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Genesis of people's perception of forest fires in Western Himalayan region of Uttarakhand, India: Causes and remedies

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ABSTRACT

This paper highlights a historical account of forest fires in the western Himalayan region of Uttarakhand. Journey goes back to colonial rule in India when Britishers had started viewing Indian forest wealth as a much beneficial commercial venture. While doing so they completely overlooked even the basic customary and traditional rights of its Indigenous people. Paper features the regulatory rules imposed by the colonial rulers and their repercussion on the forest health of the region. Forests which were taken as a community asset during the regime of local rulers gradually started coming under the crown's property through various settlements and classifications. This triggered an unrestrained expression of emotion by the villagers which virtually shattered the whole of the western Himalayan belt of India. The author proposes, through this paper, that the present relationship between the forest and its dependent communities is in no way better than what it had been hundred years before and suggests few strong corrective measures to turn foes into friends, for a much wider cause of protection of unique Himalayan ecosystem.

KEYWORDS

Forest fires;
Forest regulations;
Grievances, Community participation.

INTRODUCTION

Forest fire in tropical countries has become one of the major culprits in causing colossal damage to the forest ecosystem. The devastating effects of such damages, partially due to forest fires, have been found to cause environmental perturbations at local and regional levels[1,2]. The Himalayan mountain system is one of the most fragile ecosystems in the world due to its inherent tectonic and geological setting[3]. It is known to have a rich storehouse of large biodiversity ranging from tropical/subtropical evergreen forests, sub tropical Chir pine, temperate forest of broad leaved and conifer to subalpine and alpine meadows. During the recent past, the Himalayan bio resources have come under great stress due to population pressure, resources exploitation and various developmental activities which have resulted in the reduction in biodiversity and degradation of natural ecosystem. Among various causes, the occurrence of frequent forest fire has of late emerged as one of the severe threats for recession

of biodiversity, natural regeneration, productive capacity of forests, soil, wildlife, forest produce etc. This has adversely affected the rural economy and ecosystem as a whole[4]. According to the Forest Survey of India (FSI), during the period of the sixth Five-Year Plan over 572 417 ha area of India's forest was affected by forest fire amounting to a loss of over half million USD[5]. A recent report on the Status of forest reveals that on average 53 per cent of the forest cover of the country is affected by fire, and such incidents are more severe in the Western Himalayan region of India[6].

The Indian Himalayan region spreads between $21^0 57'$—$37^0 5'$ N latitudes and $72^0 40'$—$97^0 25'$ E longitude covering an area about half a million square kilometers which is 16.2 percent of India's total geographical area. This region is highly strategic as its entire northern area touches seven international borders and most of the area is covered by snow-clad peaks, glaciers, rivers and the dense forest cover of mid-Himalaya. This area has tough physiographic condition and poor infrastructure causing thin and sparsely distributed human population as compared to the national figures. Indian Himalayan region constitutes 16.2% of the India's total geographical area and contributes only 3.86% of the India's total population as per the 2001 census report. Interestingly, the growth rate in this region is much higher than the national average. The percentage contribution of its population has gone up to 3.86% in 2001 from 3.6% in 1991 due to the higher decadal growth rate of about 25.4% as compared to national average of 21.35% during 1991-2001[7,8].

The Indian Himalayan region comprises partly or wholly twelve Indian states named as Jammu & Kashmir, Himachal Pradesh, Uttarakand, Sikkim, West Bengal, Meghalaya, Assam, Tripura, Mizoram, Manipur, Nagaland and Arunanchal Pradesh. Uttarakhand became the 27th state of the Republic of India on 9th November 2000 with an area of 53,483 square Km and a population of little less than ten million[9]. The region, being situated centrally in the long sweep of the Himalaya, forms a transitional zone between the per-humid Eastern and the dry to sub humid western Himalaya.

This state comprises five lithotectonically and physiographically distinct subdivisions namely, the outer Himalaya comprising Tarai and Bhabhar, Sub-Himalayan belt of Siwaliks, the lesser Himalaya, the great Himalaya and the trans-Himalaya or the Tethys.

TABLE 1: Altitude zone wise area in the state

Sr. No.	Altitude (M)	Area (Km^2)	%age
1	0-1000	13609	25.44
2	1001-2000	17616	32.94
3	2001-3000	7152	13.37
4	3001-4000	4164	7.79
5	Above 4000	10942	20.46
		53,483	100.00

(Based on SRTM, 90 m (GLCF www.landcover.org.2006)

Four major river systems namely, Ganga, Yamuna, Ramnagar and Sharda originate from this state along with their tributaries which works as a major source of water for drinking and irrigation to millions of peoples living in and around their basin.

The forest area under various classes is 37999 square kilometers, which is 71% of it's total geographical area, out of which about 24,260 square kilometers forest area is directly controlled by the Uttarakhand forest department under the category of reserved forest. These reserve forest areas comprises thousands of species of trees, shrubs, herbs and climbers along with equally large number of faunal species[10]. Today, India stands among the important mega biodiversity centers of the world, with a lot of contribution coming from the Himalayan ecosystem in which Uttarakhand state plays a pioneering role to play. Uttarakhand forest vegetation ranges from tropical dry deciduous forest in the foothills to alpine meadows above timberlin[11]. Since pre colonial rule till late eighteenth century rich forest diversity had been a main source of sustenance of the people living in and around Uttarakhand. Forest biodiversity was variously being used for fodder, fuel wood, timber, leaf litter, construction, industrial raw material and several other non-timber forest produce. Though accelerating effect of human activities on biodiversity certainly impact ecosystem functioning but the anthropogenic disturbances made by the local villagers were not only sustainable but also followed community governed strict regulatory practices. Various activities like removal of forest floor biomass, edible fruits, fiber,

gum, resin, spices, medicines or even wild animal products were carried out in a self disciplined orderly manner where pride of being owner of nearby natural resources was a strong motivational factor for the local communities for not only exploiting but also conserving and protecting their rich natural heritage like forests[12].

This symbiotic relationship between the forest and the forest users started shattering since 1878, with the advent of strict colonial rule and it's non community based natural resource management regulations over this part of the Himalayan ecosystem. Local Communities got shocked, shaked and surprised with the various rulings imposed over them by the British government and since then the forest sanctity is still in jeopardy as regards the harmonious relationship between the natural resources and its righteous owners is concerned.

LITERATURE REVIEW: HISTORICAL BACKGROUND

The year 1878 is highly crucial in the history of Indian forestry in general and in the context of forest of western Himalayan region in particular. That was the year when the forest laws were declared and implemented in India during the colonial rule. These laws were introduced for twin objectives i.e. to manage forest for peasants need for fuel and fodder and to meet the requirements of wider commercial markets of timber. That was the time when colonial regime had the world markets in their hands. Britisher's also knew that it was a great profitable venture to control the forest resources in the colonies[13]. Under this law large chunks of lands with diverse biodiversity were declared as reserve forests. The first reserves in the western Himalayan region of Kumaon were series of small tracts that were demarcated in 1890's, primarily as fuel wood reserves for several expanding colonial towns and military cantonments in the hills. During 1911 to 1916, under the wartime pressure, forest department initiated the process of converting many more woodlands into new reserves. Declaring reserve was nothing but depriving villagers from their "rights" over the forest and permitting few "privileges" only, which could be even restricted according to the forester's assessments of the forests needs[14] This law restricted villagers access to any reserve forest for grazing, fuel wood, collection of minor forest produces, construction timber and other needs. In order to control the reserves, 1878 laws gave a hierarchy from British professional foresters down to forest guard, who became the first police force of any sort in the history of the hills of western Himalayas. This forest hierarchy not only emphasized efficiency, discipline and authority in its training and uniform but also ensured loyalty to the British crown in order to meet their commercial interests.

Expansion of urban markets, introduction of railways, wartime needs for fuel wood and timber, and many more long-range commercial objectives of the Britisher generated a demand for hundreds of thousands of trees annually[15] These facts led to the indiscriminate logging of trees in the forest areas of western Himalayas. These logging operations were carried out under the supervision of forest department and by the contractors, who were outsiders i.e. not from the hilly region but from the plains. Deprived villagers from their rights over the forest viewed forest department primarily as a machinery of repression. It gave complete weightage to the commercial interest of British empire over their bare needs for subsistence and survival.

Formation of new reserve forests, curtailment of forest rights, deployment of foreign contractors and laborers, plantation of monoculture species of commercial importance like Chir Pine, tradition of unpaid coolie, "beggar", etc were the main issues of conflict between forest department and the hilly people. People's anger burst in the year 1916, when formation of new reserves was taking place in the middle of the hills. It was the same elevation where the most dense villages and productive agricultural land of the villagers was situated. That was also the time of maximum political and climatic stress because of the war years and an unusually dry season, exacerbating the food scarcities. The hot and dry months between February and June are most difficult for the forest management even in the normal years. This is the season when villagers burn the dry grasses to encourage vigorous new growth of

fodder in the early monsoon rains of June and July. There is always a danger that the grass fire will spread in to the forest, destroying young seedlings and even mature trees. The dry months of the year 1916, saw the first example of forest set by the people of not just for their annual grazing cycle but to protest the new restrictions. Thousands of acres of forest were burn in the forest fires beyond the usual annual grass fires[16]. Though the loss this time was not very high but it gave a clear indication for something unusual for the future which appeared in the form of a worst holocaust, witnessed in the year 1921. Man made fires of 1916 were the ominous precedent for the devastating forest fires of 1921 in the Kumaon region of western Himalayas. Late in the year 1918, the end of World War I gave rise to first national non-cooperation campaign, led by Mahatma Gandhi. This movement was based upon the principle that it was patriotic to resist illegitimate and repressive colonial laws. In Kumaon area of United Province (UP) the protest centered on the beggar controversy until that was resolved, but then it quickly shifted to forest reserves, which seemed to the hilly people to strip away their ancestral subsistence rights[17].

In Jan 1921, young Congress leaders in Kumaon were urging the population to resist the abrupt and arbitrary new forest regulations. The early months of 1921 were the hottest and driest in many years. In this incendiary situation, the hills came suddenly in flames. Within a few weeks, in March and April, thousands of acres of forest in Kumaon burned out of control and many more forest areas burned as far North West as the Kangra valley of Punjab hills[18]. Sal forest of lower hills got destroyed almost overnight and dry pine forests of the higher hills vanished in smoke. Villagers set fire again and again in some places. In Airadeo, for example, fires continued for three days and two nights, and "new fires were started time after time, directly a counter-firing line was successfully completed". For 1921, the relevant figures were much higher than that of 1916. The area of forests that was fired rose to 272,000 acres. Of the 819 offences that were detected, 395 were known to be incendiary. People's grievances were particularly acute because of the elaborate new rules that specified strict restrictions on lopping and grazing rights, restricted use of non-timber forest products, prohibited the extension of cultivation, enhanced the labor extracted from the villagers, and increased the number of forest guards[19].

The provincial government, the forest department and the congress leaders were all appalled at the damage as no one had intended such a holocaust. The professional foresters were helpless to preserve their wooded heritage. They responded that the fires showed an organized effort of the Kumaon people and their leaders to destroy their own future in an ignorant effort to undermine a progressive administration. The then United Province government under seemingly revolutionary pressure in all parts of the province established a commission of inquiry to recommend measures that would defuse the danger in the hills before the next dry season.

The commission recommended in his report to take back the new reserves from forest department immediately. Forest department resisted but commission rejected and everyone found the reserve forests a convenient target to attack. Process of deserving the reserved forest and formation of village forest panchayats started taking place. These village forest panchayats were supposed to be managed by communities for their bonafide uses. By the year 1937, 182 villages had their forest panchayats which could be extended to a little over 1000 by 1947 covering an area of few hundred square kilometers. The whole area of Uttarakhand got classified as reserved forest, civil land, village forest panchayats and private land. The above description clearly shows that people's resentment to colonial regulations could lead to some fresh land settlements in this region.

OBJECTIVES OF THE PAPER

A brief account on forest related historical background of the Western Himalayan region of Uttarakhand, generates two prominent hypotheses to look into the matter for further comments. The main objective of the paper lies in the testing of these two hypotheses and to comment over the current state of affairs regarding forest-forest user interface.

Hypothesis one

People of western Himalayan region maneuver forest fires to destroy government functionaries revenging against their grievances.

Hypothesis two

Community involvement in decision making of natural resource management along with equitable sharing of benefits may establish an aged old but abandoned synergetic relationship between forest and its users.

THEORETICAL FRAMEWORK OF THE STUDY

Forest fire is an accepted reality propelled and perpetuated through the consent of the forest users and the stakeholders. This is related to their unaddressed grievances and shall remain like this only until direct economic gains are diverted to them from their neighboring natural resources. Reduction of participation of forest users in the conservation of forests is indirectly or inversely proportional to the Regulations imposed over them. It has always enhanced apathy of the forest users towards forests by themselves.

METHODOLOGY

Reflexivism of the author as the forest manager and a forester directed by the realism to be tested through hypothetico- deductive methodology is the research frame.

Observations of the forester/author led the research perspective towards first secondary data study and generation of hypothesis which then got tested through several reports and white papers produced on forest fire especially in the western Himalayan region. A comprehensive list of the causes of the forest fires is based upon an exhaustive experience of the writer who has over 22 years of experience in the Forestry sector. The list is well validated by the reports and the experts' comments. The genesis for the causes deduces an interesting fact of unaddressed grievances through a deductive methodology which is further validated by testing of two framed hypothesis.

DISCUSSIONS

Cattle rearing were an ancient profession for the people of western Himalayan region. Temporarily shifting from one place to other favorable places in search of palatable grasses was quiet common in these areas. Though before 1887, villagers used to light fire on forest floor for growth of good palatable grasses with an early monsoon shower but such operations were done under strict vigil and control. All safety measures were taken by the nearby communities to burn the forest floor within the predefined limits. Any carelessness was viewed very seriously and the offender was even socially boycotted for his mischief with the environment. Incident of uncontrolled forest fires besides the purpose of augmenting the grass growth were hardly reported in this area till 1916. With the implementation of Indian forest law of 1878[20]. Forest department started process of making more and more reserved forest along with their detailed management plans[21]. In the year 1911 and 1916, many more areas were brought under the administrative control of the Britishers putting severe restrictions on grazing, fuel wood gathering, fire and even villager's access to forests[22]. Above mentioned fact clubbed with few other political factors like unpaid coolie labor charged villagers with great anger and anguish resulting into a great disaster to the natural environment. The years 1916 and 1921 saw the first but the worst man made forest fires in this region of western Himalayas. For the hill residents who relied on a mixture of livestock rearing and agriculture, and for many of whom controlled fire encouraged the production of fresh grasses, government attempts to prevent firing and their entry to the forest were always remained a "source of complaint". Thousands of acres of prime forest of lower and higher hills got vanished in smoke. The then leaders were appalled at the damages as no one had intended such a holocaust. These man-made forest fires were a direct indication of their deep grievances against the colonial government's decisions.

In the present context, even after a period of over 90 years, forest fires have become a very common phenomenon of western Himalayan region. The ma-

jor causes for forest fires in the western Himalayan region of Uttarakhand are enumerated as below.

1. To have good growth of grass and fodder.
2. To encroach upon the forest land.
3. To conceal illicit felling.
4. To settle score with the forest department (issues related to developmental works).
5. To counter blow personal rivalry between contractors (timber, minor forest produce, resin etc.)
6. Driving away wild animals (man-animal conflict)
7. Collection of non timber forest produce (herbs, honey, wax, animal remains etc.)
8. Accidental causes (burning form residue, camp fires, road construction sparks form vehicle, cigarettes, biri and electricity.
9. Lack of environmental awareness.
10. Natural causes (Lighting, friction of rolling stone, rubbing of dry bamboo clumps etc.)

More than 95 percent forest fires are anthropogenic in nature caused either deliberately or accidently. Natural reasons for forest fire are very rare. According to FAO report "Fire Management-Global assessment 2006", regional estimates of human induced forest fires for the Mediterranean and the South Asian region are between 90 to 95%[23]. close examination of deliberate causes for the forest fires clearly reflects the communities' unaddressed grievances of one form or the another. In the context of a Himalayan state like Uttarakhand these unaddressed grievances vis a vis the cause of forest fires may be summarized exhaustively as follows.

1. Undeveloped grasslands on community land, least accessibility to high milk fielding animal variety and unavailability of locally grown good palatable grass forages.
2. No provision to award land to landless or homeless people as over 71% of the total geographical area of the state comes directly under forest conservation act.
3. Lack of proper infrastructure and training to the latest modern regulatory staff for combating against illicit activities.
4. Delayed or denied developmental activities under the forest conservation act.
5. Overlooking community's involvement for works, individuals gets benefitted under the existing work procedures.
6. Cattle lifting and man eating incidents by wild animals are on a continuous rise in the state.
7. Forest areas generally not being viewed as potential improvement for providing direct economic gain to the communities.
8. Increased number of accidental fires clearly indicates a casual attitude towards the natural resources and addresses the grievance of community participation in the management of natural resources.
9. Lack of environmental awareness and especially among the young villagers in also a hidden grievance which needs to be first propagated and then addressed.

The following table shows the official data of forest fires in the state of Uttarakhand during the last eight years. Actual data are on a much higher side as many forest fires remain unattended and inaccessible because of the remoteness of the area.

The biggest concern before a natural resource manager lies in the fact that "majority" or "almost" all the above mentioned forest fires were manmade[24, 25].

Since after independence in the year 1973 world famous Chipko movement was started in Chamoli district of Uttarakhand to protect tree felling as well as an economic struggle in the upper reaches of Garhwal Himalaya and in the year 1977, prestigious Nainital club of Kumaon Himalayan was set a blazed against the formation of a state's timber extraction corporation. These are some other live examples of peasants protest against the policies under which they turned aggressive and greatly disturbed or destroyed

TABLE 2 : Year wise forest fires in Uttarakhand state

Year	2003	2004	2005	2006	2007	2008	2009	2010
Fire affected area (Ha)	4983	4850	3652	562	1595	2369	4115	1610

Source : Uttarakhand forest statistics report 2011-12

TABLE 3 : Comparison of regulatory process on a hundred year scal

Sr. No.	Early 1900s	Early 2000s
1	Forest laws of 1887 prevailing	Indian Forest act of 1927, 1980 and 2006 existing along with forest conservation act of 1980 and 2006.
2	Wild birds and animal protection act 1912 and 1935 prevailing.	Wild life protection act of 1972 with more than 6 amendments existing
3	Till 1966, a total of 2,185 forest panchayats were formed covering an area about 1835 sq km (3.4 % of T.G.A. of Uttarakhand)	Till 2013, a total of over 12,000 forest panchayats were formed covering an area about 5500 sq km (10% of T.G.A. of Uttarakhand)
4	Forest department regulations always discouraged expansion of agriculture in reserved areas.	Forest department puts a complete ban on all developmental activities in reserved and protected areas until cleared by Govt. of India.
5	Unpaid coolie labor in forestry operations was a common phenomenon in colonial time.	Delayed and limited budgetary allocations creates an interim unpaid coolie labor situation.
6	Britisher's ruled reserved forest on strict regulatory pattern.	Role is still regulatory but with few failed participatory experiments like joint forest management, forest development agency and eco development.
7	Forest laws never shared the comfortable convictions of the provincial Indian leaders.	Government order of 1893 regarding protected forest quashed by Uttarakhand state Government in Feb. 2013. Local public representatives are not comfortable with the forest department's checks.

various governments' functionaries.

The above narration tests positive the hypothesis no one as people of western Himalayan region do use forest fires for destruction to government functionaries as a vengeance against their grievances

Since 1887, the community involvement in natural resource management of western Himalaya region is on a declining path. This is happening slowly but gradually. Historical and present accounts clearly show that peasant struggles and grievances gradually accelerated with the expanded regulatory processes imposed over their natural resources like timber, water, mineral and other natural deposits.

A critical examination for the trend of these regulatory processes over a period of last 100 years in western Himalayan region of Uttarakhand is illustrated as follows.

Above illustration clearly shows that even after the colonial rule the regulatory developments over the natural resource management are on an increasing trend creating wider and wider gaps between the indigenous communities and their involvement in the process of environmental conservation. Though there comes many schemes of community participation in natural resource management but while implementing them and during execution phase, in advertently they get governed with some strict regulatory rule, regulation or act forbidding many lateral activities which are more dominantly important for the success of the program.

Under section 20 of the Indian Forest Act, the forest department owns the reserved forest areas of the country and the Forest Conservation Act of 1980 applies over it. This act clearly prohibits any non forestry activity over the reserved or protected forest without the prior approval of government of India. In a state like Uttarakhand over 71% of the total geographical area falls into this category. Under the above mentioned circumstances involving community with their expertise of traditional practices and indigenous knowledge in natural resource management is a real hard task to achieve. Historical as well as current happenings display gradual depleting involvement of the original societies at decision making levels causing great unethical utilization of forest resources and developing a much distorted Bionomics.

Under the above discussions it is fairly true that presently there is no effective community involvement in natural resource management in the state of Uttarakhand there by failing the hypothesis number two on its very initial test. Community involvement in decision making of natural resource management alongwith equitable sharing of benefits may establish an age old synergetic relationship between forest and its users under the present socio economic context is still debatable.

CONCLUSIONS

In a concluding example, of peoples grievances and non community participation, of 1999, approximately 750 sq. km. of territory in the Western Himalayas, in the district of Kullu in the northern Indian state of Himachal Pradesh, was declared closed to local populations and notified as the Great Himalayan National Park. Following the procedure laid down in the Indian Wildlife (Protec-tion) Act of 1972, the rights of any claimants to the resources inside the Park were extinguished; out of the more than 15,000 users, a small compensation was ordered for those whose names appeared in the records that were consulted by the powers that-be to determine legitimate users. Curiously, this legitimacy was derived from records more than a century old, of 1897 vintage, from the first forest settlement in the region that demarcated almost the whole area into different classes of forests and determined and codified the nature and extent of rights in all of these forests.

The notification of the National Park appeared to culminate a fifteen-year struggle of the Forest Department and the conservation lobby in India to secure the area for the conservation of precious Western Himalayan biological diversity in general. Immediately following the notification and the extinguishing of rights, local populations organized themselves to lobby their political representatives for redressal. Through a combination of claims to a moral economy and the amoral pragmatism of electoral arithmetic, local residents were successful in securing access to the legally denied resources inside the Park, circumventing the restrictions and threats posed by the Forest Department and the law. This result resonates with a similar effort in the 1880s, when the Forest Department attempted to reserve large tracts of forest in the same area and was frustrated in similar fashion[28].

With the beginning of the 19th century, the western Himalayan region came under the direct control of British administration. 26 They were initially welcomed by the hill people as liberators from Gurkha suppression who ruled the state of Uttarakhand for a short period of only twelve years between 1803 to 1815.27 The next coming 100 years for this region were a real transition phase for the hill people as the Britishers gradually reversed the indigenous participatory processes of natural resources management into a strict regulatory mechanism through scientific forestry operations. Even after the independence in 1947, regulatory role of the government got further tighten up narrowing the scope of community's cooperation in conservation and development of the natural resources. Trends of forest fires in western Himalayan of Uttarakhand clearly sketch a real hostile attribute of people's perception about its neighboring natural resources. On a wider scale there exists many more such unfavorable attributes like illicit felling, encroachment, poisoning of wild animals, anti forest campaign, trespassing, uncontrolled grazing, heavy lopping, green shoots cutting and non supportive attitude to deal with forest related crimes. All such unfavorable need to be converted into favorable through a process of moderately deregulating the subject matter related to natural resource management. A national thinking on this configuration is really a hard task to perform as it needs some strong prerequisites like awareness, education, skills for the contemporary youth of the society who is inadvertently fleeing away from the villages in search of livelihood or economic gain.

This rearrangement of governance is not an overnight venture which might seem to be achievable through some more strict and time bound government orders. Perfect involvement of these heart burnt communities in a modern participatory process may require well aligned consistent policies efforts for at least next fifty or hundred years to come. The "word modern participatory process" is deliberately chosen to indicate the commitment for direct economic advantages from the natural resources to its saviors or governors i.e. the indigenous communities.

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