew stations, fire watch towers and strengthening wireless communication network. Monitoring and generation of pre alerts and real time daily alerts is done by use of Satellite Based Information in collaboration with National Remote Sensing Centre (NRSC), Hyderabad and on forest fire incidents are made available to field formations.

6. During the Fire Season, after detection of fire incidents, the near exact location is sent to the concerned Forest Division. The nearest fire crew/mobile team is then alerted and mobilized to the reported area. After putting off the fire, a preliminary report is forwarded by the local crew station to the Divisional MCR.

7. **Fund Availability:** The State receives funds for forest fire mitigation under various schemes as follows:

Amount in Lakh

Name of scheme	Financial Year	Proposed Amount	Release Amount	Expenditure Amount
Forest Fire Protection of Reserve Forests (State Sector)	2018-19	6020.00	1190.00	1118.01
Fire Protection of Civil, Soyam and Panchayati Forests (State Sector)		1960.00	333.00	325.80
Forest Fire Prevention & Management Scheme (Centrally Sponsored)		2456.63	612.16	560.99
CAMPA		1352.80	360.20	353.02
Total		**11789.43**	**2495.36**	**2357.82**
Forest Fire Protection of Reserve Forests (State Sector)	2019-20	3167.01	1278.00	1250.00
Fire Protection of Civil, Soyam and Panchayati Forests (State Sector)		584.50	450.50	435.73
Forest Fire Prevention & Management Scheme (Centrally Sponsored)		2258.66	533.36	468.48
CAMPA		1300.20	330.61	317.83
Total		**7310.37**	**2592.47**	**2471.04**
Forest Fire Protection of Reserve Forests (State Sector)	2020-21	2668.01	1420.00	1398.21
Fire Protection of Civil, Soyam and Panchayati Forests (State Sector)		860.00	537.50	515.18
Forest Fire Prevention & Management Scheme (Centrally Sponsored)		1300.84	131.75	122.79
CAMPA		825.57	824.91	377.42
Total		**5654.42**	**2914.16**	**2413.60**
Forest Fire Protection of Reserve Forests (State Sector)	2021-22	1458.26	1408.26	1377.57
Fire Protection of Civil, Soyam and Panchayati Forests (State Sector)		500.24	500.24	488.41
Forest Fire Prevention & Management Scheme (Centrally Sponsored) General		1152.57	198.61	134.43
Forest Fire Prevention & Management Scheme (Centrally Sponsored) SCSP		224.00	81.62	0.00
CAMPA		1230.00	720.07	625.00
Total		**4565.07**	**2909.33**	**2625.41**
Forest Fire Protection of Reserve Forests (State Sector)	2022-23	1777.50	1577.53	1521.05
Fire Protection of Civil, Soyam and Panchayati Forests (State Sector)		635.50	635.50	595.30
Forest Fire Prevention & Management Scheme (Centrally Sponsored)				
1- General Component		894.52	148.81	196.68
Last year unspent balance		0.00	64.20	
		894.52	**213.01**	**196.68**
2- SCSP		115.00	81.62	79.53
Last year unspent balance		0.00	0.00	
		115.00	**81.62**	**79.53**
Total (Gen.+SCSP)		**1009.52**	**294.63**	**276.21**
CAMPA		500.00	449.00	422.00
Grand Total		**3922.52**	**2956.66**	**2814.56**
Forest Fire Protection (State Sector)	2023-24	1575.04	1575.04	1350.39
		1575.04	**1575.04**	**1350.39**
Forest Fire Prevention & Management Scheme (Centrally Sponsored)				
1- General Component		1402.13	334.40	311.15
Last year unspent balance		0.00	16.14	
Total		**1402.13**	**350.54**	**311.15**
2- SCSP		172.73	41.13	41.79
Last year unspent balance		0.00	2.09	
Total		**172.73**	**43.22**	**41.79**
Total (Gen.+SCSP)		**1574.86**	**393.76**	**352.94**
CAMPA		1000.00	800.00	339.07
Grand Total		**4149.90**	**2768.80**	**2042.40**

Identification of Gaps

8. A Gap Analysis has brought to fore a series of issues that need urgent attention. Various strategies and actions have been assessed as to arrive at a listing of the things that we are doing right, the things we need to further scale up for more effectiveness, the things that we are not doing right, the things we need to change and the new things we need to take up.

9. Three key strategies- *Prevention, Preparedness and Perpetual Vigilance* are central to reducing the risks and consequent impacts of forest fire.

The Project

10. The Vision: An Uttarakhand where forest fires do not adversely affect biodiversity, people, assets and livelihoods.

11. The Mission: To work in synergy with local communities and other stakeholders to understand and effectively respond to the threats of forest fire across Uttarakhand.

12. Project Goals:

a. Reduction in number of forest fire incidents
b. Reduction in areas affected by forest fires
c. Reduction in any losses of human lives and assets due to forest fires
d. Reduced carbon emissions from forest fires across the State
e. Improved forest-based livelihood opportunities, both consumptive and non-consumptive, for local communities.
f. More Community Based Institutions which are able and equipped to play a direct and substantive role in the management of forest resources across the State and contribute to their protection, including from forest fire.
g. Increasing water regime and restoration of mostly fire affected area.

13. Project Implementation Area and Duration: This project will be implemented across the State of Uttarakhand over a period of 5 Years (2024-25 to 2028-29).

14. The cornerstones of this project can be described as "Community" and "Technology". Both are underutilised so far and can be potential game changers in our response to forest fires. The project will specifically focus sharply on both these segments

15. Themes for Strategic Interventions:

Based on the above, the project has identified a series of themes for strategic intervention, as below.

16. *Policy and Legal*

a. Implement directions of the Hon. NGT and the Hon. High Court of Uttarakhand with respect to Forest Fire Mitigation in Uttarakhand. Primary of these is the filling up of field level vacancies in the Forest Department on a priority.

b. Submit a proposal before the Hon. Supreme Court of India with support of the MoEF&CC, GoI for relaxation of the ban on green felling above 1000 meters MSL

c. Take up the matter for grant of Green Bonus as an acknowledgement of the ecosystem services performed by the forests of Uttarakhand with the Niti Aayog and other appropriate forums with the GoI.

17. *Administrative*

a. Filling up of Vacancies at the Field Level:

b. Timely and adequate Funding Support for fire season which is spread over two financial years.

c. Strengthening Synergies with various Departments/ Agencies and other Stakeholders

18. *Strengthening of Human Resources:*

a. Deploying of an additional 500 frontline teams of 10 persons each, a total of 5,000 Forest Fire Responders/watchers deployed across various locations across various crew stations the State.

b. Regular Training and Fire Fighting Equipment for Forest Fire Responders/Personal.

c. Special Incentives for Staff and Personnel engaged in Forest Fire Mitigation at the ground level including for meeting any cost towards medical expenses due to injuries while fighting fires and an ex-gratia scheme.

19. *Infrastructure development*

The project will build the technical and material capacities of the State Forest Department to mitigate forest fires across the State.

A series of actions have been identified towards this as below.

a) State Forest Fire Reporting & Control Room

b) Strengthening of Divisional Master Control Room & Establishment of Model Forest Crew Stations at least one in each range

c) Strengthening and upgradation of existing Forest Crew Stations

d) Strengthening of network of Fire Watchtowers across the State.

e) Strengthening of Van Panchayat/Gram Panchayats (Incentives)

f) Specialised Equipment for Fire Fighting like blowers, portable chain saws (for clearing hazardous trees etc.), backpacks (water mist), fire safety suits, shoes, etc.

g) Eco-Restoration (Plantation like fodder, fuel, etc.) and increasing of water regime in area.

h) Over the years, due to a variety of reasons, including uncertainty of availability of funds, cleaning of many forest fire lines, which serve as the primary breaks for any Forest Fires, have fallen into dis-use. They will be restored on a war footing.

i) Procurement of Mini Fire Tender (multi-utility) mounted vehicles up to range Level.

j) Strengthening of Wireless Network by adding repeaters, base stations, mobile stations and handsets as also batteries and solar charging panels and maintenance support for them.

k) Procurement of Satellite Phones for critical communication support in the interior and higher reaches of the State.

20. *Community Engagement*

This is the dominant theme and focus of this project. Various activities will be taken up to provide a platform for local communities to have a direct and substantive role in the management of forest resources across the State and contribute to their protection, including from forest fire. These include:

a) Preparation of Management Plans for at least 5000 Van Panchayats with special emphasis on Fire Protection and Livelihood Generation.

b) Preparation of Fire Protection Plans with clear roles and responsibilities for Community Based Institutions such as Van Panchayats, Eco Development Committees etc and entering into an MoU with them.

c) Incentive Based Schemes for Community Based Institutions such as Van Panchayats, BMCs, Eco Development Committees, Village Panchayat level Forest Fire

management committees etc based on their successful performance towards forest fire prevention and mitigation.

21. *Capacity Building:*

a. Training Programmes for fire protection and livelihood linkages will be implemented for different audience groups.

22. *Forest Utilisation:*

a) Encourage greater utilisation of Chir Pine needles and their removal from forest floor through community incentives by promoting programmes for electricity generation, biofuel briquette production use in boiler for furnaces, fibre production & handicraft items from Chir Pine needles.

23. *Technology*

a) Deployment of Drones for Forest Fire Detection and Support to Fire Crews

b) Cloud Seeding: The project will support a pilot project to explore options for Cloud Seeding in selected locations of Uttarakhand.

24. ***Research:***

a) Studies on quantification of ecological, economic and social impacts/losses due to forest fires.

b) Pilot project on use of chemical suppressants, foam, fire balls etc. for fire control.

c) Pilot Project on use of Artificial Intelligence (AI) tools and other cutting edge technologies for forest fire prediction and control

d) Modelling hotspots of major Invasive Alien Species (IAS) under Future Climate Scenario and its impact on Forest Fire regime in Uttarakhand Forests.

Objectives

1- Modelling hotspots of major Invasive Alien Species (IAS) under current and Future climate Scenario in Uttarakhand.
2- Comparative analysis of impact of major Invasive Alien Species (IAS) on Forest Fire regime in Uttarakhand.

e) Study on impact of Forest Fuel Characteristics on Fire Regime in Chir Pine Forests of Uttarakhand.

Objectives

1- Forest Fuel Characterization in Chir Pine Forests of Uttarakhand.
2- Understanding the role of Forest Fuel on Fire regime in Chir Pine Forests of Uttarakhand.

25. *Awareness:*

a. The project will launch a targeted awareness campaign, including use of social media tools to reach out to all stakeholders. The project will also reach out to the media at local, regional and national level to provide them with objective, verifiable information about forest fire hazards and the efforts to mitigate them.

26. Monitoring and Evaluation:

a. Monitoring and Evaluation(M&E) will be carried out by the CCF, Forest Fire & Disaster Management with the help of M&E wing of the Forest Department against project indicators and milestones agreed upon before initiation of this project.

b. In addition, Third Party Monitoring will be carried out by engaging a suitably qualified agency.

27. Implementation Modalities

a. Implementation Agency: The Uttarakhand Forest Department will be the primary Implementing Agency for this project. It will implement this project in collaboration and partnership with a diverse number of stakeholders, especially the local community for the research projects, the support of expert organisations viz. FSI, FRI & IIRS would be taken.

28. Budget

A total budget of Rs. 40400.98 Lakhs (404.01 Crores) is proposed over a period of five years.

Brief Details are as follows:

Serial	Year	Proposed Budget (In Lakh Rs.)
1	2024-25	7774.34
2	2025-26	10991.24
3	2026-27	7232.76
4	2027-28	7034.76
5	2028-29	7367.88
TOTAL		**40400.98**
		~40401 Lakhs

29. Successful implementation of this project will lead to a marked positive influence on lives of the people of Uttarakhand and the biodiversity wealth of the State by reducing forest fire threats

Chapter 1

Project Background

1.1 An Introduction to Uttarakhand

Uttarakhand is a young mountain State in northern India. It is the 27th State of the Republic of India, carved out of erstwhile Uttar Pradesh on 9th November, 2000. It has a geographical area of 53,483 sq. km., which represents only 1.69% of the land area of India. From the Tarai and Bhabhar regions to the, Shiwaliks, Lesser Himalayas to the Greater Himalayas and further beyond, the Trans Himalayas, the State exhibits a great altitudinal, physiographic and climatic diversity. This in turn contributes to a wide diversity of natural ecosystems and supported species.

The Himalayas are known as the water towers of Asia and the Third Pole due to the water stored in the glaciated mountains in the form of snow and ice. The melting of this snow and ice contributes to the flow of water in the rivers downstream. Himalayan glaciers are estimated to provide around 8.6 x 106 m^3 of water annually, feeding Asia's seven major rivers (Government of India, 2010). Uttarakhand is the cradle of two of the most important river systems of India, the Ganga and the Yamuna.

The State is represented by biogeographic zone 2B Western Himalaya and 7B Shiwaliks consisting of Kumaon and Garhwal regions. Of the total geographical area of the State (53,483 sq.km), 46,035 sq.km (86.07%) is hilly.

The State is also known as "Dev Bhoomi" or Abode of the Gods as four of Hinduism's holiest shrines, Kedarnath, Badrinath, Gangotri and Yamunotri are situated within the State. Hem kund Sahib, one of the revered holy sites of Sikhism is also located here. Piran Kaliyar is a *sufi* dargah near Haridwar which is one of the most revered across India.

These holy sites bring a steady stream of visitors from across the corners of the world. In addition, the scenic natural beauty of the State, its hill stations like

Nainital, Mussoorie, Lansdowne etc., view of Himalayan peaks, opportunities for trekking, mountaineering, rafting, wildlife viewing and in general relaxation in the lap of nature attract a large number of visitors. Tourism and allied activities are one of the major economic drivers of the State.

1.2 Some important indicators of Uttarakhand

are as follows:

1.1.1 Population (2011):

- Male:51.38 lakh
- Female: 49.48 lakh
- Total: 100.86 lakh
- Decennial Growth Rate: 18.81%
- Sex Ratio: 963 females/1000 males
- Density: 189 persons/sq.km

1.1.2 Literacy Rate:

- Male: 87.40%
- Female: 70.01%
- Total: 78.82%

1.2.3 Agriculture:

- Net Area Sown: 672530 hac
- Total No. of Holdings: 882000
- Area:747,000 hac
- No. of Marginal Holdings(<1.0 Hac) :659,000
- Area: 284,000 hac
- No. of Small Holdings (1.0-2.0 hac.): 149,000
- Area: 206,000 hac

- No. of Semi Medium and Semi Medium Holdings (2-10 hac.): 73,000
- Area: 234,000 hac
- No of large Holdings: (> 10 hac.): 1000

- Area: 23,000 hac

1.2.4 Horticulture:

- Area under fruits: 180468 hac.
- Area under vegetables: 70823 hac.
- Area under potato: 26449 hac.

1.2.5 Others

- Tourist Arrivals (2018): 368.52 lakh
- Gross State Domestic Product (18-19): 24589460 lakh Rs.
- Per Capita GSDP: Rs 220,257
- Per Capita Income: Rs. 198,738

1.3 The Forest Wealth of Uttarakhand:

1.3.1 Forests constitute one of the most widespread and major resources of Uttarakhand with very rich biodiversity. The State has 71.05 % of its geographical area notified as forests while its forest cover is 24,303 sq. km., comprising 45.44 of its geographical area. It is the only north Indian State to have more than 33% of its area under forest cover (FSI 2020).

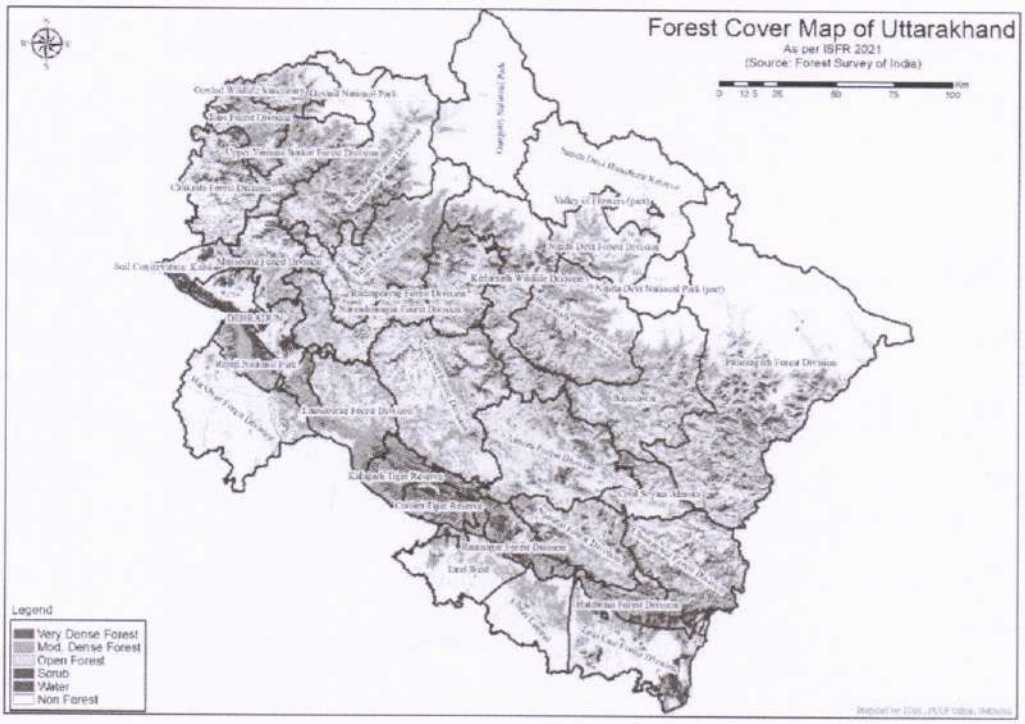
The State ranks sixth among all States in terms of percentage of recorded forest area. The State has varied terrain, major portion of which is mountainous with unique ecological diversity consisting of high alpine areas to the Sub-tropical and Tropical regions. The forest diversity of the State comprises of Tropical Moist Forest (500-1000m) which is Tarai and Bhabar belt of Sub Himalayan Tract, Sub-Tropical Pine Forest (1000-2000m), Himalayan Moist Temperate Forest (2000-3000m), Sub-Alpine Forests (3400-4000m) and Alpine Forests 4000-5000m). Physio-graphically, the State can be divided into three zones namely, the Himalaya, The Shivalik and the *Tarai* Region. The State has a temperate climate except in plain areas where the climate is tropical. The average annual rainfall is 1550 mm.

1.3.2 Floral Diversity:

Uttarakhand's forests are home to a diverse range of animal and plant species, including many which are listed as rare, endangered and threatened (RET). Over 4700 species under 1503 genera and 213 families of plants representing about 27.96% of the flowering plant diversity of India are reported from the State. The State has reported presence of 93 endemic species in its various vegetation types. Besides 487 species of ferns of which 15 species are endemic, 18 species of gymnosperms are also reported from the State. The State is also endowed with a large number of medicinal plants which include about 964 different species.

1.3.3 Faunal Diversity

Uttarakhand has documented the presence of 3748 species of fauna belonging to 1848 genera and 427 families of both vertebrates and invertebrates. There are 499 genera with 1060 vertebrates and 1349 genera with 2688 species of invertebrates found in the State. This enormous faunal diversity is represented by 93 species of Mammals (which is about 25 % of the known Indian species), 686 species of birds, including migratory winter visitors, 72 species of reptiles and about 439 species of butterflies. It is home to many iconic endemic and threatened species including tigers, Asian elephants, Monal pheasant, King Cobra to the elusive Snow Leopard.



1.3.4 Avifaunal Diversity

Truly a bird watcher's haven, Uttarakhand has reported 623 species of birds ten years ago (Mohan and Sinha 2003). Since then, the number has increased to 710 species of birds (Mohan and Sondhi 2017). This list includes many vagrants, seen once or twice, and 28 species that have been recorded in old literature, but whose presence in the State is doubtful. One such bird is the Himalayan Quail *Ophrysia supercilious* that is considered extinct. Out of these 710 species, five are in the Critically Endangered category of Bird Life International/IUCN: Baer's Pochard *Aythya baeri*, Slender-billed Vulture *Gyps tenuirostris*, White-rumped Vulture *G. bengalensis*, Red- headed Vulture *Aegypius calvus*, and Himalayan Quail. Besides, two species are Endangered, 18 species are Vulnerable and 20 species are Near Threatened. Cheer Pheasant *Catreuswallichii*, Western Tragopan *Tragopan melanocephalus*, White-throated Tit *Aegithalos niveogularis* and Himalayan Quail *Ophrysia superciliosa* are restricted range species of the State. (Rahmani et al 2016).

Nine species, which have been recorded in Uttarakhand, are endemic to the Western Himalaya: Western Tragopan *Tragopan melanocephalus*, Cheer Pheasant *Catreuswallichii*, Himalayan Quail *Ophrysia superciliosa*, White-throated Tit *Aegithalos niveogularis*, White-cheeked Tit *Aegithalos leucogenys*, West Himalayan Bush Warbler *Locustellakashmirensis*, Tytler's Warbler *Phylloscopus tytleri* (only in its breeding range), Spectacled Finch *Callacanthis burtoni* and Orange Bullfinch *Pyrrhula aurantiaca*.

Uttarakhand is also home to 18 Important Bird Areas that are important and priority sites for conservation.

Its forest resources play a significant role in the climate change mitigation for the region. They are also important sources of various goods and services including consumptive ones such as timber and non-timber forest products (NTFPs) as also non consumptive ones such as ecotourism. As such, they play a very significant role in the local economy of the State and the livelihoods of its people.

1.4 Community Institutions of Uttarakhand

1.4.1 Uttarakhand has a long history of community leadership in conservation of natural resources. It is the cradle of the Chipko movement, globally acknowledged as one of the finest people led movements for control and management of conservation of their natural resources.

Van Panchayats are a unique community institution of Uttarakhand. They are institutions legally acknowledged as "Forest Officer" and entrusted with the responsibility of management of Panchayati Van/Forest, which are notified in the State. In existence since 1930s, the Van Panchayats represent the earliest form of Joint Forestry Management (JFM) in modern India.

Details of Van Panchayats in Uttarakhand are as follows:

Serial	District	No. of Van Panchayats	Area in Hac.
1	Nainital	490	27150.89
2	Almora	2089	49650.72
3	Pithoragarh	1566	57082.3
4	Bageshwar	825	39348.28
5	Champawat	571	22531.84
6	Dehradun	195	8513.29
7	Tehri	1321	14735.91
8	Rudraprayag	505	19106.32
9	Uttarkashi	638	5766.08
10	Chamoli	852	169346.06
11	Pauri	2165	39412.59
TOTAL UTTARAKHAND		**11217**	**452644.28**

** SOURCE: PCCF Van Panchayat 2023.

These Panchayati Van or Village Forests in Uttarakhand represent over 14% of the total forest area and more than 10% of the total geographical area of the State.

Village Forest/Panchayati Van in Uttarakhand were formed Under the Kumaon Panchayat Forest Rules 1931, and incorporated under sub-section (2) of section 28 read with section 76 of the Indian Forest Act, 1927(Act no. XVI of 1927) for Management of Village Forests or Panchayats Van. Van Panchayats have the power of a Forest Officer as per rule 20 of Uttarakhand Panchayati Van Niyamawali, 2005, (Revised 2012).

As such the institution of Van Panchayats has a very significant and direct role in involving people on aspects of participatory management and development of forest resources in Uttarakhand.

1.4.2 Biodiversity Management Committees

Section 41 of The Biological Diversity Act 2002 provides as follows:

Constitution of Biodiversity Management Committee— (1) Every local body shall constitute a Biodiversity Management Committee within its area for the purpose of promoting conservation, sustainable use and documentation of biological diversity including preservation of habitats, conservation of land races, folk varieties and cultivars, domesticated stocks and breeds of animals and microorganisms and chronicling of knowledge relating to biological diversity.

The Act further mandates that the National Biodiversity Authority and the State Biodiversity Boards shall consult the Biodiversity Management Committees (BMCs) while taking any decision relating to the use of biological resources and knowledge associated with such resources occurring within the territorial jurisdiction of the Biodiversity Management Committee and that such committees may levy charges by way of collection fees from any person for accessing or collecting any biological resource for commercial purposes from areas falling within its territorial jurisdiction.

In Uttarakhand, the Uttarakhand Biodiversity Board has constituted a total of 7991 BMCs at all the local bodies of the State as below:

Serial	Local Bodies	Number
1	Nagar Nigam	08
2	Nagar Palika	41
3	Nagar Panchayat	43
4	District Panchayats	13
5	Block Panchayats	95
6	Gram Panchayats	7791

A BMC is a committee of 07 members having the mandatory representation of 02 women members, 01 member belonging to SC or ST community and 01 member from line department, who shall also act as the Secretary of the BMC. By an order dated 19.11.2013 the State government has appointed the DFOs of the territorial Divisions to act as the "Nodal Officer" of the BMCs within their territorial jurisdiction. The DFOs are also directed to nominate Forest Guards/Foresters/Deputy Rangers (01 for each BMC) as Secretary to the BMC.

The functions of the BMCs are:

i. Conservation and sustainable use of the biological resources.
ii. Eco-restoration of the local biodiversity.
iii. Preparation of 'Peoples Biodiversity Register' (PBR), as per the guidelines issued by the NBA.
iv. To ensure the implementation of benefit Sharing and not allow anyone to exploit biological resource from their area without the consent of SBB/BMC.
v. Management of Biological Heritage Sites (BHS), Sacred Groves and water bodies etc.
vi. Conservation of traditional varieties/breeds of economically important plants/animals.
vii. Protection of Traditional Knowledge recorded in the PBR.
viii. Biodiversity Education and awareness building.

With a clear legal mandate and spread across the entire State including rural, peri-urban and urban areas, BMCs have a crucial role in achieving success in biodiversity conservation initiatives across the State.

1.4.3 Other institutions

Some of the other institutions in Uttarakhand engaged in conservation of natural resources include Mahila Mangal Dal, Yuvak Mangal Dals and Eco Development Committees.

A total of 5629 Mahila Mangal Dal and 5220 Yuvak Mangal Dal are actively working in Uttarakhand. (Planning Department, GoUK, 2019)

1.4.4 Village Panchayat level Forest Fire management committees

As an innovative initiative in the Forest Fire season 2022, the Village Panchayat level Forest Fire management committees are being constituted in various forest divisions of the State of Uttarakhand for making them responsible for Forest Fire prevention and mitigation in the forest area close to the Village panchayat and providing incentive for the same.

Chapter 2

Forest Fires: An Overview

2.1 Background : Fires, both natural and human-caused, have played a critical, and persistent, role in shaping our environment. It is estimated that almost a third of the global landmass experiences recurrent fire activity, averaging ~4.5 Million Km^2 area burned yearly, which is larger in size than India. Although the global annual area burned has been decreasing for several years, the occurrence of extreme wildfire events with catastrophic consequences has been increasing.

2.2 Global Scenario :

2.2.1 Amongst various other challenges to conservation of natural resources, forest fires constitute a very significant and potent one. Forest fires are one of the most unpredictable, devastating, natural catastrophes, with severe environmental consequences, causing environmental, infrastructure and asset losses, while also costing lives.

Forest fires affect large swathes of the globe on an annual basis. Various regions across the globe continue to face the hazards of large forest fires. Some of the major forest fires across the globe are listed as below:

i. The Chinchaga Fire, Canada 1950: This started in British Columbia, Canada, on 1 June 1950 and ended five months later on 31 October in Alberta; in that time, it burned approximately 1.2 million hectares of boreal forest.

ii. China and USSR-1987: The Black Dragon fire that originated in the forests of the Greater Khingan Range, a mountain range in north-eastern China, and spread into the Soviet Union between 6 May and 2 June 1987 burned over 2.5 million acres of Pine Forest. It reportedly killed more than 200 people, injured more than 250 and left tens of thousands displaced.

iii. Siberia, Russia-2003: Across Siberia's Taiga forests, on one day in June 2003 satellites recorded 157 fires burning over 10.8 million hectares of land. The smoke cloud from the fires darkened the skies 4,800 km away in Japan and ash from the blazes fell in Seattle, Washington.

iv. Wallow Fire – USA, 2011: The largest wildfire in Arizona's history, this burned through over half a million acres of land, costing $72 million dollars to extinguish, and a further $37 million to clean up and rebuild after the damage. More than 60 homes, businesses, and other structures were lost, and 6,000 people had to be evacuated. Difficulties in getting firefighting equipment, such as bulldozers and chainsaws, over the rough terrain allowed the blaze to burn hot and fast, throwing plumes of smoke 30,000 feet into the air. When the wind changed, it forced the smoke back down, feeding the fire like an enormous bellow.

v. Camp Fire, California, USA-2018: The Camp Fire reported on November 8 2018 in Butte County, California, USA fire grew rapidly and became the deadliest and more destructive wildfire in California history. It burned over 61,334 hac, destroyed nearly 19,000 homes, killed at least 85 people and could only be contained on November 25.

vi. Australia-2020: A pair of massive bushfires in south-eastern Australia has merged into a "megafire" engulfing some 595,697 hac., - a single blaze more than three times as large as any known fire in California. The merged fire, which straddles the country's most populous States of New South Wales and Victoria, is just one of some 135 bushfires in Australia's southeast that have claimed the lives of at least 26 people, killed more than a billion animals and damaged or destroyed nearly 3,000 homes.

vii. Over 2019-2020, Australia experienced its worst fire season on record in its history. More than 15,000 fires occurred across all States, resulting in a combined impact area of up to 19 million hectares In eastern Australia, around 12.6 million hectares containing primarily forest and woodland were impacted by these forest fires. (WWF 2020).

It is thus evident that forest fires have emerged as a very significant challenge globally. Forest Fire regimes across the globe vary greatly in terms of the size,

frequency, intensity, timing, number of fires, ignition pattern, ecological effects, and behaviour and thus need careful analyses.

2.2.2 On a global level, some of the key issues identified for forest fire management and mitigation are as below.

1.1.1.1. Climate change is leading to longer, hotter, and drier fire seasons, which in combination with other environmental changes linked to population growth and unsustainable land-use practices, is contributing to extreme wildfire events that exceed existing fire management capacities. This 'new reality' demands new approaches to fire governance.

1.1.1.2. Fire is an inherent feature of the Earth system. While many ecosystems across the globe depend on fire for their long-term survival, changes in global fire activity in terms of location, intensity, severity, and frequency will likely have immense costs to biodiversity, ecosystem services, human well-being and livelihoods, and consequently national economies. Thus, greater investment in social, economic, and environmental monitoring is therefore urgent.

1.1.1.3. Integrated fire risk reduction is key to adapting to ongoing changes in global fire risk. This demands approaches based on a clear understanding of awareness, preparedness, fire surveillance, early-warning systems, adaptive suppression strategies, fire-regime restoration, landscape-scale fuel management, changes of many land use practices, and active restoration of landscapes.

1.1.1.4. Engagement with local communities and other stakeholders in a manner that is respectful of local cultures and identities as also economically productive is crucial to restore and maintain landscapes and strengthen their fire-resilience.

1.1.1.5. People have historically fire as a land-management tool, thereby shaping many modern and long-standing landscapes around the world. Traditional fire knowledge can be an important key to adapting to local changes in fire activity, using known techniques for the reduction of dangerous

their villages and pasture lands to get rid of the dry leaf litter, particularly the slippery Chir Pine needles, and to ensure fresh grass growth for their livestock. In a normal year, sufficient ground moisture and intermittent showers through the winter and spring ensure that such fires usually do not go out of control but in the event that the area is experiencing a dry spell, many of these fires can go out of control.

2.4.5 Fires also sometimes escape from agricultural fields where burning of agricultural biomass residue is a common practice not only in Uttarakhand but the entire country. Near urban and semi-urban centres, burning of garbage which is often dumped close to forest areas is a regular practice and sometimes fires spread into forests from such dumps which keep smouldering for hours, often days.

2.4.6 The nature of the hilly mountainous terrain of Uttarakhand makes it very difficult to control fires. Reaching the site of forest fires which are often away from road-head is difficult. Many a times, there are no foot tracks/bridle paths to reach such sites. While with the help of satellite based technology, detection of fires is now reasonably fast but response time to reach the site can be hampered by lack of appropriate and adequate infrastructure. Most of the forest ranges have at best one vehicle to move the firefighting crew to the site of fires but in peak fire season, there are often simultaneous multiple fires in each range making it necessary to have multiple vehicles for movement of fire-fighting crews.

2.4.7 Climate change is projected to dramatically increase forest fire activity and its ecological and socioeconomic consequences. As global temperatures rise, periods with elevated fire weather are expected to increase in frequency and duration, which would be expected to increase the number and size of fires. Erratic weather conditions, which in the case of Uttarakhand include prolonged dry spells and higher than usual temperature regimes, spread of precipitation distorted, with events such as cloudburst depositing bulk of the annual rainfall received over a short window of time and erratic snowfall patterns (Thus, 21-23 April 2021 has seen some very heavy snowfall across the higher reaches of the State, reportedly breaking 30 year records!) influence

such fire patterns. Statistical forecasts or simulations of future fire activity often account for direct climatic effects only, neglecting other controls of importance, such as biotic feedbacks.

2.4.8 The management and control of forests in Uttarakhand is not just vested with the Forest Department but spreads across various agencies including the Revenue Department, Van Panchayats, Cantonment Boards, Municipalities etc. Many of these may or may not have adequate planning and resources to deal with forest fires. However, in the public perception, any and every forest fire is immediately associated with the Forest Department.

Building synergies for forest fire mitigation, especially for those fires that originate outside areas under direct management of the Forest Department continues to be a challenge.

Fire Sensitive Zone Mapping Methodology

Sensitive map of Uttarakhand was prepared division wise. Forest fire incidences of past 10 years reported by FSI were taken. These incidences then overlaid on beat boundary. Based on the frequency of fire incidences in beat, the entire beats of a division were grouped in to 3 classes viz., Low Sensitive, Moderately Sensitive, Highly Sensitive.

e.g.

In a Division lowest number of fire incidence N(Min) and highest N(Max) so the numbers are divided in such a way:

N(Max)-N(Min)/3=X

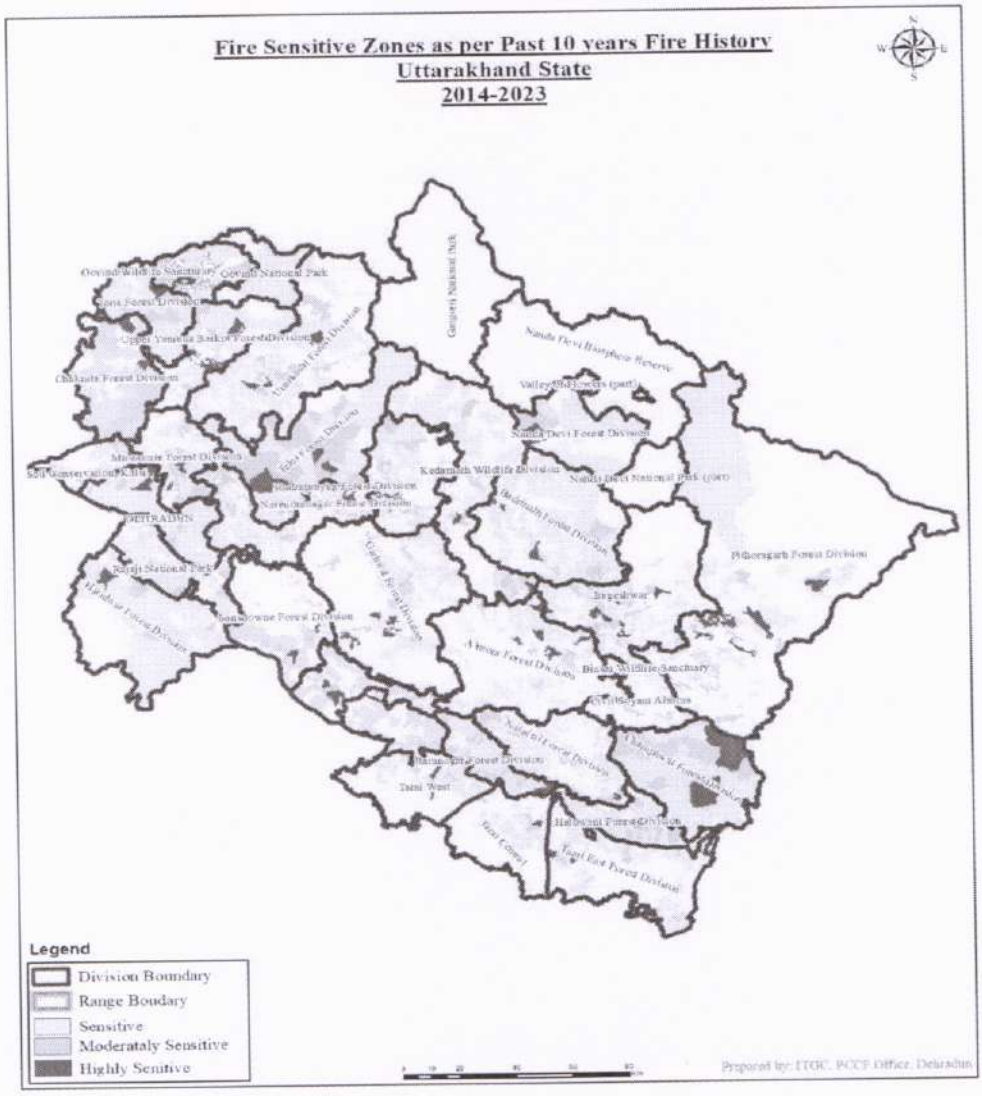
Therefore beats having fire incidences

N(Min) to (N(Min)+ X) = Low sensitive

(N(Min)+ X) to (N(Min)+ 2X) = Moderately sensitive

(N(Min)+ 2X) to (N(Min)+ 3X) = Highly sensitive

*Different divisions may have different class values.


Fire Sensitive Zones as per Past 10 years Fire History
Uttarakhand State
2014-2023
Legend
Division Boundary
Range Boudary
Sensitive
Moderataly Sensitive
Highly Senitive
Prepared by: ITDC, PCCF Office, Dehradun

2.5 Impacts of Forest Fire:

2.6.1 The most immediate and direct impact of any forest fire is the loss of biodiversity. However, this needs to be understood in some detail. Generally every forest fire is described as burning the forest to ashes. Given that Uttarakhand faces mostly ground fires, this is almost always not the case. Most trees, unless they are dead or diseased, can withstand exposure to fires for some periods and do not suffer any visible long term damage. In fact, most areas which have suffered forest fires, when seen after the rainy season would not exhibit any discernible damage to tree cover. However, prolonged exposure to high temperatures and fire can have severe impacts on various elements of biodiversity.

The Forest Department continues to emphasise mainly on the loss to timber and tree cover and this is reflected in the present system where losses are evaluated primarily on the basis of damage/loss of timber value. In today's context, this clearly needs course correction.

At the ground level, creeping fires destroy herbs, shrubs and bushes, causing extensive damage to ground flora. Other elements of biodiversity including wild animals, ground dwelling and nesting birds, reptiles, butterflies and other insect forms etc. suffer extensive damage as they may not have the opportunity to move away well in time. Such losses are rarely captured in documentation of forest fires.

Damage to habitats, even temporary may force some species to peripheral areas bringing them in close proximity to human habitations, further exacerbating issues of human-wildlife conflict and exposing them to poaching threats.

Forest fires, especially when they occur repeatedly can impact the composition of vegetation in forests as well as promote the invasion of species such as *Lantana camara* and *Eupatorium odoratum*. It is well documented across the globe that Indigenous communities and rural communities living at the edge of forests have used fire to alter vegetation characteristics for thousands of years.

While the direct impacts of forest fires are generally better understood and documented, there are also several other impacts, which though not easily

discernible, have tremendous significance. Raising of ground temperature can impact soil processes and properties including micronutrients with long ranging impacts on soil productivity and forest regeneration.

Repeated forest fires can adversely impact the reliance of the forest community and expose it to other attacks such as pests and disease.

2.6.2 Despite their wide spread nature, magnitude and frequency, there is surprisingly little known about the full social costs of these fires. In the short term, while there is clear evidence on health damages of air pollution, little is known about the long-term and intergenerational costs of early-life exposure to air pollution. Air pollution is also associated with increased incidences of upper respiratory tract infections, acute conjunctivitis, lung disease, asthma, bronchitis, emphysema, and pneumonia, among other ailments. Severe deteriorations in air quality as a result of these fires can thus contribute towards serious health problems, especially to the elderly and those with respiratory issues.

This is especially of great significance in the present day world scenario where COVID-19 is causing severe illness and death due to respiratory tract infections. Quantifying the impact of air pollution on health outcomes is challenging because such increased pollution levels are random, often for a short span of time and their impact may often be amplified due to other pre-existing comorbidities.

Forest fires are also visually very potent and the images of forests swathed in fires playing endlessly on print, electronic and social media deter potential visitors. Visuals of "hills on fire" can be disturbing. In Uttarakhand, where tourism is one of the most important economic drivers for large sections of society, this can lead to loss of tourist traffic and consequently income.

More targeted research is needed to better understand and quantify these impacts of forest fires.

2.6.3 The link between forest fires and climate change has been underlined by several studies, which identify such forest fires as arguably the most important disturbance agent in terrestrial ecosystems at a global scale, releasing every year significant amounts of carbon to the atmosphere.

2.6.4 **The Positive Impact of Forest Fires:** In all fairness, while the negative impacts of forest fires are often amplified, one must not lose sight of the fact

that fires are an important management tool in forest management. Fire is a natural part and plays a key regulating role in many environments. For instance, fire clears the dead litter on forest floors which allows important nutrients to return to the soil, creating favourable conditions for several animals and plants.

Fire plays an important role in the maintenance and alteration of forest stand composition, regeneration of seedlings within certain dominant forest types. In natural forests, the annual forest fires scorch the seeds of several tree species and facilitate germination by removing a portion of the seed coat. Earlier management practices across several parts of India placed emphasis on total exclusion of fire from the forest. Two important consequences of this immediately followed. Firstly, the lack of fire lead to the accumulation of fuels within forests, raising susceptibility to larger fire accidents and secondly, the regeneration of certain important species especially Sal *(Shorea robusta)* and teak *(Tectona grandis)* was adversely impacted. Thus, provisions for early burning of the forests found acceptance as the general practice and complete protection was practiced only for certain sites with special ecological attributes. It is thus that all forestry management manuals describe forest fires as "Good Slave but a Bad Master". In effect, the real challenge is not fire in a forest but a forest fire that is lighted by accident or deliberate design and subsequently burns uncontrollably.

2.7 Present Strategy For Mitigation of Forest Fires in Uttarakhand

The present strategy for wild fire mitigation in Uttarakhand is briefly as follows:

2.7.1 Pre-Fire Season Activities:

2.7.1.1 Rotational Burning/Controlled Burning of Forest Floor Litter – Carried out during winter season, as per the prescription of the Working Plans/Management Plans, to reduce the litter load.

2.7.1.2 Clearing of Fire - Lines In the Forests as per the Management Plans/Working Plans.

2.7.1.3 Approval of District Fire Management Plan - Each district prepares a comprehensive fire management plan that has to be approved by a district level committee, headed by District Magistrate well before the commencement of fire season (15th Feb to 15th June).

2.7.1.4 Awareness Programmes - Training/Workshop, Rallies, Street plays, meetings of Village/Block/District Level Fire Protection Committees, puppet shows, pad- yatras, fire-protection week, sensitization through local TV channels, use of multimedia etc. and distribution of publicity material viz. pamphlets, hand bills, banners,

2.7.1.5 Establishment of State Master Forest Fire Reporting Control Room (MCR) - A State Master Control Room (MCR) is established at the Forest Department HQ. It serves as a nodal forest fire information centre, and is the Command and Control Room for all forest fire mitigation efforts across the State. It is directly under control of a senior officer of the State Forest Department.

2.7.1.6 Establishment of Master Control Room (MCR) - A Master Control Room (MCR) is a nodal forest fire information centre, and is located in each Forest Division Headquarter. The MCR are provided with Wireless Communication Network and are equipped with forest fire danger rating system to forecast the chances of forest fire in any area and put more attention where there are more chances of fire. The MCR communicates with all the other Range Control Rooms and the Headquarters, and keeps a stock of the situation. As soon as any incident of fire is detected, the MCR relays the information to the concerned Range Office. The Range Office in turn relays the message to the firefighting crew located nearest to the area of incident, which moves to the area to combats fire.

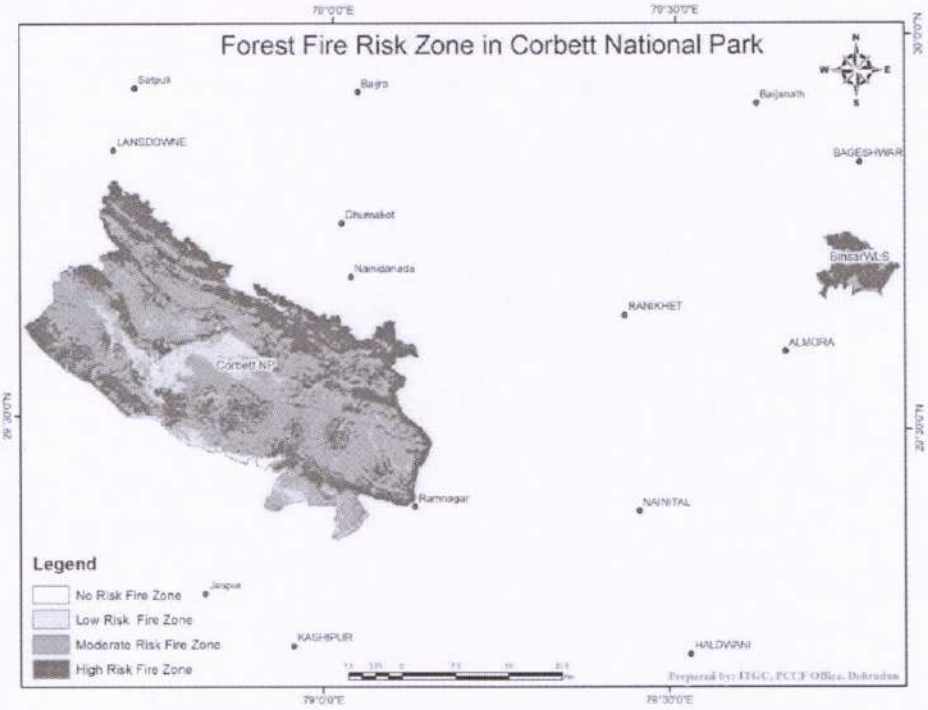
2.7.1.7 Establishment of Crew Stations - A Crew Station has a deployment of 4-5 Fire Watchers equipped with firefighting tools and wireless communication network. They are the ones who respond to each fire incident and are responsible for the control of each such incident.

2.7.1.8 Watch Towers - Each watch tower serves as a view point that offers a large section of forest to be monitored for various activities. During fire season, fire watchers are deployed on the watch towers to report any incident of fire of smoke from the forest. Upon the receipt of such report, the information is passed on to the Range Office and MCR which in turn directs the nearest Fire Fighting Crew to mobilize manpower and resources to the site of fire to combat it.

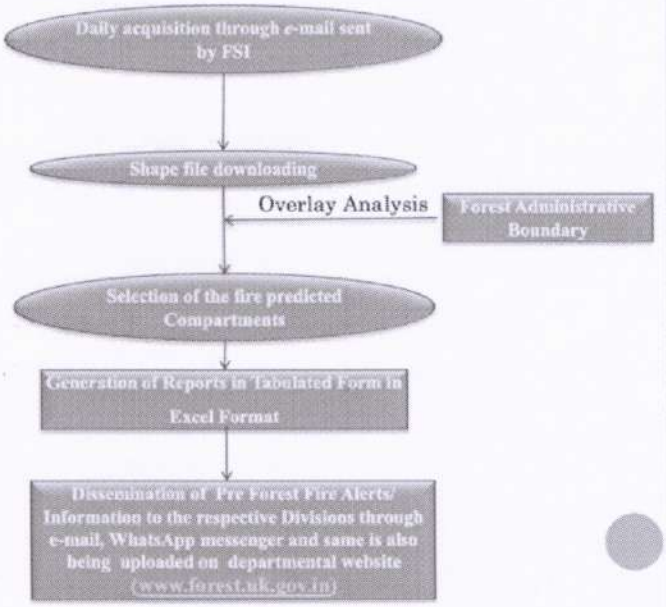
2.7.1.9 Wireless Communication Network- The Divisional Headquarter, MCRs, Range Offices, crew stations and field staff are equipped with wireless communication devices for effective real time communication.

2.7.1.10 Satellite Based Information System- The Information Technology & Geo informatics Centre (ITGC) of Uttarakhand Forest Department (UKFD) is equipped to receive, analyse, and share information related to forest fire incidents from satellite data. A map of fire most sensitive areas has also been developed. With the help of Forest Survey of India (FSI), Dehradun pre fire alerts are also provided to respective divisions. Daily near Real-Time Day & Night TERRA/AQUA MODIS and SNPP VIIRS based monitoring of active forest fire points/threats is also carried out with the help of Uttarakhand BHUVAN portal that is developed in collaboration with National Remote Sensing Centre (NRSC), Hyderabad. The NRSC has also initiated a refine resolution for fire monitoring using, 750m and 375m for "Suomi National Pollar- Orbiting Partnership (SNPP), Visible Infrared. Imaging Radiometer Suite (VIIRS)" satellite data, over Uttarakhand Forest Bhuvan Portal. Daily fire alerts received from national Aeronautics Space Administration, Fire Information for Resource Management System (NASA FIRMS) and FSI through email are acquired and forwarded to forest officials in the field through Bulk SMS, Email and departmental website, so that the necessary management actions can be ensured timely.

FOREST FIRE RISK ZONATION OF CORBETT TIGER RESERVE



Methodology of Processing of Pre Fire Alerts



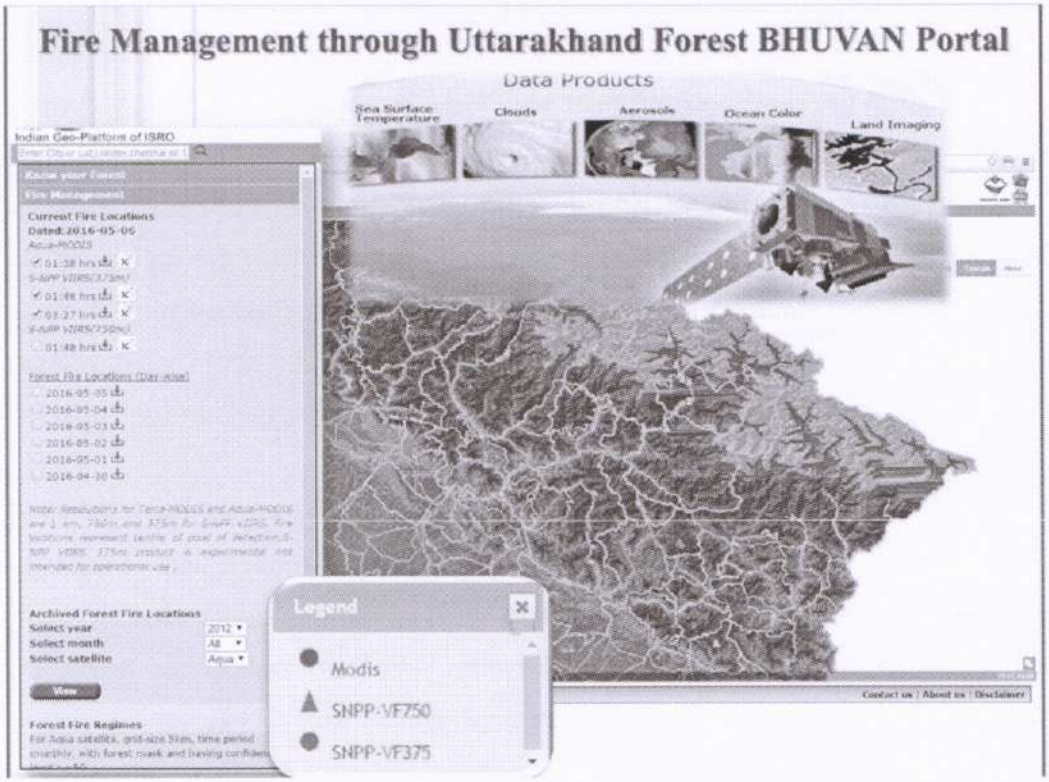
2.7.11 Efficient Fire Fighting Tools- The Forest Research Institute had designed and developed efficient firefighting tools for use in forest areas. Such tools including Fire-Rakes, brush hooks, Macleod, Pulaski, Crowbars (*sabbal*), water bottles, torches, helmet, dresses, as also wireless sets, safety whistles, first-aid boxes, hygrometers, thermometers etc. are procured by the UKFD and made available to the fire-fighting personnel.

2.7.2 Forest Fire Management During Fire Season:

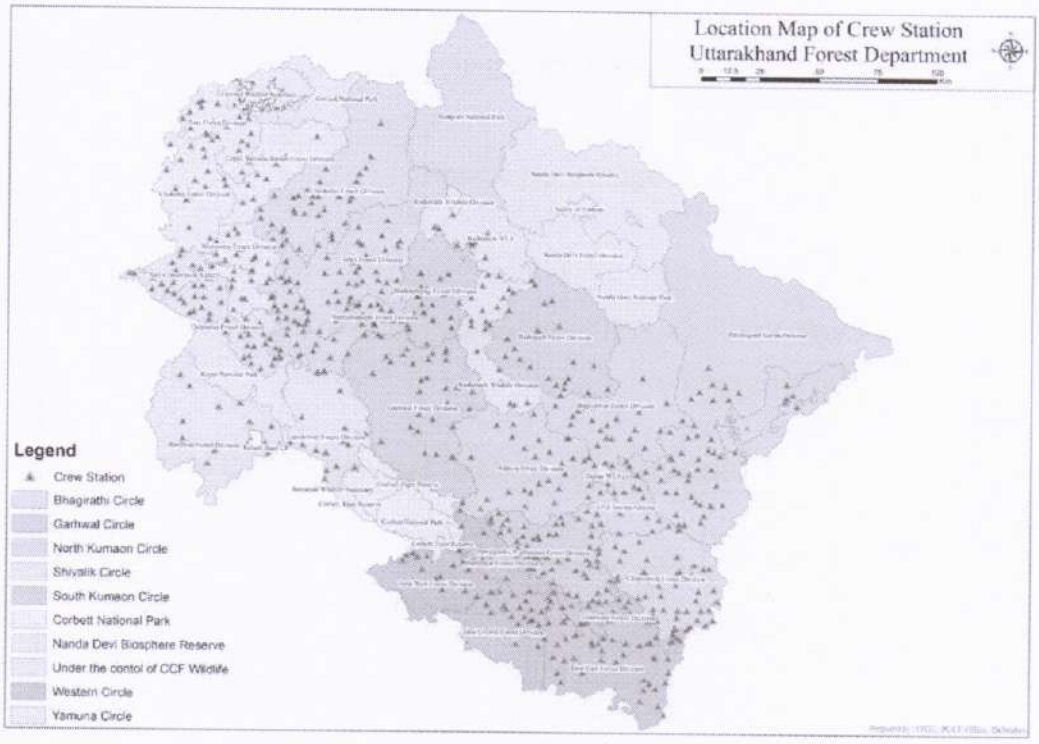
2.7.2.1 Detection of Fire Incidence: Detection of fire incidents is being done through information gathered from local sources, Fire Watchers, Watch Towers, patrolling teams, dedicated WhatsApp Number, Toll Free Number, Uttarakhand Forest BHUVAN portal, SNPP VIISRS and MODIS based satellite data alerts, and other available sources. Pre-fire alerts and warnings are issued on a weekly basis after analysis of satellite data by the ITGC and the same is forwarded to the field officers by emails. The same is also sent by WhatsApp messenger, and prominently displayed on the departmental website www.forest.uk.gov.in.

2.7.2.2 Daily post fire alerts received from National Remote Sensing Centre (NRSC) and Forest Survey of India (FSI) through email as well as through SMS. Forest Department is also getting daily post fire alerts directly from National Aeronautics Space Administration, Fire Information for Resource Management System (NASA FIRMS) through email, that distributes near real-time active dire data within 3 hours of satellite (TERA and AQUA) overpass from Moderate-resolution Imaging Spectro-radiometer (MODIS). MODIS is a sensor of American Satellites which passes over Uttarakhand at 10:30 AM approximately in the Morning and 12:30 PM noon daily. ITGC, established at UKFD HQ, Dehradun, downloads these fire incidences and overlays these on the administrative boundaries to identify the near exact location where the fire incident has taken place which is then sent to the concerned Forest Division through email and WhatsApp messenger. Maps and tables are also being uploaded over the departmental website for public information. Extended weather forecast is also provided to respective officers in the field.

2.7.2.3 Action by the Local Crew Station/Mobile Team: Upon receipt of any information related to fire, the near-most fire crew/mobile team is alerted and mobilized to the reported area. It also seeks assistance of local villagers if available, and ensures efforts to suppress fire with help of tools, equipment and locally available resources. After putting off the fire, a preliminary report is forwarded by the local crew station to the Divisional MCR.



2.7.2.4 Continuations of Awareness Campaign-Banners, posters, handbills, stickers are being displayed or distributed at all levels. Puppet shows, Street rallies, lectures in schools, signature campaigns etc. are organized at local levels. Such campaign is an ongoing process and continues till the end of the fire season. Wide use of social media tools is made.



From the above, it is evident that there is a series of complementing actions and activities that are needed to be done to mitigate forest fires. Many of them may appear routine, basic and repetitive but are nevertheless crucial to this effort. It is also evident that despite many of these activities being carried out year after year by the Forest Department and other agencies, the threats due to forest fires remain as potent as ever.

The proposed project aims to address this substantially while also adopting new strategies and approaches that can minimise fire hazards across the State.

2.8 Budgetary Support For Forest Fire Mitigation:

Presently, funding support for forest fire mitigation is available under various State sector and centrally sponsored schemes.

These include:

State Sector:

i. Forest Protection and Management

Centrally Sponsored

ii. Forest Fire Prevention & Management Scheme

iii. **Others**

iv. **CAMPA**

The status of availability of funds from various sources for fire mitigation over the last Five years is as below:

FUND AVAILABILITY (Rs. In LAKHS) FOR FIRE MITIGATION					
YEAR	PROPOSED BY FOREST DEPARTMENT	RELEASED	% OF RELEASE vs. DEMAND	EXPENDITURE	% EXP. Vs. RELEASE
2019-20	7310.37	2592.11	35.46	2461.09	94.95
2020-21	5654.42	2914.16	51.54	2413.6	82.82
2021-22	6462.31	2827.71	43.76	2625.41	92.85
2022-23	3940.52	2956.66	75.03	2814.56	95.19
2023-24	4149.9	2768.8	66.72	2042.4	73.76

It is evident from the above that the funds available are barely sufficient to carry out the minimum necessary activities for fire mitigation.

In order to upscale, innovate and most importantly strengthen community engagement in fire mitigation efforts to make a visible and sustainable impact, much greater, sustained and timely investment of resources is *sine qua non*.

Chapter 3

Identifying Barriers and Mapping the Way Forward

3.1 Gap Analysis:

Gap Analysis: To meet the challenge of annual forest fires, a Gap Analysis exercise has been conducted across various levels of the Forest Department and some other key stakeholders.

Some of the key questions that were taken up and the top answers are listed in brief as below:

3.1.1 What are the things that we are doing right now?

i. Preparation and planning for fire season
ii. Clearing of fire lines
iii. Deployment of fire watchers
iv. System of generating and sharing fire alerts

3.1.2 What are the things we need to further scale up for more effectiveness?

I. Eco-restoration (plantation) and Increasing of soil moister conservation (SMC works) in fire effected area.
II. More and better trained staff to take up leadership roles for incident control
III. More feet on the ground
IV. Better equipment support
V. Engagement with communities including shared roles and responsibilities
VI. Engagement with other stakeholders such as other government departments and agencies including Revenue, Police, PWD, Meteorology, Armed Forces, Para Military units, NDRF, SDRF and civil society institutions/NGOs.
VII. Awareness programmes

3.1.3 What are the things that we are not doing right?

I. Uncertainty, quantum and timing of budget
II. Maintenance of fire lines
III. Control burning

IV. Engagement with communities

V. Awareness Strategy

3.1.4 What are the things we need to change?

I. Method of evaluation of losses due to forest fire

3.1.5 What are the new things we need to take up?

I. Investment in newer technology such as blowers, light weight tools, chemical suppressants, fire balls, personal fire safety equipment etc.

II. Investment in alternate uses of Chir Pine needles

III. Incentive programmes for staff, fire watchers and community institutions

The various issues that need urgent attention are categorised and listed below. All strategies and activities under this project are woven under these broad categories. There is an obvious overlap amongst some of these but together, these are the main themes under which any meaningful response to the challenge of forest fire mitigation is to be met.

i.Policy and Legal Issues
ii.Administrative Issues
iii.Strengthening Human Resource
iv.Infrastructure Development
v.Community Engagement
vi.Capacity Building
vii.Forest Utilisation
viii.Technology
ix.Research
x.Awareness
xi.Law Enforcement

3.2 Some Legal and Policy Issues:

3.2.1 Matter before the National Green Tribunal:

Original Application No. 60 of 2018 (M.A. No. 539/2018) (Earlier O.A. No. 679 of 2017) Rajiv Dutta Vs. Union of India & Ors. was moved before the National Green Tribunal Principal Bench, New Delhi in view of the allegation that there was large scale unchecked damage to the environment on account of forest fires specially in the States of Uttarakhand and Himachal Pradesh. While disposing this matter on 17th July 2018, the Hon. NGT has issued several directions, which include inter alia the following:

i. *The MoEF&CC should in consultation with the States formulate National policy/Guidelines for forest fire prevention and control, which should be updated periodically. It should also issue directions under Section 5 of the Environment (Protection) Act, 1986 to the States to prepare and implement forest fire management plan for effective prevention and control of forest fires in the respective States.*

ii. *Considering that forest fires can create serious environmental hazards and disaster, we direct that the Chief Secretary of the State shall along with concerned State Departments review implementation of the Forest Fire/Crisis Management Plan of the State to take effective steps, so as to prevent and control forest fire and execute relief, rehabilitation and restorative measures, in the event of forest fires. They shall ensure that adequate resources and manpower are placed at the disposal of the concerned Department for the aforesaid purposes.*

iii. *The financial resources, manpower, transport/vehicle and fire fighting equipment should be made available to the Forest Department both at the State and district/Division level, at the beginning of the Financial Year so that Forest Fore Management Plan could be implemented in totality and effectively.*

iv. *The department should, as a part of the Management Plan, carry out forest fire vulnerability mapping of the entire forest area, identify high hotspots*

which are necessary for fighting the forest fires. Therefore, the State should also deliberate whether it can equip the State Disaster Response Force with Helicopters and with other aerial equipment, which will permit the State Disaster Response Force to effectively deal with the forest fires. For, it is a common knowledge that once forest fires blaze out of control, it is easier to control the same from the air, than from the land.

(3) The State should also consider the possibility of creating artificial rain by cloud- seeding. Of-course, this will have to be balanced with the distinct possibility that too much rain may also lead to land-slides, a phenomenon to which the State is prone to.

(4) Since in the case of Rajiv Dutta (supra), the learned Tribunal has already issued effective directions to the State, the State is directed to implement the directions as expeditiously as possible, and preferably within a period of six months.

3.2.3 Green Felling on Fire lines areas above 1000 meters of MSL :- Hon'ble Supreme court new Delhi has decided in the writ Petition No. 202/1995 T.N. Godavarman vs. Union of India and others (felling of trees situated above 1000 metres), maintaining of Fire-lines and silviculture operation can be carried out as per the approved working plan. Consequently, clearing of fire lines is also going to be taken up in coming years as per working plan.

3.2.4 Green Bonus for Uttarakhand:

The ecological role performed and the ecosystem services delivered by the forest of Uttarakhand are well documented and need no further elucidation. Presently, States with higher green cover are subject to several checks and balances on how these natural resources can be utilised. This places a significant "Opportunity Cost" on the State and its residents because many development projects need to confirm to higher environmental standards adding to time and cost over runs, and access to many types of industries are not permitted. There is a general perception that while the "costs" of maintain such green cover is borne by the State and its residents, the environmental benefits are shared by the larger landscape and beyond. Thus, many people

actually see the State's green cover as a disadvantage, which in turn impacts investments towards maintaining such green cover and public participation and support towards the same.

Since recent years, various Finance Commissions have considered the forest cover of a State as one of the parameters for devolution of funds. However, that is not seen as adequate. More support needs to be provided for conserving forest cover in the Himalayan States. Provision of Green Bonus will be seen as a direct benefit from maintaining forests of the State and will incentivize management of natural resources and environmental conservation in lieu of other developmental activities. Conserving forest cover will not only benefit mountain communities but also lowland areas by ensuring provision of key ecosystem services such as clean air and water and various food commodities.

3.2 Administrative Issues

3.3.1 Acute Shortage of Key Staff

The position of staff in some key field cadres in the Uttarakhand Forest Department is as follows:

S. No.	Name	Sanctioned Strength	Persons in Place	Vacancies	% Vacant	Till 1/7/2023	Till 1/5/2024	Vacancies on till date	% Vacant
1	Forest Guard	3650	2430	1220	33.42	2296	2853	797	**21.84**
2	Forester	1729	1452	277	16.02	1443	1645	84	**4.86**
3	Deputy Ranger	408	399	9	2.21	402	370	38	**9.31**
4	Range Officer	308	233	75	24.35	239	247	61	**19.81**
TOTAL		**6095**	**4514**	**1581**	**76**	**4380**	**5115**	**980**	**16.08**

The lack of adequate feet on the ground severely impedes the efforts of the Forest Department in implementing its strategies for conservation across the

State. This also implies that during a crisis such as a forest fire, shortage of persons who are trained, equipped and able to assume a leadership role at the field level can be a severe handicap. In fact, this is the **single biggest hurdle** in a timely and adequate response to forest fires.

3.3.2 Timely and adequate Funding Support

By its very nature, the fire season is spread over two financial years. Most of the preparatory work is done in the months of February-March which is at the fag end of the financial year, while the major firefighting operations are carried out in the months of April to June in the next financial year. Most of the time, the availability of adequate resources remains a huge challenge. To make things even more difficult, sometimes the funds arrive well after the fire season, meaning that when the actual operations are on, field managers have very limited cash flow to deal with even basic needs of their crews on the ground. This uncertainty is a severe impediment to planning and successfully implementing any firefighting operations.

3.3.3 Building Synergies with various Departments/ Agencies and other Stakeholders:

Fire does not recognize administrative, institutional or property boundaries. Fires can and do spread from forests to private assets and vice versa, and across administrative boundaries. Thus, effectively managing fire risks requires involvement of a wide range of stakeholders. While the institutional responsibility for management of forest fire largely rests with the Forest department, there are many governmental agencies and authorities, from local to national, which can play a critical role in the design and enforcement of strategies for mitigation of forest fires. The success of risk reduction strategies is also dependent on a deep understanding of pre- and post-fire social dynamics. can influence fire management. Often, narratives about forest fires tend to focus not on what is being done with the limited resources at hand but on what more could and should be done. This is further amplified by mass

media that have an enormous influence on how forest fire is perceived by society.

A key example is how despite multiplicity of administrative control over the forests in Uttarakhand vested in various agencies and departments other than the Forest Department including the Revenue Department, Cantonment boards and Municipalities, the perception is largely that any forest fires are the responsibility of the Forest Department alone. Especially mentionable is case of Panchayati Forests, where the Forest Department exercises the role of facilitator and extending technical support while the administrative matters are dealt by the Revenue Department. While communities take upon the role of a "Forest Officer" by law in such areas, there is little by way of direct roles and responsibilities in forest fire mitigation.

There is need to build greater synergy amongst such agencies and institutions with a clear prescription of roles and responsibilities. Policies and practices that fail to take into account perceptions, needs and concerns of local communities, as well as their traditional knowledge, are unlikely to lead to desirable outcomes. To adequately address the process of forest degradation and biodiversity loss, there is a need for greater direct participation of local communities in planning and management of forest assets. The involvement of communities in forest landscape planning, restoration and protection must expand greatly, using appropriate models and fire protection techniques in addition to implementing sustainable livelihood support programmes which reduce the pressure on forest resources while improving local livelihoods.

This aspect in particular needs special attention and effort.

3.4 Infrastructure development

It is clearly evident that the traditional infrastructure available with the Uttarakhand Forest Department needs a major overhaul and strong dose of modernisation and expansion. In Uttarakhand, the Forest department is one agency which has a footprint in some of the most difficult and remotest parts of the State. As such, on many occasions, the FD is expected and called upon

to provide valuable support to the people of that locality. This role of the FD providing valuable on ground support to affected communities is not limited to just forest fires but also during other natural calamities and human-wildlife conflict situations. The FD has played a major role as the First Responder in situations of natural calamities or other such exigencies. As such, it needs to strengthen its infrastructure to meet the challenges of today and tomorrow.

Some of the aspects which require immediate and focussed intervention include:

i. Eco-restoration and increasing of water regime.
ii. Establishment of State War Room for Forest Fire Management (Integrated Control and Command centre)
iii. Upgradation of Master Control Rooms established in the divisions
iv. Establishment of multipurpose Model Crew Stations for disaster management
v. Procurement of Mini Fire tender (multi-utility) mounted on vehicles
vi. Strengthening Wireless Network by adding/repairing/maintenance of Wireless Equipment, repeaters, base stations, hand sets
vii. Operating staff for mini fire tender
viii. Strengthening of Van Panchayats/Gram Panchayats (Incentive)
ix. Exposure visits
x. Media Sensitization workshops
xi. Back pack water pumps with mist facility
xii. Oxygen cylinder 1 lit.
xiii. Protective gears kit (proximity suit, shoes, water bottle, helmet, head light, gloves, bag etc)
xiv. Firefighting tools: - Leaf blower, Fire beater
xv. Drones
xvi. Mobility vehicles (for QRT)
xvii. Mobile app development
xviii. Demonstration of New technology for fire mitigation

3.5 Community Engagement

This is seen as one of the major gaps in the present scenario. As such, any strategy and action plan for the future will need to aggressively engage with the community by providing them a central role in natural resource management, with clear cut role functions and responsibilities. The FD must aim to strengthen the bond of the community with the forests and engage with them as true partners.

Linkages with community institutions need to be institutionalised and further strengthened.

3.6 Capacity Building

Even the best of human resources would be underutilised and ineffective in the absence of proper training. Fore forest fire mitigation, adequate training needs to be imparted to the frontline staff who serve as primary responders. In addition, the FD hires a large number of fire fighters on daily wages during the fire season. There is need to impart specialised training to these persons and to see that the same set of people can be employed for these activities year after tear so that there is continuity and the experience gained and learning over the years is gainfully utilised. Further, a cadre of voluntary personnel is to be created with various community institutions with support of this project. These personnel will be providing support to the FD during forest fires. As such, there is need to provide capacity building opportunities to such persons also, so that they have the necessary knowledge and skills to deal with the challenge at hand, and are also able to identify as part of an organised, trained, confident response initiative.

3.7 Exposure visits

To make aware the people/villagers who are living near forests are greatly affected by forests directly and indirectly. The cooperation of people/regional villagers and public representatives can play an important role in the control/management of forest fire. Efforts are being made to connect

Total consumption 675 MT. Total consumption 6,075 MT per year. Pilot Project started in Mussoorie Forest Division (Ringalgarh). Allocation of 15000 domestic stoves and 750 commercial stoves for use by local beneficiaries/restaurants/hotels in 12 sensitive forest divisions. Allocation of stoves for preparation of mid-day meals in 150 primary schools in the said divisions.

Barriers:

Sengar et al (2020) have identified, categorized and prioritized some of the major factors that hinder and are barriers to energy generation using Pine needles in the State of Uttarakhand, India.

Technological barriers

i. The majority of the villages in Uttarakhand located near Pine forests are situated in deep remote areas which have limited access to energy of any form such as solar energy; wind energy, thermal energy and hydro energy. Energy is required to make briquettes from Pine needles for the purpose of grinding these Pine needles and as such any problems in access to energy for such manufacturing process is a major barrier.

ii. Technology for generating energy using Pine needles is still at its nascent stage, making it unattractive for investors to invest because of high level of risk associated. A very high level of investments is needed to build and operate big briquetting plants or pelleting machines which can provide economies of scale and be viable.

iii. Small pelleting machines are available, but they are purely pyrolysis based. And may not be viable.

iv. Pine needles are a good source of biomass fuels. However, some pre-treatment including bio degradation and use of enzymes etc. is required to alter the biomass macroscopic and microscopic size and structure in Pine needles so that carbohydrate fractions to monomeric sugars can be achieved more rapidly and with greater yields that can be further fermented to biofuels.

The technology towards this is still under development and is yet to be adopted widely in the field. (Dwivedi et al 2016)

v. Because of their very high volume, storage and transportation of Pine needles is another challenge.

vi. Ensuring safety of the collected Pine needles is also a concern. Unseasonal rains may dampen and decay them.

vii. Another challenge is seasonal availability of Pine needles. Pine trees shed millions of tons of Pine needles during the months of January to April. As such, this seasonal availability is seen as intermittent engagement and seasonal livelihood option.

viii. Topography of remote hilly areas creates further in the collection and, transportation of Pine needles. This is also a barrier in the transportation of machinery and parts for installation of plants in the interior areas of the State.

Economic barriers

I. The present policy States that Van Panchayat shall have to collect Pine leaves and other biomass through human resources only (not from any automatic plant), for which light tools can be used. For the collection of forest produce, such equipment shall not be allowed to be taken in the forest area.

II. It is perceived by some developers that this adds a cost to the collection of raw materials and affects viability.

III. On the other hand, emphasis on manual collection is also seen as providing greater economic opportunities directly to the local communities. .

IV. Since the industry as a whole is new and in the proving stage, banking finance is difficult to come by. As such, the economic cost of investment is rendered high.

V. The long-term sustainability and viability of such projects is yet to be fully established. As such, the entrepreneurs who are moving into this sector at this stage are taking a "leap of faith", which needs to be suitably supported.

Legal and regulatory barriers

While the Uttarakhand Government has come up with a policy for promotion of exploitation of Pine needles by briquette making or power generation, Ihere are several aspects that need urgent attention.

i. Presently, no transit pass is required for transportation of Pine needles. However, a royalty of Rs. 20/MT is payable to the Forest Department. This is a notional sum and can be considered for complete waiver.

ii. Chir Pine needles are a forest produce as per provisions of the Indian Forest Act, 1927 and thus operate within a strict regulatory framework for extraction. It may be worthwhile to consider reclassifying this so that there are no restrictions, perceived or real, in its removal.

Human resource barriers

i. There is a lack of skilled work force and experts for building, operating and maintaining such projects in rural areas for energy generation. Moreover, those experts and technicians willing to work in such areas expect special benefits and significantly higher wages.

ii. The entire exercise of Pine collection, storage and briquettes making process is seen as a collective and collaborative effort and hence responsibility and accountability on the part of villagers is seen as a concern.

iii. The task of Pine needle collection would invariably go to women who are already overburdened with household chores and other farming activities. Men folk are least interested in collecting Pine needles and thus there is a clear gender bias in the commitment for this activity.

Market - related barriers

Market related barriers include supply chain and logistics barriers, lack of value chain and lack of proper marketing of the manufactured briquettes.

It is important to address these issues in full measure before we can make any substantive headway in utilisation of *pirul*for energy generation.

3.9.2 Fiber from Chir Pine Needles:

Recently, the Forest Research Institute (FRI), Dehradun has developed technology for production of fiber from Chir Pine needles without using electricity or external heat. The Uttarakhand Bamboo and Fiber Development Board (UBFDB) has entered into a MoU with the FRI for transfer of this technology and its field trials. This needs to be promoted.

Similarly, various handicraft items viz mobile case, flowers vase, show case, flowers pots, stands etc. are being prepared by various Mahila SHG in Tons and Kedarnath wildlife division of the State which needs to replicated in other forest division of the State there by ensuring the income to these Mahila SHG.

3.10 Technology

While traditional means and methods of dealing with forest fires have been in vogue for long and are moderately successful too, the growing nature and size of such incidents necessitates exploring technological options that can support better planning and focussed implementation on the ground.

Presently, the most important technological intervention in forest fire mitigation is the use of satellites to accurately pin point forest fire locations and provide this information in real time to ground crews.

Technology can play a further significant role in the following ways in this effort:

- Risk Mapping, Prediction and Alert Generation
  This would use tools like AI to carry out simulation and modelling efforts.
- Facilitating Fire Fighting Efforts on the Ground
  This would involve testing equipment like Drones, ATVs etc. under field conditions.

Pilot projects on the above themes need to be taken up on priority.

3.11 Research

Focussed research is needed to address some of the important questions related to forest fires.

The first and foremost is to develop an appropriate model to assess the losses arising due to forest fires. As has been discussed in detail earlier, the present model captures only a fraction of the timber associated losses while the

Baseline Information on these parameters will be compiled and used for evaluation along milestones.

4.7 Beneficiaries, expected outcomes and outputs:

4.7.1 Main beneficiaries of the Project are the people of Uttarakhand. Neighbouring States and regions will also benefit from this project as the ecological benefits of such community centric action to mitigate biodiversity losses will have over reaching regional impact. The Project will draw and build on various ongoing projects and schemes including the National Action Plan on Forest Fire (NAPFF).

a. The expected outcomes are:

i. Wildfire and other anthropogenic threats to natural resources, especially forest lands understood, quantified and incorporated in planning for landscape protection activities for such areas and are significantly reduced.

ii. Increased and well-defined role of NGOs and other civil society institutions towards saving forests and human lives and property from forest fires.

iii. Increased capacity of local communities to implement forest conservation and restoration activities

iv. Local people's knowledge and skills about livelihood activities linked to forest protection including forest fire mitigation, ecotourism, NTFPs production, processing and marketing etc. are enhanced, leading to increased income for livelihood sustenance while also strengthening conservation of natural resources.

It is expected that building direct and visible livelihood linkages for local communities with nearby natural resources will strengthen their motivation for contributing towards and participating more openly in initiatives for their protection from forest fires and similar threats.

b. Main expected outputs are:

i. Output 1: Structured planning processes for land use promoting landscape-level forest restoration together with protection measures strengthened.

ii. Output 2: Targeted programs for improving land uses/ alternative livelihoods developed

iii. Output 3: The organisational and technical capacities of local communities and other stakeholders including the Forest Department enhanced to engage in integrated landscape restoration and fire management.

4.8 Implementation approaches and methods:

The Project's strategic area of intervention is to strengthen the capacity and skills of the State Forest Department and local Community Based Institutions to implement improved models for forest fire mitigation as an integral part of forest conservation and sustainable livelihood development across the State of Uttarakhand.

The project will support field surveys to continuously identify fire risks levels, impact and efficacy of mitigation strategies, and also to plan future management activities. These will feed into district and State level fire mitigation plans. The project will also build the technical and material capacities of the State Forest Department to mitigate forest fires across the State. This will include strengthening of infrastructure for control rooms and fire crew stations and providing them with appropriate equipment.

It will also support engagement of additional human resources during the key season and equip them with proper training and tools. Communication is a vital component of any incident response. The project will support procurement of vehicles for upto Forest Range level and also hiring of additional vehicles during crunch time.

The project will engage with Community Based Institutions such as Van Panchayats, Mahila Mangal Dal, Yuvak Mangal Dals, Eco Development Committees, Gram Panchayat level Forest Fire management committees etc to build the technical and material capacities of local communities to engage in control of Forest Fire, and prevention and suppression techniques. It will explore options and opportunities for providing such community institutions a more direct and hands on role in forest fire mitigation.

The Project will also engage with all stakeholders as partners to build their understanding of their roles and responsibilities towards forest fire mitigation.

The cornerstones of this project can be described as **"Community"** and **"Technology".** Both are underutilised so far and can be potential game changers in our response to forest fires. The project will specifically focus sharply on both these segments

As has been enunciated in the previous chapter, the following key areas have been identified for intervention under this project.

i. Policy and Legal Issues
ii. Administrative Issues
iii. Strengthening Human Resource
iv. Infrastructure Development
v. Community Engagement
vi. Capacity Building
vii. Forest Utilisation
viii. Technology
ix. Research
x. Awareness
xi. Law Enforcement

In order to achieve the project objectives, following strategies will be adopted as follows:

4.8.1 Policy and Legal Issues

4.8.1.1 Implement directions of the Hon. NGT and the Hon. High Court of Uttarakhand with respect to Forest Fire Mitigation in Uttarakhand. Primary of these is the filling up of field level vacancies in the Forest Department on a priority.

4.8.1.2 Submit a proposal before the Hon. Supreme Court of India with support of the MoEF&CC, GoI for relaxation of the ban on green felling above 1000 meters MSL

4.8.1.3 Take up the matter for grant of Green Bonus to Uttarakhand with the Niti Ayog and other appropriate forums with the GoI.

4.8.2 Administrative issues

4.8.2.1 Filling up of Vacancies at the Field Level:

The Forest Department is heavily constrained by the acute shortage of human resources at the field level. Filling up of these vacancies will be taken up on a priority basis. This is also in compliance with the orders of the Hon. NGT and the Hon. Uttarakhand High Court.

4.8.2.2 Timely and adequate Funding Support

The fire season being spread over two financial years poses its own challenges in financial management. Greater coordination with the MoEF&CC and the Finance Department of the State government will be done to ease out any constraints in timely release of adequate funds. Other sources of funding including from NDRF shall also be explored towards this.

4.8.2.3 Strengthening Synergies with various Departments/ Agencies and other Stakeholders :

Regular coordination meetings led by the Hon. Chief Minister, Hon. Forest Minister, Chief Secretary and other senior officials of the State government will set the foundation for this. At the field level, this will be further strengthened by

similar meetings and discussions at the District level, also supported by joint field exercises to understand each other's operational patterns.

Eco-Restoration and increasing water regime in fire affected area for restoration of ecosystem in forest fire affected areas, plantation and water and soil conservation works seem to be very necessary. However, during rainy season, plantation is proposed on the basis of action plan in various schemes under the department. At present, plantation of broad/fodder species and fuel species plants/path plantation work is being proposed to be done with the cooperation of the local people in the highly susceptible areas of forest fire so that the cooperation of the local people can be taken in forest fire prevention in these areas, so that the ecosystem can be restored in forest fire affected areas. Further, due to moisture retention through water conservation work, incidents of forest fire can be reduced in the coming forest fire seasons. At present, plantation/maintenance work has been proposed in 10 hectares area (1100 plants per hectare) under 12 divisions for 3 years and maintenance of plants planted every year (2 years). Water conservation works have been proposed in all divisions. Similar activities are being carried out through other schemes also.

4.8.3 Strengthening of Human Resources:

The availability of additional boots on ground during the fire season is essential. The following are the key actions towards this.

4.8.3.1 Deploying an additional 500 teams of 10 persons each, a total of 5,000 Forest Fire Responders deployed across various locations across the State)

As has been mentioned earlier, the Uttarakhand Forest Department is reeling with an acute shortage of human resources, especially at the field level, from Forest Guards to the Range Officer level. There have been no recruitment at the Assistant Conservator of Forests (ACF) level in the year 2021, 21 years after the creation of Uttarakhand, who are presently under training. All these put considerable strain on the available human resources during times of crises.

The inability to carry out direct recruitment also means a lack of young legs on the ground, which can make a vital difference in such situations.

Further, during peak fire season, there is need to augment existing hands by temporarily hiring daily wagers from the neighbourhood, to provide support to the teams of the FD. These additional hands also need to be suitably trained and equipped, to be effective on the ground.

This project will not only support this but will also develop a database of such personnel who are employed seasonally so that their training and experience can be utilised in subsequent years also.

This project aims to employ an additional 5,000 persons as Forest Fire Responders/watchers during the Forest Fire Season.

Training and Fire Fighting Equipment for Forest Fire Responders

Wherever possible, these responders will be engaged through Community Based Institutions such as Van Panchayats, Biodiversity Management Committees (BMCs), Mahila Mangal Dal, Yuvak Mangal Dals, Eco Development Committees Gram Panchayat level Forest Fire management Committee etc. They will be provided training and equipment and made to undergo regular drills so that they are mentally and physically well geared to meet the challenges of forest fire.

4.8.3.2 Special Incentives for Staff and Personnel engaged in Forest Fire Mitigation at the ground level

Forest staff are expected to be on duty 24*7*365, responsible for the safety of forestry assets under their direct charge as also towards responding to any related issues such as human-wildlife conflict. Dealing with Forest fires can be a physically and mentally taxing effort, carrying serious life risks. The project will develop and implement a mechanism where a certain portion of the assigned monthly wages/salary can be paid as incentive for such staff and workers.

A mechanism for meeting any cost towards medical expenses due to injuries while fighting fires and an ex-gratia scheme for the families of those who lose their lives or those grievously injured while fighting fires will be put in place. This

safety net will be a huge morale booster for the men and women who put themselves in harm's way in the call of their duty towards forest fire mitigation. It is expected that these practices will be included within the official framework of the Forest Department by the end of this project period.

4.8.4 Infrastructure development

The project will build the technical and material capacities of the State Forest Department to mitigate forest fires across the State. This will include strengthening of infrastructure for control rooms and fire crew stations and providing them with appropriate equipment. It will also support engagement of additional human resources during the fire season and equip them with proper training and tools. Communication is a vital component of any incident response. The project will support procurement of vehicles for upto Forest Range level and also hiring of additional vehicles during crunch time.
A series of actions have been identified towards this as below.

4.8.4.1 Establishment of State War Room for Forest Fire Management (Integrated Command Center)

The State Level Forest Fire Control Room needs an urgent facelift with specialised communication equipment as also specialised IT equipment and staff to receive alerts, analyse them in real time with GIS and other supporting technologies and constantly engage with other State level and district level control rooms of agencies like the Revenue Department, Fire, Police, SDRF, NDRF etc.

4.8.4.2 Strengthening of Divisional Master Control Room including engagement of Specialised Staff

The Divisional Master Control Room keeps an eye of the overall ground situation within a Division and allocates resources & engages with other agencies accordingly. There is need to equip these control rooms with latest equipment, communication facilities and staff.

4.8.4.3 Establishment of Model Forest Crew Stations and Strengthening and upgradation of existing Forest Crew Stations

There are presently over 1300 crew stations established across the State. Since these are the launchpads for any firefighting operations, there is need to make these crew stations well equipped including opportunities for rest and recreation for crew.

In addition to upgrading the existing ones, Model Crew Stations will be established across the State, at least one in each Forest Range.

A Model Fire Crew Station will be designed to cater to all exigencies including Forest Fire, Human-Wildlife Conflict and Natural Disasters. Thus, it will be a focal point for the intervention of the Forest Department in any crisis.

The key attributes for a Model Crew Station are identified as follows:

a) Convenient access and vantage location
b) Double Storeyed Building with Watch Tower on Terrace
c) Accommodation for at least 25 persons (They may need to host NDRF/SDRF teams or other additional staff during a crisis)
d) Well-equipped Store
e) Garage
f) Wireless
g) Mobile network connectivity, if possible
h) Electricity/Solar Plant
i) Water supply/Handpump
j) Toilets including a public toilet

4.8.4.4 Strengthening of network of Fire Watchtowers across the State.

These perform a vital function in forest fire detection. The existing network of fire watchtowers across the State will be augmented and improved.

4.8.4.5 Establishment of Automatic Weather Stations Across the State:

This network of stations will provide real time information about prevailing weather conditions as also provide predictions about local atmospheric conditions. As such, they can provide valuable inputs in planning and resource allocation.

4.8.4.6 Specialised Equipment for Fire Fighting

The key to use of firefighting equipment in the hills is that they should be light and easy to operate. The Forest Research Institute, Dehradun has developed a set of standard equipment for forest fire mitigation. In addition, equipment like blowers, portable chain saws (for clearing hazardous trees etc.), fire safety suits and shoes etc. shall be provided for crews.

4.8.4.7 Use of Mini fire Tender (Multi-Utility)

Mini fire tender is used for fire extinguishing in remote parts where conventional fire tenders can't reach. These vehicles will be equipped with blazing sirens, huge lights, and multiple fire extinguishing equipment for use in some of the most vulnerable and difficult areas across the State.

4.8.4.8 Oxygen Cylinder:

Uttarakhand is a hilly state which is has cast stretches of Pine-dominated forests. Along with this, most of the state is has high mountains with rocky and extremely inaccessible slopes. In case of a forest fire, during the forest fire control/management operations, there is a severe shortage of oxygen in these areas due to the extreme temperature and combustion of biomass due to which the personnel engaged in forest fire control and other local people etc. face extreme difficulties in breathing. In such a situation, provision of portable 1 liter capacity oxygen cylinder for the crew-team members and villagers engaged in forest fire control is being proposed in this project.

4.8.4.9 Back Pack water pumps with mist facility

Most of the areas of the state is in high mountains which are often rocky and very inaccessible by motor roads where fire fighting vehicle cannot reach. In such a situation, portable backpack pump is being proposed for forest fire control and prevention. Backpack pump can prove to be a useful tool for forest fire control/prevention. This portable fire extinguisher can deal with small fires and hot spots, clean up and repair areas beyond the reach of hosepipe. Apart from plain water, foam and water solution can also be used in it. The backpack tank capacity (10 liters) has been proposed which will be used as a backpack by firefighting personnel/villagers on their backs.

4.8.4.10 Strengthening of Wireless Network:

Despite advent of other modes of communication such as mobile phones, wireless networks continue to remain the backbone of communication for the Forest Department, especially during an emergency. The project will support the strengthening of wireless networks by adding repeaters, base stations, mobile stations and handsets as also batteries and solar charging panels and repair/maintenance support for them.

4.8.4.11 Mobile App Development:

This mobile app consists of live visualization & monitoring of forest fire incidences in the State of Uttarakhand. All the assets (crew station etc.) will be mapped and also the alerts received from FSI will be integrated to the mobile app. There will be an additional option to track the crew team vehicles. The app has public reporting module as well so that if any general public will see the fire, they can easily report the incident by mobile app. All the field staff as well as the fire watchers/outsourced person are enrolled in the app and once any fire is detected in their command area, they will be getting notification on

the app. This app will help to monitor the ground status of fires received from FSI or received from general public on runtime basis. There will be a GIS based dashboard at the State level in which all the fire incidences with the State will be monitored and also, we will be get information at how many places there is an active fire at any given time.

4.9 Community Engagement

This is the dominant theme and focus of this project. Various activities will be taken up to provide a platform for local communities to have a direct and substantive role in the management of forest resources across the State and contribute to their protection, including from forest fire. The following key activities are proposed:

4.9.1 Incentive Based Schemes

Incentive Based Schemes for Community Based Institutions such as Van Panchayats, Eco Development Committees, Gram Panchayat level Forest Fire Management Committees etc based on their performance towards forest fire prevention and mitigation Implementation will be developed and implemented by this project. The modalities for the same have been explained in detail in the paras above.

4.9.2 Wherever possible, Forest Fire responders and other field level work force needed for the implementation of this project will be engaged through Community Based Institutions.

4.9.3 Participation and engagement of NGO/Civil Society members will need to be strengthened to facilitate and strengthen the process of engaging with Community Based Institutions. The project will facilitate creation of an administrative framework towards the same and will also allocate appropriate resources for this.

4.10 Capacity Building:

Training Programmes will be designed and organised in consultation with experts from the Fire Services and the NDRF & SDRF. They will be implemented for different audience groups, such as Forest Department staff upto Range Officer level, Seasonal Fire Watchers and Community Representatives who are directly involved in firefighting efforts.

Specialised Training will be provided on livelihood linkages and Fire Protection for local communities along with equipment support. This would include themes such as forest fire protection and control, Nature Guides, Bird Guides, Home Stays, Trekking, First Aid, Interpretation, Forest based product development and marketing etc.

As mentioned earlier, this will amplify the linkages of the community with the local forest resources and add emphasis towards the role of the community in forest fire mitigation which otherwise would directly impinge upon their livelihood opportunities.

4.11 Forest Utilisation: Encourage greater utilisation of Chir Pine needles and their removal from forest floor through community incentives. The Forest Department will develop and implement a comprehensive administrative framework for encouraging use of Chir Pine needles for electricity and fuel production (Briquettes/Pellets) with support of the local community. A comprehensive analysis of this theme has been included in Chapter 3. The project will make investments for its implementation. The project will also make investments towards development of appropriate technologies for conversation of Chir Pine needles into energy and briquettes.

This policy and administrative framework can be extended to other forms of biomass from the forest such as Lantana whose removal may be desirable from the ecological and forest fire prevention perspective.

The project will also support a regular review of the existing policies of the State government so as to identify and remove any administrative and other bottlenecks.

4.11.1 **Emphasis on Pine Needle (Pirul) Collection and its utilization :-**

1. **Pine Needle (Chir Pirul) Collection:-** The process of collecting pine-pirul is being done through local self-help groups under pine dominated divisions. At present, the payment for pine pirul collection is being made at the rate of Rs. 3.00 per kg fixed by the government. Till date, a total of 3830.00 tons of chir pirul has been collected. In the proposed project, a target of collecting 38 thousand tons of pine pirul has been set.
3. **Pine Needle (Chir Pirul) Collection Center:-** A provision has been made to store the Chir-pirul collected from the forest areas under the divisions at safe places near motor roads, in which 234 collection centers are being proposed under chir dominated forest divisions.
4. **Pellets/Briquettes Unit:-** At present, 4 briquette/pellets units have been established in the state, under this, the briquette/pellets unit established in Raipur Range (Ringalgarh) of Mussoorie Forest Division, Mussoorie has been funded by Uttarakhand Pollution Control Board as a pilot project. Under this scheme, a proposal is being prepared to establish 25 units in chir dominated divisions.
5. **Distribution of Pellets Stove**:- Provision has been made for giving departmental subsidy in the distribution of Pellets Stove at the initial stage for commercial and domestic use of Pellets/Briquettes produced from Pine. The maximum number of people will use Pellets/Briquettes produced from Pirul, which will increase the disposal of Pirul and also reduce environmental damage. In this proposal, distribution of 8500 Pellets Stove for domestic use and 1050 Pellets Commercial Stove has been proposed.
6. **Measurement and security/arrangement of Pine Needle Collection Centre** :- Provision has been made for measuring and storing Pine needle Collection Centres and employing 03 personnel per storage centre for its arrangement and security.

4.12 Technology

The project will support development and use of cutting-edge technology for forest fire mitigation.

4.12.1 Deployment of Drones for Forest Fire Detection and Support to Fire Crews

The use of drones as a cost effective, easily manoeuvrable and accurate eye in the sky is gaining global acceptance. This is also true for mitigation of forest fires. This aerial platform can provide a good bird's eye perspective in any kind of terrain to support decision making. It also has great utility in collecting evidence against potential criminals who are involved in such arson.

Some recent studies have proposed a distributed deep reinforcement learning (RL) based strategy for a team of Unmanned Aerial Vehicles (UAVs) to autonomously monitor and control forest fires especially when terrain, weather, and other factors can pose serious challenges for firefighters – including the potential for loss of life. monitoring, and control efforts. (Haksar and Schwager, 2018).

The project will support procurement and deployment of drones and operating teams across the vulnerable areas of the State.

4.13 Research: The project will support a series of research projects to strengthen various aspects of its implementation.

4.13.1 Studies on quantification of ecological and economic losses and social impacts due to forest fires.

The project will support research projects in collaboration with leading scientific institutions to assess the true ecological impacts of forest fires in Uttarakhand and quantify the economic valuation of such losses. Studies will also assess the social and other related impacts of forest fires. This will provide a very useful resource for future planning and decision making in forest fire management al the local scale.

4.13.2 Pilot project on use of chemical uppressants, foam, fire balls etc. for fire control.

Globally, fires are known to cause huge economic losses, if not checked well in time. There are several new technologies that are being developed for fire suppression. While developed primarily for an urban setting, many of these technologies also have a potential use in fighting forest fires. This project will undertake a pilot project on the efficacy of use of chemical suppressants, foam, fire balls etc. in a forest setting.

It would be important to caution here that fire suppressants and retardants are generally composed of nitrates, ammonia, phosphates and sulphates as well as other chemicals and thickening agents. The application of retardants creates an atypical appearance on land and water surfaces and has potential to change soil chemistry, affect water quality through leaching, eutrophication or misapplication. As such, the impact of such suppressants and retardants on the natural ecosystem will also have to be monitored carefully before they can be used on a large scale.

4.13.3 Pilot Project on use of Artificial Intelligence (AI) tools and other cutting edge technologies for forest fire prediction and control

Many international and national level scientific and academic institutions are engaged in the use of Artificial Intelligence (AI) tools for risk and vulnerability

assessment and mapping. In some countries, AI tools have also been used for wildfire risk zonation and prediction.

In a predictive wildfire model, temporal–spatial characteristics of forest fires are placed in a Geographical Information System (GIS) and the risk analysis is based on data-driven fuzzy logic functions constructed around three primary themes: topography, fuel availability and temperature. More layers can be added, as more information is available for modelling.

Similarly, algorithms have been developed to improve fire detection in forest by using wireless sensor networks. These wireless sensor network systems deploy an intensive, array of small, low-cost sensors that monitor the environment. This technology can provide quick and accurate information for forest fires in the real time. Fire Ignition can be determined quickly, without depending on the pass time of the satellites (Ghaida Muttashar et al 2018).

4.13.4. Modelling hotspots of major Invasive Alien Species (IAS) under Future Climate Scenario and its impact on Forest Fire regime in Uttarakhand Forests.

Objectives

a. Modelling hotspots of major Invasive Alien Species (IAS) under current and Future climate Scenario in Uttarakhand.
b. Comparative analysis of impact of major Invasive Alien Species (IAS) on Forest Fire regime in Uttarakhand.

4.13.5. Study on impact of Forest Fuel Characteristics on Fire Regime in Chir Pine Forests of Uttarakhand.

Objectives

1. Forest Fuel Characterization in Chir Pine Forests of Uttarakhand.
2. Understanding the role of Forest Fuel on Fire regime in Chir Pine Forests of Uttarakhand.

4.13.6. Demonstration of New technology for fire mitigation

Forest fire is a very important and relevant issue. Forest fire has a direct impact on the environment including humans, animals, plants and trees. Therefore, new technologies are constantly being developed to prevent loss of life and health, environmental damage and disruption of activity. Digitalization and adoption of new technologies in forest fire protection can ensure that forest

fire protection system will be more effective, reliable and sustainable. In this regard, the following forest fire prevention equipment's are being considered:

1- Cloud Seeding: Rainfall is the ultimate and most effective fire fighter. Cloud seeding is a weather modification technology to create artificial rainfall.
This involves modifying a cloud's structure by adding small, ice-like particles to increase the chance of precipitation. Usually, silver iodide particles are used, which act as additional condensation nuclei. Once those silver iodide particles make their way into a ripe cloud, unattached supercooled water vapour molecules in the clouds condense around these particles. Then, the condensed water vapour droplets group together. This process continues until the droplets are large enough to fall as rain.
There are two ways of adding particles to clouds:

a) Using large cannons that shoot particles into the sky
b) Using airplanes that drop the particles from above

There is evidence to suggest that under certain conditions, Cloud Seeding can increase rainfall by 10 to 15 percent. The Indian Institute of Tropical Meteorology, Pune has been carrying out cloud seeding experiments for several years now. IIT Kanpur and some other private companies are also working on this. The project will support a pilot project to explore options for Cloud Seeding in selected locations of Uttarakhand.

2- Automatic weather station (AWS) & Ordinary Rain Gauge's :- The Indian Metrological Department, Ministry of Earth Science, Govt. of India, New Delhi & Department of Forest, Govt. of Uttarakhand has decided to signed a MoU to establish Automatic Weather Stations (AWS) and Ordinary rain Gauges (ORG) for providing customized real time weather information, weather forecast & warnings at district level that will improve the mitigation of forest fire in the State of Uttarakhand.

3- Water Mist Suppression - Water mist systems create very small droplets, which reduces the amount of water used. More area can be sprayed with less water. It reduces the amount of oxygen in the fire area by converting into vapor. It also forms a barrier of water on surfaces, which reduces the rate of fire spread.

4- Forest Fires Suppression Gel - Forest Fires Suppression Gel (Granules-Crystalline Solid)- It is proposed to use a mixture of 1% part of Teflon Plumbing and 99% part of water for forest fire prevention/control. Before using new technology for forest fire prevention/control in forests, it is necessary that the equipment should be effectively used by the concerned firm. For this, it has been proposed that the department should demonstrate the new technology in front of the field officers/employees of the forest department. Apart from this, before using chemicals in forests, it is necessary to study the effects of chemicals on forests, eco-system and environment. For this, research studies have also been proposed.

4.14 Awareness:

The project will launch a targeted awareness campaign, which will include a 360 view of various interest groups related to forest fires. Most Awareness Campaigns on such social aspects do not meet their Stated objectives because they consider their audience as mere "receivers" of information and not as active interlocutors who have an active role to play in problem solving.

A targeted media campaign, including use of social media tools will reach out to all stakeholders with messages regarding expected actions and outcomes. Specialised Action Research and Media Agencies will be employed for this purpose. A multiplicity of media tools such as audio clips, video clips, songs, skits, puppet shows, rallies, advertisements in newspapers and hoardings and banners on public utilities like transport buses etc. will be created in Hindi, Garhwali and Kumaoni to carry the message far and wide.

The project will also reach out to the media at local, regional and national level to provide them with objective, verifiable information about forest fire hazards and the efforts to mitigate them, as also the long-term impact of forest fires on forests, so that correct, timely and nuanced information can be made available to the audience at large.

Exposure visits:

To make aware the people/villagers whose living near forests are greatly affected by forests directly and indirectly. The cooperation of people/regional

4.17.3 Financial Management:

The project will follow the procurement and expenditure norms as laid down by the GFR-2017, the Government of Uttarakhand and also any additional directions as may be prescribed by the funding agency.

Payments for goods and services obtained through community-based institutions will be credited directly into their accounts. No advance payments shall be made, except as provided in a legal agreement with such institutions.

All payments shall be in the DBT mode, except when in an emergency, expenditure in cash has to be made. The Disburser will hold responsibility for justification for any such disbursement.

Expenditure shall be considered as complete only when works against which such money has been advanced, have been completed.

Annual audit of such expenditure shall be carried out by a set of auditors accredited by the CAG.

In addition, annual audit shall also be carried out by the State AG.

4.17.4 Mid Term Review:

A Mid Term Review will be carried out during the 3rd year of the Project to suggest course corrections, if any.

4.17.5 Risk Factors

Lack of adequate and timely funding support for the forest fire mitigation by the Forest Department can have a significant impact in achieving desired outcomes. Any other natural disasters and unavoidable catastrophes that may interrupt the expected normal course of events is also a significant risk to project implementation.

4.17.6 Gap analysis for Forest Fire Mitigation Project :-

1- **Strengthening of Human Resources**:- Engagement of fire watchers and providing them Protective gears/kits are proposed in this proposal. During the fire season, the department deployed 10 fire watchers per crew-station. Under the state sector, CAMPA and centrally funded scheme, the department made the provision for wages of 04 fire watchers. In this project, remaining 6 fire watchers per crew station has been proposed for 4 months during fire season. At present, 5 kits of Protective gears per crew station have been proposed under U-PREPARE project (World Bank). Additionally, 6 kits per crew station are proposed in this proposal.

2- **Capacity Building and Awareness Programme**:- Utilization of training & capacity building, awareness programmes and strengthening of Van Panchayats/Gram Panchayats (Incentive), less funding is being received. However, forest fire incidents can be reduced through increasing capacity building and awareness programmes. The contribution of the media in mass awareness programmes can be effective in forest fire mitigation outreach. In this proposal, for the first time, the Exposure visits and media sensitization workshops have been proposed.

   a) **Pre-Fire Season Mock Drill**: - For evaluation/training of frontline forest personnel to prevent forest fire in minimum time, one mock drill has been proposed per forest division.

3- **Procurement/Strengthening of Equipment for Fire Mitigation**:- A proposal for 7 repeater sets, 7 wireless towers, base set or hand set and 40 mini fire tender multiutility's tenders has been put forward under U-PREPARE project, the process is currently underway. Apart from this, the remaining wireless systems (repeater, base set, mobile set, walkie talkie etc.) under the department are not in good condition to operate, which needs to be replaced or repaired. Also a proposal for mini fire tender multiutility has also been proposed. A proposal for a Back pack water pumps with mist facility has been proposed for the first time, which can be very effective in controlling forest fire, for which operating staff will also be required.

4- **Procurement /hiring Mobility Vehicles (for QRT):-** During forest fire season, a proposal for hiring of vehicles is proposed under State Sector and CAMPA. Additionally, proposal for procurement of 64 vehicles for 32

reserved forest divisions and hiring of 5 vehicles per division for 41 forest divisions of Uttarakhand.

5- **Infrastructure Development**:- Establishment of Integrated Command and Control Centre is important for early warning and prediction of forest fire alerts during fire season, fire mitigation, 24x7 live visualization of fire and multipurpose model crew stations for disaster management is also proposed in this project.

6- **Water Regime and SMC works**:- The Soil and Moisture Conservation work also proposed under State Sector and CAMPA schemes. In this project, 12 highly & moderately fire sensitive divisions has been selected for watershed treatment area @500 Ha. per watershed. In these 12 divisions, proposed the construction of rain water structure tanks (1 lakh lit.), rain water percolation tanks (50000 lit), Chal-khal (30000 lit and 10000 lit), contour trench, vegetative-pirul check dams and RR dry check dams for increasing water regime in the high-risk areas.

7- **Post Fire Restoration of fire burnt Area**: - After the forest fire period, provision is being made for multipurpose plantation in the forest areas affected by the most forest fires. So that the areas affected by forest fire can be rejuvenated during the rainy season. Under this project, plantation of 10 hectares per forest division has been proposed in 10 highly sensitive forest divisions affected by forest fire. Silviculture activities, nursery raising work and maintenance of plantation for 3 years have been proposed under these forest divisions.

8- **Controlled Cool Burning & Fire line maintenance**: - There are 9,920 ha. Area proposed for cool/control burning in 41 territorial divisions. Cool/Controlled burning will be done in the Month of December and January. There are total 61842.54 km of fire lines under 100 feet, 50 feet, 30 feet, roadsides, perimeter of plantation, section fire line, forest block fire line and other fire lines. In this proposal, there are 4800 km. fire lines maintenance work proposed in 12 highly sensitive divisions as per working plan.

9- **Floor Bio-mass Utilization From Forest: -**

- **Pine Needle (Chir) Utilization**:- There are 106 ranges dominated by chir pine forests. In this project, selected 57 highly sensitive ranges of dominated chir pine areas to set up chir-pine needle collection centre. This proposal is being proposed for the first time and it is necessary for reduction of chir-pine needles, which is highly sensitive biomass for fire. In this proposal collection of pine needle (chir) by SHGs/Mahila- Yuva Mangal dal / other institutions, personnel for weighing, security & deployment of pine needles and establishment of pellets/briquettes unit set up and distribution of chir pirul based stoves for domestic and commercial use have been proposed.
- **Sal Seed & Leaf Manure Collection through SHGs for entrepreneurship development**: - Collection of Sal seeds and its leaves used for preparing bio manure with the help of self-help groups. Under this project, 500 hectares of Sal has been proposed in forest areas.
- **Weed Removal (lantana etc**: - Under the project, removal of Lantana and other weeds, which are highly flammable due to drying up in summer, has been proposed in 2250 hectares of 10 highly sensitive forest divisions.

10-**Fire Fighting Tools**: - There are 40,184 different fire equipment tools available in forest department at present. The list of division wise fire tools is annexed (annexure-1). In the present scenario of forest mitigation, a department need 2 Leaf blower per crew station i.e. requirement of 2876 leaf blowers. At present, 340 leaf blowers are available & in this project proposing only 615 leaf blowers with respect to the remaining leaf blowers. Also, department need one drone per range i.e. requirement of 287 drones. At present, department have only 37 drones, In this project only proposing 82 drones with respect to the remaining. Department don't have any oxygen cylinder. In this component, to augment the forest fire fighting resources, proposed 7190 oxygen cylinders (1 lit.).

These equipment's are very essential for forest fire mitigation, that is not proposed in other schemes.

11-**Technology**:- A mobile app is required for all field staff to report of forest fire incidences and monitoring the forest fire alerts with its live visualization in quick response time. Demonstration and research for utilization of new technologies and innovation for forest fire mitigation is also proposed for first time.

4.17.7 Budget

A total budget of Rs. 40400.98 Lakhs (404.01 Crores) is proposed over a period of five years.

Brief Details are as follows:

Serial	Year	Proposed Budget (In Lakh Rs.)
1	2024-25	7774.34
2	2025-26	10991.24
3	2026-27	7232.76
4	2027-28	7034.76
5	2028-29	7367.88
TOTAL		**40400.98**
		~ 40401 Lakhs

The detailed year and item wise budget is enclosed as Annexure.

It is important to mention here that for most items, the baseline costs for each year are with an addition of 10% from the previous year to offset inflation and increases in wages etc.

Uttarakhand Forest Fire Mitigation Project (2024-2029) Annual Budget

(₹ in Lakhs)

S. No.	Item	Phy Unit	Unit Cost (₹ Lakh)	FY 2024-25		FY 2025-26		FY 2026-27		FY 2027-28		FY 2028-29		Total		Remarks
				Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	
1	**Post Fire Restoration of fire burnt Area**															
1.1	Silvicultural activities	Ha	0.20	100	20.00	100	20.00	100	20.00	100	20.00	100	20.00	**500**	**100.00**	10 ha. Per Division (Extremely Fire Sensitive Division)
1.2	Restoration and multi purpose Plantation	Ha	2.00	100	200.00	100	200.00	100	200.00	0	0.00	0	0.00	**300**	**600.00**	
1.3	Restoration Nursery	No.	0.00025	300000.00	75.00	0	0.0000	0	0.00	0	0.00	0	0.00	**300000**	**75.00**	
1.4	Nursery Maintenance	No.	0.00010	0.00	0.00000	240000	24.0000	180000	18.00000	100000	10.00	0	0.00	**520000**	**52.00**	
1.5	Maintenance Plantation	Ha	0.35	0	0.00	100	35.00	200	70.00	200	70.00	100	35.00	**600**	**210.00**	
2	**Strengthening of Human Resources**															
2.1	Engagement of Fire Watchers	No.	0.10	8628	1294.20	8628	3451.20	8628	3796.32	8628	3796.32	8628	4141.44	**43140**	**16479.48**	Per crew Station 6 Fire Watcher proposed (1438 crew station)
2.2	Protective gears kit (proximity suit, shoes, water bottle, helment, head light, gloves, bag etc)	No.	0.30	2876	862.80	2876	862.80	0	0.00	0	0.00	0	0.00	**5752**	**1725.60**	Per crew Station 4 kits proposed (1438 crew station)

3	**Capacity Building and Awareness Programmes**															
3.1	Training & Capacity building	No.	0.25	400	100.00	400	100.00	400	110.00	400	110.00	400	120.00	**2000**	**540.00**	10 Training per year per division (40 division)
3.2	Awareness Programmes	No.	0.20	400	80.00	400	80.00	400	88.00	400	88.00	400	96.00	**2000**	**432.00**	10 Awareness Programmes per year per division (40 division)
3.3	Strengthening of Van Panchayats/Gram Panchayats (Incentive)	No.	0.30	500	150.00	500	150.00	500	165.00	500	165.00	500	180.00	**2500**	**810.00**	Incentive for van Panchayat/forest fire management committees
3.4	Exposure visits	No.	2.50	82	205.00	82	205.00	82	205.00	82	205.00	82	205.00	**410**	**1025.00**	2 exposure visits per division are Proposed
3.5	Media Sensitization workshops	No.	5.00	82	410.00	82	410.00	82	410.00	82	410.00	82	410.00	**410**	**2050.00**	2 media sensitization workshops per division are Proposed
3.6	Pre Fire Season Mock Drill	No.	1.00	41	41.00	41	41.00	41	41.00	41	41.00	41	41.00	**205**	**205.00**	Per Division 01 Mock Drill
4	**Procurement/Strengthing of equipment's for Fire Mitigation**															
4.1	Wireless system maintenance & Upgradation	LS	-	Procurement of Base sets, repeaters and	15.00	Procurement of Base sets, repeaters and	15.00	Procurement of Base sets, repea	16.00	Procurement of Base sets, repeat	16.00	Procurement of Base sets, repeat	16.00	Procurement of Base sets, repeaters and	**78.00**	Procurement of Base sets, repeaters and their maintenance

				their maintenance		their maintenance		ters and their maintenance		ers and their maintenance		ers and their maintenance		their maintenance		
4.2	Mini Fire tender (multi-utility) mounted on vehicles	No.	20.00	16	320.00	16	320.00	0	0.00	0	0.00	0	0.00	**32**	**640.00**	32 Mini Fire tender for territorial division and division having Protective Areas
4.3	Back pack water pumps with mist facility	No.	5.00	82	410.00	82	410.00	82	410.00	82	410.00	82	410.00	**410**	**2050.00**	10 back pack water pumps with mist per division are Proposed
4.4	Procurement of Mobility vehicles (for QRT)	No.	25.00	32	800.00	32	800.00	0	0.00	0	0.00	0	0.00	**64**	**1600.00**	Proposed for 2 per division for 32 territorial division and division having Protective Areas
4.5	Hiring of Mobility vehicles (for QRT) for fire session	No.	0.40	205	82.00	205	82.00	205	82.00	205	82.00	205	82.00	**1025**	**410.00**	Proposed 5 mobility vehicles for hiring per division

7.4	Establishment of Pellets/Briquettes Unit set up (government support to given entrepreneurs and firms)	No.	75.00	5	375.00	5	375.00	5	375.00	5	375.00	5	375.00	**25**	**1875.00**	There are 25 Pellets/Briquettes Units proposed to be established in 5 years.
7.5	Distribution of Chir Pirul based Pellets Stove for domestic use (government support and Subsidy)	No.	0.075	1500	112.50	1500	112.50	1000	75.00	1000	75.00	1000	75.00	**6000**	**450.00**	6000 Chir Pirul based pellets domestic stove to be proposed in 5 years.
7.6	Distribution of Chir Pirul based Pellets Stove for commercial use (government support and Subsidy)	No.	0.30	200	60.00	200	60.00	150	45.00	150	45.00	150	45.00	**850**	**255.00**	850 Chir Pirul based pellets commercial stove to be proposed in 5 years.
7.7	Sal Seed & Leaf Manure Collection through SHGs for entrepreneurship development	Ha	0.05	100	5.00	100	5.00	100	5.00	100	5.00	100	5.00	**500**	**25.00**	100 ha. Sal Seed & Leaf Manure Collection by SHGs
7.8	Weed Removal (lantana etc.	Ha	0.25	450	112.50	450	112.50	450	112.50	450	112.50	450	112.50	**2250**	**562.50**	45 ha. Per div. Weed Removal for 10 division
8	**Controlled Cool Burning & Fire line maintenance**															
8.1	Cool Burning & Fire Maintenance	Ha	0.01	1984	19.84	1984	19.84	1984	19.84	1984	19.84	1984	19.84	**9920**	**99.20**	62 ha. Per Territorial div.

8.2	Fire Line Maintenance	Km	0.025	960	24.00	960	24.00	960	24.00	960	24.00	960	24.00	**4800**	**120.00**	80 Km. Fire line maintenance in 12 Highly Sensitive Div.
9	**Fire fighting tools**															
9.1	Leaf blower	No.	0.70	315	220.50	300	210.00	0	0.00	0	0.00	0	0.00	**615**	**430.50**	15 leaf blowers are proposed for each division
9.2	Drones	No.	2.50	41	102.50	41	102.50	0	0.00	0	0.00	0	0.00	**82**	**205.00**	82 drons are proposed for each division
9.3	Oxygen cylinder 1 lit.	No.	0.05	4314	215.70	2876	143.80	0	0.00	0	0.00	0	0.00	**7190**	**359.50**	5 oxygen cylinder are proposed per crew station
10	**Modern Technology**															
10.1	Mobile app development	No.	10.00	1	10.00	0	0.00	0	0.00	0	0.00	0	0.00	**1**	**10.00**	This mobile app is important for monitoring of response time for forest fire mitigation, its live visulization and reporting off forest fire incidences.

10.2	Demonstration of New technology for fire mitigation & its Research for its utilization of technology.	**LS**	LS	LS	20.00	LS	20.00	LS	20.00	LS	0.00	LS	0.00	**LS**	**60.00**	For this purpose, ₹ 20 lakh proposed in first 3 years. (Cloud seedling, suppression gel & any others)
10.3	**Research for Burnt treatment & its analysis, ringal flowering study etc.**	**LS**	LS	LS	10.00	LS	10.00	LS	10.00	LS	10.00	LS	10.00	**LS**	**50.00**	For this purpose, ₹ 10 lakh proposed in research & analysis of burnt area
Total					**7774.34**		**10991.24**		**7232.76**		**7034.76**		**7367.88**		**40400.98**	

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Principal Chief Conservator of Forests,
(HoFF), Uttarakhand, Dehradun

Additional Principal Chief Conservator of Forest,
Forest Fire & Disaster Management,
Uttarakhand, Dehradun

UTTARAKHAND FOREST FIRE MITIGATION PROJECT- (2024-2029)
ANNUAL BUDGET

Uttarakhand Forest Fire Mitigation Project (2024-2029) Annual Budget					
					(₹ in Lakhs)
S.No.	Item	Phy Unit	Unit Cost (₹ Lakh)	FY 2024-25	
				Phy.	Fin.
1	**Post Fire Restoration of fire burnt Area**				
1.1	Silvicultural activities	Ha	0.20	100	20.00
1.2	Restoration and multi-purpose Plantation	Ha	2.00	100	200.00
1.3	Restoration Nursery	No.	0.00025	300000.00	75.00
1.4	Nursery Maintenance	No.	0.00010	0.00	0.00000
1.5	Maintenance Plantation	Ha	0.35	0	0.00
2	**Strengthening of Human Resources**				
2.1	Engagement of Fire Watchers	No.	0.10	8628	1294.20
2.2	Protective gears kit (proximity suit, shoes, water bottle, helmet, head light, gloves, bag etc)	No.	0.30	2876	862.80
3	**Capacity Building and Awareness Programmes**				
3.1	Training & Capacity building	No.	0.25	400	100.00
3.2	Awareness Programmes	No.	0.20	400	80.00
3.3	Strengthening of Van Panchayats/Gram Panchayats (Incentive)	No.	0.30	500	150.00
3.4	Exposure visits	No.	2.50	82	205.00
3.5	Media Sensitization workshops	No.	5.00	82	410.00
3.6	Pre-Fire Season Mock Drill	No.	1.00	41	41.00
4	**Procurement/Strengthing of equipment's for Fire Mitigation**				
4.1	Wireless system maintenance & Upgradation	LS	-	Procurement of Base sets, repeaters and their maintenance	15.00
4.2	Mini Fire tender (multi-utility) mounted on vehicles	No.	20.00	16	320.00
4.3	Back pack water pumps with mist facility	No.	5.00	82	410.00
4.4	Procurement of Mobility vehicles (for QRT)	No.	25.00	32	800.00

4.5	Hiring of Mobility vehicles (for QRT) for fire session	No.	0.40	205	82.00
4.6	Operating staff for mini fire tender	No.	0.20	16	12.80
5	**Infrastructure Development**				
5.1	Establishment of State War Room for Forest Fire Management & Calamities (Integrated Command and Control Centre)	No.	50.00	1	50.00
5.2	Upgradation of Master Control Rooms established in the divisions	No.	5.00	0	0.00
5.3	Establishment of multi purpose Model Crew Stations for disaster management	No.	30.00	0	0.00
6	**Water Regime enhancement & SMC Works**				
6.1	Rain Water structure Tanks (1lakh lit)	No.	0.60	120	72.00
6.2	Rain water percolation Tanks (50000lit)	No.	0.50	120	60.00
6.3	Chal-Khal (30000 lit)	No.	0.20	120	24.00
6.4	Chal-Khal (10000 lit)	No.	0.10	120	12.00
6.5	Contour Trench (3.00x0.30x0.30) per Ha. 200 Nos	Ha	0.15	2400	360.00
6.6	Vegitative-Pirul Check-dam	No.	0.10	120	12.00
6.7	RR Dry Check Dam (3-4 m span)	No.	0.20	120	24.00
7	**Floor Bio-mass Utilization From Forest**				
7.1	Collection of Pine Needle (Chir) by SHGs/Mahila-yuva Mangal dal/other institutions (per Ton)	Ton	0.03	5000	150.00
7.2	Establishment of Pine Needle (Chir) Collection Centre its proposed to setup collection centre for 106 ranges in chir pine dominated forest areas	No.	20.00	30	600.00
7.3	Personnel for weighing, security & arrangement of Pine Needle (Chir) and collection centre	No.	0.10	90	45.00

7.4	Establishment of Pellets/Briquettes Unit set up (government support to given entrepreneurs and firms)	No.	75.00	5	375.00
7.5	Distribution of Chir Pirul based Pellets Stove for domestic use (government support and Subsidy)	No.	0.075	1500	112.50
7.6	Distribution of Chir Pirul based Pellets Stove for commercial use (government support and Subsidy)	No.	0.30	200	60.00
7.7	Sal Seed & Leaf Manure Collection through SHGs for entrepreneurship development	Ha	0.05	100	5.00
7.8	Weed Removal (lantana etc.	Ha	0.25	450	112.50
8	**Controlled Cool Burning & Fire line maintenance**				
8.1	Cool Burning & Fire Maintenance	Ha	0.01	1984	19.84
8.2	Fire Line Maintenance	Km	0.025	960	24.00
9	**Fire fighting tools**				
9.1	Leaf blower	No.	0.70	315	220.50
9.2	Drones	No.	2.50	41	102.50
9.3	Oxygen cylinder 1 lit.	No.	0.05	4314	215.70
10	**Modern Technology**				
10.1	Mobile app development	No.	10.00	1	10.00
10.2	Demonstration of New technology for fire mitigation & its Research for its utilization of technology.	**LS**	LS	LS	20.00
10.3	**Research for Burnt treatment & its analysis, ringal flowering study etc.**	**LS**	LS	LS	10.00
Total					**7774.34**

UTTARAKHAND FOREST FIRE MITIGATION PROJECT- (2024-2029)
ANNUAL BUDGET

(₹ in Lakhs)

S.No.	Item	Phy Unit	Unit Cost (₹ Lakh)	FY 2025-26	
				Phy.	Fin.
1	**Post Fire Restoration of fire burnt Area**				
1.1	Silvicultural activities	Ha	0.20	100	20.00
1.2	Restoration and multi purpose Plantation	Ha	2.00	100	200.00
1.3	Restoration Nursery	No.	0.00025	0	0.0000
1.4	Nursery Maintenance	No.	0.00010	240000	24.0000
1.5	Maintenance Plantation	Ha	0.35	100	35.00
2	**Strengthening of Human Resources**				
2.1	Engagement of Fire Watchers	No.	0.10	8628	3451.20
2.2	Protective gears kit (proximity suit, shoes, water bottle, helment, head light, gloves, bag etc)	No.	0.30	2876	862.80
3	**Capacity Building and Awareness Programmes**				
3.1	Training & Capacity building	No.	0.25	400	100.00
3.2	Awareness Programmes	No.	0.20	400	80.00
3.3	Strengthening of Van Panchayats/Gram Panchayats (Incentive)	No.	0.30	500	150.00
3.4	Exposure visits	No.	2.50	82	205.00
3.5	Media Sensitization workshops	No.	5.00	82	410.00
3.6	Pre Fire Season Mock Drill	No.	1.00	41	41.00
4	**Procurement/Strengthing of equipment's for Fire Mitigation**				
4.1	Wireless system maintenance & Upgradation	LS	-	Procurement of Base sets, repeaters and their maintenance	15.00
4.2	Mini Fire tender (multi-utility) mounted on vehicles	No.	20.00	16	320.00
4.3	Back pack water pumps with mist facility	No.	5.00	82	410.00
4.4	Procurement of Mobility vehicles (for QRT)	No.	25.00	32	800.00
4.5	Hiring of Mobility vehicles (for QRT) for fire session	No.	0.40	205	82.00

4.6	Operating staff for mini fire tender	No.	0.20	32	25.60
5	**Infrastructure Development**				
5.1	Establishment of State War Room for Forest Fire Management & Calamities (Integrated Command and Control Centre)	No.	50.00	0	0.00
5.2	Upgradation of Master Control Rooms established in the divisions	No.	5.00	41	205.00
5.3	Establishment of multi-purpose Model Crew Stations for disaster management	No.	30.00	32	960.00
6	**Water Regime enhancement & SMC Works**				
6.1	Rain Water structure Tanks (1lakh lit)	No.	0.60	120	72.00
6.2	Rain water percolation Tanks (50000lit)	No.	0.50	120	60.00
6.3	Chal-Khal (30000 lit)	No.	0.20	120	24.00
6.4	Chal-Khal (10000 lit)	No.	0.10	120	12.00
6.5	Contour Trench (3.00x0.30x0.30) per Ha. 200 Nos	Ha	0.15	2400	360.00
6.6	Vegitative-Pirul Check-dam	No.	0.10	120	12.00
6.7	RR Dry Check Dam (3-4 m span)	No.	0.20	120	24.00
7	**Floor Bio-mass Utilization From Forest**				
7.1	Collection of Pine Needle (Chir) by SHGs/Mahila-yuva Mangal dal/other institutions (per Ton)	Ton	0.03	7000	210.00
7.2	Establishment of Pine Needle (Chir) Collection Centre its proposed to setup collection centre for 106 ranges in chir pine dominated forest areas	No.	20.00	27	540.00
7.3	Personnel for weighing, security & arrangement of Pine Needle (Chir) and collection centre	No.	0.10	171	85.50

7.4	Establishment of Pellets/Briquettes Unit set up (government support to given entrepreneurs and firms)	No.	75.00	5	375.00
7.5	Distribution of Chir Pirul based Pellets Stove for domestic use (government support and Subsidy)	No.	0.075	1500	112.50
7.6	Distribution of Chir Pirul based Pellets Stove for commercial use (government support and Subsidy)	No.	0.30	200	60.00
7.7	Sal Seed & Leaf Manure Collection through SHGs for entrepreneurship development	Ha	0.05	100	5.00
7.8	Weed Removal (lantana etc.	Ha	0.25	450	112.50
8	**Controlled Cool Burning & Fire line maintenance**				
8.1	Cool Burning & Fire Maintenance	Ha	0.01	1984	19.84
8.2	Fire Line Maintenance	Km	0.025	960	24.00
9	**Fire fighting tools**				
9.1	Leaf blower	No.	0.70	300	210.00
9.2	Drones	No.	2.50	41	102.50
9.3	Oxygen cylinder 1 lit.	No.	0.05	2876	143.80
10	**Modern Technology**				
10.1	Mobile app development	No.	10.00	0	0.00
10.2	Demonstration of New technology for fire mitigation & its Research for its utilization of technology.	**LS**	LS	LS	20.00
10.3	**Research for Burnt treatment & its analysis, ringal flowering study etc.**	**LS**	LS	LS	10.00
Total					**10991.24**

UTTARAKHAND FOREST FIRE MITIGATION PROJECT- (2024-2029)
ANNUAL BUDGET

(₹ in Lakhs)

S.No.	Item	Phy Unit	Unit Cost (₹ Lakh)	FY 2026-27	
				Phy.	Fin.
1	**Post Fire Restoration of fire burnt Area**				
1.1	Silvicultural activities	Ha	0.20	100	20.00
1.2	Restoration and multi purpose Plantation	Ha	2.00	100	200.00
1.3	Restoration Nursery	No.	0.00025	0	0.00
1.4	Nursery Maintenance	No.	0.00010	180000	18.00000
1.5	Maintenance Plantation	Ha	0.35	200	70.00
2	**Strengthening of Human Resources**				
2.1	Engagement of Fire Watchers	No.	0.10	8628	3796.32
2.2	Protective gears kit (proximity suit, shoes, water bottle, helmet, head light, gloves, bag etc)	No.	0.30	0	0.00
3	**Capacity Building and Awareness Programmes**				
3.1	Training & Capacity building	No.	0.25	400	110.00
3.2	Awareness Programmes	No.	0.20	400	88.00
3.3	Strengthening of Van Panchayats/Gram Panchayats (Incentive)	No.	0.30	500	165.00
3.4	Exposure visits	No.	2.50	82	205.00
3.5	Media Sensitization workshops	No.	5.00	82	410.00
3.6	Pre Fire Season Mock Drill	No.	1.00	41	41.00
4	**Procurement/Strengthing of equipment's for Fire Mitigation**				
4.1	Wireless system maintenance & Upgradation	LS	-	Procurement of Base sets, repeaters and their maintenance	16.00
4.2	Mini Fire tender (multi-utility) mounted on vehicles	No.	20.00	0	0.00

UTTARAKHAND FOREST FIRE MITIGATION PROJECT- (2024-2029)
ANNUAL BUDGET

(₹ in Lakhs)

S.No.	Item	Phy Unit	Unit Cost (₹ Lakh)	FY 2027-28	
				Phy.	Fin.
1	**Post Fire Restoration of fire burnt Area**				
1.1	Silvicultural activities	Ha	0.20	100	20.00
1.2	Restoration and multi purpose Plantation	Ha	2.00	0	0.00
1.3	Restoration Nursery	No.	0.00025	0	0.00
1.4	Nursery Maintenance	No.	0.00010	100000	10.00
1.5	Maintenance Plantation	Ha	0.35	200	70.00
2	**Strengthening of Human Resources**				
2.1	Engagement of Fire Watchers	No.	0.10	8628	3796.32
2.2	Protective gears kit (proximity suit, shoes, water bottle, helmet, head light, gloves, bag etc)	No.	0.30	0	0.00
3	**Capacity Building and Awareness Programmes**				
3.1	Training & Capacity building	No.	0.25	400	110.00
3.2	Awareness Programmes	No.	0.20	400	88.00
3.3	Strengthening of Van Panchayats/Gram Panchayats (Incentive)	No.	0.30	500	165.00
3.4	Exposure visits	No.	2.50	82	205.00
3.5	Media Sensitization workshops	No.	5.00	82	410.00
3.6	Pre Fire Season Mock Drill	No.	1.00	41	41.00
4	**Procurement/Strengthing of equipment's for Fire Mitigation**				
4.1	Wireless system maintenance & Upgradation	LS	-	Procurement of Base sets, repeaters and their maintenance	16.00
4.2	Mini Fire tender (multi-utility) mounted on vehicles	No.	20.00	0	0.00
4.3	Back pack water pumps with mist facility	No.	5.00	82	410.00
4.4	Procurement of Mobility vehicles (for QRT)	No.	25.00	0	0.00

4.5	Hiring of Mobility vehicles (for QRT) for fire session	No.	0.40	205	82.00
4.6	Operating staff for mini fire tender	No.	0.20	32	25.60
5	**Infrastructure Development**				
5.1	Establishment of State War Room for Forest Fire Management & Calamities (Integrated Command and Control Centre)	No.	50.00	0	0.00
5.2	Upgradation of Master Control Rooms established in the divisions	No.	5.00	0	0.00
5.3	Establishment of multi purpose Model Crew Stations for disaster management	No.	30.00	0	0.00
6	**Water Regime enhancement & SMC Works**				
6.1	Rain Water structure Tanks (1lakh lit)	No.	0.60	120	72.00
6.2	Rain water percolation Tanks (50000lit)	No.	0.50	120	60.00
6.3	Chal-Khal (30000 lit)	No.	0.20	120	24.00
6.4	Chal-Khal (10000 lit)	No.	0.10	120	12.00
6.5	Contour Trench (3.00x0.30x0.30) per Ha. 200 Nos	Ha	0.15	2400	360.00
6.6	Vegitative-Pirul Check-dam	No.	0.10	120	12.00
6.7	RR Dry Check Dam (3-4 m span)	No.	0.20	120	24.00
7	**Floor Bio-mass Utilization From Forest**				
7.1	Collection of Pine Needle (Chir) by SHGs/Mahila-yuva Mangal dal/other institutions (per Ton)	Ton	0.03	9000	270.00
7.2	Establishment of Pine Needle (Chir) Collection Centre its proposed to setup collection centre for 106 ranges in chir pine dominated forest areas	No.	20.00	0	0.00
7.3	Personnel for weighing, security & arrangement of Pine Needle (Chir) and collection centre	No.	0.10	171	85.50

7.4	Establishment of Pellets/Briquettes Unit set up (government support to given entrepreneurs and firms)	No.	75.00	5	375.00
7.5	Distribution of Chir Pirul based Pellets Stove for domestic use (government support and Subsidy)	No.	0.075	1000	75.00
7.6	Distribution of Chir Pirul based Pellets Stove for commercial use (government support and Subsidy)	No.	0.30	150	45.00
7.7	Sal Seed & Leaf Manure Collection through SHGs for entrepreneurship development	Ha	0.05	100	5.00
7.8	Weed Removal (lantana etc.	Ha	0.25	450	112.50
8	**Controlled Cool Burning & Fire line maintenance**				
8.1	Cool Burning & Fire Maintenance	Ha	0.01	1984	19.84
8.2	Fire Line Maintenance	Km	0.025	960	24.00
9	**Fire fighting tools**				
9.1	Leaf blower	No.	0.70	0	0.00
9.2	Drones	No.	2.50	0	0.00
9.3	Oxygen cylinder 1 lit.	No.	0.05	0	0.00
10	**Modern Technology**				
10.1	Mobile app development	No.	10.00	0	0.00
10.2	Demonstration of New technology for fire mitigation & its Research for its utilization of technology.	**LS**	LS	LS	0.00
10.3	**Research for Burnt treatment & its analysis, ringal flowering study etc.**	**LS**	LS	LS	10.00
Total					**7034.76**

UTTARAKHAND FOREST FIRE MITIGATION PROJECT- (2024-2029)
ANNUAL BUDGET

(₹ in Lakhs)

S.No.	Item	Phy Unit	Unit Cost (₹ Lakh)	FY 2028-29	
				Phy.	Fin.
1	**Post Fire Restoration of fire burnt Area**				
1.1	Silvicultural activities	Ha	0.20	100	20.00
1.2	Restoration and multi purpose Plantation	Ha	2.00	0	0.00
1.3	Restoration Nursery	No.	0.00025	0	0.00
1.4	Nursery Maintenance	No.	0.00010	0	0.00
1.5	Maintenance Plantation	Ha	0.35	100	35.00
2	**Strengthening of Human Resources**				
2.1	Engagement of Fire Watchers	No.	0.10	8628	4141.44
2.2	Protective gears kit (proximity suit, shoes, water bottle, helmet, head light, gloves, bag etc)	No.	0.30	0	0.00
3	**Capacity Building and Awareness Programmes**				
3.1	Training & Capacity building	No.	0.25	400	120.00
3.2	Awareness Programmes	No.	0.20	400	96.00
3.3	Strengthening of Van Panchayats/Gram Panchayats (Incentive)	No.	0.30	500	180.00
3.4	Exposure visits	No.	2.50	82	205.00
3.5	Media Sensitization workshops	No.	5.00	82	410.00
3.6	Pre Fire Season Mock Drill	No.	1.00	41	41.00
4	**Procurement/Strengthing of equipment's for Fire Mitigation**				
4.1	Wireless system maintenance & Upgradation	LS	-	Procurement of Base sets, repeaters and their maintenance	16.00
4.2	Mini Fire tender (multi-utility) mounted on vehicles	No.	20.00	0	0.00
4.3	Back pack water pumps with mist facility	No.	5.00	82	410.00
4.4	Procurement of Mobility vehicles (for QRT)	No.	25.00	0	0.00

4.5	Hiring of Mobility vehicles (for QRT) for fire session	No.	0.40	205	82.00
4.6	Operating staff for mini fire tender	No.	0.20	32	25.60
5	**Infrastructure Development**				
5.1	Establishment of State War Room for Forest Fire Management & Calamities (Integrated Command and Control Centre)	No.	50.00	0	0.00
5.2	Upgradation of Master Control Rooms established in the divisions	No.	5.00	0	0.00
5.3	Establishment of multi purpose Model Crew Stations for disaster management	No.	30.00	0	0.00
6	**Water Regime enhancement & SMC Works**				
6.1	Rain Water structure Tanks (1lakh lit)	No.	0.60	120	72.00
6.2	Rain water percolation Tanks (50000lit)	No.	0.50	120	60.00
6.3	Chal-Khal (30000 lit)	No.	0.20	120	24.00
6.4	Chal-Khal (10000 lit)	No.	0.10	120	12.00
6.5	Contour Trench (3.00x0.30x0.30) per Ha. 200 Nos	Ha	0.15	2400	360.00
6.6	Vegitative-Pirul Check-dam	No.	0.10	120	12.00
6.7	RR Dry Check Dam (3-4 m span)	No.	0.20	120	24.00
7	**Floor Bio-mass Utilization From Forest**				
7.1	Collection of Pine Needle (Chir) by SHGs/Mahila-yuva Mangal dal/other institutions (per Ton)	Ton	0.03	9000	270.00
7.2	Establishment of Pine Needle (Chir) Collection Centre its proposed to setup collection centre for 106 ranges in chir pine dominated forest areas	No.	20.00	0	0.00
7.3	Personnel for weighing, security & arrangement of Pine Needle (Chir) and collection centre	No.	0.10	171	85.50

7.4	Establishment of Pellets/Briquettes Unit set up (government support to given entrepreneurs and firms)	No.	75.00	5	375.00
7.5	Distribution of Chir Pirul based Pellets Stove for domestic use (government support and Subsidy)	No.	0.075	1000	75.00
7.6	Distribution of Chir Pirul based Pellets Stove for commercial use (government support and Subsidy)	No.	0.30	150	45.00
7.7	Sal Seed & Leaf Manure Collection through SHGs for entrepreneurship development	Ha	0.05	100	5.00
7.8	Weed Removal (lantana etc.	Ha	0.25	450	112.50
8	**Controlled Cool Burning & Fire line maintenance**				
8.1	Cool Burning & Fire Maintenance	Ha	0.01	1984	19.84
8.2	Fire Line Maintenance	Km	0.025	960	24.00
9	**Fire fighting tools**				
9.1	Leaf blower	No.	0.70	0	0.00
9.2	Drones	No.	2.50	0	0.00
9.3	Oxygen cylinder 1 lit.	No.	0.05	0	0.00
10	**Modern Technology**				
10.1	Mobile app development	No.	10.00	0	0.00
10.2	Demonstration of New technology for fire mitigation & its Research for its utilization of technology.	**LS**	LS	LS	0.00
10.3	**Research for Burnt treatment & its analysis, ringal flowering study etc.**	**LS**	LS	LS	10.00
Total					**7367.88**

Uttarakhand Forest Fire Mitigation Project (2024-2029) Annual Budget

(₹ in Lakhs)

S.No.	Item	Phy Unit	Unit Cost (₹ Lakh)	Total	
				Phy.	Fin.
1	**Post Fire Restoration of fire burnt Area**				
1.1	Silvicultural activities	Ha	0.20	500	100.00
1.2	Restoration and multi purpose Plantation	Ha	2.00	300	600.00
1.3	Restoration Nursery	No.	0.00025	300000	75.00
1.4	Nursery Maintenance	No.	0.00010	520000	52.00
1.5	Maintenance Plantation	Ha	0.35	600	210.00
2	**Strengthening of Human Resources**				
2.1	Engagement of Fire Watchers	No.	0.10	43140	16479.48
2.2	Protective gears kit (proximity suit, shoes, water bottle, helmet, head light, gloves, bag etc)	No.	0.30	5752	1725.60
3	**Capacity Building and Awareness Programmes**				
3.1	Training & Capacity building	No.	0.25	2000	540.00
3.2	Awareness Programmes	No.	0.20	2000	432.00
3.3	Strengthening of Van Panchayats/Gram Panchayats (Incentive)	No.	0.30	2500	810.00
3.4	Exposure visits	No.	2.50	410	1025.00
3.5	Media Sensitization workshops	No.	5.00	410	2050.00
3.6	Pre Fire Season Mock Drill	No.	1.00	205	205.00
4	**Procurement/Strengthing of equipment's for Fire Mitigation**				
4.1	Wireless system maintenance & Upgradation	LS	-	Procurement of Base sets, repeaters and their maintenance	78.00
4.2	Mini Fire tender (multi-utility) mounted on vehicles	No.	20.00	32	640.00
4.3	Back pack water pumps with mist facility	No.	5.00	410	2050.00
4.4	Procurement of Mobility vehicles (for QRT)	No.	25.00	64	1600.00
4.5	Hiring of Mobility vehicles (for QRT) for fire session	No.	0.40	1025	410.00

4.6	Operating staff for mini fire tender	No.	0.20	**144**	**115.20**
5	**Infrastructure Development**				
5.1	Establishment of State War Room for Forest Fire Management & Calamities (Integrated Command and Control Centre)	No.	50.00	**1**	**50.00**
5.2	Upgradation of Master Control Rooms established in the divisions	No.	5.00	**41**	**205.00**
5.3	Establishment of multi purpose Model Crew Stations for disaster management	No.	30.00	**32**	**960.00**
6	**Water Regime enhancement & SMC Works**				
6.1	Rain Water structure Tanks (1lakh lit)	No.	0.60	**600**	**360.00**
6.2	Rain water percolation Tanks (50000lit)	No.	0.50	**600**	**300.00**
6.3	Chal-Khal (30000 lit)	No.	0.20	**600**	**120.00**
6.4	Chal-Khal (10000 lit)	No.	0.10	**600**	**60.00**
6.5	Contour Trench (3.00x0.30x0.30) per Ha. 200 Nos	Ha	0.15	**12000**	**1800.00**
6.6	Vegitative-Pirul Check-dam	No.	0.10	**600**	**60.00**
6.7	RR Dry Check Dam (3-4 m span)	No.	0.20	**600**	**120.00**
7	**Floor Bio-mass Utilization From Forest**				
7.1	Collection of Pine Needle (Chir) by SHGs/Mahila-yuva Mangal dal/other institutions (per Ton)	Ton	0.03	**38000**	**1140.00**
7.2	Establishment of Pine Needle (Chir) Collection Centre its proposed to setup collection centre for 106 ranges in chir pine dominated forest areas	No.	20.00	**57**	**1140.00**
7.3	Personnel for weighing, security & arrangement of Pine Needle (Chir) and collection centre	No.	0.10	**774**	**387.00**
7.4	Establishment of Pellets/Briquettes Unit set up (government support to given entrepreneurs and firms)	No.	75.00	**25**	**1875.00**

7.5	Distribution of Chir Pirul based Pellets Stove for domestic use (government support and Subsidy)	No.	0.075	6000	450.00
7.6	Distribution of Chir Pirul based Pellets Stove for commercial use (government support and Subsidy)	No.	0.30	850	255.00
7.7	Sal Seed & Leaf Manure Collection through SHGs for entrepreneurship development	Ha	0.05	500	25.00
7.8	Weed Removal (lantana etc.	Ha	0.25	2250	562.50
8	**Controlled Cool Burning & Fire line maintenance**				
8.1	Cool Burning & Fire Maintenance	Ha	0.01	9920	99.20
8.2	Fire Line Maintenance	Km	0.025	4800	120.00
9	**Fire fighting tools**				
9.1	Leaf blower	No.	0.70	615	430.50
9.2	Drones	No.	2.50	82	205.00
9.3	Oxygen cylinder 1 lit.	No.	0.05	7190	359.50
10	**Modern Technology**				
10.1	Mobile app development	No.	10.00	1	10.00
10.2	Demonstration of New technology for fire mitigation & its Research for its utilization of technology.	LS	LS	LS	60.00
10.3	**Research for Burnt treatment & its analysis, ringal flowering study etc.**	LS	LS	LS	50.00
Total					40400.98

Principal Chief Conservator of Forests,
(HoFF), Uttarakhand, Dehradun

Additional Principal Chief Conservator of Forest,
Forest Fire & Disaster Management,
Uttarakhand, Dehradun

REFERENCES

1. http://164.100.24.220/loksabhaquestions/annex/171/AU4512.pdf

2. https://earth.org/worst-wildfires-in-us-history/

3. https://fsi.nic.in/forest-fire-activities?pgID=forest-fire-activities

4. https://www.guinnessworldrecords.com/world-records/601916-largest-forest-wildfire-single-fire

5. https://www.iii.org/fact-statistic/facts-statistics-wildfires

6. https://www.nationalgeographic.com/environment/article/partner-content-a-world-on-fire

7. https://www.npr.org/2020/01/10/795169417/enormous-mega-fire-in-australia-engulfs-1-5-million-acres

8. https://sbb.uk.gov.in/pages/display/88-books

9. https://www.sfgate.com/california-wildfires/article/How-the-largest-blaze-in-Calif-history-compares-15566279.php

10. https://www.wwf.org.au/news/news/2020/3-billion-animals-impacted-by-australia-bushfire-crisis#gs.zuby71

11. https://www.scientificamerican.com/article/rain-how-to-try-to-make-it-rain/

12. Anon (2019) National Action Plan On Forest Fire, Forest Protection Division, Ministry Of Environment, Forests And Climate Change, Government of India

13. Anon (2010): National Mission for Sustaining the Himalayan Ecosystem under National Action Plan on Climate Change. Department of Science & Technology, Government of India

14. Anon. (2018) : Policy for Power Generation from Pirul (Pine Leaves) and Other Biomass Government of Uttarakhand Energy Section-01 No. /I/2018/03-06(05)/07/2004 Dehradun :

15. Anon (2019), Uttarakhand at a Glance, Directorate of Economics and Statistics, Department of Planning, Govt. of Uttarakhand.

16. Anon (2021): Uttarakhand State Forest Fire Management Plan, Forest Department Uttarakhand.

17. Chandran Manoj (2011): Study on the Impact of ban on green felling of Chir Pine (Pinus roxburghiiSarg.), Report submitted to the Forest Department Uttarakhand.

18. Chandran M., Sinha A. R., and Rawat R. B. S.(2011): "Replacing controlled burning practice by Alternate methods of reducing fuel load in the Himalayan Long leaf Pine (Pinus roxburghiiSarg.) forests", 5th International Wildland fire conference, Sun city, South Africa, 9-13 May.

19. Dwivedi R. K., Singh R. P. and Bhattacharya T. K.(2016): Studies on bio-pre-treatment of Pine needles for sustainable energy thereby preventing wild forest fires Current Science, Vol. 111, No. 2, 25 July

20. Envis Newsletter Vol.-9 Issue-2 Oct-Dec.:(2013): Diversity of "Flora and Fauna of Uttarakhand, ENVIS Centre, UEPPCB, Dehra Dun.

21. GhaidaMuttasharAbdulsahib, Osamah Ibrahim Khalaf(2018): An improved Algorithm to Fire Detection in Forest by Using Wireless Sensor Networks, International Journal of Civil Engineering and Technology, 9(10), pp. 369–377.

22. Haksar R. N. and Schwager, M. (2018):"Distributed Deep Reinforcement Learning for Fighting Forest Fires with a Network of Aerial Robots," IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), pp. 1067-1074, doi: 10.1109/IROS.2018.8593539.

23. Joshi Kapil, Sharma Vinay & Mittal Sukrit (2015): Social entrepreneurship through forest bioresidue briquetting: An approach to mitigate forest fires in Pine areas of Western Himalaya, India, Renewable and Sustainable Energy Reviews,Volume 51,Pages 1338-1344, ISSN 1364-0321,

24. Kala CP (2010) Medicinal Plants of Uttarakhand – Diversity, Livelihood and Conservation. Biotech Books,

25. Marchal, J., Cumming, S.G. & McIntire, E.J.B. Turning Down the Heat: Vegetation Feedbacks Limit Fire Regime Responses to Global Warming. Ecosystems 23, 204–216 (2020). https://doi.org/10.1007/s10021-019-00398-2

26. Mohan, D. and Sinha, S. (2003). Birds of Uttaranchal (A checklist). Forest Department Uttaranchal. Pp vi + 23

27. Mohan, D.. and Sondhi, S. (2014) An Updated Checklist of the Birds of Uttarakhand. Uttarakhand Forest Department, Dehradun. Pp 54

28. Rahmani, A.R., Islam, M.Z. and Kasambe, R.M. (2016) Important Bird and Biodiversity Areas in India: Priority Sites for Conservation (Revised and updated). Bombay Natural History Society, Indian Bird Conservation Network, Royal Society for the Protection of Birds and BirdLife International (U.K.). Pp. 1992 + xii

29. Robinne F.-N., Burns J., Kant P., de Groot B., Flannigan M.D., Kleine M., Wotton D. M. (eds.).(2018):. Global Fire Challenges in a Warming World. Occasional Paper No. 32. IUFRO, Vienna, International Union of Forest Research Organizations.

30. Satendra and Kaushik, A.D. (2014): Forest Fire Disaster Management. National Institute of Disaster Management, Ministry of Home Affairs, New Delhi

31. Sengar Anita, Sharma Vinay, Agrawal Rajat, Dwivedi Alka, Dwivedi Prasoom, Joshi Kapil, Dixit Gaurav, Sharma, Pankaj Kumar , Barthwal Mohit(2020): Prioritization of barriers to energy generation using Pine needles to mitigate climate change: Evidence from India, Journal of Cleaner Production, Volume 275,

32. Uniyal, B.P., J.R. Sharma, U. Chaudhery& D.K. Singh (2007). Flowering Plants of Uttarakhand (A Checklist). Bishen Singh Mahendra Pal Singh Dehradun, 404pp.

33. State Forest Fire Management Plans, Forest Department, Government of Uttarakhand, 2019, 2021 & 2022.

34. Forest Fire Tools & Equipments, Director, Forest Research Institute, Dehradun & Head Silviculture Division, Forest Research Institute, Dehradun.

35. Craig Chandler, Philip Cheney, Philip Thomas, Louis Tabaud, Dave Williams, 1983 Fire in Forest Fire Behaviour and Effects. John Wiley & Sons, New York. Forestry

36. ES Artsybashev, 1974, Forest Fires and their control. Oxonian Press Private Ltd, New Delhi

37. Forest Department, Govt of Andhra Pradesh- Modern Forest Fire Control in Andhra Pradesh

38. Forest Department, Govt of Andhra Pradesh-State forestry Research Plan of Andhra Pradesh

39. Indian Council of Forestry Research and Education - National Forestry Research Plan

40. Forest Department, Govt of Andhra Pradesh- Annual Administration Report, 1996-97

41. R.K.Luna the author of the publication namely Principles and Practices of Forest Fire Control

42. Bahuguna, V.K, 1999. Forest fire prevention and control strategies in India. International Forest Fire News No. 20, 5-9,

43. Saigal, R. 1990. Técnicas modernas de control de incendios forestales: experiencia de la India. Unasylva Vol. 41, No. 162, 21-27.

44. Srivastava, R. 1999a. Controlling forest fire incidences by generating awareness. A case study from Nilgiri

45. Biosphere Reserve, Coimbatore, India. International Forest Fire News No. 20, 10-15.

46. Srivastava, R. 1999b. Forest fire and its prevention by generating environmental awareness in the rural masses. International Forest Fire News No. 21, 3647. Ministry of Environment and Forests. 1987. Annual report of forest survey of India.

47. Ministry of Environment and Forests. 1988 OEF. National forest policy.

48. Champion, HG, and S.K. Seth. 1968. A revised survey of forest types of India. Manager of publications. Rodgers, W.A. 1985. The role of fire in the management of wildlife habitat -A review. Indian Forester Vol.112, No. 10, 145-157.

Annexure-1

वनाग्नि शमन हेतु उपयोग में लाये जा रहे उपकरण (मार्च 2024 की स्थिति)																	
प्रभाग का नाम	साबेल	फायर रैक/हैंड रैक/गार्डन रैक	वाटर बोतल	वनाग्नि प्रतिरोधक जैकेट	फेस मास्क	फायर बीटर	फायर प्रोटेक्टिंग ग्लास (चस्में)	पुलास्की	दूरबीन	मैक्लायड	हेलमेट	सर्च लाईट /टार्च /हैड लैम्प	वाटर टैंक कैम्पर छोटा	बैग	फस्ट एड बॉक्स	डांगरी/ फायर प्रोटेक्ट सूट	सैनेटाईजर
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
DFO, Almora	21	198	145	0	29	8	27	7	7	5	140	45	0	30	0	0	0
DFO, Bageshwar	0	500	100	2	0	0	0	0	7	0	150	5	0	0	0	10	0
DFO, Champawat	37	705	128	0	2	29	3	14	6	11	52	56	0	0	0	12	0
DFO, Pithoragarh	43	642	120	50	0	32	0	29	9	50	100	19	0	2	8	0	0
DFO, Civil Soyam Almora	23	647	10	0	0	18	0	1	1	0	50	2	0	0	5	0	0
DFO, Nainital	70	2680	400	0	0	0	0	25	27	57	81	384	0	0	0	0	0
DFO, Nainital Soil Conservation	22	447	15	0	0	17	0	9	2	13	0	100	0	0	0	0	0
DFO, Soil Conservation Ranikhet	46	222	66	66	28	19	66	28	0	19	66	0	0	0	1	14	0
DFO, Soil Conservation, Ramnagar	86	483	49	0	0	0	0	20	0	80	30	114	0	0	0	0	0
DFO, Haldwani	29	150	100	0	0	0	0	100	38	0	0	0	0	0	0	0	0
DFO, Ramnagar	34	73	222	30	0	33	110	43	52	28	90	21	1	15	0	30	0

DFO, Tarai East	96	208	167	0	0	39	0	85	4	51	0	17	1	0	23	0	10
DFO, Tarai West , Ramnagar	41	100	85	0	0	48	0	34	8	38	0	14	0	0	17	0	10
DFO, Tarai central	25	48	32	0	0	15	0	12	2	8	0	3	1	0	1	0	0
DFO, Alaknanda Soil Conservation, Gopeshwar	7	301	100	0	0	0	0	0	11	2	0	103	0	0	80	0	0
DFO, Badrinath, Gopeshwar	60	379	0	200	150	111	150	0	27	62	100	1	0	100	90	150	0
DFO, Garhwal	20	767	313	0	0	119	0	2	16	35	129	108	0	30	25	61	0
DFO, Rudraprayag	0	580	100	0	0	100	0	56	0	0	100	0	0	0	0	0	0
DFO, Civil Soyam Pauri	95	275	243	0	0	144	0	0	4	0	184	66	0	72	0	0	0
DFO, Narendranagar, Muni-ki-rethi	14	509	220	0	50	0	0	0	0	0	370	112	13	270	0	0	0
DFO, Soil Conservation, Uttarkashi)	7	150	50	0	0	70	0	0	0	0	50	0	0	25	0	25	5
DFO, (Tehri DAM 1)	0	200	110	0	0	70	0	0	0	0	70	10	0	0	35	46	0
DFO, (Tehri DAM 2)	4	150	50	0	50	50	0	0	0	0	50	0	0	25	0	25	5
DFO, New Tehri	67	502	145	0	0	107	0	8	13	5	198	67	1	34	0	34	0
DFO, Uttarkashi	6	672	114	5	30	52	0	12	29	2	235	44	13	9	12	0	0
DFO, Chakrata	0	112	70	70	0	106	0	74	15	0	70	10	0	0	0	0	0
DFO, Mussoorie	78	144	111	8	66	26	0	2	20	0	43	9	1	40	3	0	0

DFO Tons,Purola	57	140	155	50	60	0	0	31	10	0	134	64	0	50	0	8	0
DFO, Upper Yamuna, Badkot	0	153	32	0	0	15	8	0	13	0	40	41	0	0	40	9	0
DFO, Haridwar	18	116	80	4	0	49	0	13	19	1	64	14	5	18	2	10	0
DFO, Dehradun	17	160	110	0	50	45	12	79	10	0	72	7	0	45	3	0	0
DFO. Lansdowne, kotdwaar	186	100	100	0	0	7	0	0	20	0	100	30	0	0	0	0	0
DFO Soil Conservation, kalsi	387	326	281	49	0	53	0	10	9	0	64	28	0	58	0	20	0
DFO Soil Conservation , Lansdowne	44	235	59	0	0	50	0	9	10	16	143	0	1	0	0	0	0
DCF - NDNP	45	87	0	0	0	84	0	35	43	86	81	187	0	0	0	0	0
DCF - Kedarnath WL Division	8	1094	600	94	0	121	0	3	49	41	154	15	0	279	62	0	0
Dy. Director (Raja ji NP)	0	50	100	50	0	0	0	0	20	0	0	21	0	250	55	0	0
Dy Dir Govind Wildlife Sanctuary	15	120	179	50	0	0	0	17	15	0	50	84	0	0	25	0	0
Gangotri National Park	6	70	24	0	0	0	0	40	15	0	0	0	0	0	0	0	0
Dy. Director (Corbett TR/ Division)	31	117	480	0	400	60	0	117	24	50	50	207	5	565	200	0	0
Dy. Director (Kalagarh TR/ Division)	60	200	200	0	0	0	0	0	30	0	80	12	1	200	25	0	0
	1805	**14812**	**5665**	**728**	**915**	**1697**	**376**	**915**	**585**	**660**	**3390**	**2020**	**43**	**2117**	**712**	**454**	**30**

वनाग्नि शमन हेतु उपयोग में लाये जा रहे उपकरण (मार्च 2024 की स्थिति)																	
प्रभाग का नाम	ड्रोन	लीफ ब्लोवर	अन्य (जूते, वर्दी, स्लिपिंग बैग आदि)	ब्रुस हुक	डबल बीट एक्स	फायर रैंजिपंट क्लाथ	दस्ताने	फायर ड्रिल किट	फायर किट	वेदर पैरामिटर /रेन गेज	मोबाइल फोन/पी0ए0 मैगाफोन सिस्टम	फायर प्रोटेक्ट सूट	पाठल/ दरांती/ तलवार	फावड़ा	बेलचा /कुल्हाड़ी /गैती	दन्दाली	कुल
1	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
DFO, Almora	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**668**
DFO, Bageshwar	1	29	50	0	0	0	0	0	0	0	0	0	0	0	0	0	**854**
DFO, Champawat	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1062**
DFO, Pithoragarh	1	7	0	76	34	44	0	0	0	4	0	1	0	1	0	0	**1272**
DFO, Civil Soyam Almora	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	**765**
DFO, Nainital	0	7	0	12	14	0	0	0	0	0	0	0	280	0	20	0	**4057**
DFO, Nainital Soil Conservation	0	0	0	7	6	0	0	0	0	0	0	0	21	0	0	0	**659**
DFO, Soil Conservation Ranikhet	0	4	66	0	0	0	48	0	0	0	0	0	0	0	0	0	**759**
DFO, Soil Conservation, Ramnagar	0	3	0	9	0	0	0	0	19	0	0	0	0	47	59	0	**999**
DFO, Haldwani	0	22	0	56	30	0	0	0	0	0	1	0	0	0	0	0	**526**
DFO, Ramnagar	0	11	0	35	22	5	0	24	40	7	0						**926**
DFO, Tarai East	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**709**
DFO, Tarai West , Ramnagar	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**400**
DFO, Tarai central	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**147**

DFO, Alaknanda Soil Conservation, Gopeshwar	0	13	0	6	1	0	0	39	0	27	0	0	116	0	28	0	**834**
DFO, Badrinath, Gopeshwar	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1589**
DFO, Garhwal	0	6	21	0	0	0	0	0	0	0	0	0	0	0	0	0	**1652**
DFO, Rudraprayag	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**944**
DFO, Civil Soyam Pauri	0	0	0	0	0	0	0	0	0	0	0	0	72	0	0	0	**1155**
DFO, Narendranagar, Muni-ki-rethi	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1571**
DFO, Soil Conservation, Uttarkashi)	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**385**
DFO, (Tehri DAM 1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**541**
DFO, (Tehri DAM 2)	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**416**
DFO, New Tehri	0	14	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**1196**
DFO, Uttarkashi	1	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1248**
DFO, Chakrata	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**533**
DFO, Mussoorie	1	13	71	0	0	0	0	0	0	0	0	0	10	0	3	0	**649**
DFO Tons,Purola	0	1	0	0	7	0	0	0	0	6	0	0	68	28	21	51	**941**
DFO, Upper Yamuna, Badkot	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**360**
DFO, Haridwar	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**418**
DFO, Dehradun	0	16	0	0	0	0	0	0	0	0	0	0	19	0	1	0	**646**
DFO. Lansdowne, kotdwaar	1	4	0	0	0	0	0	0	0	0	0	0	50	0	0	0	**598**
DFO Soil Conservation, kalsi	2	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1309**

DFO Soil Conservation , Lansdowne	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**574**
DCF - NDNP	1	6	52	0	0	0	0	0	0	0	0	0	0	0	0	0	**707**
DCF - Kedarnath WL Division	1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2528**
Dy. Director (Raja ji NP)	7	23	0	0	0	0	0	0	0	0	67	50	235	0	0	0	**928**
Deputy Director Govind Wildlife Sanctuary	0	3	593	0	0	0	0	0	0	20	0	0	75	0	40	0	**1286**
Gangotri National Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**155**
Dy. Director (Corbett TR/ Division)	9	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2328**
Dy. Director (Kalagarh TR/ Division)	6	13	0	63	0	0	0	0	0	0	0	0	0	0	0	0	**890**
	37	**340**	**857**	**264**	**114**	**49**	**48**	**64**	**59**	**64**	**68**	**51**	**946**	**76**	**172**	**51**	**40184**