

The dynamics of tenure security, agricultural production and environmental degradation in Africa: Evidence from stakeholders in north-east Ghana

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Abstract

Many authors have blamed African land tenure systems for the poor agricultural production and environmental degradation in Africa, and therefore the resulting hunger, environmental refugees and the lack of socio-economic progress. The aim of this paper was to investigate the role of tenure security in north-east Ghana and the implications for agricultural production and environmental sustainability. The research used a mixture of qualitative and quantitative methods including interviews, focus group discussions and questionnaires to collect and analyse data from stakeholders in two selected districts in north-east Ghana. The study revealed that contrary to the mainstream view that lack of security of customary land tenure is the main cause of the poor agricultural production and environmental degradation, stakeholders' perceptions of their security of tenure was generally high. Yet poor agricultural production and environmental degradation characterised the study area. Interviewees perceived the main causes to be due to non-tenurial factors including lack of finance, poor soil fertility, inadequate and unreliable rainfall, pests and diseases, inadequate farmlands, bush burning and excessive tree cutting. It was also shown in the study that women and strangers (i.e. non-community members) generally had little or no power and control over land use decision-making and management under customary land tenure. These findings have negative implications for tenure security and environmental sustainability in north-east Ghana, since most women are involved in food production. The paper concludes that current policy focus on enhancing tenure security may fail to lead to increased agricultural production and environmental sustainability if similar focus is denied the above non-tenurial factors. Tenure security is a necessary but not a sufficient condition for improvement in agricultural production and environmental management in north-east Ghana.

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Introduction

Land resources and the rights to them are fundamental to survival in the developing world (West, 2000; de Soto, 2000; Auzins, 2004). As land tenure defines access to and use of land resources, it has become the focus in identifying the causes of Africa's food production and environmental degradation problems. Thus most writers (e.g. Elkan, 1959; Myrdal, 1974; Mountjoy, 1975; Ault and Rutman, 1979) have largely attributed poor agricultural performance and environmental degradation to the land tenure systems in

Africa. It has been highlighted that critics of the communal nature of tenurial systems in Africa (e.g. Dorner, 1972; Johnson, 1972; World Bank, 1974) and in Ghana (e.g. La Anyane, 1962; Government of Ghana, 1999a) blame insecurity of tenure for the poor performance in the agricultural sector and environmental degradation.

The above writers argue that African tenures have communal characteristics that lack the security of tenure required for stimulating investments in agriculture for enhanced productivity and sustainable land resource use. For example, Acquaye (1984, p. 11) observed that, the debilitating impact of African tenurial systems has been pronounced so frequently and so loudly by commentators that it is widely accepted as a fact and to question it is

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taken by proponents as “*proof of reduced intelligence*”. The critics of customary land tenure systems in Africa, including Ghana, gain support from Hardin’s (1968) “tragedy of the commons”, which argued that systems of shared property are subject to systematic over-use and degradation of the natural resource base, implying the need to enclose common resources and individualise their ownership (Quan, 2000). Donor agencies and governments have thus been strongly influenced by the above arguments when formulating land tenure policies (Atwood, 1990; Platteau, 1992; Bruce and Migot-Adholla, 1994), but often without empirical evidence on the ground. Currently, this bias is under attack in the land tenure literature (Powell, 1998) for the reason that “communal” does not always imply “open access” and therefore given the existence of group excludability in African tenurial systems, productive and sustainable land use can be achieved (Bromley, 1989, 1991; McKean, 1992). This paper provides needed empirical evidence from the agricultural unproductive and environmentally degraded north-east Ghana to demonstrate that tenure security has been made a scapegoat in the region. Other non-tenurial factors are far more to blame for poor agricultural production and environmental degradation. These considerations therefore need to be fed into national land tenure policy formulation and implementation for enhanced agricultural production and sustainable land resource use and management.

Tenure, agriculture and environment nexus: a synthesis of the literature

Amongst the four arguments (see Platteau, 1996, 2000) on security of tenure in Africa, are the investment demand or security effect argument and the environmental benefits argument, which are examined for the purpose of this paper.

First, the investment demand or security effect argues that under a statutory (modern) land tenure system there will be more efficient use made of land resources because inefficient farmers would be out competed in the land market and that excessive land fragmentation would be eliminated (Falloux, 1987). As a result, a transition from subsistence farming to commercial agriculture would emerge (Falloux, 1987), the result of which is the potential for increased agricultural production due to enhanced security of tenure. For this potential increase in agricultural production to be realised, however, two conditions must be satisfied. First measures to offer individualised ownership of land must help reduce tenure insecurity and second, also reduced tenure insecurity must lead to higher levels of agricultural investment (Pagiola, 1999). However, in Africa, what needs to be emphasised is that the absence of individual titles to land resources should not automatically be equated with tenure insecurity. For example, a substantial body of literature (e.g. Place and Hazell, 1993; Mafeje, 1993; Bruce et al. 1994; Quan, 1997; Platteau, 1996, 2000) demonstrates that many customary land tenure

systems in Africa do not necessarily have insecure tenure even in the absence of individual titles to land. Platteau (1996, 2000) has emphasised that in agrarian societies in general and African communities in particular, secure use rights can be held by farmers despite their apparent vulnerability and what appears to the external observer as precarious land rights may actually be long-term investments in the specific context of these societies. In Burkina Faso, for example, farmers perceived a high degree of security in their right to continuously use most land now under cultivation within the communal tenure system (Malton, 1994). Furthermore, even use rights over borrowed land can often be bequeathed to descendants provided that the borrower and lender belong to the same lineage and land has been lent for an indefinite period of time (Malton, 1994). Similar security of tenure has been observed in the case of Ghana (Kasanga, 1994, 2001).

Even if lack of individual title to land does lead to tenure insecurity, it does not necessarily follow that reduced insecurity would result in higher agricultural production or investments in agriculture (Pagiola, 1999). Support for Pagiola’s (1999) conclusion is drawn from Gavian’s (1993) assertion that tenure insecurity had little effect in Niger because there were simply no profitable long-term investments to be made. Tenure security did however have some influence on the application of manure. In Kenya, Place and Migot-Adholla (1998) found that though land title registration increased tenure security, it had little effect on agricultural production. In the case of Ghana, Besley (1995) observed that enhanced security of tenure facilitated agricultural investment in the Wassa area, but the same conclusion could not be reached for the Anloga area, where no significant relation was found between security of tenure and agricultural investments. Meinzen-Dick et al. (2002) therefore concluded that simplistic policy prescriptions to give title to land as a way to stimulate investment can be misleading, because there is more to tenure security than just statutory title and more factors influencing investment than just security of tenure. In Africa, it has therefore been argued that imposing individualised tenure on the communal land tenure system could be counter-productive (Mafeje, 1993; Platteau, 1996). This insecurity could arise if the hitherto secure customary lands use rights by vulnerable groups in society, e.g. women “disappear” upon the registration of family lands by males in a family (van den Berg, 1997).

The above analysis suggests a causal link between security of tenure and agricultural production. Yet evidence that customary land tenure lacks security of tenure and that statutory land tenure has security of tenure is inconclusive (Platteau, 1996, 2000). A causal-effect relationship is suggested between these two variables but this relationship does not allow us to conclude *a priori* that causality runs from enhanced security to enhanced agricultural production and investments (Platteau, 1996, 2000). It is quite possible that under statutory tenure farmers tend to register land parcels that benefit from

comparatively high levels of investment, in which case private tenure does not stimulate investment but is only positively associated (Roth et al., 1994). It has also been noted that, to the extent that investment represents a visible commitment to the long-term productivity of the land, continued use of the land is implied and the common assertion that tenure security is necessary to promote investment may in many cases be reversed. Thus, although insecurity of tenure is a disincentive to invest, it is paradoxically, also an incentive because investment will itself increase security through raising the value of the land (Sjaastad and Bromley, 1997).

A related issue to the causality between tenure security and agricultural investment is the lack of a common definition of security or insecurity of tenure. Insecurity of tenure is often perceived as the probability of losing ownership of the land (Sjaastad and Bromley, 1997). In communities where land is seen as a bundle of rights rather than a physical area and where multiple tenures determine the access to land, as in sub-Saharan Africa, the above view of insecurity of tenure is inadequate (Sjaastad and Bromley, 1997). Thus Roth and Haase (1998, p. 1) offered a more comprehensive definition of security of tenure as “the individual’s perception of his/her rights to a piece of land on a continuous basis, free from imposition or interference from outside sources, as well as the ability to reap the benefits of labour or capital invested in the land, either in use or in alienation”. For example, the right to recover an investment need not be related to the right to retain land, assuming some form of recompense could be provided for improvements made to the land (Barrows and Roth, 1989). Hence certain types of investment in land e.g. tree planting are a legitimate way of claiming more secure rights to land and such investments may be recovered even when land is lost (Sjaastad and Bromley, 1997). Therefore, the assertion then that insecurity in customary land tenure systems is a serious impediment to agricultural investment seems less convincing (Sjaastad and Bromley, 1997).

The above African-based alternative concepts of tenure security have two important dimensions; firstly the security of land rights associated with tenure possession and secondly to whom these land rights are distributed (Carter et al., 1995). Thus, Roth and Haase (1998) and UNECA (2003) argued for tenure security to be investigated by assessing stakeholders’ own perceptions of their security of tenure and the results fed into measures that address questions of tenure security for these stakeholders.

Secondly, it has also been argued that private land tenure through land registration has environmental benefits (Feder et al., 1988; Pagiola et al., 1997). Pagiola (1997) and Pagiola et al. (1997) argued that similar to the investment effect argument more sustainable resource use is made by stimulating investments, which improve the long-term productivity of the land. Therefore farmers with registered land and security of tenure are more likely to undertake conservation measures on their land. Additionally, it has been emphasised (e.g. Behnke, 1994; Mearns,

1997) that in the extensive grazing systems characteristic of the savannah areas in Africa, mobility and flexibility are essential for environmental sustainability because these allow for natural regeneration of lost vegetative cover. Thus, individualising tenure can create rigidities that worsen vulnerability to drought, etc.; as well as exacerbate any existing tendencies towards localised overgrazing. The environmental benefits of land registration should, however, be verified for their existence rather than assumed (Pagiola, 1997), especially in the case of north-east Ghana where the livestock population is high.

From the foregoing discussion on the security of land tenure in both statutory and customary land tenure systems in Africa, the following conclusions can be drawn. First, the presumption that customary land tenure systems lack security of tenure is questionable. Nonetheless, it is important to acknowledge that where insecurity of customary tenure exists in an agrarian economy, as in the case of strangers in north-east Ghana, it can be a major factor in poor agricultural production and environmental management. Second, it should not be assumed that statutory land tenure offers land tenure security for enhanced agricultural production and environmental sustainability. Both views are subject to the lack of empirical evidence.

Materials and methods

This paper is based on qualitative and quantitative data collected in some selected rural, peri-urban and urban communities in the Bongo and Bolgatanga districts of the Upper East Region of Ghana to study land tenure and sustainable livelihoods from June to September 2003 and April to July 2004 for a Ph.D. at the University of Greenwich, UK.

Qualitative data were collected from 35 communities in the districts of Bolgatanga and Bongo in north-east Ghana. In the process, a variety of techniques including snowballing, individual and group interviews and focus group discussions were applied to collect data from a sample size of 70 stakeholders. Based on an initial analysis of transcribed qualitative data, an appropriate questionnaire was designed for further quantitative data from a sample size of 419 stakeholders in 10 communities of whom 254 (61%) were engaged in farming as a major occupation. Following the snowball sampling approach, the qualitative sample comprised 19% women and 81% men. However, in the quantitative sample, the proportion of females (46%) was similar to that of males (56%) to reflect the important roles women play in land use and management and ensure that the samples were representative of the population studied. It was also considered important to ask women directly about what their perceptions and attitudes to land tenure issues are in the study area and if, how and why they felt disadvantaged in the land resource use and management process (Bruce, 1998; Bruce and Migot-Adholla, 1994; Yngstrom, 2002). In each district the males and females were proportionally sampled to achieve an even

distribution. A group of 86 (21%) strangers (i.e. non-community members) of the total sample size were also interviewed, because strangers are also perceived as a marginalised group in terms of tenure security. However, because of the distribution of strangers more 76 (88%) tended to be in the largely urban district of Bolgatanga than in the largely rural district of Bongo 10 (12%). Thus, data collected was from cross-sections of rural, urban and peri-urban communities in the largely urban Bolgatanga and largely rural Bongo districts and analysed with the help of the Statistical Package for Social Sciences (SPSS) for the presentation of results.

Results and discussion

Stakeholders' views on the effectiveness of customary and statutory land management

Land tenure practices in the study communities ranged from customary dominated to statutory dominated from the more rural to the more urban areas, respectively. The sale and rental of land in north-east Ghana were hitherto considered sacrilegious to undertake (Agbosu, 1980). But this belief was no longer strictly adhered to in all the communities. In this regard, it was found necessary to ascertain the views of stakeholders on the effectiveness of both customary and statutory land tenure in the management of land in their communities. The results of this investigation showed variations in stakeholder groups' perceptions as shown in Table 1.

The results in Table 1 show that most community members 83% considered customary land management as very effective or effective, whilst only 42% of strangers had these positive views of customary land management. The results were reversed for statutory land management. It was also revealed that 101 (30%) of community members were uncertain of the level of effectiveness of statutory land tenure in land management, whilst only 31 (9%) were uncertain of the effectiveness of customary land management. Therefore, there were fewer community members who were uncertain of the effectiveness of customary land management than statutory land management in their communities.

These differences in the results suggested significant differences between community members and strangers in

their perceptions of the effectiveness of customary and statutory land management. χ^2 tests showed a significant positive difference (99% confidence) between community members' views of the relative effectiveness of customary and statutory land management (χ^2 value 72.482). However, a significant negative difference (99% confidence) was shown between strangers' views on the relative effectiveness of customary and statutory land management (χ^2 value 28.630).

Stakeholders' perceptions of security of tenure under customary and statutory land tenure

The suitability of the term "ownership" as applied in the western sense to land, for African land ownership has been questioned due to the multiple ownerships to land that can arise in the African context (Okoth-Ogendo, 1998). Therefore, security of tenure often defined as the probability of loss of ownership of land (see Bruce, 1988, 1993; Sjaastad and Bromley, 1997) and measured on that basis was found to be unsuitable for application in this investigation. Instead, Roth and Haase's (1998) definition of security of tenure as an individual's view of their freedom from the imposition or interference from outside sources of their use rights to a piece of land on a continual basis was adopted.

The conventional approach to measuring security of tenure is based on the level of investments in the land (Roth and Haase, 1998). However, this approach was also not adopted in this investigation following the argument by Gavian (1993) that where there are no profitable investments in land an association between security of tenure and the level of investments is not likely to arise. The rationale for this approach was based on the evidence that north-east Ghana is the poorest region in Ghana and the worst in terms of environmental degradation (Government of Ghana, 1996, 2002a, b). Therefore the assumption that land investments may not be profitable enough to be an indicator of security of tenure was made. This assumption gains support from Pagiola's (1999) argument that it does not even necessarily follow that reduced insecurity would result in higher investments in land. A typical view of community members' security of tenure was

Once you have customarily acquired land for farming and do not do anything to constitute an adverse claim to

Table 1
Stakeholders' views on the effectiveness of customary and statutory land management in the quantitative sample in answer to the questions: how effective is (a) customary land management and (b) statutory land management in your community?

Customary land management	Community members	Strangers	Males	Females
Very effective or effective (%)	83	42	75	74
Very ineffective or ineffective (%)	7	37	14	13
<i>Statutory land management</i>				
Very effective or effective (%)	60	88	67	64
Very ineffective or ineffective (%)	9	1	7	9
Total (n)	332	85	226	191

the land owner’ title, you and your descendants can continue to cultivate the land (*Edmund Achie; qualitative interview*).

The above observation supports the view that continued access to and use of the land for farming was important to most community members’ perceptions of their security of tenure, which conforms to the definition of Roth and Haase (1998) of security of tenure.

Gender and stakeholders’ perceptions of security of tenure

It was important to examine security of tenure from the perspective of stakeholders’ own definitions of their security of tenure following Roth and Haase (1998). The results on stakeholders’ perceptions of their security of tenure based on gender are shown in Table 2.

The results in Table 2 show 95% of male and 96% of female stakeholders defined their security of tenure as the ability to continually cultivate the land without outside interference. Therefore, irrespective of gender security of tenure was largely perceived as the ability to continually cultivate the land as a means of providing a livelihood and not the reaping of benefits from the land of capital invested or in transference to others. Most stakeholders’ view of security of tenure was therefore in line with the definition of security of tenure as given by Roth and Haase (1998) above.

As to whether customary land tenure or statutory land tenure offered the better security for stakeholders, however, more males 150 (66%) than females 107 (55%) were of the view that customary tenure had better security than statutory tenure for agricultural production. Similarly, more males 117 (52%) than females 89 (46%) indicated that customary tenure offered better security of tenure for environmental management than statutory tenure. The

results indicate that 14% fewer male and 9% fewer female proportions viewed customary land tenure to have better security of tenure for environmental management. These differences in gender perceptions of security in customary and statutory land tenure showed a significant positive difference (99% confidence) between gender and the perceptions of security of customary tenure for agricultural production (χ^2 value 16.385). Also, a significant positive difference (99% confidence) was shown between gender and the perceptions of security in statutory tenure for environmental management (χ^2 value 12.637).

Though similar proportions of male (95%) and female (96%) defined their perception of security of tenure as the ability to continually cultivate the land without outside interference, more males (66%) than females (55%) perceived customary land tenure to offer better security for agricultural production and environmental management, respectively. The difference in perceptions of security in customary land tenure between males and females could be linked to the religious beliefs and practices between males and females in the community. For example, the Chief of Gambongo underscored the general male preference for customary land tenure as follows

Customary land tenure facilitates agriculture because the land is easy to obtain, there are no restrictions that will negatively affect the farmers’ activities and the Tendana (land priest) sacrifices to the gods for good rains, harvests, health and procreation for everyone in the community (*Naba Amoaa; qualitative interview*).

The gender difference in perceptions of security of customary land tenure could be due to the marginalised and vulnerable nature of women’s land rights in comparison to their male counterparts in the community. Alternatively, the result that fewer women perceived of lower security in customary land tenure for agricultural production and environmental management could be explained by the eco-feminist argument that women are better environmental managers than men (see Govers, 1997; Leonard and Toulmin, 2000). Thus, if the alternative explanation is correct then one implication of the high perception amongst males (69%) and females (59%) that women can own land in north-east Ghana may lead to improved women’s land ownership position and in turn enhanced environmental sustainability.

Community membership status and perceptions of security of tenure

Table 3 shows the results in respect of community membership status of stakeholders and their perceptions of security of tenure.

It can be seen in Table 3 that perceptions of security of tenure based on community membership status showed that 329 (99%) and 70 (81%) of community members and strangers, respectively, regarded security of tenure as the ability to continually cultivate the land without outside

Table 2
Gender and stakeholders’ perceptions of their security of tenure in the quantitative sample in answer to the question: what do you perceive land tenure security to be?

Perceptions of security of tenure	Male (n = 226) Yes (%)	Female (n = 193) Yes (%)
Is land tenure security ability to continually cultivate the land without outside interference?	95	96
Is land tenure security ability to reap benefits of capital or labour invested in the land?	27	31
Is land tenure security ability to benefit from the land in transference to others temporarily?	14	15
Is land tenure security ability to benefit from the land in transference to others permanently?	26	20

Table 3
Community membership status and stakeholders' perceptions of security of tenure in the quantitative sample in answer to the question: what do you perceive land tenure security to be?

Perceptions of security of tenure	Community members (n = 333) Yes (%)	Strangers (n = 86) Yes (%)
Is land tenure security ability to continually cultivate the land without outside interference?	99	81
Is land tenure security ability to reap benefits of capital or labour invested in the land?	28	31
Is land tenure security ability to benefit from the land in transference to others temporarily?	15	13
Is land tenure security ability to benefit from the land in transference to others permanently?	18	37

interference. Thus, more community members (99%) than strangers (81%) were of the view that security of tenure was the ability to continually cultivate the land without outside interference and not the reaping of benefits from the land of capital invested or in transference to others.

However, stakeholders' perceptions of security of tenure in customary and statutory tenure in Table 3 show that more community members 230 (69%) than strangers 51 (59%) indicated that customary tenure was more secure for agricultural production. A higher proportion of strangers 60 (70%) also regarded statutory tenure as having better security for environmental management than community members 88 (26%). These results suggested significant differences between community members' perceptions of security of tenure in customary and statutory tenure for agricultural and environmental management.

Statistical tests showed a significant positive difference (99% confidence) between community membership status and the perception of customary land tenure as being of better security than statutory tenure for agricultural production (χ^2 value 66.610). Also, a significant positive difference (99% confidence) was established between community membership and perception of statutory tenure as being more secure than customary tenure for environmental management (χ^2 value 56.271).

These differences in perceptions therefore have both positive and negative implications for the adoption of any form of integration of customary and statutory land tenure in north-east Ghana. Given that strangers hold land rights regarded as secondary to those of community members', which are termed primary land rights, these differences were not unexpected and indicate higher vulnerability of strangers' land rights to loss than community members'. The scarcity of suitable agricultural land in north-east Ghana could be one explanation for this result.

Restrictions on land use under customary land tenure and security of tenure

The generally high perceptions of better security of tenure in customary land tenure than statutory land tenure 55–66% across stakeholder groups for agricultural production was verified by asking stakeholders in the qualitative sample if they placed or faced restrictions on land allocated or accessed for agricultural production in their communities under customary tenure. The results are shown in Table 4.

In Table 4, all the 70 stakeholders in the qualitative sample were of the view that no restrictions were imposed or faced in respect of the choice of crops to be cultivated, sale of farm produce and the prevention of animals from destroying crops on the farms. With reference to strangers, however, the typical view was that "a stranger has big eyes but they cannot see" (*Asibi Akaribo, a female farmer in Gambongo; qualitative interview*) i.e. a stranger was not likely to know the suitability of land allocated to him for various crops, and therefore advice from the land owner as to the most suitable crops to cultivate on the land could be sought. Such advice was however not binding on the stranger.

However, as to whether the individual could recultivate their land after leaving it to fallow for a season or more, the results in Table 4 show that Tendanas (land priests) were observed to be more unwilling to place restrictions on the land user than the other stakeholders. A male farmer in Beonkuti gave a typical illustration of the Tendana's granting of land to both community members and strangers as:

Customary land tenure is people-centred. The Tendana knows that the ancestors require him to give land to people for their sustenance at no monetary cost or other barriers so long as the land users do not degrade the land (*Francis Awunkwa; qualitative interview*).

Only one out of the 15 Tendanas was of the view that the land user would require his express permission as a condition before the recultivation of the land. More Chiefs 13 (76%) and Kouadanas (farmland owners) 28 (88%) were however of the opinion that their express permission was necessary before the recultivation of the land after a land user had left it for a fallow period of a season or more. Such permission however was normally granted as a typical view by the Tendana of Feo illustrated: "it is only a matter of courtesy on the part of the farmer to request the permission of the land owner to recultivate the land" (*Akoliga Binaba; qualitative interview*).

In the exercise of use rights that related to monetary benefits from the land *per se* by the individual (e.g. renting of the land) or had adverse effects on the land owner's reversionary interest in the land (e.g. gifting, bequest, sale or building on the land) the land user, especially strangers was generally met with restrictions from the land owner. Thus, in the sale of the land for example, all the

Table 4

Restrictions imposed on use rights to land acquired under customary land tenure for agricultural production in the qualitative sample in answer to the question: do you impose or face restrictions on land allocated or accessed under customary land tenure for agricultural production?

Restrictions on right to:	Chiefs (<i>n</i> = 17)	Tendanas (<i>n</i> = 15)	Farmers (<i>n</i> = 32)	Government officials (<i>n</i> = 6)
	Yes	Yes	Yes	Yes
Choose crops to cultivate	0	0	0	0
Recultivate the land	13	1	28	6
Improve condition of the land	0	0	1	0
Sale of the farm produce	0	0	0	0
Prevent animals from destroying the crops	0	0	0	0
Gifting of the land	15	14	31	6
Renting the land	15	14	31	6
Bequest of the land	15	13	20	5
Lending the land	15	14	32	6
Selling the land	17	15	32	6
Building on the land	14	13	32	6

stakeholders indicated that customary restrictions were available to prevent that from happening. A typical response to whether land acquired under customary tenure, could later on be sold by the acquirer was given by a female farmer of Nyariga as

How can you sell something you do not own? It will imply adverse claim to the ownership of the land and the land user will be evicted by the land owner (*Mary Ayembilla; qualitative interview*).

The above observation highlights the view that stakeholders clearly distinguish between use rights to land granted to others to pursue their livelihood options and the exercise of the right to sell land. Therefore use rights to land may be secure for the purpose for which they are granted and conversely.

Land boundary disputes and security of customary tenure

In Ghana, land disputes have widely been associated with insecurity in customary land tenure on account of the lack of permanent boundary indicators under the customary land tenure system (Ferguson, 1958; La Anyane, 1962; Government of Ghana, 1999a). In the study area, in a sample of 389 stakeholders 388 (99%) were of the opinions that land disputes negatively impact on security of tenure and that this in turn affected agricultural production negatively. The remaining stakeholder considered the effect of land disputes on tenure security and agricultural production to be neutral. Thus, no stakeholder considered land disputes to either have a positive effect on security of tenure or agricultural production. The nature of boundary indicators for farmland, building land and grazing land are shown in Table 5.

In Table 5, it can be deduced that social/customary recognition, the basic realisation through overt acts of use and/or oral accounts that an individual or his family is the owner of a particular parcel of land was the most common means of boundary identification. Of the stakeholders who responded, 381 (93%) of the farmland sample; 289 (87%)

Table 5

Nature of land boundary indicators in the quantitative sample in answer to the question: how do you identify your farm, building and grazing land boundaries?

Nature of boundary indicator	Farmland	Building land	Grazing land
	Yes	Yes	Yes
Social/customary recognition (%)	93	87	93
Streams/rivers/ponds (%)	10	21	40
Footpaths/hills/mountains (%)	55	33	56
Trees/shrubs (%)	70	30	50
Survey maps (%)	3	6	3
Other (%)	0	1	2
Total (<i>n</i>)	410	332	400

of the building land sample and 372 (93%) of the grazing land sample indicated social/customary recognition as their means of land boundary identification. Next in dominance after social/customary recognition were trees/shrubs and footpaths/hills/mountains where 70% and 55% of stakeholders, respectively used these as boundary indicators of farmland. Also, 56% and 50% of stakeholders, respectively used these as boundary indicators for grazing lands as shown in Table 5. Therefore more non-permanent indicators were used in land boundary demarcations than permanent indicators such as survey maps for which only 1–2% indicated their use in boundary demarcation.

In the sample of farmland boundary identification, 209 (95%) male and 172 (91%) female stakeholders indicated social/customary recognition as a means of farmland boundary identification. Similarly, 168 (76%) males and 119 (62%) females indicated trees/shrubs in farmland boundary identification. Therefore, statistical tests showed no significant differences in the perceptions of males and females of the nature of land boundary demarcations.

In the case of community membership of stakeholders, there were 312 (94%) community members and 69 (87%) strangers who regarded social recognition to be used for farmland boundary demarcation. For the use of trees/shrubs as farmland boundary indicators 243 (73%) community members and 44 (56%) strangers were of the

view that that was the case. Thus, no significant positive differences were shown between community membership status and perceptions of the use of social recognition in farmland boundary identification.

However, whether the above results necessarily led to land disputes at a scale that impacted negatively on stakeholders' tenure security and thus their agricultural production and environmental sustainability practices needed further investigation. When asked if stakeholders had any experiences of disputes involving farmland, building land and grazing land boundaries in the last 10 years, the responses were as indicated in Table 6.

The widespread use of social/customary recognition and other non-permanent boundary indicators as means of boundary identification (see Table 5) may have increased potential for land boundary disputes. Indeed, Nyari (1995) observed that the lack of written records and basic data concerning land transactions and permanent land boundary indicators have led to land disputes in some parts of northern Ghana. Thus, the results in Table 6 indicate that 17–32% of stakeholders had experiences of land disputes in their communities. For an indication of the frequency of these land boundary disputes, however, 68 of these stakeholders estimated the numbers of land boundary disputes they had experienced in the last 10 years. Of these stakeholders, 58 (85%) indicated 1–5 boundary disputes in the case of farmland; 10 (15%) showed 6–10 boundary disputes for building land, while no stakeholder provided an estimate of the number of boundary disputes for grazing land. These results suggest that land boundary disputes under customary land tenure could be a potential problem in the study area in the future due to the increasing population and the resultant scarcity of land for the provision of livelihoods.

However, responses from a sample of 151 stakeholders indicated that 139 (92%) were satisfied with the customary means of the resolution of land boundary disputes, 8 (5%) were dissatisfied and 4 (3%) could not decide if they were satisfied or not with the customary means of settlement of land boundary disputes. Therefore, most stakeholders may be satisfied with the customary land tenure mechanisms of land dispute settlement, i.e. Tendanas and/or Chiefs/elders hearing land dispute cases and offering judgments.

Table 6

Experiences of boundary disputes over farm, building and grazing land in the quantitative sample in answer to the questions: within the last 10 years, has your community experienced any farmland, building land or grazing land boundary disputes?

Responses	Farmland		Building land		Grazing land	
	Frequency	%	Frequency	%	Frequency	%
Yes	133	32	87	21	70	17
No	170	41	214	51	225	54
Do not know	115	27	117	28	123	29
Total	418	100	418	100	418	100

Thus, the generally low level of existence of land disputes in the communities as indicated by stakeholders was surprisingly low. The result contrasts with the situation in southern Ghana where land disputes are significantly higher in frequency and argued to be a constraint on the capacity of the judicial system (Kasanga, 2001). The use of customary mechanisms to settle land disputes in north-east Ghana could be responsible for the low level of land disputes. This explanation is supported by the result that 92% of stakeholders felt satisfied with the customary means of land dispute resolution applied by Tendanas, Chiefs and Clan/family heads. However, it could also be argued that more urbanised nature of southern Ghana provides higher scarcity value for land, which stakeholders feel the use of the formal courts as a more secure method of protecting their land rights.

From the forgoing discussion it is clear that land tenure could be only one factor in agricultural production and environmental degradation in the study area. Other factors including the availability of agricultural inputs e.g. seeds and farm labour to the farmer, market opportunities, credit facilities, soil and weather conditions and demographic factors all have varying degrees of influence on agricultural production and environmental management (Abudulai, 1986; Kasanga, 1988; Barrows and Roth, 1989). In this regard, this investigation made an assessment of agricultural production and environmental degradation in north-east Ghana based on stakeholders' perceptions of the past, current and future trends in these conditions, the possible causes and solutions to these problems from the viewpoints of stakeholders.

Trends in, possible causes of, and solutions to the poor agricultural production

There were differences in stakeholders' perceptions of agricultural production as the results in Table 7 indicate.

In Table 7, of the sample of 419 stakeholders similar proportions of males and females and community members and strangers perceived agricultural production to have decreased or decreased a lot. Overall, 397 (95%) of these stakeholders, perceived agricultural production to have decreased or decreased a lot. In terms of the level of education of these stakeholders 229 (55%) were educated and 190 (45%) were illiterate. Only 10 (2%) of stakeholders regarded improvements in agricultural production trends.

The Wudana, an elder of the Tongo Chief gave a typical view of stakeholders' perceptions of agricultural production trends as

Our grandfathers used to cultivate small farmlands and got good yields. Today, larger farmlands if cultivated are met with poor yields (*Wudana of Tongo; qualitative interview*).

The possible causes of declining agricultural production could be linked to the agricultural problems that farmers

Table 7

Trends in stakeholders' perceptions of agricultural production in the quantitative sample in answer to the question: how do you see agricultural production in your community in the last 10 years?

Agricultural production trends	Number	Male (%)	Female (%)	Community member (%)	Stranger (%)
Increased or increased a lot	10	60	40	60	40
Decreased or decreased a lot	397	53	47	55	45
Same or do not know	12	67	33	58	42
Total	419	226	193	333	86

Table 8

Agricultural problems identified by stakeholders in the qualitative sample in answer to the question: what are the most serious agricultural problems of farmers in your community?

Agricultural problem	Percent
Inadequate finance	77
Poor soil fertility	66
Poor rainfall	53
Inadequate farmland	29
Pests and diseases	24
Lack of labour	23
Lack of market	20
Poor transportation facilities	6
Insecurity of customary tenure	3
Poor agricultural extension services	1
Others	1

$n = 70$ stakeholders.

faced. These problems as identified by stakeholders in the qualitative sample are depicted in Table 8.

The most commonly identified agricultural problems were lack of finance (77%), poor soil fertility (66%) and poor rainfall (53%). A female farmer of Yikene described the characteristic views of some farmers of these problems as

The most serious problem is the lack of farm finance; the bad rains and poor soil fertility due to continuous cropping on the same land are equally important problems facing farmers (*Abaa Anabila; qualitative interview*).

Other problems identified were inadequate farmland (29%), pests and diseases (24%), lack of labour (23%), and lack of market for farm produce (20%) of stakeholders. Farmers highlighted these problems, for example, "lack of farmland is the most serious agricultural problem as some individuals in large families cannot have a piece of land for farming" (*Gibson Agana of Gowrie; qualitative interview*) and "livestock diseases are a very serious problem" (*Robert Akolgu, a farmer of Naylorigo; qualitative interview*).

The poor agricultural production in Ghana has been largely blamed on the absence of security of tenure under customary land tenure (La Anyane, 1962, Government of Ghana, 1999a). However, the key results did not indicate security of tenure to be a major constraint to agricultural production in north-east Ghana. Only 1–3% of stakeholders in both the quantitative and qualitative samples

indicated insecurity of customary land tenure as a serious agricultural problem. To the contrary, the majority of stakeholders had positive views of customary land tenure for agricultural production. For example, a female farmer of Zuarungu gave a typical statement in support of the positive influence of customary land tenure on agricultural production as

Without customary land tenure, which makes land freely available to people for farming, agriculture would have been the preserve of the rich few; and how could the majority poor have survived? So, customary land tenure positively influences agricultural production (*Asibi Azumah; qualitative interview*).

Yet, agricultural production was regarded by most stakeholders (95%) to have decreased or decreased a lot in the last 10 years. Therefore, based on these results the main perceived reason for the poor agricultural production is not insecurity of customary land tenure. Other than insecurity of customary land tenure, most stakeholders identified their most serious agricultural problems to be the lack of finance, poor soil fertility, poor rainfall, pests and diseases and inadequate farmland. These results are similar to the findings of Kasanga (2001) and Kasanga and Kotey (2001) in respect of constraints to agricultural production in Ghana generally. However, most stakeholders generally felt powerless in finding solutions to these agricultural problems and looked to government for solutions. This situation could be explained by a number of reasons including the high level of illiteracy in the communities and possible over-reliance on government for solutions to stakeholders' agricultural and environmental problems. Insecurity of customary land tenure appeared as a serious agricultural problem to only 3% of stakeholders. Therefore the lack of finance and environmental conditions were more important factors in agricultural production to most stakeholders than tenure security. In further investigations in the quantitative sample, stakeholders also identified the agricultural problems in their communities as shown in Table 9.

However, stakeholders were generally less confident in identifying their own solutions to these agricultural problems. The following are typical responses of stakeholders to the question of how the agricultural problems they identified could be solved: "[y]ou are literate and so closer to government, so we have to ask you the question of

Table 9
Agricultural problems identified in the quantitative sample in answer to the question: what are the most serious agricultural problems of farmers in your community?

Agricultural problem	Number	Percent
Lack of finance	409	98
Poor soil fertility	396	95
Poor rainfall	351	84
Pests and diseases	237	57
Inadequate farmland	174	42
Lack of labour	32	8
Lack of market	5	1
Insecurity of customary tenure	5	1
Others	6	1

how these agricultural problems can be solved” (*Mary Ayembilla, a female illiterate farmer of Nyariga; qualitative interview*). A male illiterate farmer of Kongo also said: “[w]ell, we just suffer and sometimes are able to sell a goat or sheep and manage to cultivate a small farm for subsistence” (*Agana Azure; qualitative interview*). Solutions to agricultural problems were largely regarded to be beyond the power of stakeholders themselves but within the power of government. Thus, 96% and 81% of stakeholders in the quantitative sample indicated government financial assistance to farmers and provision of irrigation dams as the ways forward in solving agricultural problems in their communities.

Trends in, possible causes of, and solutions to environmental degradation problems

Environmental degradation was generally perceived amongst stakeholders to be worsening. The Chief of Tongo gave a typical description of the environmental trends in the study area as

The vegetative cover used to be dense and full of diverse species. No chemical fertilisers were needed in farming. Rivers used to overflow their banks. Crocodiles used to inhabit these rivers that we could call out and sit on their backs. Today, the opposite is true (*Tongorana; qualitative interview*).

Results on stakeholders’ perceptions of environmental conditions are shown in Table 10.

Table 10 shows that only 1–6% of stakeholders regarded improvement in environmental conditions, while 85–97% was of the opposite view. A male farmer of Beonkuti gave a typical view of the future of the environment as that “environmental degradation is going to worsen in the future because the environmental education given is not being understood” (*Francis Awunkua; qualitative interview*). In relative terms, however, more stakeholders (28%) perceived animal resource degradation to have worsened a lot than plant, soil and water resource degradation (10–17%). These results suggested particular concern for livestock but overall an association between declining

agricultural production and worsening environmental conditions. Thus, statistical tests showed a significant negative difference (99% confidence) between stakeholders’ perceptions of worsening overall environmental conditions and declining agricultural production (χ^2 value 54.339).

In the qualitative interviews, stakeholders identified specific environmental degradation problems as shown in Table 11.

In Table 11, poor rainfall and loss of vegetative cover emerged as the common environmental problems that 77% and 76% of stakeholders, respectively identified. In contrast to 78% of stakeholders in the quantitative sample who regarded soil resource degradation to be worsening, soil erosion as evidence of soil resource degradation was identified by only 1% of stakeholders in the qualitative sample. Overgrazing, bush burning and environmental diseases were identified as environmental problems by only 1–7% of stakeholders.

In the views of most stakeholders various reasons including spiritual and human actions were responsible for the state of environmental degradation in their communities. A typical example of these views as given by stakeholders was

Tree planting is not taken seriously because there is a belief that God and not man plants trees. If a man plants a tree and it survives, then he dies (*David Dubtong, Chief of Kongo, qualitative interview*).

The above observation is corroborated by responses frequently given by stakeholders as “are we God to know the causes of environmental changes” and “if there will be any positive changes to the current environmental conditions in the future, it is only God and not man who can cause such changes” (*A. Dugurog, a farmer of Kongo; qualitative interview*). These views of stakeholders on the possible causes of environmental degradation are indicative of their lack of the knowledge to diagnose the anthropogenic causes of environmental degradation and perceived lack of power to control environmental degradation problems in their communities. However, it was also observed that, “agricultural officers (visit some communities to teach them) how to plant more trees and protect the environment” (*Peter Alekeya, a farmer of Ayarigabisi; qualitative interview*) but only 5–10% of the communities in north-east Ghana were covered by these measures of environmental education (Bongo District Agricultural officer, pers. commun.). These measures of environmental management were often the collaborative efforts of the government (Ministry of Agriculture) and NGOs (e.g. TRAX), which operate in the Upper East Region. Perhaps influenced by these environmental management measures, the Chief of Yorogo who was educated, had this to say about the causes of environmental degradation:

It is the modern methods of farming introduced without proper education, e.g. the ploughing of the land with bullocks along the slope rather than across the slope.

Table 10

Stakeholders' perceptions of environmental conditions in the last 10 years in the quantitative sample in answer to the question: Have environmental conditions in your community improved or worsened in the last 10 years?

Environmental condition	Improved a lot (%)	Improved (%)	Same (%)	Worsened (%)	Worsened a lot (%)
Soil resource degradation	0	1	2	80	17
Water resource degradation	0	3	4	78	15
Plant resource degradation	0	6	9	75	10
Animal resource degradation	0	2	1	69	28
Overall environmental conditions	0	2	1	81	16

Table 11

Environmental problems identified by stakeholders in the qualitative sample in answer to the question: what are the environmental problems in your community?

Environmental problem	Percent
Low and erratic rainfall	77
Reduced vegetation	76
Drying up of rivers	21
Encroachment on river valleys	19
Loss of wild life	7
Bush burning	7
Overgrazing	4
Mining	4
Stone quarrying/sand winning	3
Environmental disease	1
Soil erosion	1

$n = 70$.

Also, population increase, tree cutting and bush burning have all been going on in an uncontrollable manner (Johnson Awuni; qualitative interview).

Thus, the farming practices used have negative implications for the environment in the views of some stakeholders.

Contribution of farming practices to environmental degradation

In the quantitative sample stakeholders' opinions on the attitude statement that existing agricultural practices lead to environmental degradation in their communities were sought. The results are displayed in Table 12.

The results in Table 12 indicate a generally high perception amongst stakeholders (57–77%) that existing agricultural practices lead to environmental degradation. Of these stakeholders, 153 (60%) were in the more urban areas, while 103 (40%) were in the more rural areas.

Statistical tests showed a significant positive difference (99% confidence) between community membership status and stakeholders' perception of existing agricultural practices as leading to environmental degradation (χ^2 value 13.904). A significant negative difference (99% confidence) was also shown between rural and urban communities and stakeholders' perceptions of existing farming practices leading to environmental degradation (χ^2 value 86.689).

However, a significant positive difference (99% confidence) was found between education and stakeholders' perception that existing agricultural practices lead to environmental degradation (χ^2 value 35.994). Yet, bush and crop residue burning were observed to be undertaken by some farmers during the qualitative interviews. Therefore stakeholders were asked in the quantitative sample of how significant they thought was the contribution of farming practices to environmental degradation. The results of this investigation are shown in Table 13.

In Table 13, just over half of male 128 (57%) and female 103 (53%) stakeholders were of the opinion that farming practices had made a significant or very significant contribution to environmental degradation. Of these 128 (55%) were in the more urban areas, whilst 103 (45%) were in the more rural areas. Therefore, fewer of the stakeholders in the more urban areas (60%) who agreed or strongly agreed that farming practices lead to environmental degradation in the analysis of results in Table 12, also felt that the contribution of these farming practices to environmental degradation was significant or very significant (55%). There were slightly more strangers 57 (66%) than community members 174 (52%) who indicated that farming practices contributed significantly to environmental degradation.

More educated stakeholders 76 (41%) than illiterates 46 (20%) indicated that the significance of farming practices in environmental degradation trends in their communities was either negligible or very negligible. There were 61 (15%) of stakeholders who were uncertain of the significance of current farming practices to environmental degradation, of whom 37 (61%) were in the more rural areas and 24 (39%) in the more urban areas. These results suggested associations between stakeholders' rural or urban location, community membership status and education on the one hand, and their perceptions that existing farming practices were detrimental to the environment on the other. Significance tests showed a significant positive difference (99% confidence) between stakeholders' location as rural or urban and their perceptions that existing farming practices negatively affected the environment (χ^2 value 61.410) i.e. more stakeholders in urban than in rural communities were of the view that existing agricultural practices contributed significantly to environmental degradation. Community membership status showed a significant negative difference (95% confidence) between

Table 12
Perceptions of stakeholders on the effects of existing farming practices on the environment in the quantitative sample in answer to the question: do existing agricultural practices lead to environmental degradation?

Stakeholder	Number	Existing agricultural practices lead to environmental degradation	
		Agree/strongly agree (%)	Disagree/strongly disagree (%)
Male	226	59	18
Female	193	63	9
Community member	333	57	16
Stranger	86	77	5
Educated	184	64	9
Illiterate	235	59	17

Table 13
Stakeholders' views of the significance of farming practices in environmental degradation in the quantitative sample in answer to the question: how significant is the contribution of farming practices to environmental degradation in your community?

Stakeholder	Number	Significance current farming practices in environmental degradation	
		Significant/very significant (%)	Negligible/very negligible (%)
Male	226	57	30
Female	193	53	28
Community member	333	52	59
Stranger	86	66	16
Educated	184	54	41
Illiterate	235	56	20

community members and strangers negative views of farming practices effects on the environment (χ^2 value 10.866). Also, a significant negative difference (95% confidence) was shown between stakeholders' education and their perceptions of existing effects of farming practices on the environment as negative (χ^2 value 36.869).

Conclusion and recommendations

Conclusion

In this paper, it has been demonstrated that in theory, a positive correlation may exist between tenure security, enhanced agricultural production and sound environmental management practices. However, though most stakeholders in north-east Ghana perceived their tenure security to be high, poor agricultural production and environmental degradation was evident in the region. The paper therefore concludes that failure of stakeholders' high perceptions of their security of tenure to translate into

enhanced agricultural production and sustainable land use practices implies the existence of other non-tenurial factors with negative consequences for agricultural production and environmental management. These include the lack of a sound agricultural environment characterised by poor access to credit, inadequate and erratic rainfall regime, poor soils, inadequate farmland and the effects of demographic changes on the environment. Until these other factors are also focused on for solutions, current policy focus on enhancing tenure security through various land registration mechanisms as a means towards enhanced agricultural production and environmental sustainability may not achieve the desired results. It is in this regard that this paper puts forward the following recommendations.

Recommendations

Issues relating to agricultural production

For the enhancement of agricultural production three policy recommendations are made.

Firstly, in view of the inadequate and unreliable nature of the rainfall pattern in the study area, serious attention has to be paid to the development of irrigation farming facilities. The current sizes of the only existing irrigation schemes: Tono and Veve irrigation schemes are inadequate for dry season farming to be undertaken by most farmers. This has led to high rents for irrigated land. Therefore, more irrigation dams and dug-outs are needed to facilitate all year round agricultural activities. Though government has recognised this need and pledged the development of 36 more dams in the whole of northern Ghana, including north-east Ghana (GNA, 2005), commencement of the dams construction rather than rhetoric is what is urgently required.

Secondly, access to credit and other agricultural inputs such as seeds and fertilisers by farmers is important for enhanced agricultural production. In this regard, the extension of farm credit to poor farmers and the reinstatement of agricultural subsidies by government are recommended to facilitate farmers' access to credit and farm inputs. While funds generated by government from international development partners through the declaration of Ghana as a Highly Indebted Poor Country (HIPC) are being used for micro-credit financing schemes to offer credit to farmers, these schemes are limited in the whole of northern Ghana (Agbagali, 2002; Yahaya, 2005). Yet these funds could be extended to provide subsidies for agricultural inputs as well. Following studies in Mali, Benin, Zambia and Tanzania, which revealed that land degradation was due to inadequate chemical inputs (Budelman and van der Pol, 1992), it is possible that the use of chemical fertilisers in the poor soils in north-east Ghana would not be against the principles of sustainable agriculture. Nevertheless, traditional sustainable agricultural practices, including improved use of crop rotations, use of manures and crop residues as fertilisers and increased diversity of crop and animal species are recommended in field extension

services of government and non-governmental organisations to farmers (Government of Ghana, 2002c). But if population continues to increase these traditional practices may not be able to provide the food needs of people as is the case in north-east Ghana. The existing best farmer awards scheme instituted by government is laudable but not until the agricultural environment is made conducive for production best farmers may only be rewarded at their marginal productive capacities.

Thirdly, the current curricula for agricultural education are in need of review. The existing curricula for teaching agriculture in secondary schools, colleges and universities are not practice oriented (Government of Ghana, 1999b, 2002c). Therefore, agricultural students complete their education without a sense of agriculture as a business practice that they can engage in and make profits. Not surprisingly, farming is generally perceived as the occupation of the poor and the illiterate, who lack the requisite skills in transforming farming beyond subsistence level agriculture; while the trained agriculturalists divert to other occupations or remain unemployed. Thus the review of the agricultural educational curricula to make agriculture practice oriented and attractive as a business could convince many of the professional agriculturalists and the youth to take up farming as a source of livelihood and increase agricultural production in north-east Ghana in particular and Ghana in general.

Issues relating to environmental sustainability

The key issues identified in this investigation regarding environmental sustainability are the lack of environmental awareness in relation to the anthropogenic causes of environmental degradation and inadequate measures aimed at addressing soil and water conservation problems. The former requires enhanced local government i.e. district assemblies' bottom-up approach to sensitise stakeholders on the anthropogenic causes of environmental degradation and how these could be solved. As in the case of stakeholder education on land registration, the education on the causes of and solutions to environmental problems could be through radio and television programmes in local languages to reach all categories of stakeholders in their local dialects to facilitate their understanding of environmental issues. The Environmental Protection Agency (EPA) has a lead role to play in the environmental education of stakeholders. These education programmes may be able to change the traditional perception that environmental degradation is caused by God. The establishment of environmental clubs in educational institutions could help raise the level of environmental awareness amongst the youth who could disseminate environmental knowledge in their various communities. Demonstration measures of sustainable land and environmental management practices by government and non-governmental organisations promoting these practices could be set up for practical demonstrations to farmers on tree planting, soil erosion control, water conservation techniques and

anti-bush fire campaigns in their farming practices. For example, the bush-burning permit system applied in Guatemala (Goldammer, 2001) could be adopted in the case of north-east Ghana. These burning permits are given to communities with times specified for controlled bush burning monitored by local groups of fire management committees to reduce the risk of wild fires (Goldammer, 2001). These activities need to be undertaken in the context of the implementation Agenda 21, and supported financially by the international organisations promoting the concept of sustainable development. To encourage stakeholders' participation in these practices community-based natural resource management (CBNRM) should be learnt from best practice areas such as Tanzania and the Gambia in the districts and environmental awards could be instituted for districts to compete for annually.

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