

POLICY *Brief*

No. 03-17: October 2017

Forest Fire Incidences

An assessment of India's preparedness to deal with forest fires and the strategy forward

Forest fire incidences in India receive priority only where there is a reported loss of timber or other forest produce; this is due to the tangible monetary loss attached to it. Our country remains entirely ignorant about a number of intangible damages associated with it. Air pollution, rapid depletion of glaciers, global warming and climate change, damage to the natural environment, loss of wildlife habitat are some of the primary and well established impacts of forest fires witnessed across the globe. Unfortunately, in India 'economy gets priority over ecology' and therefore ecological losses, be it direct or indirect, remain unnoticed, irrelevant, undocumented and ignored. The Government of India has still not come up with a dedicated national forest policy for prevention and control of fire; neither has it constituted a separate cell dedicated exclusively to deal with forest fires. Given the vast damages that occur from forest fires, it is essential that the government comes up with a national and state level action plan to review in detail, the incidence of forest fire so as to develop effective mitigation strategies. This is especially important given that apart from the damage to the environment, a vast number of human population, including indigenous tribes, are dependent on these forests for their livelihood and destruction of forests pose a great threat to their primary existence.

Introduction

The State of Forest Report of 1995 published by the Forest Survey of India (FSI) revealed that on an average, 53.1% of forest area is affected by fires.¹ Further, the Forest Fire Disaster Management Report 2014, published by the National Institute of Disaster Management, states that, “*about 35 million hectares of forest area is affected by fires annually*” in India and “*50% of the total forest area of the country is prone to forest fires*”.² Again, as per an RTI reply dated 8th November 2016, received from the Ministry of Environment, Forest and Climate Change (MoEF&CC), the total forest land affected and degraded in just 11 states and Union Territories due to forest fires in the last 4 years (2012 – 2016) is 2, 43, 940 Ha.

The data available on forest fires, as highlighted above, clearly depicts a distressing picture with respect to the frequency of occurrence of forest fires in India and the number of forests that are prone to these fires. Despite this serious situation, the awareness of the vast environmental and other impacts of forest fires and the effort made by the government to deal with these issues is close to nil. The little substance that it has attained due to media reports also limits itself to the state of Uttarakhand and Himachal Pradesh. Mint highlighted about 12 states, which have registered more forest fires than Uttarakhand in the last five years.³

Upon studying the prominence of forest fires in the Indian legislation, a number of significant gaps surfaces when it comes to the need for documentation and recording, monitoring, mitigation measures of forest fires and related issues; and the biggest gap exists in policy making.

This paper attempts to identify and highlight some of the significant issues relating to forest fires, the numerous gaps that exist and the developments so far.

Impacts of Forest Fires

India constitutes one of the richest biodiversity zones in the world which supports a variety of flora and fauna. Along with the enormous economical gains, forests also provide a variety of environmental benefits. With the frequent occurrence of forest fires however, the rich biodiversity is constantly under threat and a number of other serious issues also arise.

Some of the primary concerns with respect to forest fires include air pollution, impact on Himalayan glaciers, global warming, threat to biodiversity, impact on soil structure, impact on people’s livelihood and impact on indigenous tribes.

Forest fires can be accounted as one of the chief contributors to the depletion of **Himalayan glaciers**. They emit a mix of organic material and black carbon or soot, which travel long distances to

¹ The State of Forest Report 1995, Forest Survey of India (Ministry of Environment, Forest and Climate Change), Page 81

² Forest Fire Disaster Management, National Institute of Disaster Management, Ministry of Home Affairs (Government of India)

³ The forest fires beyond Uttarakhand dated May 06 2016, Mint. Available at: <http://www.livemint.com/Politics/er5wI3cx3DabpgP5ynPi5L/The-forest-fires-beyond-Uttarakhand.html>

finally deposit on glaciers upon reaching the northern part of India.⁴ This black carbon or soot absorbs more sunlight thereby causing rapid melting of glaciers. Furthermore, when the glaciers melt into rivers they also contaminate the river water by carrying with them the deposited black carbon/ soot. Apart from black carbon/ soot these fires also emit a cocktail of toxic gases and aerosol including greenhouse gases (Carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O); photo-chemically reactive compounds (carbon monoxide (CO), non-methane volatile organic carbon (NMVOC), nitrogen oxides (NO_x)) and fine and coarse particulate matter (PM) thereby majorly impacting the **Ambient Air Quality**.⁵ What is important to note here is that the impact on air due to forest fires are not restricted to the region of occurrence of these fires and the impacts are felt in places far away from the origin point of forest fire, this was the case in the city of Salmon (Idaho, US) in August 2012. The PM_{2.5} concentration of 80 mg/m³ was due to the Halstead Fire, which took place more than 100 km (over 62 miles) away from the city. Similarly, in the city of Reno (Nevada, US), in August 2013 the air quality was not considered safe for 4 days, due to the Rim Fires, taken place almost 250 km, or 155 miles away.⁶

Forest fires are also extremely damaging to the **Himalayan ecosystem** and they threaten wild animals and their natural habitat posing a risk to their survival. **Tribal population** in most part of the country is an inseparable part of the forest ecosystem and their dependence upon forests are social, economic, religious and cultural. Loss of forests, apart from greatly affecting the livelihood of these tribal, also threaten their very existence. As per the India State of Forest Report 2015 there are 189 tribal districts identified by the Government of India and the total forest cover in these tribal districts is 451,223 sq. km. which is 40.59 percent of the geographical area of these districts.

Enforcement Gaps

Forest fires are frequently occurring events across the country and even though the loss is palpable, they are undocumented to a large extent. Regardless of the number of issues, both environmental and economical, that arise from forest fires, no significant effort has been made to deal with the said issue. In fact, India is still ill equipped to meet the challenges associated with forest fires.

Inadequacy in Regulatory Framework and absence of a Unified Plan

For starters, the two main statutes constituted for forest conservation i.e. the Indian Forest Act 1927 and the National Forest Policy 1988 do not talk about forest fires in detail or with the significance that it requires. While the Indian Forest Act, 1927 covers forest fires caused due to wilful action or due to gross negligence and provides penalization of such action by way of imprisonment, fine or by suspending all rights of pasture, it only extends to reserved forests.⁷ Even the National Forest Policy

⁴ Black Carbon Research Initiative, National Carbonaceous Aerosols Programme (NCAP), March 2011, Government of India. Available at: <http://www.moef.nic.in/downloads/public-information/Black%20Carbon%20Research%20Initiative.pdf>

⁵ Chemical Composition of Wildland Fire Emissions by Shawn P. Urbanski, Wei Min Hao, and Steve Baker accessed on 24th August, 2017 at https://www.nifc.gov/smoke/documents/Chem_Comp_Wildland_Fire_Emissions.pdf

⁶ Data by Climate Center Association, accessed on <https://www.decodedscience.org/summer-fires-effects-air-pollution-health/55350>,

⁷ Areas that are recorded as forest in the government records

1988 only recognizes the existence of forest fires and the need to take special precautions during the fire season.⁸ The policy however does not specifically deal with the mitigation and control of forest fires and is therefore insufficient to this extent. Furthermore, the policy also suffers effective implementation and even the Supreme Court acknowledged that there is no machinery established even today for implementation of the said National Forest Policy, 1988.⁹

National Green India Mission and Council on Climate Change were mandated to prepare a Forest Fire Action Plan to handle CO₂ emission and CO₂ sequestration, however no such plan has been formulated.¹⁰

Further, the legal guidelines and the schemes formed by the government are also insufficient considering the gravity of the issue of forest fires. India lacks a unified national forest fire plan or guidelines and existing general forest policies such as the National Forest Policy 1988 have not been looked into or reviewed since 1988. An RTI response received from the MoEF&CC and Forest Survey of India (FSI) dated 28th November, 2016 and 18th October 2016 respectively also clarified that there is no Unified Forest Fire Policy or National Forest Fire Coordination Plan or Policy.

Inefficient Mitigation Measures and Techniques

The meagre mitigation measures that exist and have been adopted in the past are insufficient and ineffective, there is no separate department for carrying out forest fire management in the States and the regular forest department staffs carry out forest fire management activities. The techniques adopted to tackle forest fires have time and again been proven ineffective, the personnel deployed to fight fires are not provided with fire suits, extinguishers, water or even medicines.¹¹ The absence of basic equipments has in the past led to the death of a numerous people in their attempts to put out these fires. Further, there is no uniform plan to strategize control and mitigation of forest fires, districts decide their own fire plans, ground fires and are controlled with the help of local people and even when forest fire fighting teams are provided, they are untrained and inefficient. This is also perhaps the reason that a number of forest fires persists for over weeks.

Lack of Inter-departmental Co-ordination

The coordination between responsible authorities for mitigating forest fires is another important facet that is missing, an RTI reply received from the MoEF&CC dated 28th November 2016 stated that there has been no joint co-ordination meeting between MoEF&CC, State Forest Department, National Disaster Management, Forest Survey of India, Forest Research Institute, State Disaster Management Authorities to mitigate forest fires measures, even though they are part of the Central Crisis Group as per MOEF&CC Crisis Management Plan for forest fires headed by Forest protection Division of MOEF&CC. This is despite the fact that the Crisis Management Plan for Forest Fires

⁸ Section 4.8.2 of National Forest Policy 1988

⁹ *Lafarge Umiam Mining Pvt. Ltd. V. Union of India (UOI) and Ors. [(2011) 7 SCC 338]*

¹⁰ RTI reply by MoEFCC & FSI

¹¹ Forest fires: 3 dead, 14 burnt as personnel lack suits, meds, water dated 3rd May 2016, The Hindustan Times. Available at: <http://www.hindustantimes.com/india/forest-fires-3-dead-14-burnt-as-personnel-lack-suits-meds-water/story-Bs39hobWYDcEyyZQWO7nRK.html>

requires the Central Crisis Group to hold meetings with Fire Prone States to assess their preparedness to meet exigencies.¹²

Lack of Data

India does not have any comprehensive data, record or study on the occurrence of forest fires and the loss associated with it, both in terms of value, area, loss of natural resources and livelihood and also information on total CO₂ emissions caused due to forest fires in India since 2000 till date.

The various Union plans such as Green India Mission, Prime Minister's Council on Climate Change mandate maintenance of data on the total degraded forest cover being restored after forest fire, however as per an RTI reply dated 30th September 2016 by MoEF&CC, no such data is available.

The only statistics available is the annual economic loss which was estimated to be Rs. 4,400 million approximately; however it only includes the replacement cost of the seedlings and does not include the losses to bio- diversity, timber, incremental carbon sequestration capacity, soil moisture and nutrient loss etc.¹³ The Forest Survey of India in its reply to an RTI stated that they do not have any data on the total economic loss incurred due to forest fires.¹⁴

Lack of Funds

Apart from the issues with coordination and absence of an effective strategy, there is an immense gap when it comes to funds. The State and Union Territories get funds under the Centrally Sponsored Scheme, named Intensification of Forest Management. However, this is not to deal exclusively with forest fire management, rather the fund is meant for the overall management of forest and therefore funds received for forest fire management is insignificant leaving states in a crunch of funds during peak months of forest fire occurrence.¹⁵ The scheme also does not have fund allocation for capacity building programme to prepare for forest fires.¹⁶ Furthermore, the trend analysis of funds released to the states and the Union Territories during 2011-2016 depicts a decline from 63.36 Crore in 2011-12 to 43.84 Crore in 2015-16.¹⁷

Developments so far

India does have a satellite-based forest fire alert system called the Indian Forest-Fire Response and Assessment System at the Vikram Sarabhai Space Centre which has been operational since 2005.¹⁸

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¹³ Page 122 of Forest Fire Disaster Management Report 2014 by National Institute of Disaster Management

¹⁴ RTI reply dated 19th October 2016 by Forest Survey of India

¹⁵ Forest Fires and its Effect on Environment, Forests, Bio-Diversity and Wildlife and Remedial/Preventive Measures

¹⁶ RTI reply by MoEFCC dated 30th September 2016, attached as Annexure V

¹⁷ Parliamentary Standing Committee Report No. 293 of Parliament of India , published in December 2016 "Forest Fires and its Effect on Environment, Forests, Bio-Diversity and Wildlife and Remedial/Preventive Measures"

¹⁸ Indian Forest Fire Response and Assessment System (INFFRAS), Vikram Sarabhai Space Centre , India Space Research Organization, Department of Space, Government of India. Available at:

The system sends an advance warning to foresters based on the 'possibility of fire arising at intense heat zones created in forests due to the hot weather and highly inflammable tree residue'. The system however does not detect fires caused due to human intervention and since in India 95% of the forest fires are manmade, the Indian Forest-Fire Response and Assessment System is ill equipped to that extent.

Most recently, the National Green Tribunal, principal bench passed a detailed judgment in the case *Rajiv Dutta Vs. Union of India* (O.A. No. 216 of 2016) dated August 3, 2017, extending to the entire country. The judgment was passed in an attempt to resolve the issue of widespread damage caused due to forest fires across the country. The most important aspects of the direction included formulation of National policy/Guidelines for forest fire prevention and control; preparation and implementation of forest fire management plan in states; reviewing the implementation of the Forest Fire/ Crisis Management Plan of the State; taking effective steps to prevent and control forest fires and execute relief, rehabilitation and restorative measures; ensuring that financial resources, manpower, transport/vehicle and fire fighting equipment are made available to the Forest Department; mapping of forest fire vulnerability of the entire forest area by the Forest Department; identifying hot-spots of fire in vulnerable areas and locations where stations for fire prevention and control could be set up; strengthening the satellite based Forest Fire Alert System and ensuring that field staff are trained in prevention and control; setting up a network of automated surveillance or watch towers /observation posts at strategic locations to provide regularly, on a real time basis, data for forest fire alerts for timely interventions of fire incidences.

However, as on November 15, 2017 i.e. three months after the NGT's judgment, the Ministry of Environment, Forest and Climate Change (MoEF&CC) had still not prepared a national policy on forest fire and it submitted that it will be issuing a national policy on forest fire by February 15, 2018.

CONCLUSION

The incidence of forest fires so far have only received importance in an economical loss perspective. The environmental degradation perspective including air pollution parameter, emission of black carbon, loss to the ecology etc have hardly come into focus. It is important to remember that the issue of forest fire is much bigger than what has been highlighted so far. Loss of soil micro-nutrient, danger to wildlife, loss of livelihood and property, likely health impacts from forest fire are some of the important issues that the government cannot remain ignorant to. Further, considering the international commitment of enhancing the carbon sink to 2.5-3 billion tons of CO₂ equivalents by 2030,¹⁹ India cannot afford to take this issue lightly. The negligence and laid-back attitude of the authorities is evident from the fact that four months have passed since the NGT directed formulation of action plans and taking various measure to mitigate forest fires, however nothing is close to be done so far.

http://www.vssc.gov.in/VSSC_V4/index.php/retired-employee-portal/78-applications/remote-sensing-applications/463-indian-forest-fire-response-and-assessment-system-inffras

¹⁹ Forest Fires and its Effect on Environment, Forests, Bio-Diversity and Wildlife and Remedial/Preventive Measures" adopted by the Rajya Sabha 16th December 2016