



**Outcomes of the International Wildland Fire Summit  
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**PART V**

**Strategic Paper  
Community-Based Fire Management<sup>1</sup>**

**Preamble**

Faced with increasing fire occurrence and decreasing fire suppression budgets, government departments, local organizations, and forest users must consider the range of fire management programs from around the world. Fires have burnt around the world in the decades of the 1980s and 1990s. Increasingly the solutions to these fire problems and the persistence of them year after year is suggesting that the reaction to fires to date needs to be reviewed. In part it has been suggested that a component of a balanced fire management should include an active role for communities. By considering proactive approaches--in particular those which recognise the existing effective fire management carried out by many groups of people in civil society or engage local communities to plan and perform fire management activities--fire management entities may avoid the pitfalls and mistakes of the past. Recent studies from five developing countries chronicle a range of local fire management scenarios; each with a diverse set of land uses and desired outcomes from Laos, Honduras, China, India, Turkey and The Gambia (FAO 2003). These approaches are seen as more effective, less costly, and more sustainable over the long term.

A series of meetings, a review and an international conference have been among major efforts on Community Based Fire Management conducted by Project FireFight South East Asia (PFFSEA), an initiative of WWF and IUCN, and its partners, including many of the summit attendees among them; FAO, USFS, GTZ, IUCN, WWF, GFMC and the Royal Forest Department of Thailand. Over the last half decade, a number of concrete efforts have been made to characterize what Community Based Fire Management (CBFiM<sup>2</sup>) means and how it effectively functions.

**Background**

Analysis of CBFiM began in Africa and South East Asia in the early 1990s where the last few decades have seen persistent fires arising from a complex set of circumstances. While the underlying causes continue to be investigated and analysed some general themes and ideas have evolved for fire in South East Asia that may have wider application. As well as the need for improvements in legal and regulatory frameworks (Abdullah 2002), options for changes in economic factors and policy incentives (Gouyon & Simorangkir 2002, Simorangkir et al. 2002) the potential for local communities to play an ongoing role in fire management has been recognized.

In 1998, relevant, high quality, published or unpublished, information on community involvement in fire management was difficult to find and some argued that communities did not have any role to play in managing forest fires, other than as causes of them. Project FireFight South East Asia and RECOFTC sought to outline a series of steps to gather the information available and assess the interest in CBFiM. In December 2000, a regional workshop was held in Bangkok, Thailand, and then due to the wide spread

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<sup>1</sup> Prepared by the Food and Agriculture Organization of the United Nations (FAO), based on a paper by Peter F. Moore, using the paper by Ganz et al. (2003) as a key resource and the joint work of Project FireFight South East Asia, Regional Community Forestry Training Centre for Asia and the Pacific and FAO.

<sup>2</sup> We use the acronym CBFiM to differentiate Community Based Fire Management from Community Based Forest Management, for which CBFM has become a well accepted abbreviation

interest prepared a larger conference held in July 2001 in Balikpapan, Indonesia, entitled ‘Communities in Flames’ (Moore et al 2002).

The attendance of over 120 people from 21 countries was a strong endorsement of the view that communities can and do play an important role in the management of fires.

A series of publications was also prepared:

- A Review of CBFiM for South East Asia (Karki 2002)
- Proceedings of the Communities in Flames Conference (Moore et al 2002)
- FAO Global Series of Case Studies on CBFiM produced in cooperation with PFFSEA and RECOFTC (FAO 2003)
- CBFiM paper prepared for the XII World Forestry Congress, Quebec 2003 (Jurvelius 2003)
- Paper on CBFiM to International Wildland Fire Conference, Sydney 2003 (Ganz et al 2003)

The collected case studies and investigations of CBFiM perhaps frame the full range of situations and circumstances of communities and their fire. Manifestations of CBFiM range across service as fire fighters (Fredriksson 2002) to fire management without any interaction or support from government agencies or non-local institutions (Darlong 2002).

Due to the documentation and intervention mainly being external the writing and resources available, and much of the discussion, has not been entirely successful at placing the people of communities in the forefront.

## **CBFiM – What is it?**

### Definitions

During the last few years, there has been quite a lot of discussion about what is now referred to as Community-Based Fire Management (CBFiM). The term has been used to describe such a wide variety of different ways in which communities are involved in fire management, that it is difficult to make any systematic comparisons or generalisations. A definition should be precise enough to enable us to make useful generalisations about somewhat similar things, while being flexible enough to accommodate a variety of approaches, a definition based on essential features.

The definition proposed in recent work (Ganz et al 2003) is:

*CBFiM is a type of land and forest management in which a locally resident community (with or without the collaboration of other stakeholders) has substantial involvement in deciding the objectives and practices involved in preventing, controlling or utilising fires.*

This definition defines CBFiM, without confusing the definition by incorporating a separate definition of fire management, “fire management” is taken to be any fire prevention or “management” practice.

The essential feature of the definition is that it takes seriously the idea of fire management being *community-based*. It does not include situations where people simply carry out paid work for a fire control agency or another agency outside the community. CBFiM as an approach to the management of fire in the landscape rests on communities in decision-making roles for the application and control of fire, so that:

- They have sufficient tenure (formal and informal) to ensure their rights are considered along with broader (e.g., national, provincial and district) production and environmental protection aims and objective.
- They consider that involvement in land and fire management decision-making and activities will improve their livelihood, health and security (Abberger & Marbyanto 2003).

This is consistent with a trend in Community Based Forest Management (and various other terms with similar meanings), which sees the essence of genuine community participation in terms of some element of community power over decision-making.

The identification and analysis of CBFiM to date has been in a developing and emerging nation context. There are some key differences between this and the circumstances of developed nations. The examples cited are in developing countries where the role of government and land use activities differ from those in developed countries. The definition of 'community' ('live in a particular locality' or 'a community of interest') essentially has a different meaning in developed countries, with media and interest groups having tremendous influence and power. In developing countries land use activities are more often tied to personal livelihood and existence without other choices being available.

Recent examples of 'Community Engagement' in developed countries could be seen as an element of CBFiM, as the community is increasingly invited to participate in fire management decision making and the importance of 'local knowledge' is being recognised and valued. However, there is little evidence that 'Community Engagement' ensures community empowerment in the context of land use management. In fact there is no common understanding apparent of 'Community Engagement'. The definition in this paper of CBFiM may help to establish a common understanding of what is needed in the process of working with communities in developed nations for fire management. Notably in such countries if CBFiM requires government involvement it will require considerable resources and training within the organisations and communities involved at least initially.

There is evolving recognition of a continuum of CBFiM<sup>3</sup>. In general terms it can be considered as having three nodes:

1. Local scale fire management where traditional or indigenous knowledge plays the major role in informing and undertaking fire management, which is also planned, conducted and controlled by local people. Livelihoods and maintaining the landscape are probably key to this node of CBFiM. The practices of Australian aborigines are an example of this node of CBFiM.
2. Community involvement in fire management that involves a range of local actors, including agencies and NGOs, that work on fire management. Livelihoods dependence, some traditional practice and community institutions may be characteristics. Elements needing support may include; analysis of the fire problem, technical capacity, regulatory framework or logistical assistance.
3. Volunteers from the community, perhaps with agency involvement, conduct fire management on behalf of the community across private and public lands. Volunteer Bushfire Brigades in Australia are an example of this. There is perhaps very little direct involvement of local people in the rural landscape and livelihood dependence on lands or forests is low.

In this CBFiM continuum a clear example of any node may not be obvious in any particular country or context. It is likely that any clearly understood CBFiM situation can be characterised as being similar to a specific node or a combination of characteristics from more than one.

### Terminology

Arnstein (1969) points out that the word "participation" is used in many ways, ranging from forms of non-participation (such as manipulation), through tokenistic forms of participation ("consultation", "informing") to forms of real participation such as "partnership", "delegated power" and "citizen control". CBFiM requires some real degree of community empowerment. In this sense "power" is defined as the capacity to have a genuine input into making real implementable decisions. Decision-making of this kind involves input into the setting of fire management objectives and deciding practices. It is important to understand here that a community role in decision-making does not necessarily mean total control, but that the community has a real input, perhaps in partnership with other stakeholders (such as forest departments) in the decision-making process.

It is necessary to be clear about what is meant by "community" as the word is commonly used in two completely different ways. One sense carries with it the idea of a group of people who live within a particular locality. The second sense is that of a "community of interest" (the "international community", the "arts community", the "conservation community"). This definition of CBFiM relates to a group of

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<sup>3</sup> The authors are extremely grateful to Florensus Steven, GIS Officer, District Government of East Kutai, East Kalimantan, Indonesia, who came up with the concept of a CBFiM continuum.

people resident in a locality. It would be possible to refer to any approach to fire management that involves a wide group of stakeholders (a “community of interest”) as community-based, but it seems more useful not to confuse two rather different types of situation in a single definition. The boundaries of this local group and its territory depend on local conditions and it can be thought of as the local group who would need to act together in some collective way for fire management. In some situations this might be a single village, in others a group of villages surrounding a forest or grassland, in yet another it might be the residents of a local government unit.

In many nations there are multiple ownerships that result in multiple goals, objectives and laws being intermingled. Many areas have National Parks and public forests created with goals or objectives that are perhaps contrary, perhaps consistent with the local people’s aspirations. Fire management involves imposing the management, rules and laws for a National Park or public forest, not CBFiM. In such countries there are broader, national laws and regulations that take priority over local rights, but there are programs in many cases that require local participation in order to develop programs across multiple ownerships and jurisdictions, each dependent on the cooperation of the other for a fire protection and management plan to work. The core differences are the dependence by local people on forests or natural areas for livelihoods and the degree of government management over the land tenure.

It is important to stress that the use of the word “community” does not imply homogeneity. On the contrary, all communities have some degree of heterogeneity in terms of economic interests, power and many other characteristics. These differences often have important consequences in fire management as fires that negatively affect others may advantage one interest group. In CBFiM, the community identifies a group of people who need to cooperate (and negotiate) in order to act effectively according to agreed (and negotiated) objectives. There is no assumption that cooperation will occur.

#### Gender and fire

An intrinsic aspect of communities is gender and in developing nations the roles of women, men and children. These can be quite specific, detailed and different. One example that illustrates this well comes from North-eastern Namibia (Namibia-Finland Forestry Programme (NFPP); Progress Report 2000. Data collected in North-Eastern Namibia in 1996 was similar to the data from the neighbouring countries of Angola, Zambia, Zimbabwe and Botswana: From 50 to 85% of the forests, woodlands and savannah was reported to burn each year. In meetings with traditional leaders, technical staff discussed possible fire management strategies and steps that should be taken to reverse the trend of increasing, uncontrolled fires, aimed at restoring the situation to one in which the use of fire in the region was practiced in an environmentally sustainable manner.

When collecting data to serve as a basis for a study underpinning the above discussions, it was found that when men were interviewed, the main reason given for burning was because of “traditions”, inherited from father to son Virtanen (2000). When women were asked the same questions, they stated that most wildfires had escaped from controlled agricultural burning, a task that was exclusively carried out by women. Similar interview data was collected in Mozambique in 2001 in meetings with traditional leaders and local farmers associations held in the province of Zambezia (Virtanen et al. 2002). Although the clearing of new land for shifting cultivation was carried out by men, it was found that spot-burning to kill and remove stumps and trees from clearings was mainly done by women, who also carried out all agricultural burning following the harvesting of crops. It is evident that in order to prepare a viable strategy for sustainable fire management in which local people are involved, gender aggregated baseline data is needed.

Gender aggregated data from pilot regions showed that 80% of all fires were lit by women and 20% by men; but for primarily different reasons. It was concluded that in this case fire programmes should to a large extent target women not men as had been previously done by the donor community. This targeting of men arose from the focus of all efforts on detection and suppression, activities dominated by men; instead of on prevention which was a women’s domain.

The people, women fire users, know very well that fire outbreaks threaten the very resources they need for survival in addition also their housing, children and elderly people. In the baseline study in Mozambique 17 % of women said that their crop had burned during the last year and 16% that their house had burned down; all in all 39% of women confirmed that their house had burned down one time or the other. Out of men

48% and out of women 36% confirmed that they had experienced losses due to wildfires encroaching into their land.

In poor countries the use of fire is mainly about the lack of economic choice and alternatives. There is no choice but to keep using fire in agricultural activities despite having no resources to handle a large fire outbreak resulting from their use of fire in livelihood activities. The implication for fire management of women handling most of the fire activity is strong. In most cases they are excluded from primary decision-making processes on management of land resources – a situation that needs to be addressed in the context of CBFiM as well as other frameworks.

### Forms of CBFiM

There are communities involved in fire management in a range of ways.

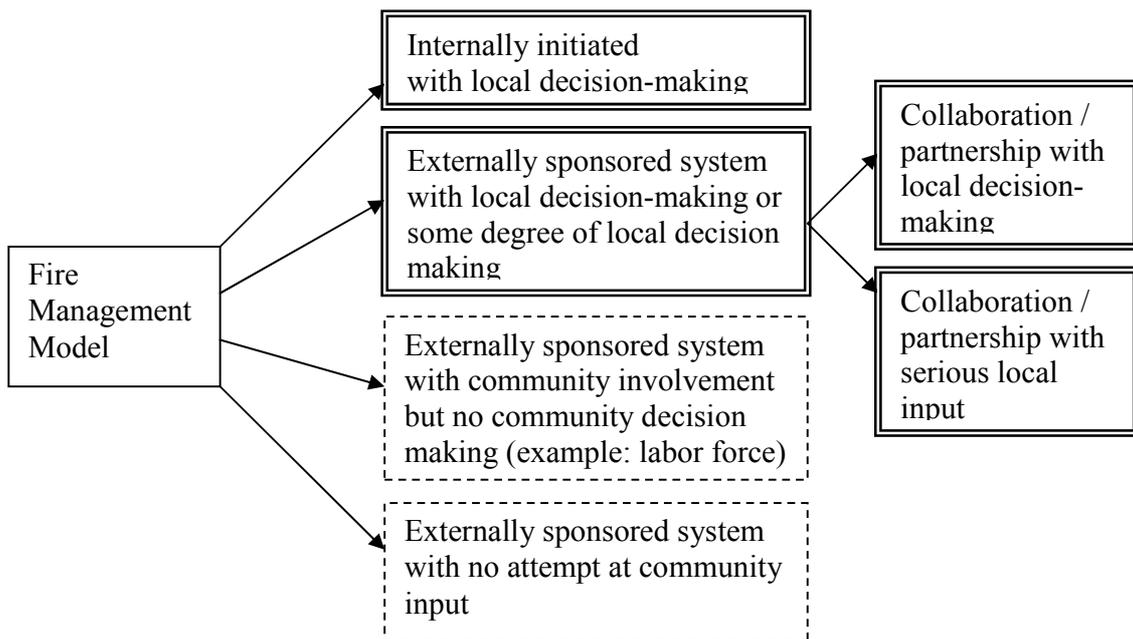
- In the western United States in planning and influencing land management through stakeholder fora (Everett, 2001).
- In Finland where most members of the Voluntary Fire Brigades in local communities have most of their assets invested in “forest farming” and are private forest owners who will protect their forests and
- Australia through Volunteer Fire Brigades that arise from the community and are mainly for protection of community assets and perhaps in many cases less engaged in forest and land management for subsistence or dependence on it in other ways.

With the exception of Finnish forest owners, in the key respect of “substantial involvement in the objectives and practices involved in preventing, controlling or utilising fires.” these developed world “communities” do not conform to the definition above. These groups are volunteers, from the community and in a sense 'for' the community but they are focused on fire fighting in two respects - preparedness and response with a little bit of prevention if they participate in prescribe burning or other measures. They are not really "community based" in the same form that CBFiM has been identified to date in developing nations, but do form a node of the CBFiM continuum.

This emphasis on locality does not imply that only local residents should be involved in fire management. Obviously there are other stakeholders (people who can be affected by the outcomes of fire management and people who can affect the outcomes). Partnerships between local people and other stakeholders are quite consistent with CBFiM. But an approach that starts with local actors and works out to include other stakeholders involves different strategies than one that starts by identifying all stakeholders and includes local residents as just one category.

While some community fire management practices are locally initiated, others are set up by outside agencies, such as forest departments perhaps supported by donors. Typically, these externally sponsored systems recruit community members into committees or working groups to manage fires. It is possible to distinguish between externally sponsored community approaches where there is meaningful community involvement in decision-making and approaches where the community is involved in carrying out tasks determined by others (such as providing labour to build firebreaks). Some modes of management that do not allow for community input but do allow for community involvement (Figure 1 - dashed lines) are not considered CBFiM as per the definition previously given. Although there is some emphasis on whether the system is initiated internally or externally, it should be noted that the initiation is not as important as the amount of credibility given to local decision making (Figure 1 - double lines).

Any attempt to improve and support CBFiM must start with an understanding of the causes and functions of various types of fires, and with their implications to various stakeholders within and outside a community. It is necessary for external actors to know where a fire started and why, before working with a local community to manage its effects. Similarly whether various stakeholders see a fire as beneficial or damaging is important before deciding what management is appropriate or possible. The technical and organisational capacities of communities should also be considered.



**Figure 1.** Modes of Community Input in Decision Making in Fire Management

#### Legislation, Policy and CBFiM

In most developing nations, specifically South East Asia, fire is not well dealt with in legislation (Abdullah, 2002). The tenure covered is usually restricted to public lands and the responsibility for fires starting and the management of fires is not allocated. Generally fires are treated as negative; the use of fire for livelihoods purposes is mainly not accepted, with exceptions in a few countries. The lighting of fires is in many cases an offence punishable under the laws. In very few cases are fires permitted for any purpose. Malaysian legislation is an exception where deliberate fire is allowed under permit for local and small-scale activities that are specified in the law. Commercial scale fire use is banned in Malaysia.

Specific Legislation most often criminalises local farmers using fire as illustrated by an example from Mozambique (Article 40, Forest burning crime; Forest Act of Mozambique, 1999):

*“Anyone who, voluntarily, sets fire and thus partially or totally destroys crops, forests, woods or a grove of trees, shall be condemned to an imprisonment sentence of up to one year and to the corresponding fine”.*

More than a million local families are daily practicing shifting cultivation in Mozambique. Applying this law to the essential livelihood practices in local communities is problematic. The only solution is to involve these communities in; fire awareness, mitigation and education activities (CBFiM) so that their traditional knowledge and inherent skills are applied to the issue of unwanted damaging fires. Increasing awareness of the damaging effects of fires can have a strong effect on communities that may not have recognised the impacts, on them as well as others and the landscape, of escaped fires (Wright & Byring 2003).

With the meager resources usually allocated to fire management the Government cannot supervise this new Act in Mozambique; and the tightening of legislation will not have any impact on wildfire occurrence. In Namibia a similar situation was approached by developing National Guidelines on Fire Management wherein directives were laid out on the responsibilities of various stakeholders in CBFiM, including Principles for Community Participation in Forest Protection in Namibia (Jurvélius 2001):

*Besides the national government, traditional authorities, commercial farmers and local communities are also responsible for the implementation of forest protection policies to maintain and manage the environment, to prevent and overcome damages, reduce air pollution, wind and water erosion as well as to sustain natural resources.*

*When it comes to Declared National Parks; then the principles of Community Involvement in Park Management should be applied to any fire situation in or around the Park. The local communities involved in forest fire management should be paid out of the Game Product Trust Fund.*

Activities set out under the guidelines included:

- To inform and educate the rural population, commercial farm communities and the general public in the role of forests and its contribution to the national economy. Numerous are still the people who see the forest as merely a source of income for timber and non-wood forest products. This short-term exploitation goal has led to drastic damage and denudation of forests to the point that the existence and quality of forest resources have declined greatly.
- To inform and educate the public about adverse environmental and economic effects of bush encroachment on commercial farming communities.
- Encourage the formation of Fire Protection Associations in commercial farming areas and Fire Committees in communal areas.
- Encourage NGO's, CBO's and private initiatives regarding forest extension and law abiding activities.
- Encourage civic organizations, religious organizations, womens groups, listener-reader-viewer groups, conservation groups, handicraft producers, local artists and environmental organizations to upgrade their understanding and appreciation of forests through their participation in regular activities and exchange of information.
- Enhance the role of civic organizations in motivating community participation in forest protection activities including fire prevention and suppression.

The focus in this case is on forests but the direction and focus of the principles and activities could equally apply, once adjusted, to other parts of the human and natural landscape.

A further consideration is the clarity of tenure under laws and regulation. In CBFiM efforts the formal or informal rights of access and use of lands was identified as a key aspect of communities taking an active role in fire management. The allocation of rights, access and operational efforts to clarify tenure are in many case not well formed in many nations. This is not necessarily restricted to developing nations as an issue, Greece has a poor cadastral base which contributes to the ongoing difficulties with fire in that country.

There are many important components involved in fire management at the policy and field level but a recurring theme is the fundamental question of who should control the use of fire and manage it appropriately? The rural landscape in developing nations remains home to millions of people, both indigenous inhabitants as well as voluntary and forced migrants. Rural communities inevitably compete with internal and external factors for access to natural resources and the right to use fire as a management tool. Increased competition for land, water and forest resources may be an important factor driving the need for more clearly defined roles and responsibilities in fire management.

## **Context for CBFiM**

Fire is a disturbance that has played, and will continue to play, a major role in both fire sensitive and fire adapted ecosystems throughout the world. In almost all of these ecosystems, humans have altered the natural fire regimes by changing the frequency and intensity of fires. In many parts of the world, local communities are often blamed for what are considered harmful fires. This view often encourages fire and forest management institutions to perceive local communities as part of the problem, and certainly not the solution. Evidently because local people usually have most at stake in the event of a harmful fire, they should clearly be involved in mitigating unwanted fires. Community Based Fire Management (CBFiM) is an option for blending participatory community development strategies and fire management to reduce unwanted fires and their impacts.

### Agricultural Burning

Agricultural fires are used for a wide range of purposes including:

- Management and maintenance of rangelands

- Beekeeping
- Hunting
- Wildlife Management
- Native People/Indigenous fires

The management of these fires generally lies with agricultural authorities and agencies. Worldwide most forest fires come from uncontrolled agricultural activities. Escaped agricultural fires represented 91% of fires in Italy (Corpo Forestale 2002) and 95% of fires in Portugal in 2002 (Forest Fires- Myths and Realities 2003).

The extent of agricultural burning is enormous. The figures of the European Commission Global Burned Area Assessment for the year 2000 showed over 230,000 fire scars in grasslands and croplands with a total burned area of over 200,000,000 hectares.

These figures suggest that fires deliberately started deliberately by people for agricultural purpose are significant in both numbers and area. The proportion of forest fires arising from escaped agricultural fires indicate that strengthening or encouraging of community based fire management is likely to be a significant means of improving the impacts of unwanted and damaging fires. The impact of this approach might be enormous.

Worldwide fires are overwhelmingly human, caused approximately 90% of all fires. Of these the majority are agricultural or livelihood fires deliberately lit to meet specific objectives. Intention will include hunting and wildlife management as well as land preparation and management of residues. Consequently community fire use must be recognised as potentially the largest source of information, expertise and experience available.

The focus for CBFiM needs, therefore, to be on building on existing knowledge, leading to efforts that improve the safe use of fire and minimising escaped damaging fires. Fire should also not be completely excluded from the daily lives of people and the landscapes they inhabit. Case studies illustrate the ways communities use smaller wanted fire to cultivate crops and non-timber forest products, hunt, create forage and manage pests and disease need to be distinguished from uncontrolled fires (FAO 2003).

### **The Current State of CBFiM**

To varying degrees, governments have begun to adopt collaborative or community-based forest management strategies. The term “community-based” in the context of fire covers a wide spectrum of situations; from potentially forced engagement in an activity (coercion), to free and willing participation in actions developed by local actors themselves (empowerment). The emphasis on “community-based” is not only the community involvement, but also where community capacity has been recognized and supported by external agencies (governments, non-government organizations, projects and others). This may include support to an existing indigenous system through formalizing, modifying, or otherwise elaborating on it, or instituting new systems. Many of these systems and approaches are considered more effective in tempering uncontrolled fires, more beneficial to local ecosystems, and more cost-efficient over the long term.

More common are instances where CBFiM has resulted from the formation of community institutions and mechanisms that support more efficient fire management entities (such as the two cases documented by FAO from Çal and Bergama in Turkey – FAO 2003). Here, the lead institutional transformations occur at the local level, with government and non-government agencies accordingly reshaping their own functions away from direct management functions towards more technical and advisory roles. The nature of institutional change varies from place to place.

In some countries, the driving force behind CBFiM approaches is indigenous land and/or use rights, including the right to use fire as a management tool. The securing of these rights may ultimately help maintain the beneficial uses of managed fires for such objectives as controlling weeds, reducing the impact of pests and disease, and generating income from non-timber forest products. A case study from Orissa, India (Darlong, 2002), documents the importance of the traditional uses of fire for cultivating Kendu and Mahua flowers. The dearth of documentation of these and other practices threatens to erode the stores of cultural knowledge. There are elements of CBFiM and other community-based strategies that represent a

revival and formalization of traditional natural resource management regimes but there should be caution against the over-emphasis of this aspect or when re-introducing a traditional fire regime.

A similar caution is urged in respect to over-emphasizing the role and capacity of local communities to fight fires historically larger and of higher intensity than those of the regimes of the past. Given the fire regimes in many parts of the world, communities and their members can be an important, perhaps pivotal, component, but should not shoulder the entire burden for fighting fires. Several of the CBFiM approaches documented in various sources occur in remote locations where the government's fire control/suppression approaches are severely hindered by access and response time. In such remote locations, communities are present and have a significant role to play in the prevention and suppression of harmful fires that have a detrimental impact on their lives but the government must not relinquish all accountability.

The community should not bear the sole responsibility for extinguishing larger, more intense fires that require resources beyond local capacity.

Ultimately, CBFiM is concerned with how villagers manage fire for local daily subsistence needs, including as an aspect, ensuring local peoples' access to, and management of, land and forest resources. By placing tighter local controls on how fire is used, and reaching clearer consensus on resource use and territorial rights agreements with their neighbours and government agencies, local people can minimize the destructive effects of fire and maximize its benefits.

## **External Intervention**

Since external actors have generated most of the documentation and assessment there is an emphasis on the means and modes of intervention. Though from an outside perspective there ideas and approaches have much to offer in developing CBFiM and supporting progress towards matching its potential and integrating CBFiM into fire management.

To lead to *sustainable CBFiM* the aim should be to build on existing knowledge. Communities must own the fire management activity and design their community participation approach fitting their locality. They should call/arrange their own meetings and invite experts that they think will be of use for their focus. This will only happen if fire management is integrated with their production/livelihood systems.

A synthesis of insights and ideas generated to date by external actors is presented below.

## **Conclusion**

CBFiM is anchored in community level influence, if not control, of fire management decision-making. The active, intentional use of fire is an important factor in many, perhaps most, communities especially in developing nations. The initial focus for CBFiM should be on improving skills in the use of deliberate fires, incorporating key aspects of gender, community institutions and appropriate training. There are significant efforts still needed for CBFiM to take its place in the balanced and sustainable management of landscapes and ecosystems. These include improved fire data collection and analysis; strengthened recognition in law, policy and practice of the potential and roles communities can undertake.

The current efforts by a range of stakeholders and actors are welcome and positive. With continued emphasis and consistent focus the rapid increased appreciation of CBFiM can be reinforced and integrated into land and fire management.

Though they are preliminary the CBFiM nodes provide a means for identifying options and characteristics of community and local scale involvement in fire management for both emerging and developed countries.

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## **Appendix 1: Towards CBFiM: Steps to Support Fire Management for Communities**

While CBFiM is considered to be driven and managed mainly by rural communities themselves, much input and support is needed from government agencies, NGOs, and other institutions to establish CBFiM through a particularly designed development programme. In the past, many programmes and activities aimed at improving the livelihood of rural communities were only successful as long as the support from “outside” was maintained, often having only limited impact on communities in terms of sustainable development and welfare.

One reason for limited success was that local communities were regarded as “targets” rather than as co-operation “partners” meaning such programmes did not necessarily match with the needs and interests of local communities. Consequences include low participation of villagers, no sustainable effects of activities carried out and generally no “sense of self-interest” developed by these communities.

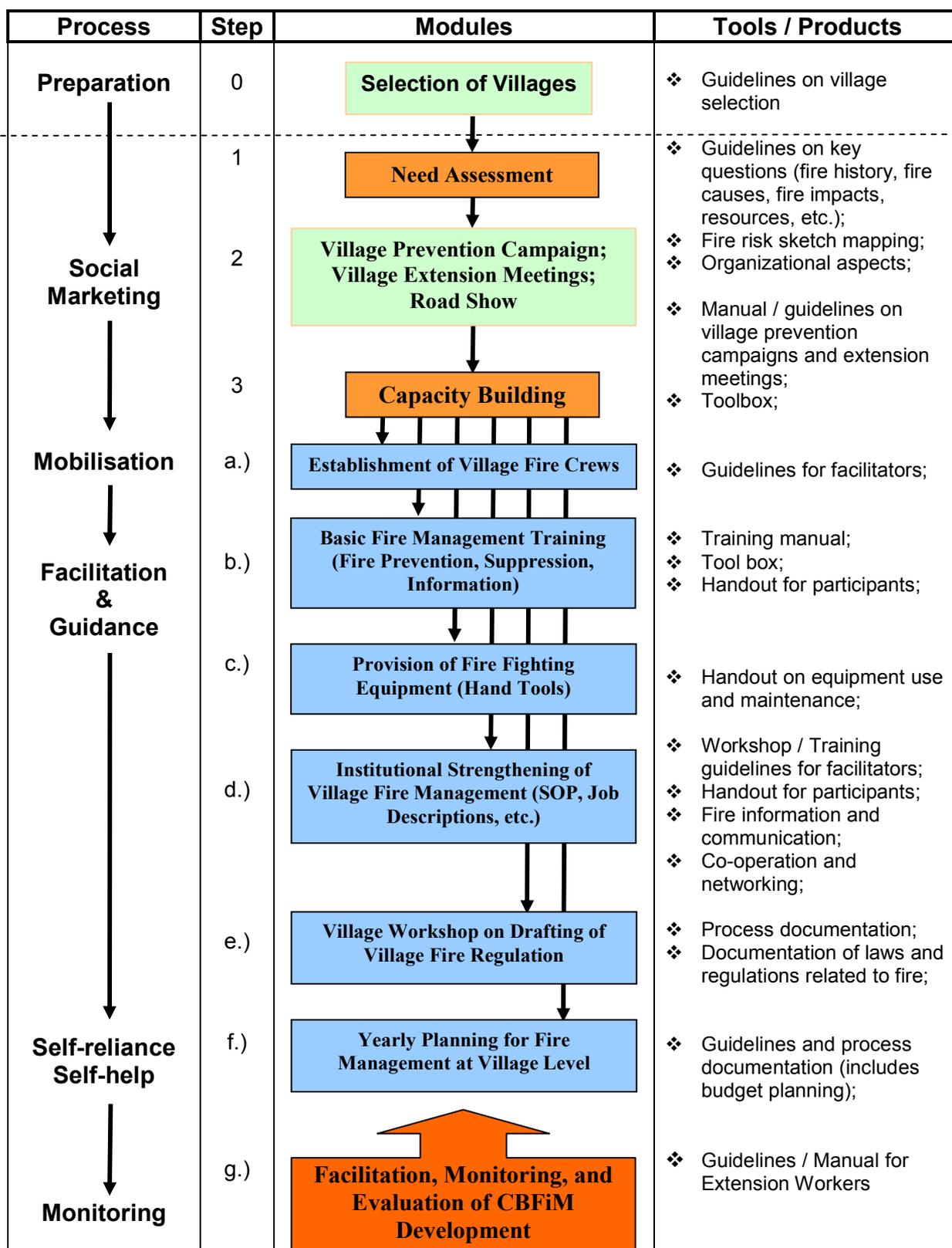
The process of developing or strengthening CBFiM has been a focus of the GTZ Integrated Forest Fire Management (IFFM) Project in East Kalimantan, Indonesia. They have documented the process and the steps of it (Figure 2). One key facet that their experience has identified, supported by understanding and insight from elsewhere, is the essential nature of the benefits for the community from practicing CBFiM. This can be either improved circumstances or a reduction of unwanted impacts. To rephrase the definition in part – involvement in land and fire management decision-making and activities improves community livelihood, health and security. CBFiM is unlikely to be of interest to the community or sustainable if initiated if it does not meet this need.

### CBFiM Processes and Activities/Products by External Actors

Based on experiences especially in Sub-Saharan Africa and South East Asia, the following processes and activities are proposed for planning and implementing sound fire programmes, which give due consideration to both technical issues and stakeholder involvement.

A critical facet of the processes for supporting CBFiM is a needs assessment at village level. Together with forestry and/or agricultural extension workers and the village leaders organize community workshops to discuss the fire history of the village, fire use, wildfire causes, wildfire impacts, past fire management efforts (perhaps by the use of a Participatory Sketch Mapping tool).

Figure 2. Steps and Process for CBFiM Development or Strengthening<sup>4</sup>.



<sup>4</sup> From H. Abberger and E. Marbyanto, GTZ IFFM Project, East Kalimantan, Indonesia (unpub.)

### Social Marketing through Prevention Campaigns and Extension Work<sup>5</sup>

In most circumstances there seems to be a strong need for awareness raising. This is a fundamental process in enabling local people to become involved in managing their fires. A key issue is to define the fire management responsibilities between government agencies, communities and NGOs. Awareness raising and an increased participation of rural communities in wildfire prevention and fire management is the main goal of campaigns and extension work carried out in selected priority villages. Based on experience drawn from many prevention campaigns carried out around the world, the following aspects should be included into village campaigns in one or the other way:

- Functions and importance of landscapes
- The ecological, economic, social and cultural benefits of fire
- The role of fire in the landscape
- The implications of removing fire from its ecological, traditional or economic function in the landscape
- Possible wildfire risks
- Negative impacts of wildfires
- Introduction to laws and regulations related to fire
- Prescribed burning in shifting cultivation and agriculture
- Possibilities for the participation of rural communities in fire management

The active participation of communities in village campaigns is very important and facilitators should understand local culture. The programme should allow as much contribution and inputs as possible from the participants. Good visualization and easy-to-understand contents are crucial in presentations given by facilitators.

Role-playing and presentations by participants add to a lively and attractive event and provide good conditions to articulate local concerns not only in regards to fire. A way to make village campaigns even more interesting is to include entertainment events such as movie shows, theatre shows, etc. Generally, village campaigns should raise the interest and motivation of rural communities to participate in the development of CBFiM in their respective villages.

Fire prevention campaigns in villages should involve government officers at local or at district level. They need to co-operate and co-ordinate efforts with all other government and non-government agencies with extension work capacities agencies. They also closely co-operate with the provincial fire officials, which should be responsible mainly for the development of concepts, campaign material, and the training of facilitators. Furthermore, village fire crews need to be actively involved in campaigns in their own and possibly also in neighbouring villages.

Means and ways that have been successfully used to implement the education, training, information-dissemination and other extension activities on fires, fire management and fire awareness include:

- Personal contacts (often pivotal and critical)
- Interview/discussions with target groups; government agencies, traditional leaders, farmers, fishermen, cattle raisers, women's groups, conservation cadres, environmentalists, tourists, hunters, honey hunters, arsonists, school children, teachers, handicraft makers and others.
- Developing and establishing a National Fire Logo, e.g. Si Pongi in Indonesia (GTZ IFFM), Twiga in Tanzania and "Fire Ostrich" in Namibia (NFFP).
- Use of printed and electronic media
- Theatre drama, plays and national radio to relay fire message to rural communities with low literacy rates
- Targeting primary and secondary schools and other training institutions
- Involving local artists in the production of educational materials, text writing, song writing and video production
- Participation in literary programs for adult learners (the majority of whom are women)
- Participating in national/local exhibitions, cultural festivals, parades, school competitions
- Participation in National Labour or Environmental Day, Food Day

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<sup>5</sup> From Abberger and Marbyanto (unpub.)

- Organising national fire campaigns on radio/TV (with national fire logo displayed)
- Producing logo; badges, key rings etc.
- Creating and preparing fire stories or fire cartoons for mass distribution in national and local languages for example NFFP (1999)
- Producing and placing fire billboards along strategic roads in national as well as in local languages.

Most of these approaches to campaigns are more suited to literate societies. Altered emphasis and methods may be needed for societies with oral traditions or low literacy.

#### Development of Community Fire Institutions

Village fire management has to be institutionalized at an early stage of any programme. This must be based in existing institutional arrangements. Responsibilities and tasks have to be assigned to community members who will, on a voluntary basis, make up a village fire crew. It has to be carefully elaborated, how fire management can be integrated into the organizational village structure in order to gain full acknowledgement and support by the community. In villages with well-organised and functioning farmer groups, the integration of fire management into their portfolio should be considered.

Confirming the safe use of fire and effective fire management practice is a key aspect of institutional development.

One task of village fire crews is to prevent and suppress unwanted fires in the village area. Importantly, they have to promote safe burning practices in agriculture in coordination and co-operation with village and district authorities. In order to fulfil these tasks, village fire crews require a regular budget from the village administration.

Additional budget sources can be government agencies, NGOs, or private enterprises. Village fire crews might also provide paid services in fire prevention and suppression to other villages.

#### Training

The sections above have dealt with the steps to take to achieve sustainable participatory approaches in fire management. These steps need to be complemented by training. The basic information (baseline study) on fire, including gender segregated data, will provide the basis for planning training activities – who should be trained (notably women as identified for Southern Africa) in what and to what level.

The training plan should include the following:

***The 5W + 1H = (or answer the questions; Why, What, Who, Where, When and How)***

Approaches in response to fires from external actors, including donors, have generally (and still do) emphasised fire suppression. Implicit in this is the assumption that the fire “problem” results from a lack of awareness about fire damage and unwanted impacts and a shortage of skills and perhaps organisation. The experience of many observers and case studies suggest strongly neither assumption is supportable. In point of fact lack of awareness and shortage of skills and poor institutional arrangements on the part of regular fire users in a community is unlikely.

By analyses of the 5W + 1H, the training may be directed to the right target group as well as contain the right curricula to meet the local needs.

#### *Prescribed Burning Training*

The use of fire for subsistence and livelihoods is much more common than community institutions set up to only fight fires. CBFiM mainly exists where fire is used in some way that generates benefit for the local people. Active fire use generates skills, understanding and awareness and strengthens community institutions that deal with fire and related aspects.

Training in prescribed burning can have a range of benefits for the local people but importantly also for other actors and stakeholders that influence or are affected by managed fires. The training can ensure that skills and

capacities are maintained and improved. Maintaining the understanding of fire at the local level is becoming an increasingly important need. As various social and economic changes take place under the influence of rural – urban migration, spontaneous and forced transmigration and land use changes, many of the skills of deliberate fire use are being lost or weakened.

Prescribed fire is also one of the activities that combine together all the elements and stakeholders in the fire management system. Training for it also does this and provides an opportunity to improve shared understanding of prescribed fire and CBFiM.

### *Components of fire training*

Issues related to training in fire management are complex; there is a need to cover both fire inclusion and fire exclusion in curricula and training programmes. Frequently, there is a generalized need to train staff in Government agencies, NGOs and local populations, in various aspects of fire management. This will include providing information on efficient methods of prescribed burning as well as information on situations in which fire should be excluded.

Staff responsible for fire management and local people alike, need to appreciate and understand the role and relationship between the basic components of fire (fuel, heat, oxygen), as well as the principles of fire behaviour. In addition, they need to master, at least in principle the skills of prescribed burning.

Such knowledge will form the basis of a more common understanding of local fire ecology, including the role of trees and forests and the requirements of fire for regeneration of forests and trees.

The generalized view that local people will not understand complex biological and ecological issues has been proven wrong in many instances. Tens of thousands of local people and government staff were trained in forest fire management and related activities in Burkina Faso, Namibia and in Mozambique in the 1990s and early 2000. Only very few of those who received training were not able to relate the environmental information to their own community or home area. Local people, being dependent on the environment for survival and well-being, are often keen observers and knowledgeable about nature surrounding them. Discussion on the relation between everyday village life and forest fires will help them better to understand both immediate and longer-term impacts of forest fires and of the use of fire.

Training curricula and materials have continuously been improved through regular evaluation of training events together with participants. Fire management training should provide a balanced mix of theory and field-practice, which incorporates local conditions and knowledge and experience of the participants. The training concept should give sufficient time for discussions, work groups sessions, role-plays, and other participatory methods. The curriculum includes fire prevention activities, environmental education, institutional issues, the role, functions, and responsibilities of fire crews, the use and maintenance of simple equipment, and also fire fighting strategies and techniques.

This Position Paper # 5 will however neither be dealing with how to develop appropriate working methods and techniques in combating fires nor with questions of how to develop suitable handtools for community fire fighting, where emphasis should be on local manufacturing.

Often assumptions, which can be gross over estimations, are made of peoples' capabilities to fight fires by using tree branches, palm leaves etc. Barefooted people without any protection against radiant heat, smoke inhalation and flames are next to useless in combating fires, unless equipped with tools, clothing and as appropriate water to contain the fire. Well made rake-hoes, fire swatters and backpack sprayers are required for community fire fighting (Jurvélius 1980). A comprehensive training manual together with useful materials is currently being prepared for publication.

### A taxonomy of learning objectives

An objective is defined as: "intent communicated by a statement describing a proposed change in a learner". When looking at the overall aim of CBFiM one may generalise it by saying that the aim is to change the behaviour of people using fire (Curzon 1991).

Ensuring the appropriate level of information exchange, enhanced understanding and capacity building is balanced to the role to be filled by those undergoing training is critical. In order to be comfortable and confident that training is meeting the objectives set for it a theoretical framework is useful. The taxonomies of learning objectives have been mainly developed in industrialised countries where all levels of an organisation (fire chiefs to fire fighters) have their own defined training levels and learning objectives.

The aim of using learning objectives is to describe what people should be able to do after they completed their training. However, as in all learning, the person gradually develops more in-depth understanding of a topic and thus the educator needs some kind of yardstick to measure this progress.

“Jurvélius’ Taxonomy” (Figure 3) describes the full range of skills, levels and capacities that might be required in CBFiM activities (Based on Bloom and Sullivan’s taxonomies of learning objectives). These Taxonomies were specifically identified for the training of CBFiM Instructors and extension officers; they were tested for thousands of students and farmers in Africa and Asia.

Information on the learning/teaching process is required before people are able to market/sell the CBFiM to local decision makers, to politicians and to Traditional leaders. This aspect is crucial when looking at the sustainability of any CBFiM projects or activities once the phase of intervention is over. Jurvélius’ Taxonomies of Learning Objectives can be used to conceptualize what an Instructor/Extension Officers in CBFiM should know; and be able to do after completion of their training. Level 4 may be considered the minimum target of attainment for CBFiM Instructors who has to be able to conceptualise the full spectrum of fire management

Figure 3: Jurvélius’ Taxonomy of Learning Objectives for CBFiM <sup>6</sup>

<b>DOMAIN/ STAGES</b>	<b>COGNITIVE (Knowledge or Information)</b>	<b>AFFECTIVE (Feelings, Attitudes, Values)</b>	<b>PSYCHOMOTOR (Motor skills, doing something with hands, feet, body)</b>
Level 1	KNOWLEDGE	RECEIVING	IDENTIFYING
Level 2	COMPREHENSION	RESPONDING	NAMING
Level 3	APPLICATION	VALUING	DESCRIBING
Level 4	ANALYSIS	ORGANIZING CONCEPTUALIZING	CONSTRUCTING
Level 5	SYNTHESIS	CHARACTERIZING	DESIGNING
Level 6	EVALUATION	INTEGRATION LEADING TO CHANGES IN BEHAVIOUR	MODIFICATION & ADAPTATION DEMONSTRATING

#### Yearly Planning for Fire Management at Village Level

Fire management Planning should be integrated into the overall village planning. Generally, such planning barely exists in many communities. Fire management is part of forest management and agriculture in communities. The necessary planning tool should therefore integrate fire management into the general land management planning of a community.

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<sup>6</sup> Prepared by Mike Jurvélius