Food, Agriculture and Natural Resources (FANR) Directorate

Concept Note No. 7 – August 2007

Cross-boundary Fire[1] Management for the SADC Countries

1. BACKGROUND

1.1 Extent and Impact of Fires

Most of sub-Saharan Africa has distinctive wet and dry seasons which favour regular vegetation fires. The wet season stimulates growth, while the dry season provides ideal conditions for burning. However, drought may lead either to increased fire danger, due to extreme fire weather conditions, or to a decrease in fire danger, as there is not enough fuel to sustain a fire. In addition, every few years the El Niño weather pattern provides climatic conditions that favour extended wildfire episodes. The frequency of extreme weather patterns that provide a conducive environment for fire has been shown to be increasing in Southern Africa due to climate change (Dube, 2007; IPCC, 2007).

The first global survey of burned areas was carried out by the Joint Research Centre of the European Commission and based on the detection of fire scars for 2000 by the SPOTt Vegetation sensor. The survey showed that Africa is the most fire prone continent. In this survey, it was estimated that 677,123 km^2 burned in Southern Africa in 2000. These results would imply that more than 742,343 km^2 burned in the SADC Region in 2000. The quantity of biomass burned globally each year from all sources is about 9,200 million tonnes FAO (2006b). Overall, global wildfires consume 5,130 million tonnes of biomass, 42 percent of which is burned in Africa, including fires associated with deforestation. This burning releases about 3,431 million tonnes of CO_2, as well as significant quantities of other emissions. [It will be good to provide burning statistics for at least one or two countries as an e.g – at least for some years. For Botswana I suggest you request for figures on annual total burnt area from the Department of Forestry in the Ministry of Environment – contact the Director – Dr Mmasera Manthe-Tsuaneng.]

Most ecosystems of sub-Saharan Africa have evolved through human use and natural fires. Therefore, these ecosystems, including their biodiversity, need fire to be maintained. However, the high frequency and intensity of destructive wildfires are as detrimental as lack of fire, for example around the basins of the Kalahari and Namibia. Following uncontrolled and repeated burning, water and wind erosion degrade former forest land into desert.

[1] As fires caused in forests or forestry can also affect other land uses, and vice versa, an integral approach is recommended. For this reason the project proposal uses the broader term fire management instead of the more narrow term forest fire management. Fire management includes forests, woodlands, savannah lands, grasslands, agricultural lands and the rural-urban interface.

Wildfires have a marked adverse impact on the extremely poor who depend on land-use for their livelihoods. Fire can be their most important land clearing tool if managed wisely. However, uncontrolled wildfires can be very destructive as they destroy crops, livestock, livelihoods and homes. Rural and some urban settlements in the interface between densely settled land and lands carrying high fuel loads are also among the most vulnerable. The occurrence of uncontrolled wildfires also has a negative influence on the tourism industry of sub-Saharan Africa – a burned landscape does not appeal to the tourist's eye. Tourists may also feel insecure if fires are raging nearby and destroying the environment. [But some fires are lit for game viewing?]

1.2 Causes of Fires

Lightning can be a significant ignition source, for example, in western Namibia, where 60 percent of all fires are caused by electrical storms [Provide a source for this]. However, most fires are started by people. Considering the fact that fire and early human beings played important roles in shaping the environment in Africa for hundreds of thousands of years, one could come to the conclusion that people are also, in a way, a 'natural' cause of fire [– this is debatable given that fires of the past were linked to land use management of that time which are different from fires under current systems?. Even some of the fires due to lightning will cease to be called natural since these will be driven by anthropogenic climate change as is already been shown in north of Canada, Alaska and other regions (see Dube, 2007 in Climate and Land degradation]

Fire is widely used in African agriculture to promote regeneration of pasture, to clear agricultural sites or remove agricultural residues. However, planned fires are often left unattended resulting in outbreaks of uncontrolled fires. Therefore, negligence is the most common cause of fire throughout Africa. The list of agents is long – honey hunters, pest control, poachers, children at play, abandoned campfires, cooking and warming fires or escaped prescribed fire.

Arson fires may be caused by cultural or religious beliefs, misunderstanding of an 'African burning tradition', civil unrest and personal anger or fear (burning the bush to open it up). Arson fires are also commonly lit by marginal community members for the thrill or to feel empowered. One of the underlying causes of frequent arson is the problem of 'ownership' or tenure. Very often the land belongs to the state or to an anonymous company, and most profits never reach the local population. Thus no sense of responsibility is created for the sustainable use of natural resources and the environment.

In forest plantations, large-scale prescribed burning is a standard practice to prepare sites for planting after harvesting. Firebreaks around and within the compartments are also prepared through burning. More than 10 percent of all plantation fires originate from these activities, due to lack of training of personnel - where - in the SADC region?(Goldammer and de Ronde, 2004).

1.3 Fire Management

Fire is managed through two main approaches, that is, prevention and suppression. As a preventive measure, fuel reduction is carried out primarily through prescribed burning between and around commercial forest plantations and nature conservation areas. Countries such as Botswana, Namibia and South Africa prepare extensive networks of firebreaks

annually, which however, due to various reasons do not necessarily result in a high success rate in fire control. Most countries lack even basic burning equipment, knowledge of fire behaviour and skills in the safe use of fire as a management tool. Apart from South Africa, SADC countries do not have sufficient capacities, resources or skills in wildfire detection and suppression.

Most fire suppression resources are urban or municipal, located in capitals or bigger cities and do not respond to wildfires occurring in rural areas. Sometimes they even lack the mandate to deal with fires in rural areas. A good example is the (2005? – need to check date) fire that threatened the Botswana Sir Seretse Khama International airport partly because this fell outside the Gaborone designated urban fire control zone (details can be checked with Depart of Meteorology)There is little capacity within the private sector for fire suppression, with the exception of South Africa. If a fire-management budget is available, in most cases 95 percent of these funds are invested in improving fire suppression and monitoring capabilities, instead of in prevention and capacity-building.

Traditionally, in the SADC region, the responsibility for fire management lies with the Ministries of Environment/Agriculture and Rural Development. However, an increasing number of countries are following the South African example and giving national disaster management centres a share in this mandate. In Tanzania, joint involvement of forestry and Fire and Rescue Service Force staff has been suggested.

Since nearly all fires in the region are caused by human activity, the reasons for these fires must be addressed, rather than simply increasing suppression capacity. Data on the underlying causes of fires are required to facilitate the development of national strategies for managing fires. There is a need to raise awareness among local people and provide training to stakeholders at all levels in the proper use of fire as a management tool at the landscape level. The appropriate management of fires at the local level is a key factor to sustainable management of natural resources, including forests.

A number of national and regional initiatives have been put in place to help improve fire management in the region:

(i) The Southern Africa fire Network (SAFNet) established in 2000 offers a framework for exchange of information and capacity building on fire management with a goal to foster more effective and appropriate fire management policies and practices in Southern Africa through the use of remote sensing, GIS and other geo-spatial information technologies (http://www.safnet.co.za/.)

(ii) The AfriFireNet, created in 2002, encourages countries to establish or expand cooperative and networking activities, including training and capacity building.

(iii) CBFiM programmes in Namibia and South Africa (Goldammer *et al.*, 2002) have used the community approach to manage fire situation at the grassroots level.

(iv) Working on Fire (WoF), a major national South African fire-management programme, has created a remarkable people-centred approach to fire management (http://www.workingonfire.org/).

(v) Regional training for trainers workshop on Community Based Fire Management in Nelspruit, South Africa, organised by FAO, the ISDR Regional Wildland Fire Network AFRIFIRENET, the Wildland Fire Training Center Africa, and the Global Fire Monitoring Center (GFMC) in 2004.

(vi) FAO Technical Cooperation Project took place in Botswana (2006-2007) and focused on capacity building of basic firefighting skills, crewleader training and participation in a study tour to South Africa.

(vii) Development of Fire Management Voluntary Guidelines which include basic principles, aspects and strategic actions (FAO, 2006c).

1.4 Issues to be Addressed by the Project

The prevailing lack of financial, infrastructural and equipment resources for fire management in the SADC region is aggravated by the lack of adequately trained human resources. The gap between the level of preparedness in fire management and the increasing fire problems in the area requires an immediate response through capacity-building (Dube, 2005; Goldammer and de Ronde, 2004). Integrated fire-management approaches face an incredible number of difficulties and obstacles. The lack of funding and integrated sustainable fire-management strategies are the most prominent ones. Since fire management in the region is not limited to the forestry sector, the key is to involve all the relevant sectors and major stakeholder groups in the controlled use of fire.

Each country should analyse its fire situation and develop a strategy for fire management. In some countries, more effective action against arsonists might be an important part of the solution, while in others, awareness of fire prevention and control need to be increased. An overall strategy would include budgetary allocation; monitoring and reporting; an early warning system; community-based prevention [Or Community based fire management?] approaches; preparedness; progressive legal, policy and planning frameworks; collaborative agreements with and between countries; capacity-building; fire danger rating; rapid response in fire suppression; and restoration following fire events.

The Fire Information for Resource Management System (FIRMS) is a NASA-funded system that provides near real time MODIS active fire products to natural resource managers around the world. As part of this, the University of Maryland developed a Web GIS for protected area managers. In order to transition from a research to an operational system the FAO-housed FIRMS will be an important partner to provide satellite-derived fire information such as number of fires, their location and extent in a user-friendly format and in time to use it for operational fire management. There is an urgent need to strengthen linkages between the SADC Secretariat and FAO in this field. Cooperation in fire management has very often resulted in the need for developing win-win situations for collaborating partners.

While some efforts by regional networks on fire such as SAFNet and AfriFireNet,are commendable, their activities appear to be sporadic, disjointed mostly due to lack of funding and not closely linked to the SADC Secretariat’s programme of activities. Collaboration, cooperation and coordination among SADC member states are essential if wildfires are to be prevented and controlled within and across boundaries. However, international exchange of experiences, ideas, resources and even funding are similarly very important. The establishment of a sub-regional fire management network for the SADC region is recommended to help to pool the expertise available within different countries of the region and provide a base to focus the exiting self-initiated networks on fire control in the region.

2. OBJECTIVES OF PROJECT

The aim of this project is to reduce the occurrence of uncontrolled wildfires and their negative consequences on sustainable development endeavours through strengthening the regional and national capacities of SADC countries in more integrated, holistic and collaborative approaches to fire management across sectors and country borders; The overall project objective is to create an enabling policy, institutional and management mechanism for a sustainable trans-boundary integrated approach to the prevention and management of fires. The specific objectives at the SADC member state and regional levels are:

(i) To establish appropriate policy guidelines and institutional mechanisms for collaboration and cooperation in the use, prevention and management of wildfire through strengthening regional and national capacity of SADC countries in fire management;
(ii) To facilitate and stimulate active research and exchange of information on fire weather-risk, the ecological and socio-economic role of fire and its consequence on the environment and development process in the region so as to provide a foundation for formulating informed fire policies and management strategies among the SADC countries;
(iii) To set up a mechanism for the SADC region to access and utilise up to date and effective fire monitoring approaches, establish a regional fire danger rating and an integrated fire early warning system;
(iv) To enhance community participation in forest fire management activities;
(v) To develop and operationalise effective information exchange mechanisms appropriate for the prevention and management of wild fires in SADC zone; and
(vi) To make a more effective and efficient use of available resources in the SADC region by promoting greater regional cooperation in fire management.

3. OUTPUTS

The major outputs that can be considered as modules resulting from the implementation of one or more projects are:

(i) A dynamic regional fire management strategy that incorporates likely future changes in fire patterns developed and approved by the SADC countries;
(ii) Informed national fire management strategies and legal and policy frameworks updated (or newly developed) and approved for each SADC country;
(iii) Capacity building, institutions strengthening and training in most needed issues as prioritized by the regional strategy and needs analysis with respect to the Fire Management Voluntary Guidelines;
(iv) Harmonized national and/or regional standards for fire monitoring,, fire danger rating and early warning systems;
(v) Enabling framework for large-scale community-based fire management in the Member States developed;
(vi) A regional fire management experts database and country profiles of capacity and capability of early warning, detection, prevention, preparedness, suppression and restoration; and
(vii) Developed data bases on fire temporal and spatial trends over the SADC region
(viii) Best practices for fire management in the SADC region.

4. ACTIVITIES

The following activities will be carried out:

(i) Conduct regional workshop for needs analysis of SADC countries with respect to FAO's Fire Management Voluntary Guidelines and their methodology to prepare countries for action in review of their national fire management policies and practices;
(ii) Support SADC countries to develop/adapt national fire management strategies, legislation, policies and practices as inputs to the regional fire management strategy;
(iii) Conduct regional workshops with key fire management stakeholders to establish the mechanism to develop a common SADC fire management strategy and cooperation between the SADC Member States;
(iv) Conduct regional training workshops on selected priority fire management themes to be defined in the SADC fire management strategy.
(v) Facilitate research on fire in different SADC institutions
(vi) Formalize a monitoring, assessment and reporting system for fire management in SADC countries;
(vii) Build on existing networks to establish a SADC region fire network;
(viii) Develop fire danger rating and early warning systems;
(ix) Develop a database on fire management experts in the SADC community;
(x) Establish fire units (composed of forest services and emergency personnel) in those countries where they do not exist; and
(xi) Prepare and publish a document on best practices for fire management in the SADC community.

5. INPUTS

(i) Human resources, comprising project coordinator (4 years), secretary (4 years), consultants to develop the project document and develop and establish community-based fire management systems, legal frameworks, expert database, institutions such as fire units and to prepare the best practices document. FAO will provide technical backstopping.
(ii) Regional and national workshops to support the development of national and regional strategies, develop capacity in selected fire related issues, and establish the SADC fire network.
(iii) Technical assistance from partner organizations, for example, during the needs analysis by FAO.
(xii) Capacity building inputs for regional and training workshops, pilot demonstrations, documentation of studies and publication of best practices.
(iv) Expendable equipment and software.

6. WORKPLAN AND IMPLEMENTATION ARRANGEMENTS

The project will be implemented in two phases over a four year period. During the first phase (6 months) a consultant will be hired to work with the SADC Secretariat and individual countries in developing a full project document, detailed work plan and budgets for implementation processes. This will be done through national level workshops in each country to assess needs analysis in accordance with the methodology prepared by FAO (2007) – Preparing for Action to Implement the Voluntary Guidelines for Fire Management.

The second (42 months) phase will entail the following:

(i) Work with existing networks in the SADC region to develop regional and national fire management strategies and policy frameworks, set up research programs and identify research gaps, capacity building, institutional strengthening and training in most needed issues as prioritized by the regional strategy and needs analysis.
(ii) Development of harmonized national standards for fire management and an enabling framework for large-scale community-based fire management in the member states
(iii) Development of a regional fire management expert's database and country profiles of capacity and capability of early warning, detection, prevention, preparedness, suppression and restoration.
(iv) Production and distribution of a document on best practices for fire management in the SADC region.

FAO will provide technical backstopping through both phases of the project.

7. BENEFICIARIES AND IMPACT

The beneficiaries of the project will include:

(i) The national governments, who will have more effective and efficient and improved national and regional fire management policies;
(ii) All the national services and agencies involved in fire management who will have integral common national strategies that define better coordination between them as well coordination with neighbouring countries and will have access to better information and knowledge support;
(iii) The civil society and other stakeholders who will benefit through increased awareness about the forest resources and fire management;
(iv) The forest dependent local communities and the resource poor will have sustained supply of goods and services from forests as well as a better protection of their lives and properties; and
(v) The private sector, including tourism, which will have better protection of forests, wildlands, natural resources and their properties.
(vi) The academia will have developed fire research agendas to provide sustained information generation and manpower training for fire monitoring and management

8. RISKS AND ASSUMPTIONS

The greatest risks to the project relate to the country context such as poor infrastructure, limited human resource capacity and lack of information on fire trends and behavior, which may slow down implementation or result in ecologically, socio-economically and environmentally inappropriate fire policies formulated. Appropriate planning, ability to pull together existing initiatives and resources and use of evaluated technical assistance, however, will mitigate some of these risks. The other risks and assumptions include the following:

(i) Lack of sensitivity to the positive role of fire, general environmental and forestry issues, despite their impact on the living standards of the population and contribution to the economy and the social and cultural life of the country.
(ii) Authorities in countries are willing to share information and collaborate in activities which occur beyond their state land.

(iii) There are existing relevant laws and provisions which provide a basic framework for countries to involve communities and relevant authorities to cooperate on fire management.

(iv) There may not be enough resources to meet the challenges posed by wildfire; however, regional cooperation may create an enabling environment for partners to work together.

The project will work at the regional (SADC), national and at local levels, with project components in selected countries. Project partners include the respective national Directorates of Forestry in these countries, local NGOs, existing fire networks, private sector, communities and international organization.

9. BUDGET

A total budget of US$ 4 million is estimated, of which a US$0.1 million for the first phase and US$3.9 million for the second phase.

10. REFERENCES

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