Keys for Successful International Cooperation: a Dream, a Team, and a Theme

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Abstract

Numerous countries and organizations have provided assistance in the past to strengthen the fire management capacity of targeted countries. These programs often have been successful in the short term by providing training, equipment, communications, policies, and practices to improve responses to wildland fires. However, when projects finally terminate and an influx of money and technical support is no longer available, the in-country infrastructure for fire management can quickly deteriorate.

The future challenge will be to find mechanisms for sustaining networks and cooperative projects over the long term. It will be necessary to provide technical guidance to establish the elements of systematic fire management while at the same time ensuring the continuity and stability of the process. The opportunity to develop strong partnerships in linking systematic fire management principles with sustainable resource management policies and practices will pay large dividends in ensuring diverse and healthy ecosystems for the benefit and enjoyment of society. A current effort under the United Nations' International Strategy for Disaster Reduction is establishing Regional Wildland Fire Networks to provide on-going assistance.

A Corporate Advisor reported on National Public Radio in the United States that success is equated with the degree to which organizations integrate a dream, a team, and a theme in the conduct of its Mission. The keys for implementing successful fire management programs can be defined as follows:

> **A Dream:** Finding harmony among people and ecosystems based on community involvement, comprehensive networks, and sustainable management practices.
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> **A Team:** The integration of human resources, both domestic and international, to define, refine, and implement the theme on a global scale.
>
> **A Theme:** Developing and applying a template for Systematic Fire Management to support policies and practices of sustainable natural resource management on a worldwide basis to benefit people, property, and natural resources.

A recent assessment of the global forest fire situation revealed strengths and weaknesses associated with sustaining the health and productivity of the world's forests when threatened by drought, wildfires and an increasing demand for natural resources (Goldammer and Mutch 2001). One strength characterizing the 1990s was the unprecedented level of inter-sectoral and international cooperation in helping to lessen the impact of wildfires.

Global trends in fire management will be highlighted; and case examples will be presented that illustrate fire management cooperation and networks.

A Dream

The management of natural resources and ecosystems is often fraught today with contentious issues that are debated heatedly among polarized groups. This is often true whether we are talking about resource management in a rural setting in India, or resource management in highly developed settings in other parts of the world. In the United States forestry projects can be delayed for extended periods by appeals, court actions, and litigation. Generally it is the resources that ultimately suffer when people agree to disagree over a course of action. Not only has there been a marked lack of harmony among people in resolving resource issues, but threats to biodiversity and ecosystem stability have escalated to the point where altered plant communities in many areas are in a state of serious decline. Declining ecosystem health in many areas has led to an unnatural accumulation of fuels, widespread high intensity fire behavior, and direct threats to people, property, and natural resources. Fire management practices have become infinitely more difficult due to this lack of harmony.

Fortunately there are examples where people have had a vision, or dream, to find harmony among people and ecosystems. These cooperative examples have carried various labels, including joint forest management, participatory forest management, consensus building, and learning networks. There is movement away from centralized and state-driven forest fire management towards decentralized and mainly community based management regimes (Ganz et al. 2003). People are coming together to examine differences and develop collaborative solutions to natural resource problems in a "win-win" environment.

A Team

Ensuring that all parties are involved in the application of systematic fire management principles to sustain healthy ecosystems requires that formal or informal networks are established to attain the necessary cooperation and collaboration. One of the conclusions of the Food and Agriculture Organization's (FAO) meeting on public policies in 1998 was that FAO and other international organizations should play a catalytic role in the establishment of networks to promote the sharing of information and knowledge among developing countries (FAO 1999).

A network is defined as any system of lines or channels of communication interlacing like the fabric of a net. Establishing effective networks among all partners is as important to resolving fire issues in the wildland/urban interface as it is in managing wildland ecosystems. Both public and private sectors have a key role to play in implementing fire management actions. When integrated networks are not established at the outset of projects, successful outcomes generally are not realized.

The network, or team members, define, refine, and implement the theme in a manner to restore, maintain, and sustain the health of wildland ecosystems.

A Theme

Systematic fire management can be thought of as the theme, or series of steps from prevention through mop-up and patrol, which managers can use in any number of implementation alternatives (Burger et al. 1993). This series of steps includes the following elements:

- **Fire Prevention:** Prevention activities take on two kinds of efforts--one to reduce fire brand production and one to reduce the susceptibility of the fuel bed to ignite (fuel treatment or modification). Keeping records of known fire causes helps to identify areas for fire prevention campaigns and methods.

- **Fire Presuppression:** These are preparedness activities in anticipation of a fire. This element includes training, equipping and pre-positioning firefighting resources.

- **Detection:** It is very important to detect a fire early when small and report it to the proper authorities. This can be done through infrared scanners, detection towers, aerial reconnaissance and people patrolling. Procedures also should be established for the general public to report wildfires that they encounter.

- **Location:** Fires need to be located accurately on a map to guide those who will dispatch resources to the right area. This can be done as simply as placing pins in the map at the reported coordinates.

- **Communication:** Fire location is typically communicated through radio transmissions to the forces that will control the fire.

- **Dispatch:** The act of receiving the location of the fire, deciding what suppression forces are necessary to send to the fire, sending the forces and supporting those resources once assigned to the fire.

- **Attack:** Having timely access to the fire area, whether by foot, vehicle, boat, or helicopter, is essential. The wildfire situation is evaluated and strategies and tactics are implemented to control the fire at as small a size as possible.

- **Mop-up:** Once the fire spread has been halted, it is necessary to extinguish all flames and cool all heat sources inside the perimeter of the fire. This must be done thoroughly to prevent future escapes.

The modern fire management system also includes provisions for the use of prescribed fire in the management of ecosystems; and the use of prescribed fire in treating fuels to help regulate the timing and size of future fires. Past attempts at excluding fire can create problems such as unnatural build-ups of fuels, increased susceptibility to insects and diseases, significant changes in the structure of vegetation, and losses of valuable wildlife habitat for some species dependent on post-fire vegetation. Generally we need to balance effective fire suppression programs with prescribed fire programs. Resource management agencies need to develop understanding among resource professionals and the public regarding the importance of prescribed fire programs to achieve certain land management objectives.

These principles and elements are minimum guidelines to be followed in implementing an effective program of fire management to safeguard people, property and natural resources.

When the concepts embodied in the "Dream, Team, and Theme" approach are implemented, the resulting harmony of such interaction can help to resolve many of the key global fire issues that were prevalent during the period 1990-2000.

Global Fire Issues and Opportunities—1990-2000

The Forest Resources Assessment (FRA) process 2000 provided an opportunity for FAO to define the global effects of fires on forests as a part of the forest assessment that is undertaken every ten years. This global assessment of forest fires summarized the results of questionnaires and contacts with countries to obtain wildfire data and narrative information regarding the fire situation (Goldammer and Mutch 2001). The report was organized according to FAO's six geographical regions: Africa, Asia, Europe, Oceania, North and Central America and South America. In-depth fire situation profiles were presented for 48 countries, with shorter reports highlighting fire conditions in several additional countries.

Through the FRA 2000 process, FAO closed out the 20th Century by instituting a system for collecting meaningful fire data for developing countries. Although the submission of wildfire data on fire numbers, area burned and causes fell short of expectations, the importance of regularly recording and evaluating such information has been established with Member countries.

This assessment of the global forest fire situation revealed strengths and weaknesses associated with sustaining the health and productivity of the world's forests when threatened by drought, wildfires and an increasing demand for natural resources:

- Wildfires during drought years continue to cause serious impacts to natural resources, public health, transportation, navigation and air quality over large areas. Tropical rain forests and cloud forests that typically do not burn on a large scale were devastated by wildfires during the 1990s.

- Many countries, and regions, have a well-developed system for documenting, reporting and evaluating wildfire statistics in a systematic manner. However, many fire statistics do not provide sufficient information on the damaging and beneficial effects of wildland fires.

- Satellite systems have been used effectively to map active fires and burned areas, especially in remote areas where other damage assessment capabilities are not available.

- Some countries still do not have a system in place to annually report number of fires and area burned in a well-maintained database, often because other issues like food security and poverty are more pressing.

- Even those countries supporting highly financed fire management organizations are not exempt from the ravages of wildfires in drought years. When wildland fuels have accumulated to high levels, no amount of firefighting resources can make much of a

difference until the weather moderates (as observed in the United States in the 2000 fire season).

- Uncontrolled use of fire for forest conversion, agricultural and pastoral purposes continues to cause a serious loss of forest resources, especially in tropical areas.

- Some countries are beginning to realize that inter-sectoral coordination of land use policies and practices is an essential element in reducing wildfire losses.

- Examples exist where sustainable land use practices and the participation of local communities in integrated forest fire management systems are being employed to reduce resource losses from wildfires.

- In some countries, volunteer rural fire brigades are successful in responding quickly and efficiently to wildfires within their home range; and residents are taking more responsibility to ensure that homes will survive wildfires.

- Although prescribed burning is being used in many countries to reduce wildfire hazards and achieve resource benefits, other countries have prohibitions against the use of prescribed fire.

- Fire ecology principles and fire regime classification systems are being used effectively as an integral part of resource management and fire management planning.

- Fire research scientists have been conducting cooperative research projects on a global scale to improve understanding of fire behavior, fire effects, fire emissions, climate change and public health.

- Numerous examples were present in the 1990s of unprecedented levels of inter-sectoral and international cooperation in helping to lessen the impact of wildfires.

- Institutions like the Global Fire Monitoring Center have been instrumental in bringing the world's fire situation to the attention of a global audience via the Internet.

Case Examples of Fire Management Networks

FAO's Regional Forestry Commissions Provide a Forum. For example, the North American Forestry Commission (NAFC) was established in 1958 to provide a policy and technical forum for Canada, Mexico, and the United States to discuss and address forest issues on the continent. The Fire Management Working Group, one of seven Working Groups in NAFC, was established in 1962 to achieve the following objectives:

- Exchange experiences and technological advances regarding prevention, wildland fire management, and fire use.

- Provide mutual aid and technical exchanges among Canada, Mexico, and the United States in the development of strategy and appropriate actions to resolve technical problems of the North American region.

- Actively support and participate in international fire management programs with fire management agencies throughout the world by developing and promoting activities that support international cooperation and development.

Agreements now exist that allow the exchange of firefighting forces among Canada, the United States, and Mexico. These Agreements have proven to be very successful in providing scarce firefighters and equipment to neighboring countries when drought conditions lead to numerous large fires.

Regional Wildland Fire Networks. The United Nations International Strategy for Disaster Reduction (ISDR) has supported a series of Regional Wildland Fire Networks throughout the world. These networks are in varying stages of implementation and are intended to foster increased levels of cooperation in fire management practices among member countries. One of the longest standing networks is the above mentioned North American Fire Management Working Group that has provided consistent interactions among fire management representatives from Canada, Mexico, and the United States since 1962. The complete listing of all Regional Wildland Fire Networks follows:

1. South East Asia (ASEAN)
2. Australasia
3. Baltic
4. Central Asia
5. Mediterranean
6. Balkan
7. Sub-Sahara Africa
8. North America
9. Meso-America
10. South America

Prepare, Stay, and Survive—the Ultimate in Teamwork. The Australasian Fire Authorities Council has provided guidance on bushfire safety and evacuation decision making (AFAC 2001). Since human lives and property values are at risk when threatened by wildfires, exemplary cooperation and teamwork are required to ensure adequate safety margins. Team members identified by AFAC for reducing the loss of life and property include State agencies, local government, the communities, and individuals. In many parts of the world the primary response is to evacuate all people threatened by wildfires. But fire experiences in Australia have demonstrated time and again that "houses protect people and people protect houses." Obviously zones of defendable space around homes must be established in advance of fires; and the young, elderly, and infirm generally are evacuated well ahead of the fire. Communities at risk from wildfires should be encouraged to be responsible for their own safety, because Fire Service personnel may not be available when burning conditions are severe.

The wildland/urban interface Dream would be one where houses are able to survive fires even when Fire Services personnel are not available. The Team would consist of the effective partnership between Fire Services and home dwellers. The theme would comprise the dual strategy of adequate defendable space coupled with the home dweller's motivation to remain on-site as an important part of the solution.

During the 2000 fire season in western Montana neighbors took it upon themselves to stay with their homes as flame fronts advanced, creating defensible space, installing sprinkler systems, fighting fire, and providing local intelligence to incoming Fire Service personnel. No home was lost as people demonstrated responsibility for their own well-being.

Capacity Building in Mongolia through Teamwork. Fire weather characterized by low humidity's, drought conditions, and strong winds make Mongolia one of the most fire-prone countries in Asia, as extensive areas of steppe and forest burn periodically. Forests cover about 8-10 percent of Mongolia and most are subject to recurring fires. Taiga forests consisting primarily of Siberian larch, along with Siberian pine, aspen, and birch, are found throughout the north and central mountains. Although people start a large majority of the fires, lightning has been reported as the cause of some fires. During the period 1996-1998, 788 wildfires affected 43 provinces. As a result of these fires, 29 people died, 82 people sustained serious burns, 11,717 livestock perished, 218 houses were destroyed, 5.5 million hectares of forested land and 18.9 million hectares of grassland were burned.

The Mission of the Ministry of Nature and Environment (MNE) is to create a safe and healthy environment for Mongolia's citizens by maintaining an ecological balance in accordance with the concepts of sustainable development. Mongolia's natural environment is relatively undisturbed due to a low population density and low rates of industrialization and urbanization. The Ministry is developing and implementing several national action plans and programs on environmental protection, including the strengthening of fire management.

Several agencies and organizations share a responsibility for fire management in Mongolia. Forest management is the responsibility of the Ministry of Nature and Environment (MNE). Fire detection, reporting, and monitoring are accomplished by MNE with suppression action being taken in some areas, such as in the Khan Khentii Strictly Protected Area. Until recently, the Civil Defense, a branch of the military, centrally managed fire suppression in Mongolia. Now the Fire Management Agency has been given responsibility for wildland fire suppression, with the participation of Civil Defense only when "disaster" situations warrant additional assistance. Most fire management actions also involve community participation. Also, The Meteorological Agency and the Environmental Protection Agency have fire responsibilities.

One of the recommendations of FAO's recent Technical Cooperation Program in Mongolia was to have the government establish an Interagency Fire Coordinating Group represented by all government agencies having a role in wildland fire management and fire disaster response to foster greater fire management capacity (George and Mutch 2001). Such a network was formed to achieve these objectives:

- Coordinate implementation of management policies, directions, and standards.

- Promote efficiency and effectiveness of incident management operations.
- Provide oversight in all aspects of fire and incident management.
- Serve as a clearinghouse and forum for the identification and resolution of inter-agency management issues.
- Promote fire prevention and education and participatory forest management.
- Provide oversight to fire management safety and training.

This Coordinating Group met regularly to carry out these responsibilities, ensuring a more integrated response to wildland fires.

The Nature Conservancy's Learning Network. The Nature Conservancy, in cooperation with the U.S. Forest Service, Dept. of Interior resource management agencies, state and local organizations, and private partners, has been testing a collaborative approach to restoring landscape-scale fire regimes on 50 different areas in the United States. Landscapes range from 23,000 to 12 million acres each (totaling over 60 million acres). The Network catalyzes and facilitates "learning by doing" while efficiently transferring innovative technologies and information between projects through facilitated peer review in national workshops.

Global Fire Science Teamwork. The International Crown Fire Modeling Experiment (ICFME) was a major, cooperative, global undertaking involving coordination by the Canadian Forest Service Fire Research Network and the Government of the Northwest Territories' Forest Management Division (Alexander, M. et al. 2000). Cooperating scientists and operational fire personnel were principally from Canada and the USA, but there was representation from several other countries as well. Those countries included South Africa, Germany, Australia, Russia, France, Holland, Japan, and Spain.

The primary purpose of the ICFME was oriented towards the testing and calibration of a newly developed physical model for predicting the spread rate and flame front intensity of crown fires. The Crown Fire Experiment also provided the opportunity to examine other aspects of crown fire behavior, including linkages to firefighter safety/personal protective equipment (PPE), wildland/urban interface issues, and certain ecological and environmental effects. The experimental crown fires provided valuable new data and insights into the nature and characteristics of crowning forest fires.

Conclusions

We have seen the distinct advantages that accrue to all when networks are formed to assist with the coordination of fire research studies and fire management responses through collaboration and cooperation. Such networks may include individuals, communities, public agencies at all levels of government, diverse fire services, universities, and the private sector. Human life and property, resource values, suppression efficiencies, fire prevention education, and sustainable development initiatives all benefit from a "win-win" consensus approach where all stakeholders are at the table together.

The absence of significant follow-through, however, when capacity building projects are terminated results in disruption, or cessation, of necessary continuity. In Mongolia, for example,

when the highly successful German fire assistance project was concluded in December 2000 the infrastructure for fire management quickly collapsed due largely to the absence of funding. The collapse occurred in the short time between the end of the Mongolia-German project in December 2000 and the start-up of the Mongolia-FAO fire project in May 2001. If we are serious about improving the global capacity to manage wildland fires, then a conscious effort must be made to retain what has been accomplished, provide essential continuity into the future, and transfer fire management advances to other fire-prone areas.

In reviewing the global fire situation, it is apparent that a continued emphasis on the emergency response side of the wildfire problem will only result in future large and damaging fires. The way out of the emergency response dilemma is to couple emergency preparedness and response programs with more sustainable land use policies and practices. Only when sustainable land use practices and emergency preparedness measures complement each other do long-term natural resource benefits accrue for society. Collaborative strategies for sound timber harvest practices, settlement, community incentives, prescribed burning and agro-forestry projects that reduce flammability should be developed and integrated on a landscape scale through appropriate networks to reduce the threat of future fires.

Sustainable land use practices and emergency preparedness measures can complement one another when we keep the dream alive for harmony among people and ecosystems, empower teams, or networks, to work collaboratively, and establish continuity for the theme of systematic fire management on a global scale.

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