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## **Land Use Systems and Food Security in Forest Areas of Ghana: Conflicts, Controversies and Resolution**

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### **Introduction**

Ghana is a developing country located in the coast of West Africa. It occupies a 227,540.0 square kilometre land of which 69 percent is demarcated for agriculture. One of the key uses of arable land in the forest belt is cocoa farming. The farms are established initially with food crops such as maize, cassava, yam, cocoyam, plantain and cassava, which contribute to both household and national food security. An alternative land use system in the forest belt is gold mining. Both large scale and small scale mining exist as sources of work. The large scale mining is deep shaft or surface mining but the small scale is only surface mining. Many small scale mining are carried out illegally (World Bank Group, 2001). Recent practices of small scale gold miners who are leasing fields earmarked for new cocoa plantations and destroying already established farms to mine gold has led to conflict among land owners, tenant farmers and miners. The fact is that some young farmers are abandoning cocoa farming to join the mining business which they perceive as more lucrative. Other young farmers are complaining about the sharecropping system operated among cocoa farmers. The result is poor farm management and low yields of both cocoa

and food crops leading to high food prices and eventually low access to adequate and nutritious food (Boateng et al, 2014). This makes the issue of pitching small scale mining against farming a controversial one. The major objective of this paper is to describe the efforts that are being made by a network of agricultural value chain actors, municipal assembly and government and non-governmental agencies to resolve the issues through consultative and participatory approaches.

## **Material and Methods**

Every land use decision involves trade-offs, often in conflicting interest and substantial conflicts about the desired use among stakeholders (Rodriquez & Bear, 2006). Economic land use theory suggests that markets resolve such conflicts via differences in land rents that will lead to most profitable land use allocation (Walker, 2004). Surface mining is profitable as it is noted that majority of foreign revenues of the developing world is mining related (Aryee, 2001). The problem is that surface mining activities (particularly that operated illegally) have a widespread and drastic environmental and social effects on local livelihoods (Kumah, 2006). Hence, multi-stakeholder planning and monitoring of land use systems is needed to keep the balance.

A mixed method approach of data collection was employed in this study. First, was a familiarization visit to observe cocoa farms and record fields destroyed by miners. Second, was a survey including 483 farmers and small scale miners in three regions (Western, Eastern and Ashanti) of Ghana. The respondents were dominated by permanent residents, males, young miners (below 40 years), old farmers and the married. About 70 percent of the respondents had received more than six years of formal education. Third, was interviewing of key informants, senior officers representing 30 relevant governmental and non-governmental agencies, to seek their opinions concerning the sources of conflict, controversies in tenure arrangements and factors of success for land use planning that supports and enhances food security.

The method of analyses was two-fold: descriptive statistics and regression model. In identifying the sources of conflict, the following were measured: time young farmers spend on mining fields, health status of farm families and perceived level of deterioration and career vision of children in cocoa growing areas. In identifying controversies in land tenure, the following were determined: mode of land acquisition and role of public and private agencies in land management. An ordinary least squares (OLS) model was employed to estimate the extent to which mining affect land area for food production. The double log form of the model was specified. Hence,

$Natural\ Resource\ (NR) = \beta_0 + \beta_1 (Number\ of\ Illegal\ Mining\ (NIM)) + \beta_2 (Scale\ of\ operations\ (SOP)) + \beta_3 (Years\ of\ operations\ (NYIM)) + \mu_i$

The proxy for natural resource was land size under cultivation (the dependent variable) and the independent variables were: number of illegal miners, scale of operation and number of years of mining. The variable of interest was scale of operation. It was hypothesized that there will be a negative relationship between scale of operation and land under crop cultivation. In describing the efforts that are being made by stakeholders to resolve the conflict between miners and farmers, the following were identified: existence of land use planning at the national and local level, type of stakeholders and approaches used in message delivery to ensure welfare of people.

## **Results and Discussion**

### ***Conflict***

The results of the study showed that the sources of conflict bothered on time allocation for farming, health and child ambition. Young farmers used more than 50 percent of their time on mining fields. The health of citizens in the farming areas had deteriorated; many farmers complained of diseases related to skin condition, diarrhoea and typhoid; it was estimated that farmers' health had deteriorated by 20 percent compared to the previous decade and this has affected human resource quality. Many children do not aspire for higher education; school drop-out rate is high and performance at school is poor since they spent off-class hours on mining fields and not studying. It was estimated that about 25 percent of children of school going age are for future career, opting for mining instead of businesses related to farming.

### ***Controversy***

The land tenure system is the key source of controversy; while most land is owned by private people (individuals, families and traditional stools), all the precious stones in the land is owned by the State. Although there are State agencies to police use of private land for mining, the practice of individuals, illegally offering farmland for gold mining persist because of weak monitoring system. It was estimated that a one percent increase in scale of operations of miners decreased agricultural land size by 0.95 percent. The yield of many of the crops that cocoa farmers grow have reduced substantially; this study estimated a range of 24% (cassava) to 67% (rice) and a mean of 45 percent. Farmers complained about loss of soil fertility due to degradation of land surfaces and pollution of water bodies as a result of surface mining.

### ***Resolution***

The solution to the current situation has been discussed by several stakeholders who understand their mandate. The government stakeholders such as Minerals Commission, Environmental

Protection Agency, Lands Commission, Ghana Cocoa Board, Ministry of Food and Agriculture and District Assemblies are formulating and enforcing rules. The private and non-governmental agencies such as the Ghana Chamber of Mines, some large scale mining companies, the traditional councils, and the Ghana National Association of Small Scale Miners are engaged in capacity building and advocacy to ensure compliance of guidelines and creation of alternative livelihoods for the youth and farmers. However, few of the stakeholders indicated that the awareness creation and sensitization programmes they undertake involve several agricultural value chain actors (especially farmers and licensed buying companies), agricultural extension officers, youth groups, school children and women groups. Issues resolved through consultative and participatory approaches have proven more effective despite its cost challenges ([www.community.eldis.org](http://www.community.eldis.org)).

### **Conclusions and Outlook**

Without a community-based land use planning and monitoring system, use of land for illegal mining will take over use of land for cocoa and other crop production. Good quality and nutritious food is being compromised due to high cost of food as a result of low yields. Three policy actions are requested: 1) Government should legislate community-based land use planning committees, 2) Networks of state and non-state support actions should be improved to strengthen monitoring activities and 3) The Networks should ensure participation of households (members of all ages and sex) in awareness creation campaigns and capacity building programmes.

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