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## Opinion

# Forest Fires in Himalaya- Climate Change or Policy Myopia?

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## Abstract

This opinion article looks at the rising number of forest fires in the Himalayan region. We need to consider if these fires result only from climate change or if other factors are involved. It's clear that climate change, especially global warming, has made conditions worse for forest fires by raising temperatures and extending dry periods. However, in the Himalayan region, these fires are mostly surface fires, which have low to moderate intensity. Additionally, the current policies focused on fire suppression have negatively impacted the socio-ecological systems in the Himalayas, as they were originally created with a Western perspective. It's essential to understand that we can only analyze forest fires in the Himalayas within a socio-ecological framework that includes climate, community, and adaptive management.

## Introduction

Fire has influenced the biosphere since it became widespread 400–350 million years ago (Ma) [1]. It is a natural force that plays a critical role in ecological functioning and biodiversity maintenance [2]. Humans have relied on fires as a tool for management of land, ecosystem modification. It is understandable that human dependence on forest fires was extensive in the past for survival and growth. However, recent data indicates that forest fires are becoming more prevalent in modern times, burning nearly twice as much tree cover today as they did 20 years ago [3].

One of the major drivers of forest fires over the last 20 years is global warming induced extreme heat waves which are now five times more common than they were 150 years ago and are expected to increase in frequency as a result of the same [3]. Warmer and drier conditions creating idyllic conditions for bigger and more frequent forest fires. These fires, result in higher greenhouse gas emissions, further exacerbating climate change, resulting in even more fires, creating a "climate -fire

feedback loop". It is expected that extreme forest fires event will increasing by 14% by 2030 and 30% by 2050 [4].

In the Himalayan region forest fires have not just a remained a cyclical phenomenon, a significant number of fire events are taking place outside the defined fire season (mid Feb to first week of June) [5], and also visible in areas where they did not occur in the past. Advancement in space technology allows us to precisely identify areas where forest fires occur. What we do not know understand the underlying causes that led to this problem in the first place. Is it just global warming? Global warming included Climate change is arguably one of the key factors behind rise in forest fires time and scale. Fire season in the Himalaya are changing [6]. Warm and dry spells in winter are creating ideal conditions for fires to start and spread. The pine forests, especially chir pine (*Pinus roxburghii*), are already fire-prone because of their resinous litter.

However, forest fires in the Himalaya still remain small, patchy, fast moving and short lived "surface fires" [5]. Such fires are less detrimental to the ecosystems when compared to slow moving "ground fires" and big stand replacing "crown



fires". Himalayan fires unlike forest fires elsewhere in the world are small contributor to global carbon emissions when compared to North America, Central Africa and South East Asia, through even small emissions from the Himalayan region are critical due to its vicinity to the impact on Himalayan glaciers which feed approximately 1/4<sup>th</sup> of global population [7]. Moreover, the previously small, low-intensity, and scattered fires are likely to change for worse, and climate change is only one part of the equation.

The fact that poor policy and management practices are playing a huge role in the escalation of the fire risk in the Himalaya. The Himalayan model of forest fire management is borrowed from the western world [8] where fires occur naturally, and prioritizes fire suppression over all other factors. The model failed in countries such as US. Long term fire suppression led to devastating and uncontrollable wildfires in future. Whereas, the west is seriously thinking of changing fire suppression policies, the Himalayan region has adopted an archaic and ecologically passive way of managing forest fires in modern times. Traditionally, forest fires which were used as a tool to manage forest understory growth, clear litter and promote fodder grasses [9]. Today it is seen as an enemy that must be fought at all costs by forest managers, social media conservationists and those with poor ecological thought and contextual understanding of the Himalayan forests and its people. Forest fires are not seen as part of socio-ecological process in which humans', forest and fire coexisted for centuries. The current model promotes build-up of huge amounts of fuels on the floors of the Himalayan forests; drier and warmer conditions can potentially result in change in forest fire regime from "surface" to "crown" fires which would become impossible to control in an inaccessible hostile terrain of Himalaya region. Fire suppression policies and other draconian acts also criminalize local communities, leading to a sense of alienation from their own forest.

The actions are largely technology driven remain an unfortunate mix of ignorance and departmental superiority. The focus of the chronicle is largely the criminalization of villagers and a native tree species *Pinus roxburghii* as "miscreants" [9]. The are early warning systems based on satellite imagery, remote sensing methods provide the incidences and area affected by fire, not the undying causes behind them. Little serious investment is made on pre planning at a landscape level. Control burning, developing fire lines and community engagement remain cosmetic in nature. Rather, there has been a reliance on tales of heroism, unrealistic strategies i.e cloud seeding and ecologically undesirable fire suppression. Such actions will have severe and long-term consequences. In future the Himalayan forest may experience high-intensity, crown fires causing changes to the structure and function of forest [10], the pedosphere, changing hydrological regimes by intensifying flash floods [11] and landslips [12] during the monsoons. Future fires will result in higher GHG emissions leading to larger amount of soot deposits on glaciers increasing melt rates. Reduced air quality, public health, loss of livelihoods and tourism will get silently affected.

What we need is a paradigm shift from a reactive management of forest fires to proactive and adaptive forest fire management in the Himalaya. The first step is the realization of the fact that forest fires are not just law and order issue, but a part of socio-ecological fabric of this region [13] which needs to be seen in a cohesive manner, by integrating climate, forest, traditional knowledge and the re-aligning of local communities in forest fire management, and reorganizing decision-making to the landscape level. Winters are getting drier [14] and lengthier; forest fires continue to increase both in numbers and intensity [15]. The problem is not because we know less, but because we continue to ignore what we know.

## Conclusion

In conclusion, the occurrence of forest fires in the Himalayan region cannot be solely blamed on the impact of climate change; policy misalignment and the loss of traditional ecological practices are equally to blame. The existing fire suppression policy, which is disconnected from the socio-ecological context of the region, has the potential to transform low-intensity fires into catastrophic events. This problem, therefore, calls for a paradigm shift towards the adoption of integrated and adaptive management practices that consider the input of both science and the community. Without this paradigm shift, the Himalayan ecosystem and millions of people who depend on the ecosystem are at great risk of environmental and socio-economic risks.

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