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RESEARCH ARTICLE

FIRE IS A GOOD SERVANT BUT ALSO A BAD MASTER: THE CASE OF BUSHFIRES IN NORTH EAST GHANA

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ABSTRACT

Bushfires have become an environmental challenge in Ghana and it has become difficult for the Government to control devastating menace since this activity is deeply rooted in the socio-cultural and economic systems of the indigenous people, especially farmers. The effects of bushfire on rural livelihoods and on the ecosystem in the Upper East Region are extensive and damaging. Bushfires have accelerated environmental degradation and have become very influential in the ecology and socio-economic aspects of the rural landscape in the transition zone of Ghana. A series of participatory research activities revealed the continuing importance of fire to rural livelihoods, but that a mismatch in desired burning regimes exists between local stakeholders. The socio-economic impact of this disaster was collected using approaches such as interviews and focus group meetings. Some of the consequences of bushfires include the burning of food stuffs, houses as well as domestic animals. The research found out that, the continuous prevalence of this activity was due to the laxity in the implementation of bye-laws regulating bushfire burning due to the lack of personnel and logistics to state agencies in the district to combat the problem.

INTRODUCTION

Savanna environments constitute the largest physical ecosystem in Southern, Central and Western Africa. The high frequency of dry lightning storms over the African continent creates a unique fire climate and fire has had a long history in the evolution of African savanna ecosystems (Eriksen, 2007), the prevalence of fire has over time created a degree of fire dependency for the growth, production, regeneration and coexistence of herbaceous and woody savanna vegetation (Aniah *et al*., 2013). Humans are believed to have altered the intensity and timing of fire over time, particularly in relation to increasing human demographics and changing power regimes, and anthropogenic activity is one of the main causes of fires in African savannas today (Mistry, 2002). In Ghana burning is embedded in the cultural values and traditional farming systems of the people (Nsiah-Gyabaah, 1996,) to such an extent that in most communities farming without fire is considered impractical. In recent times fire has become a major threat to the forest resources and the development of agriculture in Ghana (Nsiah-Gyabaah, 1996). The extent and use of anthropogenic fires have become prevalent and are considered to be a major threat to forests in Ghana (Kalame*et al*., 2009). Over the last two decades since wildfires became a major problem in Ghana, they have affected the physical environment expressed as changes in local climate, soil productivity, vegetation and biodiversity and it stands to reason that fires may have impacted on farming systems as well. (Amissah *et al.,* 2011). The issue of bushfire (wildfire) appears as a central theme because bush burning is one of the challenging 'man versus environment' conflicts in Ghana. Burning is embedded in the cultural values and traditional farming systems of the people. The effects of bushfire on rural livelihoods and on the ecosystem in Ghana are increasingly becoming extensive and damaging. However, it has been difficult to reduce or completely eliminate bushfires. (NADMO, unpublished). The difficulties of eliminating bushfires completely means that there is need for a clear understanding of the causes and effects of bushfires so that bushfire policies can address the undesirable effects with respect to forestry, arable agriculture, rangeland, soil conservation and wildlife. Although bushfires have played some part in agricultural production and in accelerating environmental degradation especially in the fragile savanna ecosystem, this issue has largely been ignored in decisions affecting the environment compared to tropical deforestation and desertification which have received considerable attention in environmental discussions (Aniah *et al*., 2014).

Like many hazardous phenomena which occur occasionally, bushfires which appear as headlines in mass media reports during the dry season seem to be forgotten when the risk disappears with the onset of the rains. Consequently, there is very little in the form of published data and information concerning the frequency, intensity, duration and effects of

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bushfire on the environment and human welfare in Ghana. This factor undoubtedly undermines the country's ability to prevent, control and completely eliminate bushfires in the fragile ecosystems which are threatened by drought and desertification. The study was undertaken using social survey techniques to access the use of fire, the causes and socio-economic and environmental effects of the annual bushfires on the people and the vegetative cover.

MATERIALS AND METHODS

Field data collection involved interviews with opinion leaders such as chiefs, Tindaanas (Chief priest), assembly members, Unit committee members, fire service and National Disaster and Management Organization (NADMO). A total of seventy two (72) respondents were interviewed in 5 towns and 9 respondents were selected from each community. The Region was divided into East and West and a simple random sampling method without replacement was used to select the communities. Focus groups discussions were also organized among farmers and Fulani herdsmen. Proceedings were recorded and later transcribed to augment information from interviews.

The target groups were farmers who have been in farming for ten years and above. The longest period of farming observed was fifty years. Before the selection of the respondents all households in each community with a farmer who had farmed for ten years and above were identified and numbered with the help of opinion leaders and elders in the community. Direct observations were made on farms to gain a firsthand experience of farming systems in the study areas. Secondary data were collected through desk studies from the district assemblies, National Disaster Management Organization and Ghana Statistical Services offices for demographic and environmental information on the fringe communities around each forest reserve. Data were analyzed using the computer software, Statistical Package for Social Sciences (SPSS version).

RESULTS AND DISCUSSION

The Role of Fire in the Seasonal Land Management Calendar of the people

Fire is a major feature in the seasonal land management calendar of the people of Upper East Region. The local communities use fire to obtain desired natural resources and to shape the natural environment to further their agricultural and other objectives, such as bush clearance, firebreak creation, charcoal production, hunting, weed and disease control, caterpillar breeding, honey collection and pasture regeneration. There is also an acute local awareness of disadvantageous, as wellas beneficial, outcomes of different fire regimes in the Upper East Region. The timing of burning is clearly linked to particular livelihood activities. In the Upper East Region, fire is exclusively ignited during the early dry season to encourage tree growth and species biodiversity. These reasons are consistent with similar research on indigenous knowledge and burning practices in Bolivia (McDaniel *et al*. 2005), Brazil (Mistry 1998), where scientists and fire managers have been proven wrong in their belief that local people use fire indiscriminately, and thereby degrade the environment on which they are dependant. Such findings highlight the importance of considering desired livelihood outcomes in an analysis of fire utilization and perceptions, as local needs often underlie the nature of causality, and the motivations underpinning activities and priorities. The Forestry Commission, Environmental Protection Agency and local NGOs, such as the Navrongo Bolgatanga Diocese Development Office and the Sustainable Family Agriculture and Educational Support Programme (a local based natural resource management institution), cooperate locally to encourage bush burning in the Upper East Region to reduce the intensity and thus destructiveness of bush fires.

Causes of bush fires in the Upper East Region

Hunters, herders, farmers and cigarette smokers are the primary recipients of blame for uncontrolled and indiscriminate bush burning. Many bushfires in the forest zone are deliberately started during the dry season. In many areas, farmers and hunters do so to facilitate access by men and animals. About 62% of farmers also burn in order to control dangerous animals, insects and pests. For example, it is used to destroy or control some pests and diseases (e.g. grasshoppers, ticks, locusts, anthrax) and livestock parasites which live and thrive on the vegetation. Fire is sometimes used to create conditions suitable for particular land use systems or to create a habitat for particular species.

Fires are used to clear lands for farming especially during the dry season Many farmers use fire to reduce the fuel load or combustible litter in order to reduce the potential frequency and intensity of late dry season fires. Burning is also a cheaper, faster and easier method of clearing lands. Though some farmers do it intentionally, others create fire belts, but in the dry season, the harmattan winds could be too strong and cause spill over to unintended lands.

The study also revealed that, the need to get fresh re-growth of grass for cattle grazing by Fulani herders promotes bush burning. During the dry season, local cattle herders and immigrants from neighbouring countries, Mali and Burkina Faso called the Fulani set ablaze the vegetation to promote early re-growth of fresh pasture for the animals. Sometimes village folks are paid some token fees by these nomadic herdsmen to set the dry vegetation ablaze during the dry months of November to March while they move southwards to find fresh vegetation for the cattle. The herdsmen return with their cattle around April and May by which time the vegetation might have re-sprouted by the early rains of April and May. Most herders believe that bush burning improves the palatability and nutritional value of grasses and trees for grazing The vegetation is also set ablaze when the headsmen notice that their heads of cattle are going to fall into the hands of harmful pests and insects such as ticks and tsetse flies.

At the beginning of the dry season, herders often start fires to stimulate the growth of young shoots. According to herders, the re-growth or young offshoots are more palatable and contain more nutrients. Burning improves ranges because grazing animals frequently are found concentrated on burned areas where the herbage is more accessible, palatable and

nutritious. This is confirmed by (Nsiah-Gyabaah, 1996), that foresters cause bushfires to maintain or achieve a plant composition which is optimal for a specific management objective. For example, in the Guinea and Sudan Savanna regions foresters and range managers cause bushfires to promote the growth of forage for livestock. Sometimes fire becomes a good management tool for facilitating and promoting the introduction of exotic species such as improved forage species into the vegetation. Most herders believe that bush burning improves the acceptability and nutritional value of trees and other species (e.g., grasses) for grazing and browsing.

Hunting is also an important economic activity in the savanna ecosystems, and most hunters set fires to drive out game in hunting. In the forest ecosystem, indiscriminate bush burning has been one of the major factors in the change of forest to woodland, woodland into savanna and savanna to shrubland. This is confirmed by Nsiah-Gyabaah, (1996), meeting protein needs of households' leads to misuse and abuse of fire. The Sudan and Guinea grasslands are anthropogenic climax communities maintained by grazing, bush burning and crop cultivation, and they will revert to shrub and then woodland and forest if these controlling factors are removed.

Effects of bushfires in the Region

Although there are good reasons for using fire as a tool, if it is uncontrolled or set indiscriminately, its effects can be damaging. Burning in certain seasons of the year can be very destructive not only of vegetation but soil structure and composition, and it increases soil erosion. The impact of the annual burning of the wild is discussed in two thematic areas; the socio-economic and environmental effects. The research conducted indicated that bushfires have brought untold hardships to individuals or sometimes a whole community/household either in the form of lost of lives or property. There are numerous cases of part or whole communities being raised down by fires. These fires sometimes burn Guinea corn, Millet and rice farms, Dawadawa, Shea trees and other tree plantations. Harvested farm produce on the farms or at home are sometimes affected by spill over wildfires, the number of reported cases of fire outbreaks, number of affected victims and households has generally been on the increase since 2002. Estimates of property lost in major wildfires ranges into several thousands or millions of Ghana cedis. Human lives and that of domestic animals are sometimes lost in these fires (Aniah *et al*., 2013).

Electrical poles and other installations are sometimes burnt in these fires disrupting power supply to the communities. The disruption in electricity supply negatively affects the socio-economic activities of residents engaged in the sale of food, meat, fish, beverage and drinks as their stock go bad and has to be discarded at a great cost to them because their businesses are not insured. Also domestic food is destroyed. Other small scale artisanal industries such as welding are affected. The local people said it is hard to put a monetary figure on the loss of income associated with this annual bush fire disasters because they are small scale businesses and do not keep records of sales, but admitted that the financial burden has been enormous.

National Disaster and Management Organization (NADMO) and the District Assembly spends huge sums of money on relief items (e.g. food, sleeping mats, blankets, mattresses, buckets, cooking utensils etc) for such people and in rehabilitating the communities by assisting with building materials such as cement and roofing sheets when these disasters occur. This research is confirmed by Amissah *et al*. (2011), the incidence of wildfire has directly affected yield of some crops, partly because of the direct influence of fire on vegetation cover, soil fertility, and the indirect effect on labour requirements for land clearance and farm maintenance associated with the change in vegetation (Aniah *et al*., 2013).

Environmental impacts of Bushfires

The environmental consequences of these extensive fire damages include the burning of plants resulting in the reduction of plant cover which affects the habitat of wild life, burning of tree plantations, and the destruction of farms. The socioeconomic impact of environmental deterioration on Africa continues to pose a major problem to development, stability, and daily lifestyles. Other dire consequences of environmental degradation include, depletion of farming lands, depletion of natural habitat for aquatic and land animals, decline in biological diversity (the variety of all life on earth, the complex relationships among living things, and the relationships between living things and their environment.), aquatic pollution, adversely affecting the livelihood of fishing communities and destroying fish and other water creatures (Aniah *et al*., 2014).

Generally, the whole area studied indicates a reduction in vegetative cover after bush fire events in 2003 with values ranging from 0.24 to 1.56. The findings of this research are consistent with Nsiah- Gyabaah, (1996) andKusimi *et al*. (2012).Indiscriminate bush burning has been one of the major factors in the change of forest to woodland, woodland into savannah and savannah to shrub land. Fire produces immediate effects on aerial vegetation, which become evident by total plant death or by partial destruction. High canopy trees may escape ground fires because the vertical discontinuity of fuel prevents fire reaching the canopies. Plant composition is also affected by fire in an indirect manner through species substitution (Aniah *et al*., 2014).

Conclusion

The people's way of life and their economic well being are closely associated with the setting of wildfires in the Region. Other factors include weak legislative instruments as well as the lack of political will on the part of the government to prosecute the policy of anti-bushfires. These acts are not only negatively affecting the economic activities of the local people in the form of the destruction of their food, houses as well as domestic animals, but it is also destroying the physical environment. Plants and animals are destroyed by the wildfires resulting in a reduction in biomass cover. Discussions with some chiefs, chief priest and assemblymen and women revealed that they are unhappy with this state of affairs and suggested the promotion and intensification of anti-bushfire education through local chiefs, opinion leaders and school children, equipping agencies and the rearing of animals such as grass cutter and other small ruminants to serve as a source of

protein to the people will help curb the menace. Fire management training should form an integral part of agricultural policies in Ghana in the absence of viable alternatives to slash and burn.

REFERENCES

Amissah1, L., Kyereh B. and Agyeman V. K. 2011. Wildfires as Dominate Force Driving Farming Systems in the Forest Transition Zoe of Ghana, Ghana J. Forestry,

Aniah P., Aasoglenang A. T. and Bonye S. Z. 2014. Behind the Myth: Indigenous Knowledge and Belief Systems in Natural Resource Conservation in North East Ghana. *International Journal of Environmental Protection and Policy,* Vol. 2, No. 3, pp. 104-112. doi: 10.11648/j.ijepp. 20140203.11

Aniah P., Wedam E., Pukunyiem M. and Yinimi G. 2013. Erosion and Livelihood Change in North East Ghana: A Look into The Bowl. *International Journal of Sciences: Basic and Applied Research (IJSBAR).* Volume 7, No 1, pp 28-35

Appiah, M., Damnyag, L., Blay, D. and Pappinen, A. 2010. Forest and Agroecosystemfire management in Ghana. Mitig Adapt StrategGlob Change 15: 551-570.

Arthur J. L. and Arthur A. Y. I 2010. Movement under Environmental Disasters: The Case of Flooding and Bushfires for Selected Periods in Ghana Paper presented at the ESF-UniBi-ZiF research conference on 'Environmental Change and Migration: From Vulnerabilities to Capabilities', Bad Salzuflen, Germany, December 5-9.

Eriksen C. 2007. Why do they burn the 'bush'? Fire, rural livelihoods, and conservation in Zambia. *The Geographical Journal*, The Royal Geographical Society

Ghana Statistical Service, 2012. 2010 Population and Housing Census. Ghana Statistical Service, Accra.

Kalame, F. B, kem, J. and Indinoba, M. 2009. Matching national forest policies andmanagement practices for climate change adaptation in Burkina Faso and Ghana. Mitig Adapt Strateg Glob Change 14: 135-151

Kusimiand, J. M. and Appati J. W. 2012. Bushfires in the Krachi District: The Socio-Economic and Environmental Implications

Ministry of Food and Agriculture (MOFA). 2001. Accelerated Agricultural Growth andDevelopment Strategy in Support of Ghana'sVision 2020. Ministry of Food and Agriculture.

Nsiah-Gyabaah K. 1996. Bushfires in Ghana. IFFN No. 15, pp. 24-29.

Solbrig, O. T. and Young, M. D. 1993. The world's savannas Man and the Biosphere Series UNESCO

Stott, P. 1991. Recent trends in the ecology and management of the world's savanna formations Progress in Physical Geography

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