



## **A Three-Level Wildland Fire Management Project for Nepal: Towards a Community-Level Wildland Fire Management Planning Approach**

### **1. Background**

In Nepal wildfires are considered to be a major driver of destruction and degradation of forest ecosystems and the environment. Deforestation and forest degradation in tropical forests in many countries, including Nepal, have reduced the quality of environmental services derived from them. These benefits include mitigation of climate-change impacts, conservation of biodiversity, protection of watersheds that supply forest-dwelling and urban communities with high-quality water, provision of amenity and recreation services, production of biomass as an alternative source of energy for fossil fuels and mitigation of water induced disasters like soil erosion, landslides and floods. Recurrent uncontrolled fires have serious impacts on the socio-economy, culture and the natural environment of the country and also affect the regional climate. Fire management efforts by local communities and government professionals to deal with forest fires are severely hindered by lack of financial and technological capability.

After a successful foundation of Regional South Asia Wildland Fire Network under the United Nations International Strategy for Disaster Reduction (UNISDR) Global Wildland Fire Network in Kathmandu in April 2007, a 3-level Wildland Fire Management Project for Nepal was approved and jointly funded by the German Foreign Office, Task Force for Humanitarian Assistance, and was implemented by the Global Fire Monitoring Center (GFMC) in close collaboration with the UNISDR-Regional South Asia Wildland Fire Network (RSAWFN), the Department of Forests (DoF) of Government of Nepal and United Nations Development Programme (UNDP) Nepal and the International Centre for Integrated Mountain Development (ICIMOD).

The main components of the project were:

- Community Forest Fire Management Planning including a training course for local community people
- District Forest Fire Management Planning
- Round Table Meeting for the Development of National Strategy for Wildland Fire Management in Nepal

Overall outputs of the project were:

- Community Forest Fire Management Plan
- 24 trained community forest fire managers (through training course for Community Forest User Group [CFUG] members)
- District Forest Fire Management Plan
- Contribution towards development of national strategic plan for sustainable wildland fire management
- Poster and pamphlet production and distribution

### **2. Rationale of the Project**

Uncontrolled fires in Nepal contribute to serious degradation of forests, ecological changes, as well as deterioration of social and economic conditions in some land-use systems and natural vegetation types. About 400,000 hectares (ha) of forest area are affected by fire annually. At least one hundred villages are burned annually in Nepal, some of which are completely destroyed by forest fires, particularly where the house roofs are made from thatched grass (Bajracharya, 2002). There are regular winter vegetation burnings in the coniferous forests in high mountains in Nepal which results in loss of the regenerative capacity of the forest (ca. 90% regeneration of *Shorea robusta* is completely

damaged by fire). Fire-induced loss of soil cover negatively affects hydrological regimes and soil properties, leading to severe erosion and loss of productive topsoil. High economic losses are caused by damaging valuable timber and non-timber forest products and planted forests.

Most of the fires are anthropogenic. A study revealed that fire incidents were 58% deliberate, 22% negligent and 20% accidental (Kunwar and Khaling, 2006).

Nepal has diverse ecosystems, socio-economic and cultural settings and vegetation types resulting from a wide range of land-use systems and climatic conditions, consequently having diverse fire regimes and vulnerabilities.

In one hand, there is increasing interest in Community-Based Fire Management (CBFIM) and the need for institutional and technological capability development at all levels. Also, there is a high expectation from sustainable vegetation cover, which helps to reduce poverty through livelihood support to rural populations. On the other hand, there is a lack of existing local and national capability in fire management, including research, monitoring, early warning and assessment, and facilitating cooperation in fire management.

The 'Kathmandu Declaration – 2007' of the foundation meeting of Regional South Asia Wildland Fire Network has recommended, *inter alia*, “to stress on strategy formulation, fire management plan development and program implementation; to give emphasis on improvement of community-based fire management and institutional and technological capabilities at all levels; and to conduct campaigns to raise the awareness about wildland fires in all sections of the society”.

The Regional Session of the '4th International Wildland Fire Conference-2007' has recommended, *inter alia*:

*“To support countries to conduct national fire and fire management assessments, formulate legal frameworks and strategies, build sustainable fire management capabilities and institutions, develop fire management plans and human resources.”*

*“To give emphasis to improvement of participatory / community-based fire management approaches and institutional and technological capabilities at all levels.”*

*“To support implementation of building fire management capability at both local and national levels, as well as through bilateral and multilateral cooperation agreements”*

*“To create an enabling environment from all possible donors including national, international, bi-lateral, multi-lateral and private foundations for financial, technical and other resource support for sustainable fire management.”*

*“To promote education and awareness-raising programs on wildland fires.”*

Furthermore, the Conference recommended, among other, that “the international wildland fire community pursue the development of a global-scale international resource sharing strategy to assist countries with fire management planning activities”.

In most of Nepal, local forest users do not have proper tools and technical know-how to fight fires. In fact, community forests are not managed properly, nor are forest fires fought in an appropriate manner. Awareness and Training programs targeting Community Forest User Groups are significantly useful to conserve the community resources (Sharma, 2005).

In government-managed forest, some steps taken by the National Department of Forests indicate positive progress in this direction. Strengthening of this Department to cover the sustainable forest management at national and local level is essential if its efforts are to materialize in a tangible manner.

Community involvement has proven to be successful for sustainable resource management. Community-based fire management could be the key to overcoming the recurring problems of forest fires in Nepal (Sharma, 2005).

Forest fire management is not practiced in Nepal. Although, the community forest users' groups try to control forest fires in their own forests, despite lack of a plan, proper training and tools for systematic prevention and control of fires.

A bottom-up planning process is therefore necessary to strengthen local capabilities to address the forest fire issues and problems in the country.

### **3. Activities**

#### **3.1 Training Course for Local Community People**

##### **Introduction**

This training course is a fundamental part of the 3-Level Wildland Fire Management Project for Nepal. Aimed at villagers and other members of a CFUG the training course allowed local people an opportunity to develop their own fire management plan and fire risk map. It dealt with tools for community based fire management planning that are intended for use in a process which is as participatory as possible. It has been developed so that it can be applied to any village environment in Nepal.

The community based fire management planning includes:

- Identifying participants, planning area and expectations of participants
- Identifying zones, changes, contrasts, conditions and physical features in the village environment (transect walk)
- Presenting and analyzing information on land use, forests, water and other resources and risk zones (participatory mapping)

As such, the course has designed to increase management capability of wildfire at local community level. The course was also developed together with trainees in accordance with their needs. The main reasons for participatory curriculum development are:

- Much time and money is devoted to fire management training – but courses do not always produce the outcomes desired, and
- As a result many training organizations need to rethink the way they plan, design, deliver and evaluate their courses.

The CBFiM training programme was organized in the Sundar CFUG of Chaukitole in Makawanpur district in Nepal. In the training programme, members of the users group with gender balanced and inclusive representation was the criteria for selection of the participants. The program was carried out in 9-15 October 2007.

##### **Objectives**

The objectives of the training program were:

- To create awareness on forest fire prevention and control
- To contribute in preparing a community based fire management plan
- To practice use of the fire fighting technique and tools, and
- To develop Sundar Community Forest as a pilot CFUG demonstrating forest fire management practices

##### **Outputs**

The outputs of the training program were:

- 24 trained forest fire managers (through training course for CFUG members)
- Provision of appropriate fire fighting tools and equipments to the CFUG

Among others, the training course took into account of safety and ergonomic aspects in fire management, including uses of appropriate firefighting tools, prescribed fire for ecological purposes and fuel management, gender balanced representation.<sup>1</sup>



**Figure 1.** Fire fighting practices during the training course

### **3.2 Community Forest Fire Management Planning (CFFMP)**

#### **Introduction**

A local level management of fire is the means to solve a recurrent forest fire problem in the country as community involvement is proven to be successful for sustainable resource management in the country. But, a systematic forest fire management has not been practiced yet, for instance, there is no single specific forest fire management plan at the community level. Although, the community forest users' groups try to control forest fires in their own forests, despite lack of a plan, a proper training and tools for systematic prevention and control of forest fires.

Sundar Community Forest is located in Choukitole of Hetauda municipality, central part of Makawanpur District, Nepal was selected for a representative community forest as a planning unit. This community forest covers an area of 109.5 ha of forests in the south-west aspect of the Mahabharat range.

The planning process followed the societal choice, acknowledged indigenous knowledge, rights, values and norms, emphasized women in action, inclusive participation, ownership and the ability of the plant to replicated and adapted for other different, but similar, local conditions.

#### **Objectives**

The main objective of the Development of Community Forest Fire Management Plan is to demonstrate the community-based fire management in the context of a developing country by building and enhancing the management capability of local people.

---

<sup>1</sup> See the report of the training programme:

[http://www.fire.uni-freiburg.de/GlobalNetworks/South\\_Asia/Community-Based-Fire%20Management-Training.pdf](http://www.fire.uni-freiburg.de/GlobalNetworks/South_Asia/Community-Based-Fire%20Management-Training.pdf)

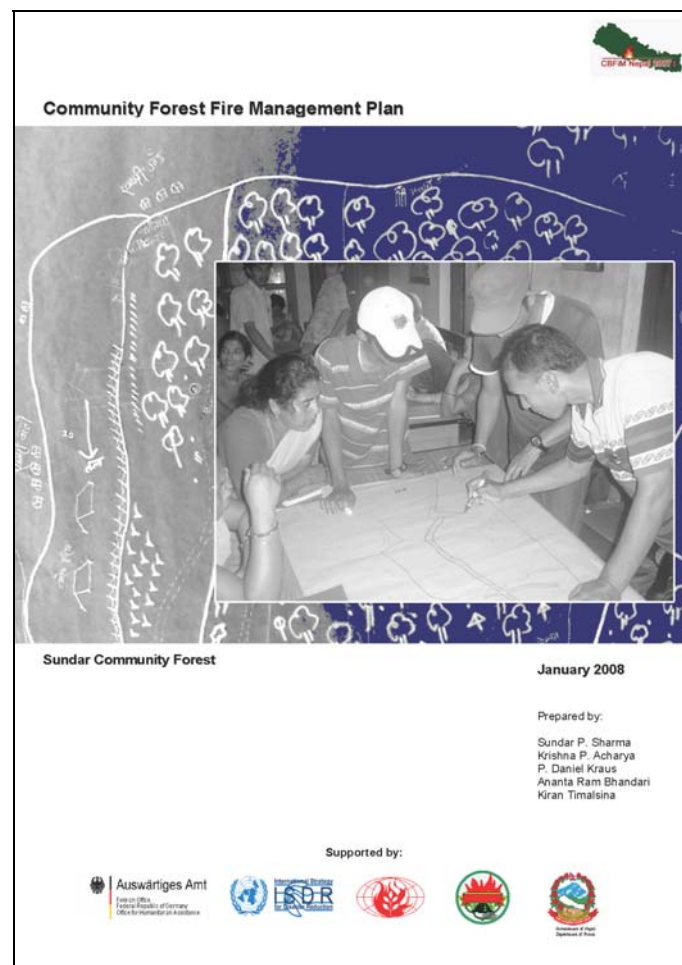
## Outputs

The process aimed to:

- To identify users, expectations and needs of users and planning area
- To identify physical features, conditions, zones, changes and contrasts in the village environment (transect walk)
- To present and analyze information on land use, forests, water and other resources and risk zones (participatory resource mapping)
- To prepare a 5-year action plan



**Figure 2.** Participatory Resource Mapping by local community



**Figure 3.** Cover page of the Community Forest Fire Management Plan<sup>2</sup>

<sup>2</sup> See full text of the Plan (PDF 1.8 MB):

[http://www.fire.uni-freiburg.de/GlobalNetworks/South\\_Asia/Community-Level-Fire%20Management-Planning.pdf](http://www.fire.uni-freiburg.de/GlobalNetworks/South_Asia/Community-Level-Fire%20Management-Planning.pdf)

### 3.3 District Forest Fire Management Planning (DFFMP)

#### Introduction

A systematic forest fire management is not practiced in Nepal. There is no management plan in a single district. In government managed forest, some steps taken by the Department of Forests even though at an indicative level are positive steps in this direction. So, it is necessary to develop district level forest fire management plan to initiate to address the forest fire problems at district level in the country.

Participatory approach to include all concerned stakeholders in the district was the main principle for the preparation of District Forest Fire Management Plan of Makawanpur district of Nepal.<sup>3</sup>

#### Objectives

The objectives of the development of a prototype District Forest Fire Management Plan include:

- To develop a model district with a proper forest fire management practices
- To recommend the Government of Nepal to implement the plan in the district concerned and replicate the planning process throughout the country
- To encourage the government to prepare national level strategic forest fire management plan



Figures 4 and 5. Elaboration of the prototype District Forest Fire Management Plan

### 3.4 Round Table Meeting for the Development of a National Strategy for Wildland Fire Management

#### Introduction

The National Round Table for Wildland Fire Management in Nepal was held in Kathmandu, Nepal, 16 December 2007. The meeting brought together 52 participants including national fire scientists, professionals, policy makers and expatriate experts, representing government organizations, international and regional non-government organizations, local non-government organizations and civil society from all over the country, and the Embassy of the Federal Republic of Germany and other international organizations.<sup>4</sup>

#### Objectives

The main objective of the meeting was to find out the direction by bringing together fire communities to discuss on global, regional as well as national level issues and concerns of wildland fire paradigms and build a national strategy for sustainable wildland fire management in the country in accordance

<sup>3</sup> See full text of the plan, PDF (1.7 MB):

[http://www.fire.uni-freiburg.de/GlobalNetworks/South\\_Asia/District-Level-Fire-Management-Planning.pdf](http://www.fire.uni-freiburg.de/GlobalNetworks/South_Asia/District-Level-Fire-Management-Planning.pdf)

<sup>4</sup> See for details: [http://www.fire.uni-freiburg.de/GlobalNetworks/South\\_Asia/Meetings\\_activities/Round-table\\_Nepal.html](http://www.fire.uni-freiburg.de/GlobalNetworks/South_Asia/Meetings_activities/Round-table_Nepal.html)

with the objectives of the UNISDR Global Wildland Fire Network (GWFN) / Global Fire Monitoring Center (GFMC) and the Regional South Asia Wildland Fire Network (RSAWFN).

**Outcomes**

The participants of the meeting presented the state-of-the-art of the fire situation and of fire management capabilities in the country and discussed international cooperation in fire science. The participants of the meeting identified five issues, namely, (a) National Assessment - Wildland Fire Management, (b) Human Resources Development, (c) Legal, Institutional and Policy Frameworks, (d) Research and Development, and (e) International Cooperation.

The participants worked in two groups and came up with common conclusions agreed a the resolution of the meeting contributing towards development of national strategic plan for sustainable wildland fire management.<sup>5</sup>

**3.5 Production and Distribution of Extension Materials**

The main objective of the development and distribution of extension materials – posters and brochures – was to raise awareness among people in rural communities towards forest fire disaster.

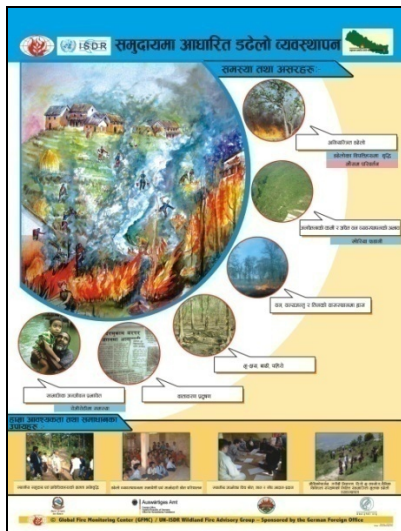


Figure 6. Poster<sup>6</sup>

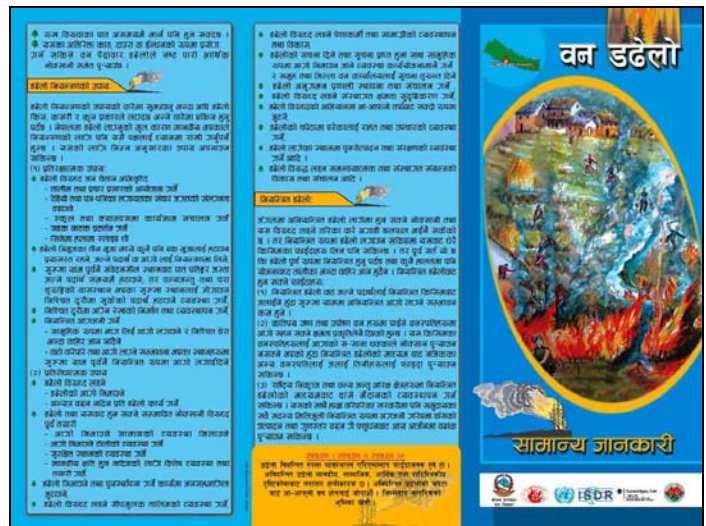


Figure 7. Brochure<sup>7</sup>

**4. The Way Forward**

For the future it is important to develop a Policy, a Strategy and Building Capacities in Local, National and Transboundary Forest Fire Management in Nepal, particularly to:

- Strengthen local communities coping with wildfires and aiding them in addressing the consequences of climate change and fires and the effects on their livelihoods;
- Assist in fire management planning and program implementation, enhancing institutional and technological capabilities and developing synergies through coordinated and collective action both within the region and internationally;
- Emphasize the improvement of participatory multi-stakeholders/fire management involving local community approaches and institutional and technological capabilities at all levels;
- Promote education and awareness-raising programmes on wildfire prevention; and

<sup>5</sup> See the resolution of the round table meeting at [http://www.fire.uni-freiburg.de/GlobalNetworks/South\\_Asia/Meetings\\_activities/Resolutions\\_RT.pdf](http://www.fire.uni-freiburg.de/GlobalNetworks/South_Asia/Meetings_activities/Resolutions_RT.pdf)  
<sup>6</sup> High-resolution version: [http://www.fire.uni-freiburg.de/Manag/poster\\_CBFIM\\_Nepal\\_nep.png](http://www.fire.uni-freiburg.de/Manag/poster_CBFIM_Nepal_nep.png)  
<sup>7</sup> High-resolution version: [http://www.fire.uni-freiburg.de/GlobalNetworks/South\\_Asia/Backgrd\\_materials/brochures.html](http://www.fire.uni-freiburg.de/GlobalNetworks/South_Asia/Backgrd_materials/brochures.html)

- Enhance and strengthen bilateral/multilateral and international cooperation in wildland fire management for creating synergies and sharing knowledge and technical and human resources among countries in the region by accepting and promoting principles, norms, rules, and decision making procedures within a guiding framework that individual countries agree on.
- Ensure participatory multi-stakeholders involvement including local communities and the activities will be implemented, monitored and evaluated together with the local communities.
- Adapt forest fire management to existing systems of sustainable forest management (SFM) with careful attention to the way forward to the REDD mechanism.

### **IFFN contribution by**

Sundar P. Sharma  
 Soil Conservation Officer  
 Department of Water Induced Disaster Prevention (DWIDP)  
 Ministry of Water Resources, Government of Nepal  
 Pulchowk, Lalitpur  
 Kathmandu  
 Nepal

### **References**

Benndorf, A.M. and Goldammer J.G. 2006. Global Forest Resources Assessment 2005. Report on fires in the South Asian Region, FAO, Forestry Department, Working Paper FFM/14/E, Rome, Italy.

Sharma, S.P., 2005. Participatory forest fire management: An approach. International Forest Fire News No. 34, 35-45.

Regional South Asia Fire Assessment and Conclusions and Recommendations of the 4th International Wildland Fire Conference (2007):

<http://www.fire.uni-freiburg.de/sevilla-2007/sessions/Session-E-South-SE-Asia-Report.pdf>

Bajracharya, K.M. 2002. Forest fire situation in Nepal. International Forest Fire News No 26, 84-86.

'Kathmandu Declaration – 2007' of the foundation meeting of the Regional South Asia Wildland Fire Network under the auspices of UN-ISDR Wildland Fire Advisory Group / Global Wildland Fire Network/ Global Fire Monitoring Center.

[http://www.fire.uni-freiburg.de/GlobalNetworks/South\\_Asia/Meetings\\_activities/Meeting-Proceedings/Kathmandu\\_Declaration\\_final\\_09\\_April\\_2007.pdf](http://www.fire.uni-freiburg.de/GlobalNetworks/South_Asia/Meetings_activities/Meeting-Proceedings/Kathmandu_Declaration_final_09_April_2007.pdf)

[www.fire.unifreiburg.de/GlobalNetworks/South\\_Asia/Meetings\\_activities/Southasia\\_meeting\\_foundation.html](http://www.fire.unifreiburg.de/GlobalNetworks/South_Asia/Meetings_activities/Southasia_meeting_foundation.html)

Conference Statement of the 4th International Wildland Fire Conference (2007):

<http://www.fire.uni-freiburg.de/sevilla-2007/Conference-Statement-en.pdf>

Kunwar, R.M. and Khaling, S. 2006. Forest fires in Terai, Nepal: Causes and community management interventions. International Forest Fire News No 34, 46-54.

Sharma, S.P., 1996. Forest fire in Nepal. International Forest Fire News IFFN No. 15, 36-39.

Sharma, S.P., Kraus, P.D., Goldammer, J.G. (2007). Community-based Fire Management (CBFiM) Training – An approach towards participatory planning. Global Fire Monitoring Center (GFMC) / Foreign Office, Federal Republic of Germany, Freiburg.

Sharma, S.P., Acharya, K.P., Kraus, P.D., Bhandari, A.R. and Timalisina, K. 2008. Community Forest Fire Management Plan, Sundar Community Forest, Chaukitole, Hetauda, Nepal.