

# Standard Operating Procedure (SOP) for Forest Fire Fighting and Management, Pema Gatshel Dzongkhag.

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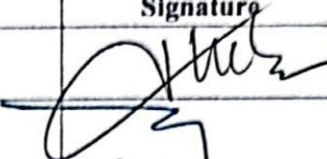


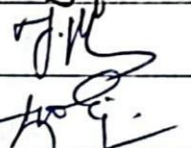




**31<sup>st</sup> May, 2022**

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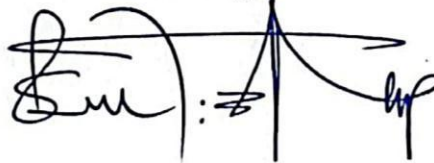
**INTER-AGENCY FOREST FIRE COORDINATION GROUP (IFFCG)**

Prepared by:  
Divisional Forest Office,  
in Collaboration with IFFCG Members

## APPROVAL SHEET

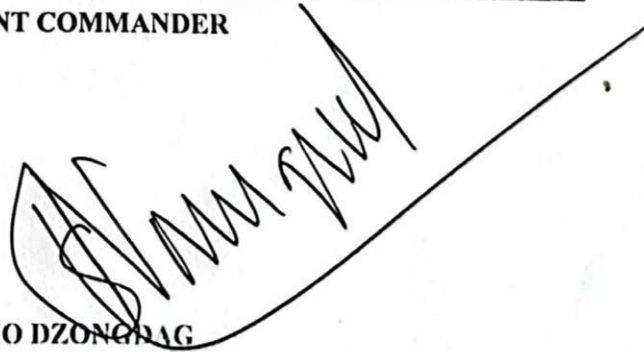
IFFCG MEMBERS			
Agency	Name	Designation	Signature
Local Government	Pema Dorji	DT Chairman	
Royal Bhutan Police	Ugyen Kelzang	Dasho OC	
District Hospital	Gautam Rana	Chief Medical Officer	
Dzongkhag ADM	Dorji Drakpa	DT Secretary/DDMO	
Desung	Phuntsho Wangdi	Dzongkhag Coordinator	
Bhutan Red Cross Society	Pema Tshering	Dzongkhag Coordinator	
Bhutan Power Corporation	Tashi Wangchuk	Manager	
Department of Road	Lethro Dorji	Executive Principal Engineer	

Incident Manager



Chief Forestry Officer  
Divisional Forest Office, Pemagatshel

INCIDENT COMMANDER



DASHO DZONGKHAG  
DZONGKHAG ADMINISTRATION, PEMAGATSHEL

## **BACKGROUND**

Pemagatshel Dzongkhag is situated in eastern region of the country. In accordance to National Forest Inventory (NFI) Report 2016, the district has total geographical area spanning to 101,217 Hectares. Of the total area, the forest cover area accounts to 83,745 hectares that constitute to 83 % (NFI, 2016) and (87.65 % LCMP, 2010).

The altitudinal gradient ranges from 100 meters to 3600 meters prevailing under wet subtropical to cool temperate agro-ecological zone (RNR Statistic, 2011). The district experiences an average annual rainfall of 1500 mm to 3000 mm (11 FYP, 2013). The prevailing dominant vegetation type is Broadleaved Forest, however in few patches and stretches the Chirpine forest are also found in four Gewogs; Nanong, Zobel, Shumar and Chimung.

This Dzongkhag being one of the agrarian communities, the slash and burn agriculture practices are very common and this practice has become the main causes of forest fire incidences in the Dzongkhag based on past forestry fire record.

As of 2021, 15 numbers of forest fires incidents occurred under the Dzongkhag destroying around 5845.1 Hectares of forest land. (PDFO forest fire report, 2021). Based on the forest fire prone area mapping conducted by Divisional Forest Office in 2017, four Gewogs; Shumar, Zobel, Nanong and Chiphung were mapped under highly prone areas.

Therefore, accordingly the Divisional Forest Office had initiated formulation of Community Level Forest Fire Management Group (CLFMG) at Tshatse and Dagor under Nanong Gewog and gradually the office has a plan to roll out the program in other fire prone areas of the Dzongkhag.

## **INTRODUCTION**

Fire is an important element of natural environment and one of the first tools in the history of human evolution. The fire is usually perceived as a destructive force but in fact, it is neither naturally destructive nor constructive as it entirely depends on how human put it into use (USDA, 1989). The natural incidences of forest fire prevent the occurrence of more severe fires by reducing fuel loads and build-up vegetations. It also helps in maintaining forest healthy by destroying competitive weeds, harmful pests and diseases.

However, the fire when not in controlled tends to spreads over unintended areas posing threats to human lives, biodiversity and properties impacting the conservation and economic development. Since forest fire is one of the primary causes of forest deforestation and degradation amongst other drivers, it poses threat to the constitutional requirement of maintaining 60 percent forest cover. Despite putting all possible effort for prevention and control measure, the fire destroys thousand hectares of forest land annually in Bhutan. The rugged terrain, topography and erratic climatic conditions further pose challenges in managing forest fire in our country.

Currently there is no proper guidelines, planning and coordination system for command and control for incident management during forest fire incidences that fails to provide for timely, efficient and effective forest fire fighting actions and responses. Therefore, based on the command of His Majesty the King in February 2017, the formulation of Standard Operating Procedures (SOP) was initiated “to strengthen inter-agency coordination and to ensure that forest firefighters are adequately and appropriately dressed and equipped while on firefighting duty”. In line with this, the Standard Operation Procedures (SOP) was formulated for Pemagatshel Dzongkhag led by Divisional Forest Procedure to provide prompt respond in coordinated approach during the incident of forest fire within Dzongkhag.

## OBJECTIVES

To ensure safety of the firefighting personnel during forest fire incidents.

To provide for timely, efficient and effective firefighting actions on forest fire incidents.

For better coordination among different stakeholders required to involve in firefighting.

To achieve cost-efficient and optimal resources distribution for all forest fire fighters.

## SOP: BASIC INITIAL PRIORITIES

These SOPs describes the method by which various Agencies involved in forest fire fighting are managed and forest fire fighting actions are being carried out in coordinated approach. The SOP will be implemented through formation of Inter-agency Forest Fire Coordination Group (IFFCG) and the Rapid Respond Team (RTT) specifying their clear roles and responsibilities.

### 1. PRE-INCIDENT PLANNING AND PREPAREDNESS.

#### 1.1 Nomination of Focal Officer for Inter-Agency Forest Fire Coordination Group (IFFCG).

The IFFCG shall consist member from various Agencies; Dzongkhag Administration, Local Government, Divisional Forest Office, Royal Bhutan Police, Desoop and Bhutan Red Cross Society. The nominated Agency Focal shall act as primary contact officials and take lead role in providing immediate response to forest fire incidents within the Dzongkhag.

Table 1- IFFCG Members

Sl.No.	Agency	Focal by Position	IFFCG Position	Contact No.
1	Dzongkhag Administration	Dasho Dzongdag	Incident Commander	17691717
2	Divisional Forest Office	Chief Forestry Officer	Incident Manager	77810956
3	Royal Bhutan Police (RBP)	Dasho OC	Member	17471177
4	Local Government	DT Chairman	Member	17688513
5	District hospital	Chief Medical Officer	Member	17640585
6	Dzongkhag Administration	DT Secretary	Member	17499018
7	Desuung	Dzongkhag Coordinator	Member	17691282
8	Bhutan Red-Cross Society	Dzongkhag Coordinator	Member	17629498
9	Bhutan Power Corporation	Manager	Member	17610606
10	Department of Road	Executive Engineer	Member	17739839

Any changes in membership of the IFFCG should be informed to the Incident Manager (IM) for updates.

## 1.2 Organogram of the Inter-Agency Forest Fire Coordination Group (IFFCG)

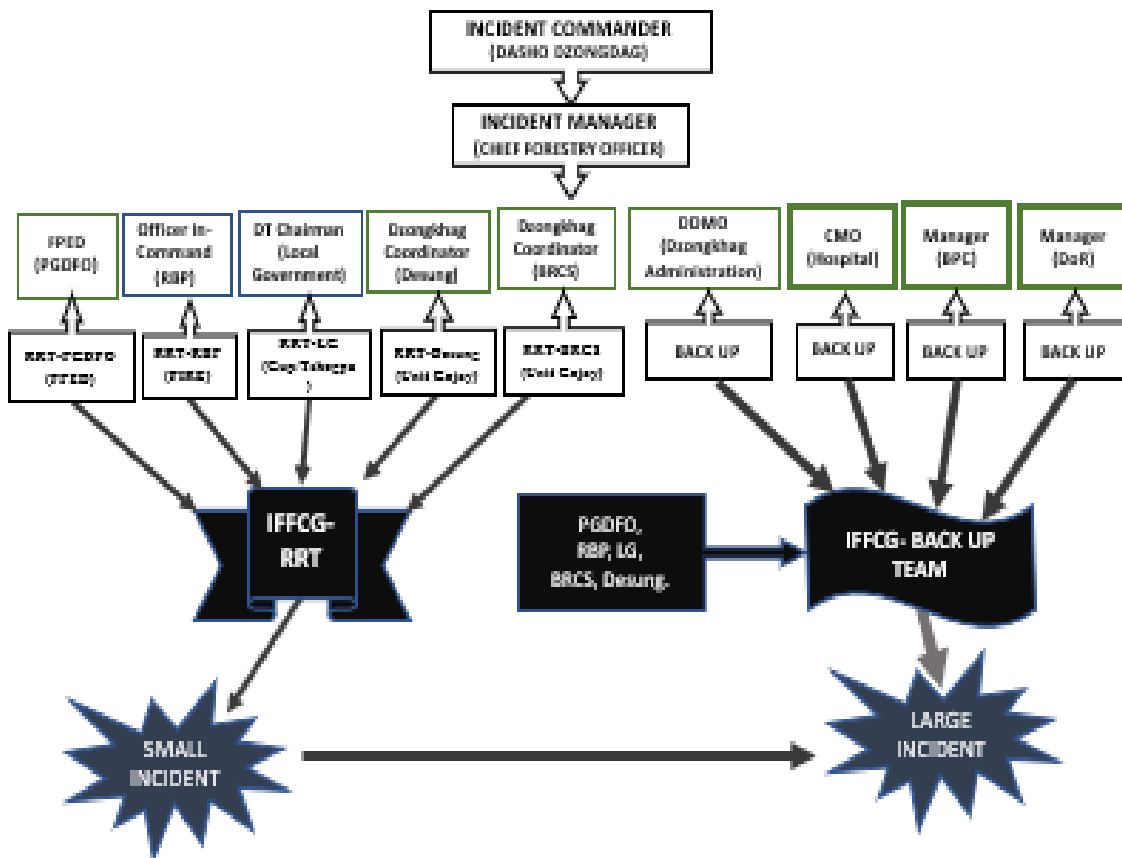


Figure 1- IFFCG Organogram

## 1.3 Training and awareness

- 1.3.1 To equipped all firefighters with various firefighting techniques, fire safety, coordination and communication protocols, the training will be conducted periodically led by PGDFO in collaboration with RBP, Desoop, BRCS, CMO and DDMO.
- 1.3.2 The fire experts from DoFPS will train all focal officers on incident management system and coordination.
- 1.3.3 The Equipment handling training such as Drone<sup>1</sup> and Power Chainsaw (felling technique) will be conducted for focal officers and RRT members led by PGDFO.
- 1.3.4 PGDFO will train members from stakeholder agencies and communities to carry out prescribed burn techniques counter fire and creation of fire line based on technical burn plans identified in fire prone areas.

<sup>1</sup> Individual each from every agencies member will be trained on drone operation.

## 1.4 Rapid Responds Team (RRT)

- 1.4.1 The Rapid Response Team (RRT)<sup>2</sup> will be formed from identified agencies; PGDFO, RBP, Desuung, BRCS and LGs.
- 1.4.2 The RRT will be trained, equipped and keep on stand-by to coordinate quick and effective first response to forest fire incidences in and around Pemagatshel.
- 1.4.3 The RRT shall consist total members of 20-25 and each RRTs may be further deployed as crews of 5 members each led by a crew leader.
- 1.4.4 The crew leader must be an officer of adequate command and decision-making authority, who will coordinate and follow up with respective focal officers during incidents.
- 1.4.5 The RRTs should be fully trained and equipped with Personal Protective Equipment (PPE) and other firefighting tools and accessories.

## 1.5 Fire Line Construction

- 1.5.1 Fire lines will be constructed around important structures, monuments and property at risk. The identification of such areas will be facilitated by PGDFO in consultation with Dzongkhag and Gewog Administration.
- 1.5.2 The construction of fire line will be coordinated by the PGDFO and implemented in collaboration with all IFFCG members and the communities.
- 1.5.3 Financial and logistics requirements and management for such events will be collaboratively arranged by PGDFO, DDMO and concern Gewogs.

## 1.6 Equipment

- 1.6.1 It is absolutely essential that any individual on forest fire incidences be adequately and appropriately equipped to effectively suppress the fires while at the same time ensuring personal and team safety.
- 1.6.2 The arrangement and distribution of equipment for IFFCG focal and RRT members will be coordinated by concern agencies. The arrangement and distribution will gradually roll out for all fire-fighters.
- 1.6.3 Gewog offices vehicle will be designated as medical evacuation vehicle in the event of emergencies.
- 1.6.4 All the member agencies will procure basic necessary forest fire fighting equipments in their respective gewogs.

**Table 2-** Equipment required for respective RRT

S/no	Types of Equipment	RBP	BRCS	PGDFO	LGs	Desuung	Total
1	Handset	2	2	2	2	2	12
2	Rake	20	20	20	80	20	160
3	Shovel	5	5	5	35	5	55
4	Pulaski	10	10	10	20	10	60
5	Flappers	20	20	20	80	20	160
6	Power chain saw	NA	NA	1	1	1	3
7	Water pack pump	10	10	10	20	10	60
9	Portable Water pump	2	2	2	4	2	12
10	Collapsible Tank	2	2	2	4	2	12
11	Drone (UAV)	0	0	1	0	0	1
12	Safety ropes (100m)	1	1	1	5	1	9

<sup>2</sup> The members with chronic respiratory diseases will not get involved as RRT.

## **1.7 Personal Protective Equipment (PPE)**

Persons undertaking forest fire activities should be appropriately attired to protect themselves and others from the dangerous effects of fire.

- 1.7.1 Ideally, clothing made from natural fibers should be worn that covers all major parts of the body to give protection from radiant heat. Garments made from synthetic materials, (nylon, rayon, etc) should not be worn.
- 1.7.2 Helmet should be worn at all times during firefighting to protect the head from falling, low or over-hanging objects.
- 1.7.3 Foot-wear should be sturdy to prevent ankle injury while traversing rugged, loose and uneven terrain.
- 1.7.4 Goggles and smoke masks should be worn to protect the eyes and respiratory system from smoke and embers.
- 1.7.5 Soft leather gloves with gauntlets should be worn to protect exposed areas of skin extending from shirt/coat sleeves (e.g. wrists, hands and fingers) to provide protection against radiant heat, embers and sharp objects or splinters. Gloves would also minimize blistering from excessive use of hand tools.

## **2. PRE-INCIDENT ROLES AND RESPONSIBILITIES OF IFFCG**

The IFFCG shall have numerous roles and responsibilities before the occurrence of fire (pre-incident), during the fire incident (suppression) and after the fire (post-fire).

### **2.1 Collective Roles and Responsibilities of IFFCG**

- 2.1.1 Coordinate to plan for training, awareness, identification of fire hazard area and conduct prescribed burning and creation of fire line.
- 2.1.2 Identify RRTs led by a crew leader and keep them ready for deployment prior to onset of forest fire season.
- 2.1.3 Coordinate to alert RRT and back up team for deployment as per the requirement.
- 2.1.4 Meet as and when required to discuss on issues related to forest fire management and suppression activities.
- 2.1.5 Coordinate, conduct and participate in all necessary training before the onset of the fire season.

### **2.2 Specific responsibilities of the IFFCG members**

- 2.2.1 PGDFO, DDMO and Gup of concern Gewog shall facilitate and arrange for distribution of PPE and firefighting gears to the respective agency focal before the onset of fire season and distribute to RRT's and other fire fighters as required.
- 2.2.2 All Agency Focal shall ensure that their respective agencies have basic requirements such as transportation and logistics for deployment RRT and other fire fighters.
- 2.2.3 The identified Agency Focal shall ensure that RRT's from their respective agencies are ready and always on stand-by during the forest fire season to deliver effective first coordinated response.
- 2.2.4 Upon the deployment of RRT for first coordinated response, all IFFCG member will alert Back up team and keep informed for deployment in case of large incident.
- 2.2.5 The PGDFO in consultation with DDMO, RBP, BRCS and Desung shall coordinate to conduct training and awareness programs on prescribe burning, fire line creation, firefighting techniques and search and rescue.
- 2.2.6 The RRT from Bhutan Red Cross Society will arrange to provide First AIDS for any casualties at



the incident site. Should there be requirement for medical back, the CMO will coordinate and arrange for necessary support.

2.2.7 PGDFO, concern Gewog and DDMO shall held overall responsibility for arrangement of logistics during fire incidents under direct command of IC.

### **3. FIRE SUPPRESSION AND OPERATIONS ON INCIDENT**

#### **3.1 Fire Fighter Safety (SAFETY FIRST)**

- o The Officer In-charge is accountable for safety of all firefighters. At the same time, all firefighters are also equally responsible for their own safety.
- o All firefighters should work collectively at the incident site to ensure safety of firefighters and other people in the area.
- o The first concern should be: “Is anyone in danger? If so, what can we safely do to protect them.
- o The second concern should be, “Is there anything of value in danger? If so, can we safely protect it?”
- o The third concern should be, “Is there anything we can safely do to help restore normality to the affected area?”

#### **3.2 Operational of Forest Fire Incident Management**

- o The IM (CFO) upon receiving fire incident information will assess the severity of the forest fire and accordingly inform IC and activate the IFFCG.
- o If the fire incidence falls under small to medium category, the IM will activate Rapid Respond Team (RRT) in consultation with the Agency Focal.
- o The RRT will immediately arrange to visit the fire incident site and try to suppress and control the forest fire.
- o If RRT could suppress and control the fire incident, they will report the IM accordingly and as such the IM will submit report to DoFPS and copy to IC.
- o In case, if the fire could not be controlled, the RRT will inform IM and the IM upon informing the IC, will activate backup team through focal of different agencies.
- o All Agency focal will coordinate to deploy the backup team from their respective agencies in consultation with IM.
- o The IM will prepare post-fire management report and submit to the Department of Forests and Park Services (DoFPS) with a copy to IC.

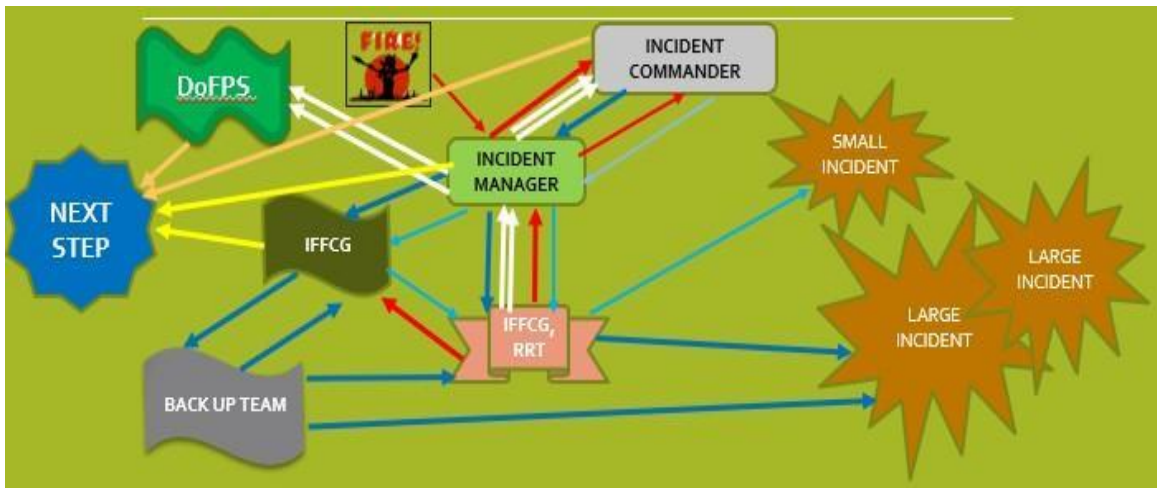


Figure 2- Incident coordination system during forest fire incident

#### 4. OPERATIONAL PLANNING DURING PROLONGED LARGE FIRES

- o During prolonged large incident fire, the IM will take lead in planning and coordinating the next steps for fire suppression under the direct command of IC and upon intimating with the DoFPS.
- o The IFFCG will initiate incident suppression planning including: rotation of fire fighters, construction of fire line and setting counter fires.
- o The IM upon apprising IC in collaboration with RBP will arrange to deploy water tanker and fire brigade to control and suppress fires.
- o Plan and propose to protect adjoining infrastructure and other resources through hazard reduction collaboratively with IFFCG members.
- o If the use of helicopter services is considered necessary by IFFCG, the IM will apprise IC who will then coordinate with DDM for availing an approval for helicopter service.

#### 5. TRANSPORTATION AND COMMUNICATION

##### 5.1 Transportation Protocol

- o The arrangement for transportation of RRT will be done by respective Agency Focal in consultation with IM. Should there be any inconvenience; the IM will apprise IC for transportation support from the Dzongkhag and other Agency Focal.
- o The transportation for Back up fire fighters will be coordinated and arranged by DDMO in consultation with IM under the direct command of IC.

##### 5.2 Communication

- o The IM will create a suitable social media group for quick communication among IFFCG agency focal and RRT before the onset of fire season.
- o The group shall be activated every year for entire fire season (October – March).
- o In the event of forest fire incidences the agency focal and RRT will use their mobile phone for communication.

## **6. REVIEW AND AMENDMENT**

- ✓ The SOP will be reviewed periodically as and when required in consultation with all IFFCG members, which will be chaired by the Incident Commander.
- ✓ Any additional sections or the sub-sections felt important to incorporate after the approval of this SOP shall be discussed during the review meeting and upon consensual agreement, the IM will arrange to annexe after the endorsement from Incident Commander.
- ✓ The change in Agency Focal of the IFFCG members will be informed to the IM and accordingly the IM will apprise Incident Commander (IC) and deliberate the matter during the IFFCG review meeting for regular updates.