

Unravelling the Local Dynamics of Increasing Fires in Community Forests of Mid-hills of Nepal

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Abstract

Forest fire is a global phenomenon and is having unprecedented impacts across continents. Nepal is not an exception to the increasing impacts, where hundreds of acres of forests is lost, or damaged, to forest fire. The severity of forest fire is on the rise in recent decades, wherein community forests have witnessed effects of the calamity over the recent years. This paper investigates the local factors behind the increasing frequency and severity of forest fires in mid-hills of Nepal. The paper draws on three separate cases from the research sites, involving five years of 'Enhancing Livelihoods from Improved Forest Management in Nepal (EnLiFT2)' project's team observations in Bhumlu rural municipality and Chautara Sangachokgadhi municipality of Kavrepalanchok and Sindhupalchok district respectively. This is complemented by informant interviews taken with 25 individuals. The paper primarily examines forest-people-fire relationship to demonstrate the weakening collective actions among the community forest user groups (CFUGs) as an important factor for increasing forest fires in the mid-hills of Nepal. We found the changing forest-people relationship, weakening CFUG governance, and increasing regulatory impositions as important factors driving the alienation of users from the forest thus, undermining collective action in forest management. We argue that strengthening collective action on better forest management to prevent forest fire is crucial over adopting mitigation techniques. The alienation of forest user groups from their forest in the changing socio-economic and forest management context can be addressed to strengthening the collective action for better forest management and ultimately to forest fire prevention and management.

Keywords: Collective actions, forest fire, forest management, forest-people-fire relationship

INTRODUCTION

Forest fire is increasing worldwide with unprecedented impacts. The frequency as well as the intensity of forest fire has raised by two folds in the last two decades across the globe (MacCarthy *et al.* 2022). Nepal, the country well known for the participatory forest management, is also not spared from the impact of recurring forest fires. The increasing incidents of fires across the forest landscapes of Nepal has resulted in economic and ecological devastation (Mandal 2019). Surprisingly, community forests (CFs), managed by the local users, have been effective in terms of forest fire management, yet increase in forest fires frequencies have been witnessed in the recent decades (Pokharel *et al.* 2007a). In addition, the incidences have become more severe in recent times. This raises the question worth interrogating collective action in community-based forest management regimes and its effectiveness in relation to addressing forest fires in Nepal.

According to Pokharel *et al.* (2007a), forest fire was a common phenomenon in Nepal, prior to the establishment of CFs in 1980s. Back then, District Forest Offices had limited capacity and resources, wherein people were incentivised to put out the fires. Following the inception of CFs, the CFUGs acted as front liners to prevent and control forest fires occurring in their own forest resulting in fewer number of occurrences, although proper plans and technical know-how lacked at that time (Sharma *et al.* 2007). However, in recent decades, especially after 2000, increasing forest fires and their severity have posed serious threat to forest cover and the ecosystem (Bhujel *et al.* 2017; Parajuli *et al.* 2022). In addition, lack of timely response in the CFs have led to wider devastation (Deuba 2021) that may take a long time to be reversed, and some even may be irreversible.

Nepal has witnessed an increasing number of forest fire incidents, yet its prevention and mitigation appears to be a low priority of the

government. While the Fire Management Strategy (2010) aimed at policy and institutional improvement to strengthen participatory forest fire management, the Forest Act (2019) has no mention of forest fires management provisions. As such, forest fire control depends on improvised responses rather than pre-planning strategies to prevent their risk (Sombai et al. 2018). However, given the increase in the severity and extent, impromptu responses, both from the CFUGs and the government, is inadequate in addressing the issue. In fact, the responsibility of forest fire management is now vested to state actors like the army, police and Division Forest Office (DFO). In addition, technical and more centralized forest fire management approaches are being sought at the national level without considering local dynamics.

Several studies dedicated to forest fire in Nepal is largely centred on the biophysical aspects, particularly highlighting the risk and extent of damage. Yet, such studies lack the societal relations with forest vis-à-vis involvement in forest management as a precursor to forest fire events. Majority of the studies on forest fire have focused on its geographical distribution and risks (Matin

et al. 2017; Bhusal and Mandal 2020; Parajuli et al. 2020; Qadir et al. 2021). In this backdrop, the paper aims at investigating the factors driving forest fire incidences using qualitative case method. The cases involves the five years' learnings of the 'Enhancing Livelihoods from Improved Forest Management in Nepal' (EnLiFT2) project team and primary data collected through 25 Key Informant Interviews (KIIs) and two research validation workshops on forest fire management in Bhumlu and Chautara clusters¹ of Kavrepalanchowk and Sindhupalchowk respectively. Both the districts are pioneer in establishing community forests in Nepal and have presented successful examples of collective actions in forest management. However, over time, CFs in these districts have also witnessed impacts of increasing forest fire (see Figure 1).

This paper also draws on literature review including peer-reviewed journal articles as well as grey literature such as Operational Plans (OPs), annual progress reports of DFOs, and profile reports of the municipalities among others. This paper is expected to provide a deeper understanding on the local dynamics behind the increasing forest fires to forest fire management decision makers.

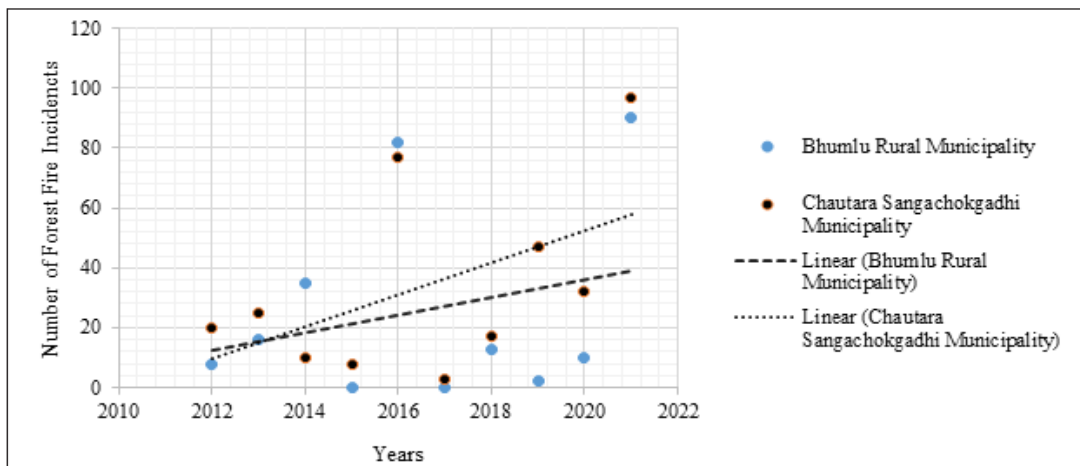


Figure 1: Trend of Forest Fire Incidences in the Clusters

Source: Fire Information for Resource Management Systems²

¹ Clusters means the sites of the "Enhancing Livelihood through Improved Forest Management (EnLiFT) project. Bhumlu cluster represents ward no 4 and 5 of Bhumlu rural municipality whereas Chauara cluster represent ward 8 and 13 of Chautara Sangachowkgadi Municipality.

² Data acquired from <https://firms.modaps.eosdis.nasa.gov/map/>

COLLECTIVE ACTIONS IN COMMUNITY FORESTRY

The success of participatory forest management is determined by the dynamics of collective actions as explained by Ostrom (1990). Nepal's community forestry model had set an exemplary illustration of the theory of collective action (Ostrom 1990). The community forestry programme keeps the local users at the centre of sustainable forest management. In this case, the communities develop and follow shared rules in governing forests (Banana and Gombya-Ssembajjwe 2000). The clearly determined forest areas through the approved management plans are managed by CFUGs which are self-governing, autonomous institutions as defined by the law. The policies have also ensured CFUGs' right to prepare the management plans, develop rules through collective decision making processes. Policies also allow designing and effective implementation of benefit sharing and monitoring. However, the decentralised forest management across the world has had mixed results (Vijge and Gupta 2014). In Nepal, there has been improvement in the forest cover, stock, and biodiversity, mainly in the middle hills (Pokharel *et al.* 2017). Whereas, the socio-economic benefits to the CFUGs were less than its ecological benefits (Charnley and Poe 2007; Acharya *et al.* 2022).

The institutionalisation of CFUG participation and its outcomes on forest resource sustainability is often determined by their ability to form, impose and comply with management decisions (Saeed *et al.* 2017). Community forest management sometimes may start with full participation of users on management and reach, to complete lack of users engagement (Brown *et al.* 2002), as a consequence of the changes that occurs throughout the span in resources based forest management interventions and required procedures (Mayers and Vermeulen 2002). The transformation of community forest from its early stage of traditional management to

silviculture-based intensive forest management in Nepal now demands for technical expertise. At the same time, increasing transaction with the market has resulted in increase in complexities. Parallel to these changes, heavy regulatory and administrative requirements in these small management units with low profitability has disincentivised users and ultimately alienated from the forest management (Paudel *et al.* 2008). In the recent context, changing social, economic and political contexts of the users' group has negatively affected collective actions on forest management. Weakening collective action on community forests has posed challenges to the future of CF. In fact, there is a need for a better understanding of range of factors shaping local actors' behaviour towards forest management including forest fire management.

BEYOND NATURAL CAUSES OF FOREST FIRE: LEARNING FROM THE FIELD

There is an increasing number of claims on climate change as a precursor to forest fire. The increasing atmospheric temperature and droughts have been attributed to the occurrence and expansion of forest fires. However, scholarships in this field have overlooked on the endogenous factors, mainly within the CFUGs, as causes of forest fire. Declining interest of users towards CF management and weakening collective actions have been found to be driving forest fires. The cases explains on three major causes of weakening collective actions, namely, changing forest-people relation, weakening CFUG's governance, and heavy regulatory impositions to the CFUGs. The cases also relate the implications of such factors with forest fire.

Case One: Changing Forest-people Relations

Chapani Gadidanda CFUG is the one of the registered CFUGs in the Bhumlu cluster - which

accounts to 33 per cent of the users migrated to foreign countries for employment and 62.5 per cent of the households having at least one member migrated outside the cluster, either for domestic employment or education or both (GoN 2019). Out-migration of youths, mainly men is becoming more common in the CFUG. However, the trend of their family migration, especially children, to cities for better education and other facilities have also increased in the recent years. Both the trends have left the elderly and women groups in the village. In addition, their dependency on the forest have reduced along with the improvement in the family income and reduced family size. *“They (people residing in the village) no longer need the forest. I think there are only 2 per cent users in the village who actually rely and utilize forest resources.”* - said a member of the CFUG.

While outmigration of people continues to contribute to household income through international or domestic remittances, labor shortages are manifested in the CFUGs. The increasing use of alternative energy sources like Liquefied Petroleum Gas (LPGs), more prevalent among migrants' families, can be claimed to have ensued following inflow of remittance. The use of LPGs have been replacing the use of firewood for regular use like cooking which can be attributed to both the lack of working members in the family and comfortable living choice, mainly of women, who otherwise had to visit forest to fetch firewood. A women respondent from the CFUG whose sons with their family lives distant from village said:

I have to pay NRs 1,000 per day to a wage labor to prepare firewood for my home. In a day, he can prepare just 4 bharis (~ 120 Kgs) of firewood which works hardly for one month. Instead, I buy LPG cylinder which costs NRs 1500 and lasts for at least 3 months. Why to worry on collecting firewood?

The change in livestock rearing pattern is also visible among the CFUGs, which has succeeded with

increasing out-migration. The average livestock unit per household in a decade has reduced from 2.4 to 1.3 in the case of cow/buffalo and 8.9 to 4.6 in case of goats. As such, the demand for forest products like firewood, fodder, leaf litter, and grass has declined among the users. The chairperson of the CFUG opined -

No one from our users group come to collect the grass from this forest rather, the users from neighboring CFUG sometimes pay a visit to collect.

Furthermore, shifting preferences in agricultural tools and technology have also reduced their dependency on the forest. These days, tractors have gradually been replacing ploughs in the field. According to one of the respondents,

Farmers nowadays prefer to pay NRs 400 to NRs 700 per hour on tractor for its convenience.

The statement of a local blacksmith complements the evidence as he expressed:

People rarely bring ploughshare (Fali) to sharpen these days.

As dependency on forests has dropped, the ownership among users has also reduced and the forest these days have become the responsibility of CF executive committee alone. Consequently, their contribution in the prevention and management of hazards like forest fire is decreasing. The ex-chairperson of the CFUG shared her story as:

If any users came to know about fire in the forest, they inform the representatives of executives rather than uniting neighbors to control it. In case we ask their help in containing fire, some people easily ignore us saying, the forest is of no use to them now as they do not collect any product.

During an interview, a user of the same CFUG who did not participate in controlling recent (2021) forest fire said:

We don't go to control forest fire because no executive member ask us to participate. First they have to call us. Then only we will participate.

The case shows that the distance in the relationship between community forest and its users is widening. Changes in livelihood brought about by outmigration have reduced the number of forest dependent users as well as the remaining residents' dependency on forest products leading to decreased participation in forest management, including the forest fire management.

Case Two: Weakening CF Governance

Dharapani CFUG of Bhumlu rural municipality manages 43.03 hectare (ha) of pine (*Pinus patula* and *Pinus wallichiana*) plantation forest that have gained huge economic benefit from timber harvest and sale in the past. Until then, users were actively participating in harmony in forest management activities. But conflict emerged soon after the CFUG started making income. Financial embezzlement started in the CFUG, following which it faced legal actions. The Commission for the Investigation of Abuse of Authority (CIAA) has already taken action against the CFUG for two times- first in 2007/08 and second in 2022 for not maintaining any financial transparency among the users. The current state of dormancy among the CFUG is the consequence of weak CFUG governance.

The CFUG has not held its general assembly and financial audits for the past four years, and regular meetings are also being held occasionally. These events are meant to be CFUG's mandatory institutional activities. On the other hand, the users are still alienated from the economic benefits that CFUG had generated six years back through timber sale. The audit reports showed that out of 60 per cent of CF income spent, only 8.8 per cent was on the livelihood activities, although 40 per cent of the CF fund is reserved in the bank account. The users' dissatisfaction towards governing bodies for

distancing them from the economic benefits were visible in several local events like ward meetings, and tole (community level) meetings among others. The conflict among users and executives was on the rise, along with resentment among users for favouritism and monopolies in CF revenue mobilisation. *"My neighbor brought plastic tunnel. When I asked, he told me that he bought the tunnel on his own. But later on, I came to know that the tunnel was supported by the CFUG's fund"* - said a women participant during the tole meeting of CFUG. As such, motivation among the users in managing forest is gradually declining.

Similarly, the CFUG has historically lacked accountability among decision makers. More than 50 per cent of the executives including office bearers live in Kathmandu and attend CFUG meetings and other events occasionally. The absence of decision makers in the village have affected the timely planning and implementation of forest management activities that would help in reducing the risk of forest fire. *"Forest burns here but the CFUG's office bearers are in Kathmandu. Who will lead the fire management as long as the fire does not affect their personal property?"* - said the FECOFUN (Federation of Community Forests Nepal) Bhumlu chair. In addition, despite the potential of CFUG, the lack of incentive mechanisms and fire-fighting equipment support has discouraged local users living in the community from participating in forest fire management. A user of the CFUG who risked his life to control fire near his settlement expressed:

We spent our whole day and night to contain forest fire in 2016. We even didn't have water to drink during that time. But till now, none have asked us about our condition, nor have we received any incentives or appreciative words. Who will risk their life in such conditions?

The local police had to experience the impact of the users' disappointment in 2021; they tried to

contain the forest fire but failed due to low and risky participation of local people. As shared by local police, they received a call from DFO, Dhulikhel at the place where the users had to come by themselves to put out fire. At the end, they could not control fire due to low participation of the users and it was left to get controlled naturally. *“After several communication with the people, only few women came but in their daily wears. How to ask them to confront the fire without any safeguards?”* - said Assistant Sub Inspector of the Nepal Police, Chaubas.

The case illustrates that weak governance of the CFUG and detachment of users from planning and equitable benefit sharing negatively affected the impetus for collective actions. Further, voluntary engagement without acknowledgement or appreciation has demoralised users for future participation in forest fire management.

Box1: Implication of Forest Fire on Forest Resources of Dharapani CFUG

- a. The forest fire of 2010 have affected around 1200 cft of piled timber
- b. The forest fire of 2016 affected 5% of the trees
- c. The forest fire of 2021 affected about 23% of the forest.

Case Three: Heavy Regulatory Impositions

Timber is the major income source of Sansaridanda CFUG – one of the highly income generating CFUGs of Sindhupalchowk district. However, timber harvesting from the CF has been very occasional. Primary reason behind it is the declining interest of CFUG members to voluntarily engage in fulfilling cumbersome regulatory requirements for harvesting. The CF leaders have suffered more in the past due to the forest officials' tendency to overlook practicalities of timber management in

order to protect themselves from legal actions. In such tendency, the processes took a lot of time which increased the CFUG's transaction cost and reduced benefits. As explained by the CFUG chairperson, in 2018, the CFUG estimated (*lagat sankalan*) certain trees to harvest and received the harvest approval from then Divisional Forest Officer (*officer onward in this case*). Meanwhile, before the CFUG could harvest and sell them, the then forest officer (officer I) was transferred and a new forest officer (officer II) was given charge in the DFO. Until then, additional trees were found to be felled in the harvesting area. The officer II asked to document those felled trees separately and harvest them. In the request of CFUG, the officer II also gave approval to harvest dried trees from the forest. The CFUG harvested the quantity approved by both the officers due to which the final harvest exceeded the one approved by officer II.

While approaching to seek approval for timber sale, several documents of the CFUG got rejected from the DFO. This is primarily because the officer II didn't agree to provide the approval for timber sale as he was not involved in the harvesting approval process. After that, the CFUG prepared a separate record for the timber approved by the officer II, with the hope that he would approve to sale at least those he approved to harvest, which also got rejected since more quantity was already harvested. Then the CFUG's chair consulted with the officer I, during the tenure of which the initial estimation was approved. The officer I refused to help since the authority had already been transferred to officer II. Subsequently, the CFUG completely changed the documents to show that the harvest approval for all harvested timbers was granted by officer II. Finally, the CFUG received the approval for which the CFUG had to strive for six months. Likewise, the approval for timber sale equally took a long time. The tender notice had to be published four times as not a single contractor bid in the due process. During the time, around four per cent of

total timber harvested were stolen and 38 per cent of the timber were decayed. In the fourth attempt, the CFUG sold remaining timber at 35 per cent reduced price of initial rate. “*Who is responsible to compensate the loss? Who will be interested to work in such environment?*”- questioned the chair of the CFUG.

In such context, even the leadership handover has become a huge challenge to the CFUG as users lack willingness to participate in CF leadership positions despite the CF have abundant resource that can be commercialized for economic benefits. “*I am planning to quit from the executive but no one wants to engage in my replacement*” - said the chairperson of Sansaridanda CFUG.

The secretary of the CFUG added:

If I were a civil servant, for the time I have given to this forest, I would have received my pension by now. What to do when no one is interested to replace my leadership.

In the CFUG, forest fire do not greatly affect users unless it encroaches the settlement. One of the users whose home is close to the CF said:

During the forest fire of last year (2021), initially when the forest opposite to this hills was burning, even we didn't go to control it. Later on, when we saw the fire nearby my cow shed (gai goth), it became very hard for us to contain. We from eight households gathered and prevented it from intrusion. We didn't sleep for three nights of the fear that fire would recur.

This case explains that the regulatory imposition of the forest officials that have largely discouraged the CF leaders from continuing their leadership. On the other hand, it has indirectly lowered the users' candidacy in leadership positions since nobody want to suffer unnecessarily. Due to this, the enthusiasm of the users who were on the front line to control the fire has decreased, which causes the fire to become uncontrollable.

DISCUSSION

The willingness of local people to invest their time and energy in the management of CFs, and their concern for forest resources primarily depends on their reliance on forests (Springate-Baginski et al. 2003; Gatiso 2019). Traditionally Nepalese farming system used to integrate agriculture, animal husbandry and forestry, and people's dependency on CF was high (G.C. et al. 2016; Bista et al. 2021). However, gradual shift from forest/farm-based livelihoods to off-farm commercial activities is reducing the dependency of communities on forest resources, concomitant with their readiness/willingness to participate in forest management (Shahi et al. 2022). The socio-economic and environmental transformation have changed people' lifestyles (Shahi et al. 2022) many of which are linked with the global changes (Scoones 1998). User households are trying to cope with the changes by expanding their livelihood strategies. Local people are largely attracted towards remittance based economy in place of subsistence farming (Khatiwada et al. 2017). The increasing out-migration of local people has not only reduced the number of forest-dependent users within the community (Robson and Berkes 2011), it has also weakened forest-people relations in terms of investment (Xie et al. 2019), management practices (Shahi et al. 2022) and participations in CFs (Lama et al. 2017). In addition, household energy sources have shifted away from fuelwood to LP Gas (Bhandari and Pandit 2018). As explained in case one, the reduced dependency on forests resulted in change in users' behavior in responding the forest fire incidences.

Similarly, good forest governance is the key for sustainable forest management, institutional development and equitable benefit sharing (Paudyal et al. 2017)forest management, biodiversity conservation and support for rural livelihoods worldwide. The Himalayan country Nepal has been at the forefront of CBF for over four decades,

with almost 40% of the total population directly involved in protecting and managing more than 32% of the country's forested land. However, in the past, the focus of CBF in Nepal was the provision of goods for local subsistence, and there has been limited analysis of the role of CBF in providing ecosystem services (ES). However, as the second case shows, there are increasing governance failure that directly dis-incentivises CF members in forest management. As the case showed, CF members are frustrated because of the financial embezzlement by the CF executives. As a result even the core institutional functions like general assemblies, meetings, audits are absent. These collectively cast major question on the quality of CFs governance. The consequences are alienation of users and their low participation in forest management and response to forest fire.

External constraints imposed upon CFUG autonomy including heavy regulatory and administrative requirements alienates them from forest management (Agrawal 2001; Basnyat *et al.* 2020). There is sense of reluctance among forest officials in permitting users to freely exercise their autonomy in decision-making (Paudel *et al.* 2008). In addition, the field forest officials always tends to avoid potential risk of disputes and insecurities while harvesting and trading valuable forest products, mainly timber. Therefore, they pose their controlling behaviour in the guise of regulatory provisions as explained in case three. Such impositions have implication on the leadership

handover of CFUG as well as in response towards forest fire. In case three, we showed how the bureaucratic attitude behind regulatory provisions created obstacles for local people in obtaining economic benefits from their forest, which subsequently affected their motivation to participate in forest management. The attitude of forest field officers further increased frustrations among CFUGs and reduced their willingness to lead in executive committees.

Alienation of CF members from their resources as explained in the three cases is strongly linked with collective actions on forest management. As a result, the undergrowth accumulations of biomass (dried leaves, bushes, fuelwood, etc.) have fuelled the intensity and frequency of forest fire making it fatal and uncontrollable. Such existing dynamics (see Table 1) behind the increasing forest fire incidences have raised question on the high-tech and more centralised approach of the national government to forest fire mitigation which are being implemented without due knowledge on the local scenarios. The national policies on fire response appear to have not been informed by local dynamics. The public investments have largely been focused on awareness raising programmes, overlooking the underlying factors. Among others, the major attribution to the increasing forest fire in community forests can be given to the weakening collective action on forest management and response to forest fire management.

Table 1: Local Dynamics of Collective Actions and their Impacts on Response to Forest Fire

Contexts	Local dynamics	Impact on response to forest fire
Forest-People Relationship	<ul style="list-style-type: none"> • Shifts from forest/farm based livelihood to the off-farm livelihood activities brought by the outmigration • Increasing preferences to alternative sources for fuel like LP gas, bio gas, electricity, etc. • Change in livestock rearing patter- decreasing number of big livestock (cattle/buffalo) and increasing trend of goat keeping • Decreasing dependency on forest products- decreasing collection of forest products like fuelwood, leaf litter, grass, etc. 	<ul style="list-style-type: none"> • Accumulation of dry fuel sources in the forest and traditional fire extinguishing methods being ineffective. • Shortage of manpower to combat forest fire. • Unwilling to participate in forest fire control unless they are about to harm on private property.
CF Governance	<ul style="list-style-type: none"> • Expired forest management plans of CFUGs. • Gap in the institutional events like regular meetings, general assemblies and annual audit • Weak planning process- not addressing the users' issues. • Increasing financial embezzlement with the CF's income and alienation of contributing users from the benefits (inequality in benefit sharing) • Less accountable executives still holding the decision making positions in the CFs. 	<ul style="list-style-type: none"> • Users demoralised to participate in controlling forest fire occurring in CFs. • Executive committee members lacking concern on forest fires in the CFs. • No practice, despite provisions on management plans to punish the culprit for inducing forest fire.
Regulatory Impositions	<ul style="list-style-type: none"> • Require forest officials in decision making and planning processes of CFUGs. • 15+ steps for timber sale and distribution provided by regulatory provisions. • Rent-seeking behaviour of forest officials. • Less interest of forest officials in silviculture based forest management due to potential risks on prestige in case of any distrust. • Ambiguous forest policies and spaces for manipulation. 	<ul style="list-style-type: none"> • Lack of feeling on common property resources. • Increasing frustration among forest leaders to manage forest as well as mitigate forest fires. • Less attention for the prevention of forest fires.

CONCLUSION

Forest fire have deep social, policy, and institutional roots. Along with the reduced dependency of users on basic forest products used for subsistence living, their priority is gradually shifting towards direct economic benefits from the forest. However, increasing alienation of local people from the economic benefits of forests, be it due to increasing policy complications or weak governance system of the forestry institutions, have increased pessimism among people for

forest conservation and management. In addition, lack of proper incentive mechanisms to promote forest fire management is gradually undermining co-management approaches. As a consequence, fire management responsibilities are transferred to external agencies. However, the techno-bureaucratic approaches are costly, unreliable, and incapable of managing forest fires without the support of local communities. Therefore, strengthening community level collective action

for better forest management is imperative for the sustainable forest fire management.

The promotion of participatory approaches in community forestry with regards to the controlling bureaucracy requires adjustment in regulatory frameworks and institutions to create flexible environment for local-level forest actors. This would allow them to develop and implement forest management systems and plans independently. For this, policy makers must recognise and consider the changing preferences of local forest managers in changing socio-economic circumstances. This will promote social acceptability of regulatory provisions as well as ownership and collective participation in forest management. The regulatory freedom can also contribute to sustainable extraction of economic benefits from the forest, which will strengthen the capacity of CFUGs and local actions to mitigate forest fire. Consideration of societal changes and preferences, while implementing regulatory provisions, can help bring local communities closer to the forest. Such an environment together by capacitating local people will enhance their active participation in forest management as well as in the preparation and implementation of forest fire mitigation strategies, and action plans. This will ultimately strengthen collective action in sustainable forest management, forest fire prevention and damaging costs reduction of fires in the future.

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