

Management of Forest Fires Through the Involvement of Local Communities: the Gambia

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EXECUTIVE SUMMARY

There are insufficient data on forest fires in the Gambia because of inadequate staffing at the field level and the unwillingness of the population to expose fire offenders for prosecution. It is clear, however, that most of the country's forest lands are burnt annually. The resulting losses are huge considering the incalculable amounts of timber and fuelwood destroyed and the low agricultural productivity resulting from soil degradation.

The use of fire is intrinsic in the socio-economic activities of the rural population. Because of the nature of the farming system (small-scale and temporal) and the absence of other appropriate means of land preparation, fire is usually resorted to as a way of preparing fields for crop cultivation. Consequently, a significant number of forest fires result from field clearing, because control over these fires was and is still generally lacking. Other traditional causes of forest fires are hunting, honey collection, herding, fuelwood collection and smoking.

State control over the ownership of forest resources caused the general public to have a *laissez-faire* attitude towards forest fires, especially in the past, when fire prevention and control were seen as the responsibility of the Forestry Department. Following political independence in 1965, government policies put a lot of emphasis on economic development, mainly through the expansion of agricultural crop production – particularly groundnuts – to generate much-needed foreign exchange. Forest lands were seen as fertile land reserves for agriculture, and the only cheap tool for converting forests to other land uses was fire. Thus forest fires were not seen as detrimental as long as they facilitated farm preparation. Forested land area was relatively large compared with the demand of the population. The situation gradually worsened as the need for more cultivable land increased.

The issue of forest fires has been a major concern for the Gambian Government since the late 1970s. Policy instruments have been put in place to deal with forest fires, and these are starting to bear fruit. Since its creation in 1977, the Forestry Department has been active in forest fire prevention and suppression, including the clearing of firebreaks along managed forest parks and the launching of radio programmes to increase public awareness. Controlled early burning is encouraged around forest parks and community forests.

After nearly two decades of conventional forest management, in 1990 the Department of Forestry piloted the community forestry concept, which has been modified over the years and is now applied countrywide. One of the goals of community forestry is to reinstate public interest in the sustainable use of forest resources by transferring forest ownership from the state to deserving communities. It was hoped that this gesture on the part of the state would engender public participation in the crusade against forest fires.

Seven years after the first transfer of forest ownership to local communities, there was no significant reduction in the frequency of forest fires nationwide. There are a few areas where

forest fires are becoming rare and it is encouraging that public awareness about forest fires has increased greatly. Indications are that people are willing to change their attitudes positively and that local forest ownership promotes this. This was confirmed by a nationwide comparative survey of villages with and without involvement in community forestry.

This study shows that there is profound indigenous knowledge about the causes, effects and prevention of fire and makes various recommendations on the local management of fires.

Gestion des Incendies de Forêt Grâce à la Participation des Communautés Locales: Gambie

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RÉSUMÉ

On ne dispose que de données insuffisantes sur les incendies de forêt en Gambie parce que le personnel de terrain n'est pas assez nombreux et que la population n'est pas disposée à dénoncer les coupables pour qu'ils soient poursuivis. Il est cependant évident que la plupart des terres boisées du pays sont incendiées chaque année. Cette pratique entraîne des pertes énormes car un volume incalculable de bois d'œuvre et de bois de feu est ainsi détruit et la productivité de l'agriculture est faible en raison de la dégradation des sols.

L'utilisation du feu fait partie intrinsèque des activités socio-économiques des populations rurales. Étant donné que celles-ci pratiquent l'agriculture temporaire à petite échelle et n'ont pas d'autre moyen approprié de préparer les terres, elles ont généralement recours au feu pour préparer les champs. En conséquence, le défrichage provoque un nombre non négligeable d'incendies de forêt car les cultivateurs ne maîtrisent pas toujours les feux qu'ils allument. La chasse, la récolte du miel, l'élevage, le ramassage de bois de feu et le tabagisme constituent d'autres causes habituelles d'incendies de forêt.

Le fait que l'État soit propriétaire des ressources forestières a amené le public à considérer les incendies de forêt avec indifférence, surtout dans le passé lorsque la prévention et la lutte contre les incendies étaient considérées comme relevant du département des forêts. Après l'accession à l'indépendance en 1965, le gouvernement a donné une grande importance au développement économique, principalement grâce à l'accroissement de la production agricole – en premier lieu celle d'arachide – afin d'obtenir les devises dont le pays avait le plus grand besoin. Les terres boisées ont été considérées comme des réserves de terres fertiles pour l'agriculture et le feu était le seul moyen peu coûteux de convertir ces terres à d'autres utilisations. Ainsi, les incendies de forêt n'ont pas été considérés comme néfastes tant qu'ils facilitaient la préparation des terres pour les cultures. La superficie boisée était grande par rapport à la demande de la population. La situation s'est progressivement dégradée à mesure que les besoins de nouvelles terres cultivables augmentaient.

Le gouvernement de la Gambie a commencé à se préoccuper vivement du problème des incendies de forêt pendant les dernières années 70 et il a mis en place pour le régler des instruments qui commencent à donner des résultats. Depuis sa création en 1977, le Département des forêts

s'occupe activement de la prévention des incendies de forêt et de leur suppression, notamment en créant des coupe-feu à la limite des parcs forestiers aménagés et en organisant des émissions de radio pour sensibiliser le public. Il encourage les recours aux feux précoces dirigés sur le pourtour des parcs forestiers et des forêts communautaires.

Au bout de près de vingt ans de gestion classique des forêts, le Département des forêts a lancé, en 1990, la notion de foresterie communautaire qui a ensuite évolué progressivement et est maintenant appliquée dans tout le pays. L'un des objectifs de la foresterie communautaire consiste à relancer l'intérêt du public pour l'utilisation durable des ressources forestières en transférant la propriété des forêts de l'État aux communautés qui le méritent. On espérait que ce geste de l'État inciterait le public à participer à la croisade contre les incendies de forêt.

Sept ans après le premier transfert de propriété des forêts aux communautés locales, aucune réduction sensible de la fréquence des incendies de forêt n'était enregistrée au niveau national. Il y a quelques zones où les incendies deviennent de plus en plus rares, et, fait encourageant, le public est beaucoup plus sensibilisé à ce problème. Il semble que les gens soient disposés à adopter une mentalité plus positive et que le transfert de la propriété des forêts aux populations locales encourage cette évolution. Cette idée est confirmée par une enquête comparative au niveau national sur les villages qui participent à la foresterie communautaire ou n'y participent pas.

Il ressort de l'étude que les populations indigènes ont une connaissance approfondie des causes et des effets des incendies et de leur prévention et diverses recommandations concernant la gestion locale des incendies sont formulées.

Manejo de Incendios Forestales a Través de la Participación de las Comunidades Locales: Gambia

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RESUMEN DE ORIENTACIÓN

No existen suficientes datos acerca de los incendios forestales en Gambia, porque no se cuenta con personal adecuado en el terreno, y porque la población se niega a exponer a los infractores a la persecución. Sin embargo es evidente que la mayoría de las tierras forestales nacionales se incendia cada año. Las pérdidas son ingentes, si se toman en consideración las incalculables cantidades de madera y leña que se esfuman, amén de la baja productividad agrícola que se produce a raíz de la degradación de los suelos provocada por los incendios.

El uso del fuego forma parte intrínseca de las actividades socioeconómicas de la población rural. Debido a la naturaleza del sistema agrícola (temporal y en pequeña escala) y debido a la falta de medios de preparación de la tierra apropiados, el fuego suele ser el recurso adoptado para preparar la tierra destinada a la siembra de cultivos. Como consecuencia, se produce una cantidad considerable de incendios forestales, debido a las prácticas de desboscamiento del terreno, porque no existen prácticas de control de estos fuegos. Otras causas tradicionales de los incendios

obedecen a la práctica de la cacería, a la recolección de miel, al pastoreo, a la recolección de leña y a las prácticas de ahumado de alimentos.

El control de la propiedad de los recursos forestales de parte del Estado propició en la población una actitud permisiva en materia de incendios forestales, especialmente en el pasado, cuando la prevención y el control de incendios se consideraban como sujetos a la responsabilidad del Departamento Forestal. Después de la independencia nacional en 1965, la política gubernamental hizo mucho hincapié en el desarrollo económico, principalmente a través de la expansión de la producción agrícola de cultivos – sobre todo de maní – con el fin de generar las divisas, tan necesarias para el país. Las tierras forestales se consideraban como reservas de tierras fértiles a destinar a la agricultura y el único medio barato para convertir los bosques a otros usos de la tierra era el fuego. Por lo tanto, los incendios forestales no eran considerados perjudiciales, en la medida en que facilitaban la preparación de la tierra. El área de tierras forestales era relativamente grande, comparada con la demanda que existía de parte de la población. Pero la situación se agravó gradualmente, en la medida en que crecía la necesidad de tierras cultivables.

El tema de los incendios forestales ha sido una de las principales preocupaciones del Gobierno de Gambia desde finales del decenio de 1970. Se crearon instrumentos en materia de políticas a fin de afrontar los incendios forestales, los cuales están comenzando a dar frutos. Desde la creación del Departamento Forestal en 1977, esta institución ha participado activamente en las actividades de prevención y supresión de incendios forestales, entre ellas la preparación de barreras cortafuego a lo largo de los parques sujetos a manejo, así como la divulgación de programas de radio destinados a la concientización pública. Además, se fomenta el uso temprano del fuego controlado alrededor de los parques y de los bosques comunitarios.

Después de casi dos decenios de manejo forestal convencional, en 1990 el Departamento Forestal introdujo el concepto de forestería comunitaria, que ha sido modificado en el curso de los años y que actualmente se aplica en todo el ámbito nacional. Uno de los objetivos de la forestería comunitaria consiste en restaurar el interés público, en cuanto al uso sostenible de los recursos forestales, a través de la transferencia de la propiedad de los bosques estatales a las comunidades que así lo merecen. Se esperaba que este gesto de parte del estado generaría una participación pública en la cruzada contra los incendios forestales.

Siete años después de la primera transferencia de la propiedad estatal a las comunidades locales, no se ha verificado una reducción significativa en la frecuencia de los incendios forestales en el ámbito nacional. Pero existen algunas áreas en donde los incendios forestales son cada vez más raros y es alentador que la concientización del público acerca de los incendios forestales haya crecido de manera considerable. Existen indicios de que la población quiere cambiar sus actitudes en sentido positivo y de que la propiedad de los bosques promueve este cambio. Así lo confirmó una encuesta comparativa entre las aldeas que participaban de la tenencia y las que no lo hacían, realizada en el ámbito nacional.

Esta encuesta muestra que existen profundos conocimientos indígenas acerca de las causas, efectos y prevención de los incendios. Además, el estudio hace varias recomendaciones acerca del manejo de los incendios forestales.

INTRODUCTION

Fire in the Gambia, as in many countries, is the main tool used to expedite land clearing. Deforestation has been linked to the use of fire for land clearing for settlements, croplands, grazing, fuelwood cutting and charcoal burning. The last of these was banned in 1980, because it was considered a very serious cause of deforestation. The situation was aggravated by an increase in the population and the influx of migrant farmers from Senegal and Mali to engage in groundnut cultivation. As the population lit fires on a regular basis, forest canopy cover decreased and the areas of grassland and savannah grew larger.

Villagers depended on forest resources and the abundance of those resources was taken for granted. Villagers did not think that the negative impacts of burning seriously outweighed the advantages. In the context of the present fire regime, human activities are perceived as the cause of all fires.

Research objectives

This study examines whether or not community forestry has increased the awareness of local communities about forest fires and whether such awareness is leading to a change of attitudes towards the prevention of forest fires.

Scope and methodology of the study

The study area covers three of the five divisions of the Gambia: the Western Division, the Central River Division and the Upper River Division. The study covers 32 villages in rural parts of the country. A series of 113 interviews served to assess systematically the uses of fire in rural communities, as well as the awareness and attitudes of village populations towards fire. Interviews were held with 83 individuals, comprising 35 women and 48 men. Thirty interviews were conducted with groups of four to six people. The ages of the people interviewed range from 13 to 97 years, with a peak in the typical labour force age of between 30 and 50 years. The group interviews were assembled to include representatives from village institutions, such as forest committees, village development committees, kafoos (village associations) and Alkalos (local village heads), and to collate the answers obtained from the individual interviews with the voiced opinions of these stakeholders. In assembling the groups, attempts were made to include women, but in many cases only one woman was willing to take part. A large majority of those interviewed are farmers (59.5 percent) or farmers and herders (19 percent), i.e. farming is their main livelihood activity.

In addition to the community study, a countrywide written survey of forest station heads for forest fire management and a literature review of past and existing legislation and policy frameworks were undertaken. The results of the field surveys were presented and discussed with participants drawn from forestry field staff, NGOs and local administrative authorities (chiefs) in two workshops conducted in the Central River and Western Divisions. This discussion process served as a forum for gaining feedback from those directly concerned with fire prevention issues at the local level and to develop elements of the national fire prevention strategy in a participatory manner.

BACKGROUND ON THE GAMBIA

The Gambia, which covers an area of 11 295 km², is the smallest state on the African continent, and lies within the savannah belt of West Africa on the Atlantic coast. The Gambian climate is characterized by a short rainy season, followed by a long dry season (of eight months). With more than 104 inhabitants per square kilometre, the Gambia is one of the most densely populated African countries. It is also a predominantly rural country, with agricultural activities forming the backbone of the population's livelihood. While the population is itself multiethnic, consisting mainly of Mandinka, Fula and Wolof, almost 15 percent are immigrants from other African countries, including refugees from southern Senegal (Casamance) and Sierra Leone. The Gambia's forest cover (including mangroves) was estimated at 43 percent of the land area (503 900 ha) in 1983. These forests are impoverished as a result of overexploitation and annual forest fires. Closed woodlands constitute only about 4 percent of the total area and form important sources of timber and fuelwood. They are also important sources of the non-timber forest products (NTFPs) on which forest-dwelling communities often rely.

Forestry development in the Gambia

The Gambia has had significant success in the past few years in community forestry implementation. By January 2000, the number of community forests in the country had reached 267, with a total area of 22 945 ha (*Out of the Forest*, 2000: 9) and there are encouraging signs that the rural population is still highly motivated to join the community forestry programme. It is clear that community forestry is the most important strategy to reduce the incidence of forest fires. Within the community forestry concept, tenure over forest resources has been made clear, and could be passed to the local communities. As Abdulaye Kane said in his publication on public policies affecting forest fires in the African region (FAO, 1999b), local populations are not likely to interfere with forest fires unless their lives or properties are threatened.

Community forestry has been ongoing in the Gambia for more than ten years. Since it was first piloted in the Foni Brefet district in 1990, it has gradually extended to all parts of the country. There are now no fewer than 270 villages countrywide participating in community forestry. These villages manage something close to 24 000 ha of forest land. The main reason for introducing the community forestry concept is to facilitate local communities' participation in the management and utilization of forest resources. In the process, ownership of forest areas is handed over to communities that are able to demonstrate their ability for sustainable forest management through their own responsible bodies (Forest Committees). When the communities have a stake in the forest resources, it is believed that they will do everything within their means to protect their forests from deforestation activities, particularly forest fires.

The community forestry approach was formally embraced with the development and adoption of the 1995 Forest Policy, which puts special emphasis on community involvement in forest resource management. A revised Forest Act and Regulations back the policy. At the time of writing, legislators had approved the Forest Act and it was hoped that the Regulations would soon be approved as well. The approach is now the priority of the Forestry Department and the aim is that nearly half of the country's forest cover will be under community management by the time that the current forest policy comes to an end in 2005.

Community participation in the management and utilization of the nation's forests has gained additional momentum from the new concept of Community-Controlled State Forests (CCSFs).

This concept foresees local communities managing forest areas adjacent to their community forests and sharing the benefits obtained equally with the government. The concept has not yet been fully mastered by the majority of Forestry Department staff and collaborating agencies, and further orientation sessions are required, at least for senior staff members. Initial attempts to sell the idea to local communities received a lukewarm reception, which was not strange considering that the villagers are always cautious when entering into agreements with the state. At the time of writing, they do not see the advantage of supporting CCSF because, previous to its introduction, they did not have to share anything with the state from areas outside forest parks and community forests.

NATIONAL POLICIES RELATING TO FOREST FIRES

Very few issues are as contentious as forest fires. The different stakeholders, foresters, farmers and pastoralists all perceive forest fires differently, and sometimes in very divergent ways. As the frequency of forest fires kept increasing and the Forestry Department was unable to cope with the problem, villagers were asked to form fire committees to increase awareness of and coordinate forest fire issues at the village level. By the second half of the 1980s, fire committees were established in most villages, but a lack of resources meant that they could not perform their expected role and the majority of them ceased functioning.

Forest Policy, 1995–2005

The most pragmatic and holistic approach to tackling the menace of ever-increasing environmental degradation came into effect with the adoption of the 1995–2005 Forest Policy. This was developed in line with the environmental and socio-economic policy objectives of the government. Before this, there was no clear-cut national forest policy for the Gambia and all forestry development proposals were mentioned briefly in the five-year centralized development plans. The Forest Policy puts special emphasis on community and private forestry and recognizes multiple-use forestry. The policy has also been designed to contribute to poverty alleviation by calling for the active involvement of local communities and the private sector in the management and development of forest resources. In short, the policy aims at making stakeholders perceive themselves as indispensable actors in the protection and rational utilization of forest resources. The policy takes account of the fact that sustainable forest management will always remain an illusion unless everybody becomes a stakeholder. This is precisely why the policy makes provisions for private and community forestry management.

The Gambia Forest Management Concept (GFMC)

This concept has been developed by the Gambian–German Forestry Project in collaboration with the Forestry Department. It collates information and experiences gathered since 1980. GFMC describes approaches to reach the targets specified in the Forest Policy document. It promotes the nucleus concept, which aims at integrating community forestry into the management of forest parks. It also underlines the importance of collaboration among the Department of Forestry, line departments and NGOs in the nationwide promotion of the community forest concept.

The GFMC gives high priority to the participation of local communities in the protection and management of forest resources. The nucleus concept enshrined in the GFMC strongly recommends the recruitment of local communities living around forest parks for firebreak preparation and other forest management activities. The overall aim is that, as well as augmenting

the income returns from forests for the communities, local people acquire forest management skills and experience. Through the involvement of communities in economic activities in and around the forest, the value of the forest is enhanced in the eyes of the communities and they become more concerned for its protection and judicious utilization.

The Forestry Legislation and Regulations, 1998

According to the New Forest Act (Section 21, subsection 2), it is mandatory that neighbouring communities are informed prior to the setting of any prescribed burning by the nearest forest station. One of the reasons for this is to avoid fire escaping into croplands and thus burning field crops. Communities are also required to offer help during the controlled burning activities. It is a criminal act under the Forest Regulations for anybody to refuse to help in fire fighting without genuine reasons.

The Regulations (Part IV Section 23) permit the burning of farmland or pasture outside of forest areas only where:

- (a) the areas to be burnt are delimited and protected by strips of land cleared of bush and grass;
- (b) the burning is supervised by farmers or other concerned people to ensure that the fire is kept within the designated limits.

Section 24 of this Part makes it mandatory for the general public to assist in fighting fires. According to the Forestry Regulations (Part IV Section 19), heads of districts, towns, villages and communities are responsible for protecting the lands within their jurisdictions from the ravage of forest and bush fires. If they are found guilty of negligence of duty with such fires, they may be held liable to the penalty prescribed for contravention. If the fire originates between two villages and the culprit cannot be traced, the heads of the concerned villages are held responsible.

The forest committees are also charged under Part IV Section 17 with responsibility for protecting from fires their community forests, the CCSFs and any other piece of public forest within the area. They are required to create sufficient mechanisms to ensure the safety of their forests from fire.

The laws sanctioning the mandatory participation of the public in forest fire suppression are seen as punitive, and are strongly contested by the local communities and authorities. The village heads, in particular, argue that the law holds them responsible for fires over which they have no control. They further protest that their enemies, in or outside the community, can start fires with the aim of causing them trouble.

As with any other act, promulgation is far easier than application. The district chiefs are often reluctant to act against their subjects for fear of losing support.

Fines and prison terms have been prescribed for various forest offences, including forest fires. Forest fire offences draw the severest fines and prison terms according to the Forest Act (Schedule V – Fine Classes).

Exclusive nature of the Forest Policy

The Forest Policy does not incorporate the wishes and aspirations of local communities, which have developed strong resentment against the forest sector. The policy fails to recognize the right

of local communities to have a say in the way that forest resources are managed. Forest exploitation licenses have been issued without the involvement of local communities, resulting in serious overexploitation.

The mandate of the Forestry Department also runs contrary to traditional ownership rights. According to the statutory law, all naturally grown trees belong to the state, irrespective of their location. This is strongly resented by the local people, who have lost their sense of owning the forest and have resorted to undermining the efforts of the forestry services by constantly burning forests and carrying out other forms of illegal exploitation. Arsonists are rarely reported to the authorities for prosecution.

Lack of security of tenure

Populations living around forest parks have little sense of ownership or stewardship of the state reserve. In the Kiang West and Upper Badibou, according to case studies (Schoonmaker Freudenberg, 1994): “the Forest Parks are perceived to be owned and managed by the state and thus not worthy of care by the local populations. Villagers are certainly aware of the excessive exploitation of the parks and frequent forest fires (and they partake of it in many cases), but they do not try to stop abusive practices because they believe that this responsibility lies with the state.”

Access to benefits from the forest is another important consideration that encourages communities to participate willingly in forest resource management. The cost of community participation in forest protection activities must be balanced by the expected returns.

Lack of government commitment

Until 1985, all government programmes on forestry were sketchily mentioned only in the five-year development plans, and focused mainly on plantation management. There was no coherent policy on the way forward for the sustainable management of forest resources. In addition to lack of will, there was also the constraint of inadequate human resources in the department. Staff were thinly spread, leading to unsupervised operations on the part of commercial fuelwood cutters and other licensed forest users. Government policies were ill-defined and thus attracted only half-hearted measures and support. The forestry services seriously lacked the trained staff and financial endowment necessary to formulate and implement holistic forest policies and regulations.

Lack of will to enforce laws

Most destruction of the forest is not caused by lack of laws but by staff unwillingness (to enforce them), exacerbated by socio-cultural conditions. The motivation of forestry staff to enforce forest fire regulations has suffered as a result of low emoluments and openness to corruption. Chiefs and village heads are not very enthusiastic about prosecuting their subjects for offences related to forest fires. More often than not, fire cases linger in the courts for long periods and, when punishments are meted out, they are often mild compared with the damage caused.

There are many reasons for this reluctance to apply the laws. District chiefs fear losing the cooperation and support of their subjects by prosecuting them for fire offences. The general preference in the Gambia, especially in rural areas, is to settle issues outside the courts. So when individuals are accused of starting forest fires, their relatives and associates plead on their behalf, either to drop the case or to punish the accused very leniently.

The absence of a socio-economic framework

If people are to be concerned about forest fires and their impacts, they must feel the effects of the problems. As long as forest resources are abundant, local communities have very little cause to worry about the annual burning of the forest. Agricultural policies have invariably encouraged the conversion of forest lands to crop fields. The cultivation of groundnuts to acquire the much-needed foreign exchange was encouraged, to the detriment of the environment. The forest has been viewed mainly as a reserve for agricultural expansion. The root cause of this is the lack of coordinated and harmonized sectoral policies.

USES AND CAUSES OF FIRE

It is a matter of utmost importance that the causes of forest fires are known, not only for historical records, but also for the more practical purposes of planning forest fire prevention and management activities. The exact causes of the majority of fires are difficult to establish. In a traditional set-up, nobody is willing to risk his or her reputation by reporting neighbours for a punishable offence such as starting forest fires. As a result, the causes of most forest fires are unknown. The different causes of uncontrolled fires are discussed in detail in the following paragraphs.

Farm clearance: Of the 113 villagers interviewed in the study, 59 percent named farming as their main livelihood activity and another 19 percent depend on farming and herding. Consequently, burning for the purpose of field clearing is the most important reason for using fire in the fields. When asked to describe their method of burning in fields, almost two-thirds (64 percent) mentioned the preventive establishment of firebreaks around the field, and virtually all of them (96 percent) spoke of raking the area and establishing heaps from the residue.

Burning is carried out in the morning and evening. More than three-quarters (76.3 percent) of respondents said that they burnt “when the sun is very low”. The reason given was often that at this time, “the wind is stagnant” and “the heat of the sun is reduced”, making the fire less fierce and less prone to escape. Almost 60 percent of respondents said that they burnt in May and June, “just before the rains”, and another 22.2 percent named April, May and June as the peak season. This means that more than 81 percent of those interviewed carry out burning in these three months at the end of the dry season. It is also in these months that, in the experience of the interviewees, most uncontrolled fires erupt.

Livestock grazing: There is a large livestock population in the country. Cattle herders often burn the bush towards the end of the long dry season to encourage the growth of new succulent grass for their animals. However, few of those interviewed supported this practice. Only four villagers mentioned the encouragement of grass growth as an incentive to burn, and none of these people was a herder. Control of wild animals as a motive for setting fire in the forest was mentioned just five times, but not by the herders.

Hunting: Hunting is a traditional activity in the Gambia, often undertaken by semi-professionals. Especially in the past, it has been a major cause of forest fires. Nowadays, the number of fires attributable to hunting is less because the majority of the country’s fauna has already disappeared. Nonetheless, hunting is still the second most important reason for using fire in the forest, being mentioned by almost one-quarter (23 percent) of respondents. Its relevance as a cause of fire is supported by the fact that more than half (56 percent) of the interviewees mentioned hunting when asked the causes of uncontrolled fires.

Wild honey collection: As it emerged from the interviews, honey collection seems to be a primary motive to set fires in the forest. It was mentioned by 40 percent of all respondents. People collecting wild honey can cause fires accidentally by using crude methods with lit torches to drive the bees away.

Smoking: In the interviews, villagers described smoking as a major cause of fires. Five villages in the sample had been seriously affected by seven fires caused by smokers. Smoking was mentioned as a possible cause of uncontrolled fires by 81 percent of the respondents.

Crop protection and pest control: Fire is used to keep animals, namely bush pigs and monkeys, away from field crops in the rainy season, especially during the night. More than one-third (35 percent) of interviewees mentioned animal control as a motive to use fire in the fields (see Table 1). Fields are also burnt during the dry season to destroy smaller pests such as locusts and grasshoppers, which farmers believe lay their eggs in the surrounding forests.

Table 1: Use of fire in the field according to categories

	CF villages active	CF villages inactive	Non-CF villages	Total / average %
Category	1	2	3	
Clearing of weeds	21 61.8	26 68.4	19 46.3	66 58.4
Clearing of harvest leftovers	23 67.6	20 52.6	35 85.4	78 69
Clearing in general	4 11.8	6 15.8	7 17.1	17 15
Fertilization	3 8.8	2 5.3	7 17.1	12 10.6
Preparation of planting	3 8.8	4 1.05	3 7.3	10 8.8
Preventive burning	5 14.7	1 2.6	1 2.4	7 6.2
Processing of oysters	1 2.9	0 0	0 0	1 0.9
Cigarette smoking	7 20.6	7 18.4	4 9.8	18 15.9
Control of wild animals	10 29.4	17 44.7	13 31.7	40 35.4
Insect control	5 14.7	5 13.2	8 19.5	18 15.9
Cooking/roasting	5 14.7	7 18.4	6 14.6	18 15.9

Note: In each cell, the first figure indicates the absolute number of responses, the second the percentage related to the respective category.

Fuelwood and charcoal production: According to the Forest Regulations, only dead wood can be collected for commercial fuelwood production. Fuelwood producers are bending these rules by setting the forest on fire to kill more trees in order to perpetuate their businesses. According to the villagers interviewed, such illegal practices are unlikely to be mentioned openly.

Nevertheless, six interviewees indicated that they employed this practice, and it can be assumed that the actual number is considerably larger. When asked indirectly in relation to their own activities, the number of respondents who implicated dead wood generation as a cause of fire rose to one-quarter (24.8 percent) of all respondents. Unlike fuelwood production, the production of charcoal is illegal in the Gambia, although trade in it is allowed according to the New Forest Act of 1998 (Section 110 Part XI). In 1980, a Presidential Decree was issued prohibiting both the production and the trade of charcoal. The prohibition on charcoal production is obviously not fully observed: 12 interviewees (10.6 percent) mentioned it as a purpose of fire, and it can be assumed that the actual number of people involved in this activity is greater.

Forest management activities: There is evidence of uncontrolled fires developing from controlled early burning and firebreak preparation activities conducted by Forestry Department staff and villagers around forest parks or community forests. Three villages in the survey were affected by this kind of fire. Two of these villages are involved in community forestry and fires set for early burning in forest parks spread into their forests. The villagers alleged that forestry staff did not inform them, as they are obliged to do, before carrying out the controlled burning nearby. In the interviews, it was clear that not only were forest areas destroyed, but also the relationships between forestry staff and the communities were seriously damaged. Villagers concluded that forestry staff, while protecting the state's forest parks, did not care about the forests that were assigned to the communities. Villagers developed the impression that: "The Forestry Department is prosecuting villagers for setting out fires while they are not prosecuting the mselves if they are offenders."

This can seriously impede the ability of forestry staff to sensitize community members about fire issues and to cooperate in the fight against forest fires.

Sparks from faulty vehicles: It is not uncommon that badly maintained combustion engines throw sparks from their exhausts when being operated. As with cigarette butts, this can cause the grass cover along roads to catch fire.

Other causes of forest fires: There is a strong belief that a local tree species (*fang jaano*) causes fire in the dry season by the explosive disposal mechanism of its seeds. At the workshop, a lot of foresters confessed that they had never seen this tree, and it was mentioned only twice in the interviews as a possible cause of fire.

Other causes include:

- cooking and roasting of food in the open: this is a common practice when spending long hours undertaking field or forest activities;
- oyster processing: in the mangrove areas near the River Gambia;
- palm wine tapping: as in honey collection, fire is used in palm wine tapping to drive the bees away; and
- Senegalese customs officers sanction the burning of the forest in order to expose smugglers across the border.

LEGISLATIVE APPROACHES ON COMMUNITY INVOLVEMENT

The most important legislative measures to control forest fire in the Gambia are the Forest Act and the draft Forest Regulations of 1998. These pieces of legislation facilitate the participation of local communities in forest management through community forestry. Other participatory forms of forest management involve CCSF, which is currently being promoted.

Prior to the inception of the community forestry concept, the state took ownership of the forest away from the local communities, resulting in a lack of concern for the forest. People left fires unattended on lands that they saw as belonging to the government, expecting Forestry Department staff to extinguish them. The community forestry concept was introduced to change this situation. Under the terms and conditions of the concept, local people have full access to benefits accruing from the forest. With the devolution of authority over the forest to the villagers, there are improved chances to contain the menace of forest fires. The prevention and control of forest fires are considered to be the most crucial elements of the community forestry approach. The communities are under very strong obligation to prevent fires in their community forests and the surrounding state forests. The ability of the community to keep forest fires under control is the main criterion used in evaluating them for the issuance of a Preliminary Community Forest Management Agreement (PCFMA) and a Community Forest Management Agreement (CFMA).

COMMUNITY-BASED FIRE MANAGEMENT

The environment (vegetation type and weather conditions during the dry season) makes fire prevention a difficult task. In years of good rainfall, the grass cover becomes very thick and tall, providing favourable grounds for serious surface fires. The situation is compounded by the dry, windy harmattan conditions prevalent from December to February each year. Communities have to be particularly alert in these three months of the dry season.

Fire fighting techniques

From the interviews carried out for this study, a pattern of fire fighting strategies can be summarized: “The holy drum is beaten, everybody assembles, women draw water, men go with rakes, establish firebreaks, they pour some water on the dry grass before the fire reaches it. Sometimes they use green branches, sometimes sand”.

While branches bearing green leaves are commonly used to beat out fire, farming tools such as rakes, axes and cutlasses are typically used by men to clear the area of flammable shrubs and grasses. Women are usually responsible for fetching water from the local well, if the fire is not too far from the village.

A more advanced method to combat particularly fierce forest fires is the coordinated creation of firebreaks and the use of counter-fire. While firebreak clearing is quite common and used in roughly half (52 percent) of cases, counter-firing is rather more demanding and needs some experience to be employed correctly. In fact, in one interview a counter-fire was mentioned as the cause of an uncontrolled fire that burnt several compounds. Counter-fire can be the only method to stop very fierce fires that are practically out of control, yet only 21 percent of the villagers mentioned it as a possible means of fire fighting.

Community-based mechanisms

Fire committees

To alert the community of an uncontrolled fire, a holy drum, a village bell or a crier calls the people to action. Roughly half of the villagers referred to fire committees. Typically, a village fire committee watches the surrounding areas for fire and calls people for fire fighting if necessary. “[They] patrol the forest to detect fires and mobilize community labour to fight it out”.

By-laws

Probably the most important mechanism for fire management at the local level are by-laws. About 70 percent of respondents knew about by-laws in their village that are related to fire. These are set up at the community level and enforced through a village council or the Alkalo. They may not be formally codified, but are enacted through an agreement of the community.

The most frequently mentioned by-law was one that makes it compulsory for villagers to participate in fire fighting when alerted. This means that the call of the fire committee or the village crier is to be taken seriously and not just as a plea. People who fail to participate are usually reported to the local authorities (Alkalos or chiefs), who decide on their punishment. In all, 21 percent of people from 15 different villages mention this by-law. This means that it is known in almost half of the villages sampled. Another common by-law is the one that regulates the widespread practice of field burning, making strip clearing along the field compulsory when clearing fields with fire. This law was mentioned in ten interviews. The Alkalo usually enforces by-laws. To reinforce this authority, there is a regulation that calls on every villager to report fire culprits to the Alkalo or chief. This by-law was mentioned by 17.7 percent of those interviewed.

Apart from these most widespread by-laws, the interviews brought to light a range of regulations that have been developed to protect villages and forests from the ravage of fires. In six villages, the drawing-up of by-laws is related to a village's involvement in community forestry.

Some of the regulations merit being mentioned as examples:

- “If there is a forest between two villages and there is fire in that forest, the village from which the fire starts takes up responsibility, but they all go and put out the fire first.”
- “Nobody shall go to the community forest with matches.”
- “When fire occurs while you are using the forest, you are automatically responsible.”
- “When you sell honey in the village and forest fire occurs on the same day, the villagers will put it out and look if the fire started through honey collection. If that is the case, they will fine you 50 D (about US\$4).”

The widespread implementation of by-laws appears to be a recent phenomenon. Just more than half of the 71 respondents who can recall their inception (51 percent) say that by-laws have been developed within the last five years.

Impact of community forestry on fire management

Of those interviewees who saw changes, 44 percent said that they now apply controlled burning techniques and take more care when using fire. It was encouraging that 31 percent of those interviewed had never seen any use of fire in the forest. The number of people who responded in this way was higher in the two categories of community forest villages than in villages that do not manage their own forest. Through community forestry, a general consensus is being built that forest fires are more destructive than useful:

“[Until] ten years ago, there was nothing like management of the forest by the communities, it was managed only by government. But when they involved the communities, things began to change. When in those days it was government who protects, people now burn only the area they wish to farm and only at the beginning of the rains”.

The effects of this gradual change of attitude were already visible for the local population. When asked about changes in forest fire occurrence over the last six years, 33 out of 34 respondents in

category 1 villages said that less area is now being burnt, and 59 percent said that fires are less frequent. The differentiation between fire frequency and affected area is not merely artificial. While the frequency of uncontrolled fires relates to fire use patterns and preventive measures, the area that is actually being burnt in a fire incident depends on the alertness and willingness of the local population regarding fire fighting: "Now when there is forest fire, there is a very small area that is burnt because the people go out quickly to fight against it".

The reduction in the occurrence of forest fires is largely, but not solely, attributable to the impact of community forestry. In 1998, Mr Pascal Vardon, a graduate student from France, carried out a short survey of farmers' attitudes to forest fires in the three districts of Western Division mentioned earlier. The results of the survey indicate that farmers are willing to invest more labour in field preparation by way of making a protective belt around their fields to avoid fires escaping to the surrounding forests. Some farmers said that they undertake these elaborate measures because of pressure from the Alkalos, who do not want to be prosecuted for unaccounted fires in their village territories under the 1998 Forest Act (Vardon, 1998: Annex 3).

It seems that consistent enforcement of the Fire Regulations in the Forest Act, together with the incentives created by community forestry, could bridge the gap between the high level of awareness and the gradual change of attitudes. Most people see the responsibility for causing uncontrolled fires as grave and were in favour of severe punishments for the culprits. In the survey, a solid 95 percent of those interviewed supported this. Usually they pleaded for heavy fines, even without considering the financial capacity of the culprit. Moreover, it was frequently advised that those incapable of paying should be imprisoned. Some respondents advised corporal punishment such as a heavy beating and went as far as proposing the death penalty.

CONCLUSION

Forest fires are one of the most intractable problems for the forestry services all over the Sahelian region, and ways to combat them remain as debatable as ever, even within the same country. A realistic fire prevention strategy for the Gambia should not aim to prohibit the use of fires in the farm management activities of the local population, but rather to regulate its application and, at the same time, make people sensitive to the dangers of fire. In fact, the use of fire to aid in farm clearance is not in itself unacceptable. What is worthy of disapproval is the indiscriminate burning of the forest in the name of farming. Because the law proscribes the uncontrolled use of fires in farm clearing, farmers who are short of help to clear their fields in the right manner sometimes covertly start forest fires, which eventually spread into their fields. Such farmers escape prosecution because they remain unidentified. Some farmers go to the extent of setting fires in the vicinity of their neighbourhood to mislead any investigation tracing the guilty person (Vardon, 1998).

Consistent law enforcement can help to deter those inclined to careless practices in relation to fire use. Furthermore, people who willingly comply with regulations will continue to do so only if they see that culprits are being prosecuted. Otherwise, compliers will form the impression that their own commitment is in vain and that they would fare better if they also breached the law. If heeding rules is labour-intensive, as it is with field clearing, or puts complying individuals at a disadvantage, people will only observe laws if they see that others also follow them. Villagers call for resolute prosecution because, understandably, they do not want to see the positive results of their own efforts being spoiled by others.

Fires are quite often caused by humans and could be prevented if the people who set them could be persuaded to change their habits. Although awareness creation is essential, fires can only be eradicated if the general public actively participates. The local population can directly prevent or control forest fires. Villagers should be able to enjoy the benefits of managing the use of fire during land clearance. Community forestry makes this possible.

The urban population also has an important role to play in forest fire reduction, because it is in urban areas that policy-makers are found. These people contribute to the design of programmes, policies and laws and are themselves influenced by public opinion.

The use of political influence for the prevention and control of forest fires is indispensable in fire management. Politicians (both parliamentarians and chiefs) should be made aware of forestry's contribution to both informal and formal sectors of the economy. Lobbying politicians for support must go hand-in-hand with sensitizing the general public about the difference between controlled and uncontrolled fires, and about the threat that uncontrolled forest fires pose to national stability. With such a level of activity, the forest fire issue could be brought to the national agenda. Political support for the Forestry Department is extremely valuable. It would mean greater commitment from chiefs, leading to expedited hearings of fire cases in the courts and the delivery of appropriate judgments. Parliamentarians can help to focus national attention on forest fires by declaring a special date to commemorate this problem in the Gambia.

REFERENCES

- Bojang & Schindele, W.** 1988. *The Gambia Forest Management Concept*, Forestry Department, Banjul, the Gambia.
- Dampha, A.** 1992. *Bushfire: a threat to forest cover in the Gambia*. Forestry Department, Banjul, the Gambia.
- Department of Agricultural Services, Hanning Unit.** 1999/2000. National agricultural sample survey. In *Statistical Yearbook of Gambian Agriculture 1999*. Banjul, the Gambia.
- Draft National Forestry Action Plan of the Gambia 2000–2010.
- FAO.** 1989. *African Forestry and Wildlife Commission, Ninth Session of the Working Party on Wildlife Management and National Parks*. Blantyre, Malawi.
- FAO.** 1998. *Managing forests as common property*, by J.E.M. Arnold. FAO Forestry Paper No. 136. Rome.
- FAO.** 1999a. *Legal bases for the management of forest resources as common property*, by J.W. Bruce. Community Forestry Note No. 14. Rome.
- FAO.** 1999b. *Meeting on Public Policies Affecting Forest Fires*. FAO Forestry Paper No. 138. Rome.
- Forestry Department of Gambia.** 2000. *Out of the forest*, 4(1), February 2000.
- Gilbert, V.C., Camara, A. & Wilkie, D.S.** 1992. *Kiang West National Park, Integrated Conservation and Development Project*. Department of Parks and Wildlife Management, Banjul, The Gambia.
- Hay, R. & Marsh, S.** 1994. *The Gambia burn scar mapping*. Banjul, the Gambia, United States Agency for International Development (USAID).
- Herbort, H.** 1987. *Study of bushfire causes in the Lower River Division*. Fajara, thesis, Faculty of Forestry, Göttingen, Germany.
- IIED.** 2000. *The Rural Land Plan: An innovative approach from Ivory Coast*. Issue Paper No. 91. London, International Institute for Environment and Development, (IIED).

- Kabala, M.** 1989. The problem of bush fires and their utilization in Africa. In FAO. *African Forestry and Wildlife Commission, Ninth Session of the Working Party on Wildlife Management and National Parks*, pp. 76–88. Blantyre, Malawi.
- Munzinger Archiv.** 1997/1998. *Internationales Handbuch – Länder aktuell: Gambia*. Ravensburg, Germany.
- N'Jai, O.** 1988. Feed management studies. National bush fire survey. Abuko, the Gambia, Department of Livestock Services. (typescript)
- N'Jai, O. & Elon, G.** 1989. Feed management studies: 1988/89 national bush fire survey. Abuko, the Gambia, Department of Livestock Services. (typescript)
- Nohlen, D.** (ed.) 1989. *Lexikon Dritte Welt*. 3rd edition, Rowohlt-Verlag, Reinbek, Germany.
- Reeb, D.** 2000. *Establishment of community controlled state forest management in selected areas and introduction of community based forest utilisation and marketing*. Short-term mission report for the Gambian–German Forestry Project.
- Republic of the Gambia.** 1998. Forest Act.
- Schoonmaker Freudenberger, M.** 1994. *Tenure and natural resources in the Gambia, summary of research findings and policy recommendations*, working paper No. 40, Land Tenure Center, University of Wisconsin-Madison, USA.
- Thoma, W. & Sillah, J.** 1999. National Action Plan to Combat Desertification, Action Plan on Forest and Wildlife Management, Department of State for fisheries, Natural Resources and the Environment, Banjul, the Gambia.
- USAID.** 1990. *Tenure constraints and opportunities in natural resource management in the Gambia*. Banjul, the Gambia, United States Agency for International Development (USAID).
- Vardon, P.** 1998. *La Foresterie Communautaire, Nouvel Outil de Politique Foresterie en Gambie*. Montpellier, France, ENGREF.