Causes and Effects of Rampant Forest Fire in Highlands Arunachal: A Study from Kurung Kumey District

Tame Ramya
Ph.D. Scholar
C/o, Director, Arunachal Institute of Tribal Studies (AITS)
Rajiv Gandhi University
Rono Hills, Doimukh - 791112, Arunachal Pradesh, India.

ABSTRACT

Forest is a complex ecological system in which trees are dominant life forms. Today, a forest is any land managed for the diverse purposes of forestry, whether or not covered with trees, shrubs, climbers or such other vegetation. Technically, forest has come to be defined as an area set aside or maintained under vegetation for any indirect benefits, namely climate, protective or environmental or for production of wood and non-wood products. In legal sense, a forest can be defined as an area of land notified to be a forest under a forest law. Forest fire is sometimes desirable or detrimental in specific season to the ecosystem, but forest fire is used for different means and purposes by the human beings from time to time. It has been used for clearing the agricultural land, driving away the wild beast, for cooking, for heat, for light, pasture land or regeneration of floral and faunal habitation. The history of wild fire in different parts of highland Arunachal is long and varied. The present paper is a product of the study on
causes and effects of forest fire and more particularly its impact on the forest ecosystems in the long run with a global perspective in mind.

INTRODUCTION

Arunachal Pradesh, which forms a significant part of Eastern-Himalaya’s “Bio-diversity Hotspot”, is characterised by wide range of physio-climatic conditions varying from tropical climate in foothills touching neighbouring Assam to alpine grasslands in the uplands stretching within narrow width. The Eastern Himalaya is appraised of being a home for about 175 species of mammals and over 500 species of birds (Chettri et al, 2006).

The state, due to diverse geographical and climatic conditions, is bestowed with rich floral diversity with 5000 seed plants out of 15000 found in India, many flowering plants, about 550 exotic orchids, about 452 pteridophytes, 60 bryo-phyles, 80 lichens, more than 500 plants with medicinal properties, 35 varieties of bamboo, 20 species of canes, etc. (SFRI, 2002; APHDR, 2005).

Moreover, the state is known for its rich forest cover. Nevertheless, the recent loss in forest cover was registered as being highest among the north-eastern states by 26 sq. km in the year between 2001 and 2003 (NEC, 2006). One of the major factors behind the diminishing in forest cover could be the unprecedented forest fires, which is very frequent in the state. Undoubtedly, the repeated annual forest fires in the state may increase further depletion of forest, and thereby lose the distinction as ‘lungs of the nation’ (Rawat et al, 2012). This study covers the causes and effects of forest fires in the state with special reference to Kurung Kumey District.
CAUSES OF FOREST FIRE

The forest fire in the state and in Kurung Kumey District is purely anthropogenic in nature, yet it is little understood whether knowingly or unknowingly. Almost all the tribes i.e. Nyishi, Puroik and Bangru inhabiting the district practice traditional slash-and-burn (jhum cultivation) method of agriculture along the sloppy hills, which is locally known as *tump-rungho*. The new jhum plot is selected and slashed generally in the months of February, March, and April. The slashed biomass is set ablaze as soon as it dries up adequately to turn into ash by the fire. The neglected spark which escapes from the burning jhum readily transforms hectares of rich forest cover into ash within no time. For days and nights fire continues to burn in the surrounding hills and everybody remain as silent spectators.

It is a difficult task to contend or manage forest fire in the hilly terrains. Due to gradient, the fire creep upslope readily; steeper the slope more aggressive is the fire because of the easy reach of firewood to slither through. Moreover, the mountain or valley breezes also act as catalyst for its rapid spread. The distant and difficult terrains are out of reached by any fire brigades and other services because such services are not available in the district. As jhum cultivation is blamed for the cause of forest fires, in that context it is very customary that the state machinery blames local communities and in return the local communities slap various government agencies/departments for their failure in evolving alternative means of livelihood to jhum cultivation.

The forest fires in some pockets of Kurung Kumey district are intentional to meet certain specific requirement of the tribals. Intended burning of the forest fulfils the
objectives of rejuvenating the forest cover by burning down the dried up leaves and grasses during the lean season to allow regeneration of tender vegetation which serves ‘fodder’ for the livestock. There are other communities who collect green vegetables from the forest, have been practicing forest burning to help grow the selective plants used as vegetables. The burning of forest also regenerates thatch-grass used for roofing and other important activities. Such forest burning is in practice in Palin, Nyapin, Koloriang, Sarli, and Sangram areas. Further, the forest burning helps native hunters to allure browsing animals. Sometimes the encroachers also set fire to forest in order to clear the land for agricultural purposes.

EFFECT OF FOREST FIRE IN SOIL EROSION AND ECOSYSTEM

The jhum clearing and forest fires are immediately followed by the onset of the monsoon rain. Unfortunately, high concentration of erosive energy of rainfall is found during monsoon (June to September) followed by summer (March to May).

Thus, the rainfall is not only consistent during summer and monsoon but its energy also is more concentrated. The high intensity storms during monsoon causes heavy damage to soil mainly from the naked and unprotected earth surface because of the jhumming activities, degraded forest due to fire and secondary forest areas (which is the cumulative result of the jhumming and forest fire). The shortening of the jhum cycle and increase in the number of jhumming families is also causing concern. In 1974, around 81,000 families were jhum cultivators in Arunachal Pradesh; by 1984 their number had shot up to 107,000 and it was estimated to reach up to 1, 55,000 families by 2000 (Roychowdhury, 2002). Further, according to a 1989 survey, the forest area affected by shifting cultivation in Arunachal Pradesh has increased from 7.94 lakhs ha in 1975 to 8.52 lakhs ha in 1984, a 7.3% increase.
A District Forest Official argues that in the recent past, Kurung Kumey has been suffering either from drought-like situation or from flash flood resulting in the frequent road blocks in the district. Why such drastic change in such lush green district? Is it due to jhum cultivation or de-forestation in the name of feeding the timber eating monsters? Removal of big trees mercilessly, due to illegal timber operation during pre-ban period, has exposed the ground where ordinary grasses, shrubs, ordinary bamboos are growing as secondary forest (of course contributing to global greenery). They have very much low moisture retention capacity and get dried up during winter to become easily susceptible for devastating wild fire. The forest firing and deforestation is reciprocated by flash flood, heavy soil loss, massive landslides, drought, drying up of springs, etc.

**OTHER LOSSES DUE TO FOREST FIRE**

Not to mention the huge losses to the diverse ecological resources, the forest fire as its immediate effects, unleash some dire consequences to the communities themselves. Reportedly, over 17 houses were completely burnt down while other thirty odd houses were partially burnt down at Palin on 10th February, 2010. Besides, a child was admitted at Naharlagun General Hospital with 90% burnt injury after he was engulfed in fire which was set in by his father to clear forest. Further, the continuous loss of habitat of Mithun due to forest fire is a cause of great concern as Mithun is traditionally valued animal which are semi-domestic and reared in wild environment. Similarly, a forest fire in Tagum village in Sangram circle killed a 38 year old woman and her 7-year old daughter on February, 2011.
In the early morning of 14th June 2008, the capital complex as well as other many area of Arunachal Pradesh witnessed floods of mud flow and landslides due to the heavy rainfall. Roads were blocked, housed washed away due to mud flow and landslides beside huge losses to life and property. The total rainfall of that particular incidence is recorded to be 179.82 mm with an average of 3.18 cm which is highest per day rainfall of the year. The peak intensity went above 9 cm per hour in between 3.20 to 3.30 am moreover the intensity remained above 4 cm for long period of the time. The gushing runoff down the slope removed tons of the top soil along with bamboo grooves and other earth materials. Cloudburst, mud-slide and landslide changed the face of the many places in the district. Devastation claimed many lives and injuring scores of people. Road, power, and water line snapped and about dozen houses have been washed away by the unprecedented devastation.

FOREST FIRE IN CLIMATE CHANGE

According to agricultural scientists, entire North-East region is facing a peculiar weather phenomenon with prolonged dry spell. Anjan Sengupta, Agriculture Officer, Tripura, points out on 12th February 2009; Shillong (one of the coolest place in country) recorded the highest temperature 29.8 °C, a new in 40 years. Between November, 2008 and March, 2009, Assam and Meghalaya received 83.9 mm rainfall, 49 per cent less than the normal, Arunachal Pradesh recorded 57% and other North-Eastern States like Nagaland, Manipur, Mizoram and Tripura together recorded 61% deficit rainfall (Borah, 2009). Such a trend of extreme drought and heavy rainfall within a period of year is a clear indication of changing climate. The Eastern Himalayas are further predicted to experience milder winters with increasing precipitation (Sharma et al, 2009).
Since slash-and-burn is practiced in entire North East, this local change in climate may be attributed to the mass destruction of forest. In the Eastern Himalayas (Arunachal Pradesh) there is a definite warming trend at higher altitudes especially, areas at altitudes above 4000 metres seem to have experienced the greatest warming trend (Sharma et al, 2009). This could further lead to a vicious circle of climate change and forest destruction. The world’s 35 top forestry scientists authored ‘Adaptation of Forests and People to Climate Change – A Global Assessment’ notes that the higher temperature, along with the prolonged droughts, more intense pest invasions and other environmental stresses that could accompany climate change, would lead to considerable forest destruction and degradation. The damage to forest from climate change significantly increases global carbon emissions, which then exacerbate the greenhouse effect. Scientists have also identified forest burning as the major contributor to global warning which has threatened the very existence of the planet and all its living inmates.

CONCLUSION AND SUGGESTIONS

No doubt, jhum burning is considered responsible for sneaking fire into the nearby forest, but at present there is no alternative to jhum in Arunachal Pradesh in general and Kurung Kumey district in particular. The practice of jhumming is deeply rooted into the culture, customs, festivals, myths, folklores, and cultural tastes of the people (Rawat et al, 2010). The jhum provides varieties of food items (food and vegetables) preferred by the people throughout the length of growing season. The traditional variety of crops grown in the jhum can hardly sustain in other system. The products of the jhum are used for the preparation of traditional items. Moreover, the difficult terrain, inadequate transportation facilities and other circumstantial factors have
made jhum farming convenient for the Arunachalee farmers. The main advantage for farmers is that it permits more than one crop to be harvested from the same piece of land in one season, ensuring more self-sufficiency in meeting the requirements of multiple products. Forest burning for jhum is viewed as to increase soil fertility and destroy harmful weeds and pests. It is perhaps because of all these reasons that official efforts during over 20 years have failed to dissuade people from resorting to jhum. A seeming lack of coordination among the various departments tackling the problem has been compounded by dearth of accurate statistics on how far jhum cultivation has been contained and how much forest land has been laid bare because of this method (Sahasrabuddhe, 1992).

The initiative should be taken to improve jhum more on scientific basis instead of alternative methods. People should be encouraged to adopt more environment-friendly methods and techniques. The protective and conservative measures are also needed in order to check the recurring forest fire. In some parts of the Arunachal Pradesh, especially in the Adi, Galo and Tangsa belts people clean up the margins of jhum before setting fire in order to check fire-spread (Rawat et al, 2012). Strict vigilance is kept to check the sneaking of ember into the forest. In case of the forest fire incidence the defaulter is rewarded with appropriate punishment by the community institutions. Such practices can be emulated all over. The stringent laws must have to press into action for the effective result. The degraded forests should be restocked through social forestry advocating Community Forest Area. The state Government must be equipped with ‘Farmer's friendly’ plans and programmes. The government should also encourage through subsidies or loan for a non-timber forest produce (NTFP) cultivation, livestock and poultry farming, fisheries, sericulture and bee keeping etc. for the sustenance and economic growth. Such farmer’s friendly
policy will inculcate them towards attainment of self-sufficiency thereby also better environment and ecosystem.

REFERENCES


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