

Impact of Mining on Livelihoods of Rural Households. A Case Study of
Farmers in the Wassa Mining Region, Ghana.



By
Emmanuel Adjei

MPhil Thesis in Development Studies (Specializing in Geography)

Submitted to Department of Geography, Norwegian University of Science and
Technology.



May 2007.

ACKNOWLEDGEMENT

To God be the utmost glory for the great thing He has done. In going through a work of this enormous magnitude successfully, invaluable support in various forms has been drawn from some people and institutions. I hereby acknowledge such assistance, which made this one time dream come to reality with this profound tribute.

In the first of all, my heartfelt thanks go to my supervisor, Professor Haakon Lein, for his kind supervision, useful comments, criticisms, encouragement and the firm trust reposed in me, all of which made this thesis come out with the acceptable font. In the second of all, my heart is full of thanks and praise to Ms. Jorunn Reitan, the MPhil in Development Studies program coordinator for the diverse support rendered me right from the start to the successful end of my study. I would also like to thank all the lecturers in the Department of Geography, especially Professor Stig Jørgensen, Prof. Ragnhild Lund for the good teachings I enjoyed all through my studies at NTNU. In equal measure I extend a deep sense of gratitude and special thanks to my lecturers in Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana particularly Professor Daniel Buor, Dr. Peter O. Kyei, Aristotle Nikoi, Alexander Segbefia and Felix Asante, as well as the entire staff of the Geography Dept. for their support and encouragement.

I owe the Administrator of the Wassa West District Assembly, Mr. Sekyi Armah, a debt of gratitude for his kind help during my field studies. In the same vein, I wish to express my sincere gratitude to, Mr. Ernest Amoateng (the Assembly member of Teberebie, Agege, Abompuniso and Adeyie), Mr. K. E. Boahene (the Assembly member of Akyempim) and the chief of Adeyie for their assistance during my field work. Similarly, I wish to acknowledge the co-operation of Mr. Kwamena Sekyi-Yorke and Mr. Eric Afful, the public and community relations officers of AngloGold Ashanti Goldfields Limited and Wexford Goldfields Limited respectively.

My thanks again go to all my MPhil colleagues and all friends especially Ms. Karolina Suracka, Nas, and all whose name could not be mentioned for want of space, for their prayer and moral support. Then to my mum and my lovely siblings I say I love you all.

DECLARATION

I hereby declare that the work in this thesis is the product of my own effort and has not been submitted for any degree or examination elsewhere. Where other author's ideas, concepts and views were used, there have been due acknowledgement by complete references.

Full Name of Student: **Emmanuel Adjei.**

Signature:.....

Date: May 11, 2007.

DEDICATION

I dedicate this work to the late Aba Anyaaba, who passed away on 11 May, 2005.
Forever in loving memory of you good sister.

LIST OF ABBREVIATIONS

AGL- AngloGold Ashanti Goldfields Limited
BOPP – Benso Oil Palm Production
CCC – Community Consultative Committee
CDP – Community Development Program
CLG – Community Liaison Group
CRO – Community Relations Officer
DFID – Department for International Development
ERP – Economic Recovery Program
GAG – Ghana Australian Goldfields Ltd.
GSM – Golden Shamrock Ltd.
IDS – Institute of Development Studies
IFC – International Finance Company
MAG – Monitoring Advisory Group
OICI – Opportunity Industrialization Centers International
SAP – Structural Adjustment Program
SOP – Standard Operating Practice
TAAA – Teberebie, Adeyie, Abompuniso and Agege
WGL – Wexford Goldfields Ltd.

ABSTRACT

Radical reforms and liberalization in the mining sector of the Ghanaian economy stimulated increase in mining sector investment with new multinational mining companies coming on board as well as the rehabilitation of old mines. The cumulative effect was the intensification of mining and the expansion in the operation of mines across the mining zones in the country. Livelihoods of households in the rural communities in the catchments of the mines got threatened by the expansion of concessions to the mining companies. These concessions covered lands on which rural households engage their farming activities for a living. The immediate repercussion has been the taking over of farmlands by the mines, a process, which affects livelihoods in its entirety. This study examines the impact, both positive and negative, that this phenomenon has had on the livelihoods of these rural households. It further sought to identify the ways those farmers, who were negatively affected by the operations of the mines cope. It looks at the context in which these poor rural households pursue their livelihoods, and discusses the factors, which make their livelihoods vulnerable. The forms of capitals, named livelihood assets, available to the rural households are examined from the effects of transforming structures and processes. The livelihood outcomes of the farmers from the strategies and the coping measures are then identified and discussed. The study found out that there are both positive and negative outcomes to the rural households following the operations of mines in the communities. The expansion of mines' concessions, though led to claim of lands from farmers, was accompanied by compensations, which enabled some of the affected farmers obtain alternative lands for farming in addition to creating the opportunity for engaging in other livelihood activities. This sustains livelihoods through more income. On the other hand, the claim of land from the farmers leads to high rent and unfavorable land tenure faced by the farmers as there is shortage of land for farming. The direct consequences of these are the reduction in farming activities and low food production. This in conjunction with chemical pollution of soils, and the accompanying low yields results in high cost of living.

Key Words: Livelihood, Sustainable livelihood, Access, Coping Strategies.

Table of Contents

CHAPTER ONE	1
1.0 Introduction of the Study	1
1.1 Introduction.....	1
1.2 Objectives of the Study.....	2
1.3 Research Questions.....	2
1.4 Justification for and the Significance of the Study	3
1.5 Organization of the Thesis	4
CHAPTER TWO	6
2.0 Theoretical and Analytical Approach.....	6
2.1 Introduction.....	6
2.2 Applied Livelihood Model.....	6
2.3 Defining Key Concepts.....	7
2.3.1 Household	7
2.3.2 Livelihood	7
2.3.3 Coping Strategies.....	9
2.4 The Livelihood Model (Analytical Framework of the Study).....	11
2.5 Explanation of and Justification for the Use of the Framework.....	13
2.6 Model for analyzing Coping Strategies	15
2.6.1 Explanation of the Model.....	15
CHAPTER THREE	17
3.0 Research Design and Methodology	17
3.1 Introduction.....	17
3.2 Selection of the study areas.....	17
3.3 Process for Field Work	19
3.4 In the Field	21
3.5.1 Qualitative Methods.....	22
3.5.2 Interviews	23
3.5.3 Observation and Conversation	25
3.6 Sampling Techniques and Sources of Data	26
3.7 Recording of Data and Techniques/Methods of Data Analysis.....	27
3.8 Limitations to the Study	28
CHAPTER FOUR	30
4.0 Background of Country and the Study Areas	30
4.1 Introduction.....	30
4.2 The Geography of the Study Areas.....	30
4.2.1 Location	30
4.2.2 Climate and Vegetation.....	30
4.2.3 Topography	31
4.2.4 Drainage	31
4.3 Demography.....	32
4.4 Economic Activities.....	32
4.5 Rural Economic Activities and Mining	33

4.5.1 <i>Farming Activities in the Study Areas</i>	33
4.5.2 <i>Rationale for Mining in the Study Areas</i>	34
4.5.3 <i>Operations of GAG and WGL Mines in the Study Areas</i>	36
CHAPTER FIVE	43
5.0 Vulnerability Context and Capitals.....	43
5.1 Introduction.....	43
5.2 Rural Livelihood Activities in Vulnerability Context	43
5.2.1 <i>Situation</i>	43
5.2.2 <i>Seasonality</i>	45
5.2.3 <i>Shocks</i>	46
5.2.4 <i>Stress</i>	48
5.2.5 <i>Trends</i>	49
5.3 Impact on Stock of Capital Assets	49
5.3.1 <i>Physical Capital</i>	52
5.3.2 <i>Human Capital</i>	53
5.3.3 <i>Financial Capital</i>	55
5.3.4 <i>Natural Capital</i>	57
5.3.5 <i>Social Capital</i>	57
CHAPTER SIX	58
6.0 Effects of Transforming Structures and Processes	58
6.1 Introduction.....	58
6.2 Structures	58
6.2.1 <i>Levels of Government (Public Sector Mining Support Organizations)</i>	58
6.2.2 <i>Private Sector</i>	61
6.3 Processes.....	62
6.3.1 <i>Policies and Legislations</i>	63
6.3.2 <i>Institutions</i>	64
6.3.3 <i>Power Relations</i>	64
CHAPTER SEVEN	68
7.0 Coping and Livelihood Strategies and Livelihood Outcomes	68
7.1 Introduction.....	68
7.2 Coping and Livelihoods Strategies of Affected Households.....	69
7.2.1 <i>Natural Resource Based Activities</i>	69
7.2.2 <i>Non-Natural Resource Based Activities</i>	71
7.2.3 <i>Social Networks as a coping mechanism</i>	72
7.2.4 <i>Migration as a Coping Strategy</i>	73
7.3 Livelihood Outcomes to Individuals and Households	74
7.3.1 <i>Economic gains</i>	74
7.3.2 <i>Diversified livelihood activities</i>	75
7.3.3 <i>Reduced Vulnerability</i>	75
7.3.4 <i>Increased Agricultural Activity</i>	76
CHAPTER EIGHT	78
8.0 Summary of Findings, Conclusions and Recommendations	78

8.1 Summary of Findings.....	79
8.2 Conclusions.....	86
8.3 Recommendations.....	87
8.3.1 <i>Provision of commensurable compensations</i>	87
8.3.2 <i>Financial Assistance</i>	88
8.3.3 <i>Employment Opportunities</i>	89
8.3.4 <i>Provision of Economic Infrastructure and Social Amenities</i>	89
8.3.5 <i>Provision of Demarcation Lines of Mines’ Concessions</i>	90
8.3.6 <i>Environmental Awareness and Education on Health Hazards</i>	90
8.3.7 <i>Even Distribution of Alternative Livelihood Program</i>	91
REFERENCES:	92
APPENDIX A:	96
APPENDIX B:	106
APPENDIX C:	112

List of Figures

Fig 1: Conceptual Framework	11
Fig 2: Model for analyzing the coping strategies of affected farmers	15
Fig 3: Map of the Wassa West District.....	29
Fig 4 Picture showing sun dried cocoa beans	33
Fig 5 Picture with farmers working on harvested corn.....	33
Fig 6 Picture showing cracks in building.....	54
Fig 7 Picture showing ALP beneficiary with pigs	54
Fig 8 Model for Analyzing the Livelihood Strategies	68
Fig 9 Responses on Whether Mining Has Enhanced Livelihoods.....	77
Fig 10 Schematic diagram for explaining the adverse impact of mining on livelihoods of the rural households	84
Fig 11 Schematic diagram for explaining the positive outcomes of mining on livelihoods of the rural households.....	85

List of Tables

Table 1 Population Distribution of Communities.....	37
Table 2: Mine’s budget on Community Development (2005).....	39
Table 3: Seasonal Income of Farmers from Rural Activities	44
Table 4: Responses of Interviewed Farmers on other Sources of Income.....	45
Table 5: Education level of respondents.....	54
Table 6: Coping Strategies of Rural Households.....	69

CHAPTER ONE

1.0 Introduction of the Study

1.1 Introduction

Under a World Bank-IMF Structural Adjustment Program (SAP) beginning in 1986, the mining sector of Ghana had undergone radical liberalization. This included deregulation and privatization with a very relaxed investment code accompanied by generous incentives to invest in the sector. The result had been the influx of new foreign mining companies and multinationals and the subsequent intensification of the operations of the existing ones. As of January 2000, as many as 251 licensed companies had been granted concessions totaling 58,167 sq. km most of whom (about 99%) are engaged in surface mining (E. A.G 2000).

Mining is associated with the destruction of most of Ghana's forest reserves, upon which more than ten thousand people depend for their food and livelihood. Ghana at independence in 1957 had a forest estate of about 8.3 million hectares of which only 1.2 million is left today, largely as a result of allowing mining activities in the forests (CCPA Monitor 2003, www.policyalternatives.ca). There is also the displacement of the indigenes from their ancestral and communal lands, on which activities, basically farming are undertaken to support the economy of their households. This causes strains on the livelihoods of the people, and also causes high unemployment rates in the rural communities within the catchments of the mines, particularly as the mining companies do not provide enough jobs to make up for the number of people laid off from agriculture.

Surface mining entails heavy use of cyanide, a highly toxic substance that causes adverse effects on the environment and the health of residents in mining communities. It also needs lands for mining. Aside from expanding operations into lands on which the locals are farming for a living, the capital intensive surface mining method employs a relatively small labor force in its operations. This brings the

livelihood of many dwellers in the mining communities directly under pressure and strains (Akabzaa 2000).

1.2 Objectives of the Study

Generally this study sought to research into the impact of mining activities and the effects the mineral sector reforms have had on the livelihoods of farmers in rural communities in the Tarkwa mining region.

The study however specifically aims at the following;

- To ascertain the impact of mining on the livelihoods of farmers in the mining communities.
- To find out the affected farmers' strategies for coping with any adverse situation the impact has created.

1.3 Research Questions

The following are the research questions the study focused on:

- Has mining enhanced the livelihoods of the farmers?
- What kind of specific benefits have the farmers received as a result of mining?
- What negative impacts has mining brought upon the livelihoods of the farmers in the study areas?
- How are those adversely affected by mining and the operations of the mines coping with the adverse situation?

1.4 Justification for and the Significance of the Study

Since liberalization policies were set out to attract foreign investment in the mineral sector, most of the studies on the results thereafter have focused on the general impact of mining especially on environmental and occupational hazards. Specific studies on livelihoods have not been adequate if not completely lacking. This has left discussions on impact of mining on livelihoods particularly in speculations.

In this study, investigation has been done about the ways in which mining and the operations of mines in rural communities have affected the livelihoods of farmers. This impact analysis has not been limited to negative repercussions but covers the positive effects of the operations of mining companies and mining in general on livelihoods of farmers as well. Interviews were conducted in five rural communities, which were grouped into two namely Teberebie, Adeyie, Abompuniso and Agege (TAAA) and Akyempim community as the fifth one.

The grouping of the communities is made because the communities lie within the catchment areas of two different mines, which are AngloGold Ashanti Goldfields Limited (also known as GAG) and Wexford Goldfields Limited (WGL). The communities of TAAA are directly affected by operations of AGL while Akyempim community is affected by operations WGL. The study presents the impact of mining on livelihoods of farmers based on the views of heads of households, opinion leaders including leaders of concerned farmers in the communities and the Assembly members of the district assembly in the communities, as well as the views of heads of the public and community relations officers of both mines.

As this study examines the exact impact, both positive and negative, that mining and the intensive operations of the mines in the rural communities have brought upon the livelihoods of farmers, it is envisaged that the report of this study become a very useful working document for addressing issues of mining and livelihoods in rural communities. It is also expected that the report provide a significant guideline for future research into mining and rural livelihoods.

1.5 Organization of the Thesis

This study is structured and presented in eight chapters, each of which deals with a specific topic relevant to and connected with the research.

Chapter one: In the chapter one I present the introduction and background of the study, stating the problem, the objectives of the study, the research questions and the justification for the research study.

Chapter two: It is in the chapter two that the theoretical and analytical framework employed in the study is presented. It contains among other information all about the theory base for the study, definition of key concepts prevalently used in the study particularly in relation to the theory and explanation of the reason why the theory has been applied in the study. The study adopts a modified form of the livelihood model of Diana Carney. The chapter gives a rationale for using a modified livelihood model in the study and concludes with a discussion of coping strategies.

Chapter three: Here the research design and methodology is brought in focus. It shows the methods and techniques for data collection and analysis. The sampling techniques used in fieldwork are discussed together with the sources and concluded with a discussion of the limitations and challenges to the study.

Chapter four: This chapter of the study dwells on background information about the study areas, basically the geographical information including the location of the study areas, the drainage, climate and vegetation, topography, demography and economic activities. The chapter also presents the economic activities predominantly pursued by the residents in the rural communities in the study areas vis a vis mining activities. Most importantly the chapter examines the rationale for mining and especially its intensification in the study areas and concludes with the operations of the AngloGold Ashanti Goldfields Limited (GAG) and Wexford Goldfields Limited (WGL) in the study areas.

Chapter five: In chapter five of the study I evaluate the impact of mining on the livelihoods of the rural households in the studied communities. Significant part of the discussion in the chapter includes the presentation of the rural livelihood activities in the vulnerability context, examining the influence of seasons and shocks on livelihoods and the impact of mining on the stock of capital assets of the rural households in the rural communities.

Chapter six: The study assesses the effects of transforming structures and processes on the livelihoods of the rural households. Emphasis is put on the governmental structures that promote and oversee the mining sector and the operations of mines in the country, power relations and policies that impinge on livelihoods in the rural communities.

Chapter seven: In this chapter I look at the effectiveness of livelihood strategies and coping mechanisms adopted by the rural households whose livelihoods were adversely affected by the operations of the mining companies. Support programs of the mines particularly the alternative livelihoods projects and capacity building programs of the mines are examined to see how effective they are in helping the affected households deal with the adversities brought upon their livelihoods by mines' operations. Following these discussions, the livelihood outcomes are presented.

Chapter eight: In the last chapter of the study I present the summary of all the findings made by the study, give the conclusion and recommendations.

CHAPTER TWO

2.0 Theoretical and Analytical Approach

2.1 Introduction

In this part, the theoretical approach of the study is explained. The theory base of the research is the Sustainable Livelihood Approach, with the Livelihood Model giving the study the framework for analysis.

2.2 Applied Livelihood Model

A number of livelihood studies have used the livelihood framework particularly the Sustainable Livelihoods Approach giving it prominence in development thinking (Shankland 2000). Consequently, a number of different SL approaches have emerged (Ashley and Carney 1999 in Shankland 2000). However, most rely on analytical frameworks which owe debt to the version developed by the IDS Sustainable Livelihoods Programme (Scoones 1998) and subsequently adopted in slightly modified form by the UK Department of International Development (DFID 2000).

Even though the livelihood model is the framework applied in analyzing the outcomes to the livelihoods of the rural households in the rural communities, I have made purposeful modification of the model. This is achieved by changing some elements in the livelihood model of Diana Carney in order to make it operational and applicable to the contextual evidence as obtained in the study areas.

The main components and salient elements in the parent model (Carney's Livelihood model) are nonetheless maintained for suitability. The five main capital assets, elsewhere termed as livelihood resources (Ellis 2002) and livelihood assets (Rakodi and Lloyd-Jones 2002), are recognized as the stock of capital assets which the household can utilize in the face of the vulnerable context and under the influence of transforming structures and processes to attain viable livelihoods. The modified livelihood model used as the analytical tool in the study and the justification of its usage are presented further below.

2.3 Defining Key Concepts

2.3.1 *Household*

The term household is commonly perceived as referring to a group of people who pool resources or “eat from the same pot” (Robertson 1984 cited in Beall and Kanji 1999). It may include members of close family and wider kin networks. The terms household and family though have common features, with different meaning. Making a common definition for households in developing countries, Robertson (1984), Mishra (1992) and Young (1993) present household as “comprising individuals who live in the same dwelling and who share basic domestic and/or reproductive activities such as cooking and eating” (in UNDP 1996).

Worthy of mention is the role that members living abroad could play in the livelihoods of the household as in the form of remittances. Similarly, help and remittances of relatives in urban centers in the form of money, medicines, food stuffs etc. are very important. Furthermore, earnings from participating in local economic market and efforts to widen the range of their possible working sphere through networking, membership in groups are not of less value in pursuit of viable livelihoods. From the above, household in this study involves a group of people who pool their resources for their collective purpose and who are usually related through blood and affinal ties.

2.3.2 *Livelihood*

The concept of livelihood is largely acknowledged as a valuable means for understanding problems, factors and necessities of poor households and low-income groups. However, various concepts have been used or applied regarding the issues of poverty in the past. First, a concept of survival strategy was used by Duque and Pastrana in dealing with poverty matters (Bhattarai 2005), where the concept meant the ways in which people in distress dealt with their situation in order to survive.

Similarly, dealing with poverty, Lomnitz introduced a concept of marginality emphasizing the social networking as an important aspect of survival of lower income and lower caste groups (Bhattarai 2005). He argued that due to their weak position and access to local labour market and economic activities, poor people or individuals face difficulties in their daily life, since they have no savings and social securities. Hence over time, the concept of livelihood, introduced by Chambers and Conway (1992) was simply defined as to have adequate stocks, food and cash to meet basic needs, based on Chambers definition (1989) of rural poverty. Simply put, it meant to have access to the means for gaining a living. In this way, methodological and conceptual base for livelihood approach come from studies of rural poverty, based on the definition of Robert Chambers (1989). According to Chambers, low-income groups or households aim at sustainable livelihoods through countering vulnerability in the face of risk and insecurity, using both tangible and intangible assets (Bhattarai 2005).

Carney (1998) forwarded a new version of definition of livelihood as comprising of the capabilities, assets (including both material and social resources) and activities required for a means of living. She defined the livelihood assets, including tangible and intangible as the capital in different forms, which combined together are deployed to enhance households' well-being. The different forms of capital she introduced are: Social Capital, Human Capital, Financial Capital, Natural Capital and Physical Capital.

Social capital focuses on the social networks and connections among the members in the society. Further, affiliation or memberships to formal groups, associations and organizations develop trustworthiness and reciprocity, which ultimately enhance the knowledge, information, skills and access to resources to achieve better livelihood.

Human capital represents different aspects of people such as skills, knowledge, ability to labor, and good health that together enable people or individuals to pursue different livelihood strategies enhancing their livelihood objectives.

The term *natural capital* represents the stocks of the resources that can be used to cater livelihood at any time. In general, it belongs to natural resources such as land, river, forest, atmosphere, bio-diversity etc. and found in intangible form.

Financial capital comprises the financial resources that people or households use to achieve the objectives of their livelihoods. Most common financial sources are credit system, remittances, business and salary from jobs.

Physical capital belongs to the basic infrastructure and producer goods that can be applied by people or household to change the physical environments, such as new technologies like tools and equipments (i.e. farm assets, irrigation, and electricity, improved seeds) to function more productive and meet their basic needs. Recognizing the importance of capital assets in people's livelihood, DFID and other organizations have developed a Sustainable Livelihood Approach including these capital assets. The main focus of this approach has been given to the poverty reduction sector in the developing countries.

2.3.3 Coping Strategies

A livelihood depends on the range of capabilities and assets that the members of a household possess. External forces, such as unexpected changes affect the households, and as a result cause the households to lose assets and capabilities and thereby face greater risk and uncertainties. Further, risk leads to decline in income and is often coupled with increased demands on budgets of the households, reducing the overall income (Bhattarai 2005). But all households do not experience the risk in the same or equal measure. The impact and level of risk and uncertainties depend on the access to the resources such as type of occupation, education levels, household size and composition, social prestige, age, gender, ethnic group, etc.

Coping strategies are heavily deployed and practiced by poor households to lessen and escape from the livelihood uncertainties, stress and shocks throughout the year. They may take the form of changing consumption patterns like reducing number and quality of

foods or meals, postponing entertainments, etc. Davies (1993, 1996 cited in Dercon 2001, Adams, Cekan and Sauerborn 1998) uses the term coping strategies to explain the short term strategies applied by households during crisis periods. Similarly, coping responses are made to reduce the negative impact of an external change (Bhattarai 2005).

The aim of coping strategies is to save livelihood from unexpected abnormal situations or calamities. In other words it is the application of available resources and capital assets to deal with such livelihood uncertainties and vulnerabilities. Each individual and household varies in their ability to cope during crisis.

If the intensity and duration of disaster increases and crisis triggered longer than necessary or expected then even those capable households also become vulnerable. Thus coping strategies can be conceptualized along a continuum that worsens with increasing crisis (Adams, Cekan and Sauerborn, 1998). The continuum presents the intensity of the vulnerability of the household, depending on how far household is able to deal with crisis (refer to model for analyzing coping strategies in fig. 2, page 15 below).

2.4 The Livelihood Model (Analytical Framework of the Study)

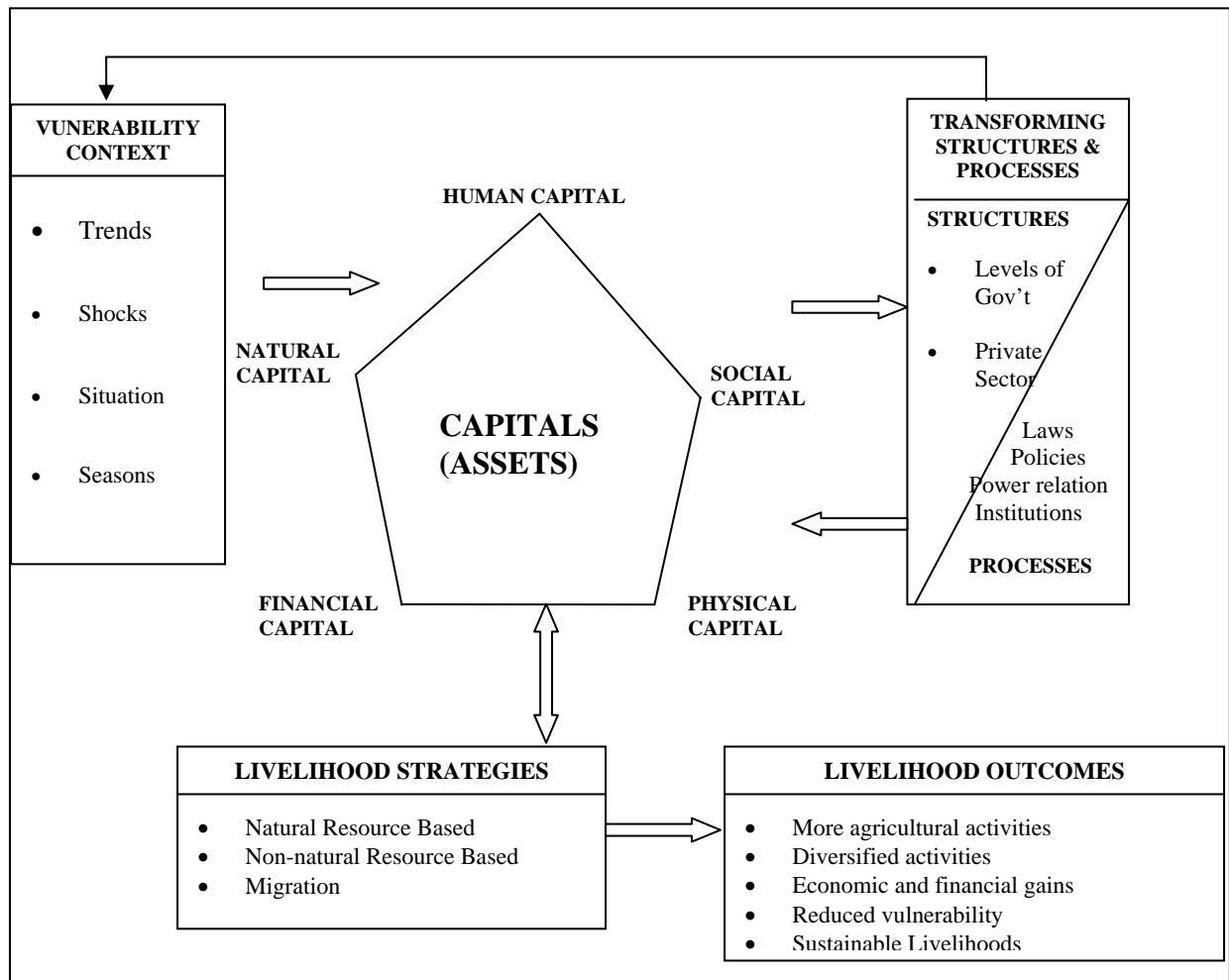


Fig 1: Conceptual Framework

Source: Author's Derivation from the Livelihood Framework of Carney (1998)

The diagram above represents the livelihood framework that is applied in this study. The framework is developed from the livelihoods framework of Carney (1998).

At the centre of the framework are the assets on which households or individuals draw to build their livelihoods. They are influenced by the vulnerability context, which refers to the sources of insecurity to which poor people and their assets are vulnerable. Access to and use of assets is influenced by policies, organizations and relationships between individuals and organizations and authority. The strategies which individuals and households adopt produce outcomes, which are defined in terms of greater or less well-being.

Five of the **Capital Assets** identified by Carney (1998) form the basis to get access to system or resources through which other forms of capital can be produced. The ability to get access to reproduction of capital assets reflects **access profile** of the household.

- There are multiple choices or opportunities in order to use the available assets that are known as **Livelihood Strategies**. It is a continuous decision making process which vary based on external situations. It may be regular and seasonal, occasional and unexpected. It could also be reactive like selling livestock at abnormal time and structural decisions that can change whole nature of livelihood like migration.
- Members of household involve in multiple **livelihood activities** based on their choices and opportunities like trading, offering services as manual farm hands or in official work, involvement in organizations or community groups.
- The livelihood activities generate income for the household in different forms i.e. goods, services and cash. The income relocates in four different sectors as **input:** into livelihood activities, **social payments:** taxes, interest on loans, **investment:** to enhance and sustain livelihoods assets and **consumption:** food, housing, clothes, etc.
- Many **local and external forces** influence livelihoods differently such as local market, physical environment and the social and political environment. Due to such dynamic features, livelihoods are always vulnerable and uncertain. However, the impact of these external forces varies with each household. Some households have more resistance power to the impact but some are more sensitive to such influences. Here the character of such external forces represents the **vulnerability context** under which livelihood activities are undertaken and livelihood assets are likewise subjected to.

Drawing on the framework above, the study investigated the extent to which mining as an activity (identified as a process in the framework), has impacted on the livelihoods of

farmers in the frontier communities in the Tarkwa mining region. Obviously, mining and operation of the mines in the Wassa Districts of Ghana have enhanced the livelihoods of some rural households, and this study worked to find out the extent to which mining has promoted the livelihoods of the farmers, or at least created livelihood opportunities for some of them.

Also the study ascertained the negative impacts of mining on the livelihoods of the farmers. Further to that, the livelihood strategies and coping measures of the affected farmers in the face of such adversity were examined. The information obtained provided the study an essential basis for analyzing the impact dimensions of mining on the livelihood assets, livelihood activities and outcomes of the indigenous farmers in the mining communities.

2.5 Explanation of and Justification for the Use of the Framework

The modification of the livelihood model made possible by synthesizing some existing frameworks has been necessitated by the differing elements evidenced in the livelihoods of the rural households in the communities studied. In reality, differential elements exist to create the vulnerability context in the livelihoods of households even depending on the type of household in question whether urban or rural. The DFID livelihood framework does not specify the factors that make all rural households vulnerable while in the livelihoods framework of Lloyd-Jones (2002), the vulnerability context defines stocks, trends and seasons as well as culture. It is notable that the livelihood framework is a tool that defines the scope of and provides the analytical basis for livelihoods analysis, by identifying the main factors affecting livelihoods and the relationships between them (Carney 1998).

The factors identified in the study as constituting the vulnerability context for the livelihoods of the rural households in the studied communities include shocks, trends and seasons as also present in almost all of the models from which this analytical tool is developed. It is, however, revealed in this study that a key component of the vulnerability context to the livelihoods of these rural households is the situation of their livelihoods.

This situational context is identified to include single livelihood activity, low incomes and dependence on one-man breadwinner for livelihoods of a whole household.

In the study areas it is discovered that power relations as a process is very crucial in the livelihoods of the rural households particularly in their ability to access available resources and their use of such resources. The elements in the transforming structures and processes in the study areas also differ as this section includes legislation, policies power relations and institutions but not culture and gender relations.

Livelihood outcomes could either be positive or negative depending on the coping abilities of the households. Beneficiaries of programs of the mining companies realized increased agricultural activity, diversification, financial gains, reduced vulnerability and sustainable livelihoods as outcomes. For these households, outcomes of their livelihood strategies have been positive. On the other hand, some households particularly those who did not or have not yet benefited from the programs of the mines experience livelihood crisis as they fail to cope with the impact on their livelihoods. This is amply illustrated in the model for analyzing coping strategies on page 15 below. It is because of these differential elements as evidenced in the study areas that made it necessary to employ a modified livelihood model suitable as the analytical tool for this study.

2.6 Model for analyzing Coping Strategies

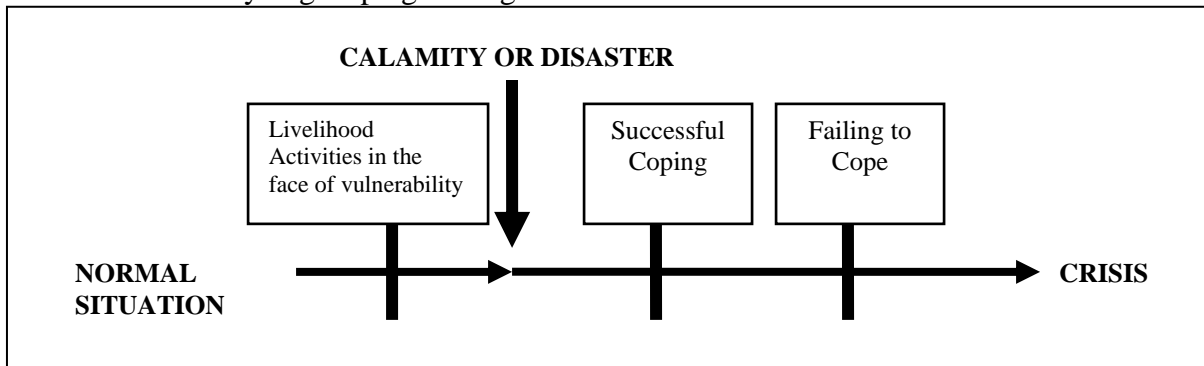


Fig 2: Model for analyzing the coping strategies of affected farmers
Source: Adapted from the Access Model (Wisner, Blaikie, Cannon and Davies, 2004).

2.6.1 Explanation of the Model

The diagram above shows the attempt by households in the continuum beginning from the period of undertaking livelihood activities with strategies to minimize vulnerabilities and possible risks in normal times through to coping during calamities and disasters. The situation, however, triggers to crisis if the households fail in coping (Cekan 1994 in Adams, Cekan and Sauerborn 1998).

In general in normal times, households apply diversified strategies such as multiple income sources, increasing production, investing assets, and increase and expand social connections and networks for capital reproduction, and exchange relationships etc. in order to minimize possible impact of hazards and risks. But households start to respond and fulfill immediate needs, discarding other strategies when the unexpected calamity appears. Thus coping begins with using and mobilizing stocks and available resources and assets such as withdrawn savings, returns from sold assets, loan all in order to respond to crisis.

Coping is successful if the household is able to manage sufficient resources to control and minimize difficulties. The successful coping should be carried out without endangering the long-term objectives of livelihood security. Similarly, a quick recovery can be accomplished at pre-crisis period effectively. Coping also fails if one finishes or sacrifices both short and long term assets and resources during struggle for survival such as when productive assets are sold, treatment are postponed, festival and ceremonies are

postponed. In this condition they will have only one way to follow such as collecting wild foods, selling labor power in farms or in labor markets. Therefore post-disaster recovery for a household takes longer time and will be slow, since it requires re-organizing the productive resources and social assets of the household. It also takes long time to invest for households' assets and repaying debts.

The worst outcome will be crisis if household fails to cope with calamity. At this condition household is only found in destitute condition and weakened labor power. It is argued that, in this condition, households having relations and connections into social networks and individuals possessing skills and knowledge and also having strong bonding and bridging capital could recover and reconstitute their social and economic status quickly but those households without such capital assets face critical situation for long time in their livelihoods.

This study only concentrates and focuses on how the rural households cope with the adversities brought upon their livelihoods by mining and the operations of the mines in the communities studied. This is examined at crisis period rather than pre and post crisis periods.

CHAPTER THREE

3.0 Research Design and Methodology

3.1 Introduction

The discussion in this chapter is centered on the criteria for selecting the mining communities as study areas, processes before and while on the field, the methods of data collection, and the type of data that was collected which comprised of both primary and secondary data and methods of data analysis. In this segment attempt is also made to justify the adoption and use of the qualitative methodological approach and research techniques in this study, particularly in my data collection and analysis.

3.2 Selection of the study areas

Tarkwa, the study area is a mining region in the Western Region of Ghana and the administrative capital of the Wassa West District of Ghana. Tarkwa has a history of nearly hundred years of gold mining record and at present has the highest concentration of mines in a single district on the African continent with as many as over 8 of the country's 14 mining companies operating in the area, virtually all in surface mining (Akabzaa 2000).

Tarkwa and its environs lie generally within mountain ranges covered by thick forest with a variety of fauna and flora. In some cases, the ranges are interspersed by undulating valley bottoms. Tarkwa Township and its surrounding settlements are located between two long ranges of hills considered the two limbs of a gold mountain. The evergreen mountain ranges were rich in biodiversity at least before the onset of mining, and with the numerous settlements in between them, appealing aesthetic scenery is presented. Unfortunately, these ridges are the main areas where gold is found, and they are the targets for open pit mining or surface mining.

The Wassa West is said to contain 44% of Ghana's closed forest, accounts for 30% of the country's gold production, about 39% of cocoa production, 50% of the country's standing

commercial timber and 100% of manganese and bauxite production (Akabzaa 2000). This natural resource potential provides the basis for varied economic activities in the area. Outside Tarkwa town and in the rural settlements around, subsistence and commercial farming have been the main economic activity among the people. Currently, however, mining has overtaken farming as the single largest economic activity in the area.

Five of the rural communities surrounding the Tarkwa mines (but grouped into two viz; TAAA and Akyempim) were selected for the field work. This is because it is impossible to conduct field work in all communities (more than 20, in addition to new emerging ones) dotted around the mines operating in the Tarkwa mining region in the Wassa Districts. Among the criteria used to select the rural communities are the coverage of the community by the catchments of the mines, predominant economic activity (especially before the 1990s), and proximity to one another and to the mines. It is, however, noteworthy that distance variation from the mines of the rural communities selected was considered as an important criterion, the proximity between them notwithstanding. Additionally emphasis was placed on homogeneity in respect of livelihood activities to select the studied rural communities.

Age of the community was chosen as criterion because it was from 1986 that Tarkwa experienced the influx of many mining companies. Moreover it was to enable the study capture the communities with indigenous economic activities like farming, as newer ones have sprung up as a result of the operation of the mines in Tarkwa. Proximity between the selected communities was a preferred criterion that helped to save time and cost while on the field and again helped to identify the communities that are in the catchments of each mining company. Distance variation of the selected communities from the mines was to enable the study capture differing information that was used in impact variation analysis. However, proximity of the communities to the mines was considered as a criterion because I believe such communities closer to the mines might have received the heaviest incidence of the impact (negative), like loss of land to mining etc. This therefore provided the study with a valuable open window to ascertain the adverse impact of mining on the livelihoods of the rural households in the selected communities easily.

3.3 Process for Field Work

In the first place I had not traveled to the Wassa mining region prior to the study before and was therefore not familiar with study areas. After arriving in Kumasi in June 2006, I gathered information basically secondary data, in connection to the study areas, from previously published reports, articles, journals and newspapers from the libraries of the Kwame Nkrumah University of Science and Technology in Kumasi, Ghana. This information covered the mining companies in operation in the Wassa districts especially the Wassa West capital of which is Tarkwa, their years of operating in the communities and the type of mineral ores mined as well as the type of mining processes used whether the open cast method or the deep shaft underground mining. Similar information was searched about the mining companies outside of the Wassa West, especially in the Mpohor Wassa East District.

Moreover, information about rural communities who are within the operational areas or the catchments of the mining companies identified in the Wassa mining region was obtained. This included the economic activities predominantly engaged in by the rural households, the demography and the relative locations of these communities. With all this information I was prepared to take the first familiarization visit to the region.

In the first visit I went to the Wassa West District Assembly office and spoke with the Administrator of the Assembly, had conversation with him which revealed important information about the operations of the mines and their impact on livelihoods of rural households in the Wassa West District. The map of the region was obtained and the name of the Assembly member and his house number were obtained through the administrator. Regular contact was kept with the Assembly member of the communities of Teberebie, Adeyie, Abompuniso and Agege after the first meeting with him and his co operation with me was very useful for the study. Through his assistance and that of my contact person, a teacher in the Abompuniso community all the opinion leaders in the communities chosen for the study were met for interviews. Also the leadership of the concerned farmers association in the communities was met and interviewed.

One other useful way information was elicited in the familiarization visit before actual interviews began was through conversation with the farmers in the communities, at the bus stations in the town and even in the taxis with the drivers. Also in the familiarization visit all the communities within the catchments of the Ghana Australian Goldfields (GAG) Limited were visited to acquaint and equip myself with additional knowledge of their physical characteristics, social, economic and other information. All this information from published documents, personal visits and conversations with the people enabled me to select appropriate rural communities in the Wassa mining region relevant for the objectives of this study.

Finally, I decided to select the five rural communities of Teberebie, Adeyie, Abompuniso and Agege (that is four communities grouped and named as TAAA) stretching over more than ten miles from the Tarkwa town centre. These communities are affected by the operations of GAG, which becomes part of the case study. I objectively selected GAG and the four communities affected by its operations because it is one of the largest mining companies in longer years of operations in the Wassa Districts.

In order to fairly assess the impact of mining on the livelihoods of rural households, this study cannot be limited to the operations of one mining company. To this end, Wexford Goldfields Limited operating in the Mpochor Wassa East District, which is three and half hours by bus from the Tarkwa town center was also selected as part of the case study. It is a relatively younger mining company whose operations directly affect Akyempim community (the fifth community of the study). It is a rural community with similar physical, social and economic characteristics as those in the catchments of GAG. In similar vein, I worked to establish rapport relevant for the field work with the Assembly member in the community and two opinion leaders through a contact person, who is an affected farmer and a part time minister of a Christian mission.

Having selected the study areas and the key informants for the study in each of the communities, I got my questionnaires ready for the interviews. The interviews were conducted with questionnaires, which were semi-structured but with differences in those administered to the opinion leaders, the Assembly members and the public and community relations officers of the mines and those administered to the heads of

households. The questionnaires however commonly centered on the background information of the respondent, the livelihood activity and other economic activities, the positive and negative impact of mining on the livelihoods of the farmers and the measures outlined to mitigate adversities a result of mining on the livelihoods of the rural households.

3.4 In the Field

This study on the impact of mining on the livelihoods of farming communities in Tarkwa has become necessary in view of the complex outcomes of the influx of many mining companies in the Tarkwa mining zone. Consequent to this are divergent and polarized discourses on the prevalent general impact of this phenomenon, whether beneficial or destructive. To this end speculations abound on the negative repercussions on the livelihoods of the rural communities. Some narratives even attribute the cause of increased food prices and increase in the general cost of living in the Tarkwa mining region to this phenomenon.

In the first place because of unfamiliarity with the study areas, I obtained sufficient information particularly about the rural communities surrounding the Tarkwa mines, their location, and predominant economic activity, duration or age of existence and the demography. Such information was obtained from the District Development Plan of the Wassu West District, the Town and Country Planning department, supported with additional information from the Kwame Nkrumah University of Science and Technology library.

This information made it possible to select the five rural communities, which satisfied the criteria specified above, for the study.

Also in order to get a good hold on the field which was not previously known to me I first met with contact persons each of whom identifies with the communities and well-versed in the situation on the ground. This created an essential gate way to the field and granted me easy access to the groups of informant as well as facilitated my entry into the studied rural communities. That apart, the use of contact persons was necessary to this study as it

helped solve the anticipated problem of respondents' reluctance, which could crop up particularly because of being a complete stranger to them.

3.5 Methods of Data Collection

The aim of research is to produce, explore and identify the new information, scattered in the field, in front of the researcher, but may not have been recognized and identified before (Aase 1997). Moreover, Aase contends that production of data and information is a never-ending process. It is because the inexhaustible social interaction every minute produces events and new information in the society. According to Kitchen and Tate (2005), in addition to contributing to knowledge, a piece of research contributes to policy issues and at the very least makes clear to the groups being researched or associated agencies that there might be a need for a greater understanding of an issue. Similarly Marshall and Rossman (1995 P.78), outline five reasons for undertaking a study, viz exploration, explanation, description, understanding and prediction.

There are various methods of conducting research. In the main qualitative research methods were used in this research. There are many specific methods within the domain of qualitative methodological approach such as observation, participant observation, structured interview, unstructured interview, focus group discussion, life history, case study and so on. A few of them have been applied in this study.

3.5.1 *Qualitative Methods*

Qualitative approach is a very important technique for formulating and producing data and information in the field. Qualitative methods are closer to life experiences and interactions which interpret and attempt at understanding and analyzing the phenomena and events more closely through human experiences and social and environmental processes. It focuses more on understanding the changing behaviors of people of everyday life, its underlying causes and relationships. Qualitative methods inquire about people's understanding and perception of events and phenomena, how they understand, relate and practice them in everyday life.

The qualitative method was used because the study sought to find out the impact of mining on livelihoods from the point of view of farmers who have directly been the recipient of the incidence. Moreover, the study sought to ascertain the measures that recipients of the negative impact of this phenomenon have applied to enable them cope in the face of prevailing adversities and in this regard qualitative method was more suitable.

Among the several methods of the qualitative approach, interviews, observation and conversation methods were used in this study. It is worth-mentioning here that this is a contextually-based study which sought to elicit information from view points peculiar to each household, which could be subjective as such qualitative methods were more appropriate.

Type of Data Collected

The study made use of both primary data and secondary data. In-depth interviews, specifically semi-structured type, as well as observation and conversation constituted the methods that were used in the main to collect the primary data for the study. Secondary data was also gathered on, for instance, the background information of the study areas, etc. from books in libraries and reports of Planning Department of the Wassa West District, published and unpublished journals, articles, the internet, etc. Below are some methods that were used to obtain the primary data.

3.5.2 Interviews

Interview is one of the methods of generating and producing data during field work. It is a very common and easy method to exchange and share human experiences as well as daily activities, and which helps to produce contextually based results. It focuses on the *hows* of people's lives (Fontana and Frey 2003). According to Silverman (1993, cited in Fontana and Frey 2003), the use of interviews has become so extensive today that it has been said that we live in an "interview society".

The interview method was applied to elicit information from the farmers on how mining has impacted on their livelihoods and the strategies or measures they have employed to mitigate the negative aspects of the impact. Initially, 10 heads of households unbiased in

gender (proportionally according to gender) and age were selected from each of the chosen communities using the purposive sampling method for interviews. Depending on the situational responses I obtained while in the field and the low satisfactory levels, I expanded the number of interviewees to 20 heads of households, 5 opinion leaders and the Assembly member of the mining communities of Teberebie, Adeyie, Abompuniso and Agege. Similarly in the Akyempim community the number of respondents was increased to include the Assembly man who represents the community in meetings with the mines. The interviewees were also selected to satisfy both sexes and across ages from 20 years to 60 years and above. The interview type was mainly semi-structured. By this medium I asked the heads of households, questions about all aspects of their livelihoods such as social, economic, earning activities, political, access to alternative resources, coping strategies etc.

Regarding their socio-economic aspects of life, I asked about their family background such as family size, land holdings and entitlements, involvement of family members in different activities, daily earning activities, alternative ways of earnings, further involvement of children and old people etc., some extra trainings or peculiar skills that may enhance their livelihoods. Further, I asked to find out whether the operation of mines in their communities has provided any benefits at all regarding their livelihoods and whether or not there are alternative earning activities to farming that might be able to sustain their livelihoods. Questions about the negative effects of mining on the livelihoods of the farmers were asked, and consequently the coping strategies- how they handle or mitigate difficulties or abnormal situations were ascertained.

As an alternative and supplementary instrument to the field, structured questionnaires were designed and administered to the Public and Community Relations Officers of two (2) selected mining companies in the two mining districts chosen to constitute the case study, the Deputy Directors of the Ministries of Mines and Energy, Employment and Social Welfare, the Minerals Commission, the Forestry Commission and the Chamber of Mines and the Environmental Protection Agency (EPA), and the secretaries of concerned farmers associations in the affected communities. Secondary data was obtained on the community capacity building programs of the mining companies at the departments of

the community relations of the two mining companies operating in the selected communities.

3.5.3 Observation and Conversation

Observation is a process which helps to understand, realize and analyze an event, phenomenon, and activities of people, which further helps to develop personal insight and perception toward the event and activities. In other words, observation is a process which helps to categorize the events, things, and activities. We categorize things based on our tastes, feelings, smells, sounds, visions, colors, hardness, and actions which help to systemize our perceptions. According to some school of thought, the process of categorization of the observed things or events varies based on our culture and experiences. It is argued by Aase (1997) that the ability to categorize the observed things is a universal human characteristic. A category according to him is a container where we localize our observations and give a meaning based on our culture, experiences and understanding of the situation. Our mind consists of a matrix of infinitive categories. Sometimes people in the same community and with same culture do not necessarily perceive a thing in the same way and give a different meaning. The perception, understanding and giving a meaning to the thing is highly influenced by individuals' level of education and socialization, too. It further varies based on age, gender, occupation, region, etc.

During the field work the different types of activities that are engaged in by the farmers in their every day life were observed. These were categorized in appropriate order for analysis. Focus here dwelt more on their earning activities, since I wanted to gather more information and knowledge about their strategies of daily livelihoods. Traditionally, farming has been the dominant economic activity in these indigenous frontier communities before the influx of mining companies. The operation of the mines in the Tarkwa township, however, has created some benefits in terms of livelihood opportunities to some of the households in these rural communities, but in another vain crippled the economic activities of some of the farmers. Those who have lost livelihoods due to the operation of the mines in the communities have to search for other possible alternative means of earning their daily income. In the field therefore I focused on the

alternative livelihood opportunities that are open to those who have received the adverse impact of the influx of the mining companies into the communities and the extent of their access. Moreover, I looked at their involvement in other activities and how they employ their skills and knowledge to enhance their earning capabilities. Additionally, I gathered information through observation and conversation on the exact impact of loss of livelihood on the farmers. For instance the kind of sufferings they go through if they lose their livelihood activities and do not get jobs and how in such circumstances they are able to face or deal with crisis like serious illness, accident, death, etc.

Further, I ascertained the intervention strategies and contribution of the mining companies, NGOs and the government to improve the livelihood condition, to generate or create alternative earning activities or opportunities, to at least assist them at their abnormal times, to assist in building capacity in order to develop access to local and central authority, and to local economic activities.

3.6 Sampling Techniques and Sources of Data

Through the familiarization visits taken of all the rural communities studied, the most appropriate sampling techniques were chosen for this study. In view of the different classes of respondents and the kind of differing questions that need to be answered to achieve the objectives of this study, random sampling and purposive sampling methods were both used in this study. In selecting heads of households random sampling was used while purposive sampling was adopted in choosing the opinion leaders as well as the heads of the public and community relations officers of the mining companies.

According to Patton (1980), random sampling is an appropriate strategy when one wants to generalize from the sample studied to some large population. Through random sampling there is increased likelihood that the data collected are a representative of the whole population of interest (*ibid*). Similarly, Peil (1982) asserts that sampling is the selection of a part to represent the whole. The random sampling technique was preferred over others to select the heads of households because with this method the probability of selection becomes the same for every case in the population. Another reason why I used random sampling was to avoid bias by giving all units in the target population equal

chances of being selected, as emphasized by Nichols (1990). I, however, must state here that the method was slightly modified to purposively remove gender bias in respondent heads of households.

The purposive sampling technique was used to select the opinion leaders and the leaders of the concerned farmers association in the studied communities. This group of respondents was selected purposively since they are affected farmers themselves and have been in the fore front in issues of the impact of mining in their communities. In order to get information about the positive and negative impact of the operations of the mines in the communities and the community capacity building programs that the mining companies have for adversely affected farmers the heads of the public and community relations officers were purposively selected for semi-structured interviews.

The purposive selection of these groups of key informants stems from the fact that they are individuals who provide in-depth and proficient information about a particular phenomenon (Beck 2004). Purposive sampling was very relevant and useful in the field work and data collection because I knew which respondent will be able to give me specific information wanted. It must be stated, however, that there was bias in the selection of the leaders of the concerned farmers association. But nonetheless, the quality and reliance of information elicited was not affected.

3.7 Recording of Data and Techniques/Methods of Data Analysis

This is a fact finding research, explorative and explanatory that leans on the use of qualitative data collection methods, specifically information from heads of household selected for semi-structured interviews. Qualitative data analysis methods were employed in analyzing data elicited from the informants and all respondents about their views on the impact of mining on the livelihoods of the farmers. The strength of this method of analysis rests on the fact that it enabled the study present and demonstrate the original views of respondents (for instance through quotes) without the biased interferences with the view of the researcher.

One drawback or demerit of this method of data analysis is that it is arduous and the researcher is prone to a feeling of frustration and being disheartened. Data gathered becomes laborious to analyze, particularly when information is gathered from observation as well as conversation. With the understanding that analysis of qualitative data is an ongoing process, I deemed it more appropriate to begin the analysis early, as soon as the data collection began. Furthermore, perseverance and starting writing up early right after analysis or concurrently with the analysis helped reduce the problems associated with qualitative data analysis.

Since I employed the qualitative data collection tools like observation and conversation, which bring to light a number of varied and complex information and have the tendency of confusing the researcher, I actively utilized field notes. The field notes were made during and immediately after visits to locations in the field to cover events and activities observed, information obtained, important remarks and statements as well as my thoughts and reflections while on the field. The field notes were meticulously structured to suit the objectives of the research in order to enhance easy analysis.

3.8 Limitations to the Study

Research of this enormity and scope required substantial resource in respect of time and money. Traveling between the communities of Teberebie, Adeyie, Abompuniso and Agege affected by the operations of the GAG mines and also from the town center to the Akyempim community was costly, strenuous and tiring because of bad nature of roads and the distance from the Tarkwa town center where I lodged. Taxis and buses operating between the communities are unavailable after 6 p.m., which is the time favorable to meet most of the heads of households who return home in the evening. Had it not been the chief of Adeyie, who requested the mining company's bus to transport me to Tarkwa town after a round of interviews, I would have remained in the community.

Respondents' fatigue was also noticed in some of the heads of the households, who claimed the mining company and some agencies had conducted similar interviews, but had failed to respond favorably. This created unwillingness in some of the affected heads of households to cooperate except only after explanation of the academic intention of the

study and the presence of the contact persons which won trust and confidence of the respondents.

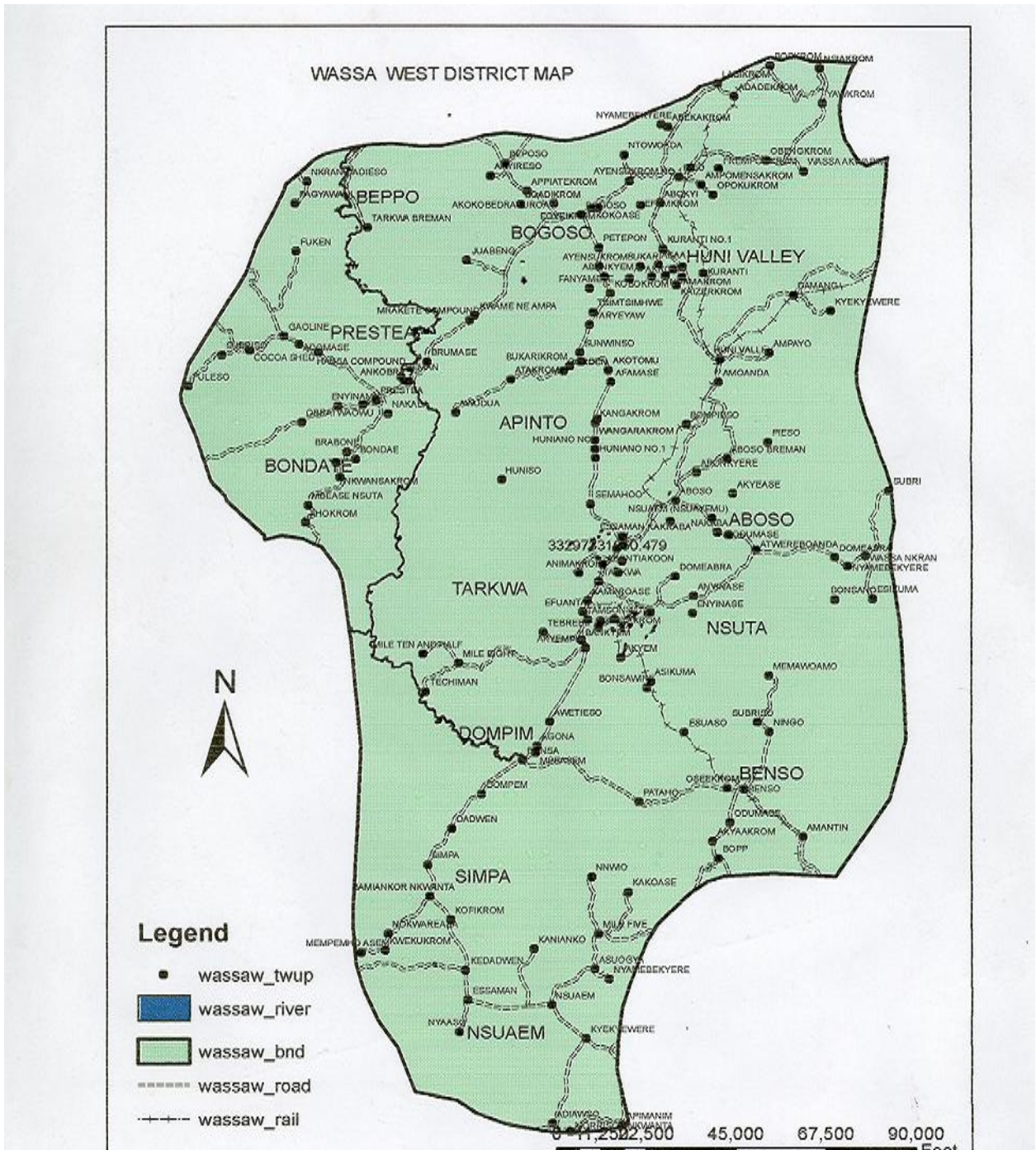


Fig 3: Map of the Wassa West District
 Source: The District Development Plan of the Wassa West District Assembly

CHAPTER FOUR

4.0 Background of Country and the Study Areas

4.1 Introduction

Tarkwa, the study area, is a mining region in the Western Region of Ghana and the administrative capital of the Wassa West District of Ghana. Tarkwa has a history of nearly hundred years of gold mining record and at present has the highest concentration of mines in a single district on the African continent with as many as over 8 of the country's 14 mining companies operating in the area, virtually all in surface mining (Akabzaa 2000).

4.2 The Geography of the Study Areas

4.2.1 Location

The Wassa West District lies between latitude 4° N and 5° 40'N and longitude 1° 45'W and 2° 10'N, covering a total land area of 9235 sq. km. It is bordered to the North by Wassa Amenfi District, to the east by Mpohor Wassa East District, to the south by the Mpohor Wassa West and Ahanta West Districts.

4.2.2 Climate and Vegetation

The region falls within the Equatorial Climatic Zone, primarily the Tropical Rainforest Zone of Ghana. It has a mean annual rainfall in the range of 1500mm and 1933mm with a bi-modal rainfall regime character, receiving rains from April to June and September to November. Relative humidity for the area ranges from 70% to 90% while the daily temperature ranges between 20°C and 40°C with 24°C to 30°C mean monthly temperatures.

The vegetation of the area consists of tropical rainforest characterized by rich undergrowth of climbers and shrubs of varying heights. The trees, which generally reach heights of between 15m and 45m, are distributed mostly at the summit of hills where

mining has not yet reached. There has been a rapid reduction in the density of trees in areas affected by mining activities. The removal of the forest cover is drying up rivers and streams leading to the extinction of river hosted animal and plant species on which the communities depend for their food and livelihood. Lack of protection from mining and lumber activities is primarily responsible for the poor vegetation in the area. Where the area has been mined out, the vegetation consists of ferns and other shrubs which grow dominantly in the hilly slopes.

4.2.3 Topography

Tarkwa and its environs lie generally within mountain ranges covered by thick forest with a variety of fauna and flora. In some cases, the ranges are interspersed by undulating valley bottoms. Tarkwa Township and its surrounding settlements are located between two long ranges of hills considered the two limbs of a gold mountain. These mountain ranges rise to an average of 300m above sea level but can reach 355m (Akabzaa 2000).

The evergreen mountain ranges are rich in biodiversity at least before the onset of mining, and with the numerous settlements in between them, appealing aesthetic scenery is presented. Unfortunately, these ridges are the main areas where gold is found, and they are the targets for open pit mining or surface mining.

4.2.4 Drainage

Tarkwa presents a unique drainage system. The mountain ranges constitute the source of water for many of the rivers and streams in the area. The Tarkwa region is also part of an extensive drainage basin known as the Ankobra Basin comprising of the Ankobra River and its tributaries. Locally, the Bonsa Sub-Basin comprising the Bonsa River and its tributaries such as Essumang, Agonabeng and Ahumabu covers the area. Almost all the tributaries of the Bonsa River in the region take their sources from the ridges within the mining concessions of large-scale mining companies, which operate open pit mines in the area.

4.3 Demography

The population of the Wassa West District according to the 1994 census was 260000 with an estimated growth rate of 3.0%. The spatial distribution of the population is skewed, with a heavy concentration in the mining areas. About 70% of the population resides in the Tarkwa mining region, where the population growth is also said to be above the national average of 3.1% (Akabzaa 2000). This is mainly due to migration of people to the area in search of jobs in the mining sector. The indigenous ethnic group is the Wassa people but the ethnic mix is highly varied due to mining activities and its attraction of people from all backgrounds (District Development Plan, 2000). The growing influx of people in search of jobs in the mines and the drift of unemployed youth from other regions in the country to the area for galamsey mining (illegal gold mining) are major contributory factors to the growing population. The total population distribution by sex is higher for females than males and the economically active group constitutes the largest proportion of the population of the area (Akabzaa 2000).

4.4 Economic Activities

The Wassa West is said to contain 44% of Ghana's closed forest, accounts for 30% of the country's gold production, about 39% of cocoa production, 50% of the country's standing commercial timber and 100% of manganese and bauxite production (Akabzaa and Darimani 2001). This natural resource potential provides the basis for varied economic activities in the area. Outside Tarkwa town and in the rural settlements around, subsistence and commercial farming have been the main economic activity among the people. Currently, however, mining has overtaken farming as the single largest economic activity in the area.

The large scale industry apart from mining is a glass factory located at Abosso with a workforce of about 300. There is also a tyre factory at Bonsa, which was out of production some time but resumed production around mid 1998. Other economic activities in the area include wood processing, textile manufacture and metal processing. There are also small-scale industries like milling, gari processing, carpentry, carving, craft making, black smithing, tailoring and petty trading (*ibid*).

4.5 Rural Economic Activities and Mining

Economic activities are acknowledged as crucial in rural livelihoods by the DFID Sustainable livelihood framework. Households in rural areas organize and pursue their livelihoods by engaging in income generating activities, which are usually farming activities. In the communities studied, the livelihoods of most of the households are single activity (crop farming) driven. This section discusses the rural economic activities that constitute the sources of livelihoods to the rural households sampled for the study in addition to exploring the extent to which mining and the operations of the two large scale gold mining companies GAG and WGL, as the case study, exist as viable economic or livelihood activity in the rural communities.

4.5.1 Farming Activities in the Study Areas



Fig 4 Picture showing sun dried cocoa beans
Source: photo taken by author (July 2006)



Fig 5 Picture with farmers working on harvested corn
Source: photo taken by author (July 2006).

The rich natural resource base of the study areas provides the basis for varied economic activities. Outside Tarkwa town and in the rural communities studied, subsistence and commercial farming have been the main economic or livelihood activity of the people. Specifically the rural households engage in crop farming, both food and cash crops. Examples of crops cultivated by most of the farmers are maize, cassava, plantain, and cocoyam. Some of the farmers also have cocoa and oil palm plantations which are the main cash crops cultivated by the farmers in the studied communities. In the Akyempim community, however, another cash crop of great significance to the livelihoods of the

farmers is rubber plantation. The Wassa West District alone is said to contain 44% of Ghana's closed forest and accounts for about 39% of cocoa production in Ghana and 50% of the country's standing commercial timber.

Currently, however, mining has overtaken farming as the single largest economic activity in the study areas. Gold in particular has assumed a leading role in foreign exchange earnings. In 1994, gold exports amounted to \$549 million, representing 45% of total export revenue (\$1,215million), beating cocoa (25% of total exports) down to second place for the third year running. Employment in the minerals sector also surged, at least up to the close of 1995. The total labor force of the sector rose from 15,069 in 1987 to 22,500 in 1995 (ISSER 1998). This figure represents full-time employees of mining companies alone and excludes exploration companies and mining support service companies.

Though employment surged in the mining sector, the farmers were not favored in the recruitment of labor to the mining companies in the study areas. The general disqualification has been the lack of requisite skills and low levels of education among the farmers.

4.5.2 Rationale for Mining in the Study Areas

Ghana has the potential to produce a variety of minerals including limestone, silica sand, kaolin, and stone as well as salt. The main minerals produced by large-scale companies are gold, diamond, bauxite and manganese, while industrial minerals such as kaolin, limestone and silica sand are mainly produced by small-scale operators. Foreigners or foreign investors are the main owners of the large mining companies while the government and private Ghanaian investors account for less than 15 per cent of the shares in these large scale mining companies. There are 19 large mining companies in Ghana operating 16 gold mines, and one bauxite, one diamond and one manganese mine, as indicated by statistics from the Mines Department. Currently, out of the 16 gold mines

operating in Ghana, with the exception of Ashanti Goldfields Company's Obuasi mine and the Prestea Gold Resources Limited, all the other mines are surface operations.

Tarkwa has the highest concentration of mining companies in the country and the West African sub-region and possibly the African continent. Out of the 16 large-scale mines in Ghana eight of them are located in the Tarkwa mining region, producing a significant proportion of the country's gold output. Gold contributes more than 90% of the total value of minerals won in the country. Of the \$612.9 million in total mineral export earnings in 1997, gold accounted for \$579.2 million, or 94.5% (ISSER 1998).

The structural adjustment policy pursued by the government of Ghana had a significant influence on the gold mining boom in Ghana, and within the Tarkwa area especially. The boom in fact induced the flight of resources and the livelihood of the people into the hands of transnational mining companies operating in Tarkwa and its environs. But in the face of the boom, national environmental policies have not been able to adequately guard and protect local communities from the adverse impact of mining operations. This has led to a deepening of poverty levels of the people in the mining communities.

Since mining projects are usually located in remote sites in rural areas, mining companies have had to invest in considerable physical and social infrastructure such as roads, schools, hospitals, electricity and water supplies. Communities within mine locations have generally been beneficiaries of some of these facilities. At the same time, these communities have been victims of air and water pollution as well as other forms of environmental degradation resulting from mining operations. Mining also often requires a considerable degree of land alienation. Thus, while mining projects generally have weak links with the rest of a host national economy, they can have a decisive impact on the communities in which, or near which, the mines are located. (Anyemedu 1992 also in Akabzaa and Darimani 2001).

The SAP pursued by the government of Ghana saw the mining sector becoming the leading recipient of foreign direct investment capital. Between 1986 and 1997, the sector attracted about USD 3 billion of foreign direct investment, representing more than 60%

of all such investment in the country. The benefits of the increased mining sector investments resulting from Ghana's ERP include the increased foreign exchange earnings in the country, the provision of substantial government revenue, the provision of capital and social infrastructure to the public, generation of direct and indirect employment and the development of communities in mining areas. These broader benefits also explain the rationale behind the expansion of mining and mining operations in the study areas.

The mining sector is said to be a significant contributor to formal and informal employment in the country. Up to 1995, the sector accounted for an estimated 20% of formal sector employment, with large-scale mining companies employing about 20,000 people. In addition, mining sector support companies such as assay laboratories, equipment leasing and sales agencies, security and catering agencies also contribute to formal sector employment.

But that notwithstanding, in both direct and indirect ways, mining accounts for the high rate of unemployment in the study areas. Large-scale surface mining has taken up large tracts of land, from farmers at the same time as mining activities do not provide enough jobs to match the total number of people laid off from agriculture because of the impact of mining.

4.5.3 Operations of GAG and WGL Mines in the Study Areas

With the creation of a congenial mining investment atmosphere through mining sector reforms in the country, not only were new multinational mining companies attracted but also existing ones gained the impetus to expand operations and productions. The AngloGold Ashanti Goldfields Limited (GAG), Iduapriem mines was established when Ashanti Goldfields Limited has gone multinational, through its expansion program (Akabzaa and Darimani 2001). It is located in the western region of Ghana; 85kms northwest of the city of Takoradi and 10 kms south west of Tarkwa. It was formerly registered as Ghanaian Australian Limited (GAG) in 1993 under Golden Shamrock Ltd. (GSM) and then became part of Ashanti Goldfields Ltd in 1996. It is now part of the AngloGold Ashanti group. Shareholding is Anglo Gold Ashanti 85% and IFC 15%.

It operates open pit gold mining with a mine life of 2018 with 5-7 year post mining monitoring and currently has annual production of 210.000 ounces. The social challenges identified towards its operations include environmental, community relations, land issues and compensation. It has a meticulously arranged environmental policy guidelines which include looking at aspects and impacts for real and potential risks, resource conservation and management, compliance with national, company and other SOP (Standard Operating Practice) and guidelines, and prevention and control of pollution.

There are 8 main communities within the concessions of the mine or associated with the Iduapriem mine.

Table 1 Population Distribution of Communities

community	population
Adisakrom	450
Adeyie (New Iduapriem)	1524
Agege (Mile 7)	436
Abompuniso	1070
Nkwantakrom	235
Teberebie	1137
Techiman	168
Wangarakrom/ Badukrom	2500
Total	7610

Source: The Social License to Mine (April, 2006)
(Note: The communities in bold are the study areas)

Community Operations of GAG

The company seeks among its broad community relations strategy to undertake capacity building of the communities in ALP, have continuous engagements with communities through Community Consultative Committee (CCC), Community Liaison Group (CLG) and Monitoring Advisory Group (MAG) meetings. It also aimed at providing community assistance, water, sanitation, health, education and other infrastructure as prescribed by community development plan (CDP).

Its Alternative Livelihood “Hand in Hand Program” aimed at establishing a prototype model for sustainable social and economic development for the communities for the disadvantaged in the 8 rural communities on the mine’s concessions in the event of closure and loss of associated employment and infrastructure. Interventions or activities in this regard include capacity building/training, agriculture, micro credits, education, water/sanitation and community resilience and participation. The “Hand in Hand program” was launched in January 2005 with a social development partner called Opportunity Industrialization Centers International (OICI). Reports as at April 2006 showed that it has made impact on the lives of about 500 households in the rural communities.

The hand in hand program introduced vegetable farms, piggery, fish farm, pomade and soap making, and snail farming. It offered incentives package to teachers, micro credits to farmers, launched community electrification project, undertake road construction and its maintenance, constructed KVIP for use of community, undertake community medical outreach program, among others.

Part of its education program towards community development is to offer training programs in the mine through attachments, national service and apprenticeship. It gives community contracts or casual jobs from which the farmers benefit. It undertakes relocation, crop and structure compensation and has received IFC proposal to consider land for land as part of the compensation package.

Table 2: Mine's budget on Community Development (2005).

Project	Amount in USD
Hand in Hand	268000
Education	84000
Water/Sanitation	5000
Donations	5000
Total	362000

Source: The Social License to Mine (April, 2006)

WGL

Wexford Goldfields Limited (WGL), which is a relatively younger mine, started full official operation in 2003 with its concessions in the Akyempim community, which provides another case for this study. This gold mining company is approximately 4 hours by road from the center of Tarkwa town.

The government of Ghana controlled at least 55% shares in all large mining operations like those of GAG and WGL before the era of structural adjustment. However, the ownership structure of these gold mining companies and all other companies in the mining industry has radically changed with private investors now playing a leading role. Foreign companies control an average of about 70% of shares in these mines. The government has 10% free share in each mine, with the option to acquire an additional 20% at the prevailing market price (Biney 1998). The dominant players in exploration are mainly junior companies from Canada, Australia and South Africa, with lesser investors from United States, United Kingdom, Norway, China etc.

The vigorous changes in the mining sector in the last 15 years brought about improved exploration, mining and processing technology. This has revolutionized the entire mining industry in the country, particularly in the domain of gold. GAG and WGL have benefited immensely from this revolution in their operations. The mines' development of processes such as cyanide heap-leach and bio-oxidation has made viable the processing of low-grade material which hitherto was considered waste. Both GAG and WGL operate

the open cast or surface mining using the intensive cyanide leaching processes with negative dimensions in terms of environmental impact.

Impact of Mining

The intensification of mining activities particularly by GAG has generated environmental and social issues in the study areas. The issues centre on resettlement and relocation, negotiation and compensation as and when farmlands are claimed by the mines and environmental damage. The persistence of these socio-environmental problems has created occasional and frequent resistance from the affected communities as well as clashes between them and the mining companies (Akabzaa and Darimani 2001). The destruction of sources of livelihood and the spate of resistance and clashes have given rise to an environmentally conscious population from which local social movements are emerging in the study areas. The capacity of the mines to generate employment meanwhile is limited. This is because surface mining operations are capital-intensive with relatively low labor requirements.

The operations of GAG and WGL mining companies have had adverse impact on the social organization and cultural values of the people. Concerns have been expressed about inadequate housing, youth unemployment, and family disorganization and increased school drop-out rates (Akabzaa and Darimani 2001). Between 1990 and 1998, mining investment in Tarkwa has led to the displacement of a total of 14 communities with a population of over 30,000 (*ibid*). Some of the communities had to migrate in search of farmland while others were relocated or resettled by the mining companies.

The growing displacement of these rural households in the communities has resulted in increased migration of the youth, who were not considered for compensation to the towns, especially Tarkwa, in search of jobs. The sudden flow of people into the township has created a major problem of housing. Rents have risen so much that the migrant unemployed youth cannot afford available rooms in the towns.

The relocation and compensation measures implemented by the mining companies have had serious consequences for the family as a close-knit social unit. New housing arrangements for resettled communities have in some cases also disrupted long established family networks in the area. In many instances, the housing units provided by the mining companies have not conformed to the size of households (*ibid*). Some of the resettled affected households complained of inadequate internal space (number of rooms, size of rooms) and open external space for other domestic activities.

One of the known, negative effects of the operations of the mining companies in the studied rural communities is the increased cost of living. All the indices like food, accommodation, health, water, etc., that make a decent life have a price tag beyond the reach of these rural households. At the same time, the traditional sources of livelihood of these farmers are impaired by the mines' operations, a situation that sparks off or aggravates other social problems.

Two main factors are identified by Akabzaa and Darimani (2001) as responsible for the high cost of living in the study areas. First, there is the disparity in incomes in favor of mine workers. For example, the salaries of the Ghanaian staff in the mines are indexed to the US dollar, which raises their income far above their counterparts in the public sector. In addition, the expatriate staff of the mines is paid internationally competitive salaries, which further widens the income disparities in the study areas. This group of high-income earners has thus influenced the pricing of goods and services such as housing, food and other amenities.

Secondly, the mining industry has withdrawn a significant percentage of the labor force from agriculture and other income-generating activities by taking farmland away. The fall in food production in an area that has been flooded by migrants, accounts for high food prices.

In the rural communities of the study, the environment is undergoing rapid degradation and its economic value is diminishing from year to year, mainly due to the intensive operations of the mines in the area. Agricultural lands are not only generally degraded

with low yields, but the scarcity of land for agricultural production has also led to a shortening of the fallow period from 10-15 years to 2-3 years according to Akabzaa and Darimani (2001).

The principal elements of the environment, which are land, water and air, have been adversely impacted by mines' operations. Four main problems of water pollution have been noticed in the study areas. These are chemical pollution of ground water and streams, siltation through increased sediment load, increased faecal matter and dewatering effects. The pollution also weakens the ability of the stream to support aquatic life and has denied the people access to clean water. The situation has become unbearable to the extent that many of the households within the concession area of GAG are requesting relocation or resettlement. The concerns of the affected households on air quality have been the airborne particulate matter, emissions of black smoke, noise and vibration through the activities of the mines.

Related to the adverse environmental impact of mining is the generation of diseases due to pollutants and accidents at mines. The effects of some of these pollutants manifest themselves immediately (cyanide, for example) but others (such as mercury) take a long time to show. In Tarkwa where GAG operates, the extraction and processing of gold has given rise to various environmental related diseases and accidents. According to the District Medical Officer of Health Dr. Avorti, the common, mining-related diseases observed in the area over the years include, but are not limited to:

- a) Vector-borne diseases such as malaria, schistomiasis and onchocerciasis;
- b) Respiratory tract diseases, especially pulmonary tuberculosis and silicosis;
- c) Skin diseases;
- d) Eye diseases, especially acute conjunctivitis and
- e) Mental cases.

According to Akabzaa and Darimani (2001), data obtained from the District Medical Office, Tarkwa, suggest that mining impact related diseases such as malaria, diarrhea, upper respiratory diseases, skin diseases, acute conjunctivitis and accidents form the top ten diseases prevalent in the area.

CHAPTER FIVE

5.0 Vulnerability Context and Capitals

5.1 Introduction

This chapter of the study seeks to examine the various constraints and vulnerability that these rural households face in pursuance of their livelihood activity and their general livelihoods. Further, it assesses the various forms of capital or assets available for the households.

The impact of mining on the livelihoods of the rural households and individuals cannot be fully assessed without considering the vulnerability context under which livelihoods activities are performed. In the Sustainable Livelihood Framework, the vulnerability context is identified as shocks and stress (trends, situations and seasonality). These are the exogenous factors that affect livelihoods especially livelihood assets either directly or indirectly.

It is the interaction of processes, policies and institutions as well as the vulnerability context that determines the livelihood outcomes from a particular livelihood strategy.

5.2 Rural Livelihood Activities in Vulnerability Context

Rural livelihood activities are undertaken in the face of trends, situations, seasons and shocks.

5.2.1 Situation

Generally livelihoods in the communities under study are characterized by single income generating activity, which is farming specifically crop farming. The absence of viable

alternative livelihood activities made households less capable to deal with any potential livelihood adversities.

Another situation in the livelihoods of the households in the rural communities studied is low income. It is note-worthy that the low income is a situation in their livelihoods before operations of the mines. Fifty percent of interviewed heads of households in TAAA earned below 500,000 cedis (equivalent of USD 60, *the exchange rate was 1=9000 approx as of July, 2006*) per month from produce of their farms before the effects of the operations of the mines. This situation is now worsened by decline in yields from farms for those still farming after the impact of mining in the communities. It is just a few who used to earn above one million cedis (equivalent of USD 120) per season in TAAA.

Table 3: Seasonal Income of Farmers from Rural Activities

Income rank (in cedis)	TAAA		Akyempim	
	Frequency	Percentages	Frequency	Percentages
Below 100,000	1	5	2	20
100,000-500,000	9	45	0	0
500,000-1,000,000	0	0	1	10
1 million and above	4	20	6	60
Don't know	6	30	1	10
Total	20	100	10	100

Source: Author's Field Sample Survey (July, 2006)

The low income situation also existed in the Akyempim community but appears better than in TAAA. A greater number (6 out of ten) of the heads of household interviewed in the Akyempim community earned 1 million cedis and above. One-fifth earned between 50,000 and 100,000 cedis while the rest don't know exactly how much they earn. One respondent explained this is so because he didn't harvest anything before the farm was taken over by the mines. One reason for the low incomes in the communities is the greater subsistence culture as opposed to commercial farming in some of the households.

On the whole the heads of households who were interviewed claimed that their income from farming was inadequate to enable them attain good livelihoods. Nine out of ten farmers interviewed in the Akyempim community considered the incomes from their farms as insufficient for them (Appendix A2b). This is worsened by the absence of adequate viable alternative income generating activities for them.

Half of the interviewees in the Akyempim community however, had supplementary sources of income, most of which were temporary jobs and petty trading. Other type of supplementary sources of income included palm wine tapping, pension payment or allowances and transfers from family members. One-fifth did not have any other sources of income apart from the income from their farms while others relied on spouses who were with vocations.

Table 4: Responses of Interviewed Farmers on other Sources of Income

Other sources	TAAA		Akyempim	
	Frequency	Percentages	Frequency	Percentages
Yes, other sources	9	45	5	50
No other sources	8	40	2	20
NA	3	15	1	10
Other: rely on others, esp. wife, seamstress/trader	0	0	2	20
Total	20	100	10	100

Source: Author's Field Sample Survey (2006).

More than eighty five percent of the respondents in TAAA who had alternative sources admitted that such returns were still inadequate to support the livelihoods of their households (Appendix A2). The consequence of this is that poverty and hardship situations have worsened in the communities, especially with the increased mining operations in the communities.

One other situation common in the livelihood of the households was the dependence on one-man breadwinner for living. A considerable percentage of the heads of household who were interviewed, however, receive support from spouses, who are also peasant farmers. On the whole 60% of the households in all the rural communities have at least one person in the household earning an income (Appendix A3).

5.2.2 Seasonality

Seasonality is also function of the vulnerability of livelihoods in the communities. Produce from farms are realized only after specific seasons just as farming activities are undertaken seasonally. The seasonality of produce and farming activities combine with

the singleness of income generating (livelihood) activity and dependence on one-man as the breadwinner to make livelihoods more vulnerable to shocks and disasters.

The alternative livelihood programs of the GAG for the affected farmers also come under the vulnerability context of seasons. In the Adeyie community, the repayment of micro-credits given to the groups of affected farmers is rendered difficult in view of the seasonality of farming activities. This apparently stalls and delays the revolving process of the fund to other affected farmers.

5.2.3 Shocks

Ellis (2000) defines shocks as unpredictable events that can directly destroy assets or affect the people themselves. Chambers and Conway (1992) emphasize that shocks are typically sudden, unpredictable and traumatic. Mostly there are natural shocks like floods, drought and famine. The study reveals shocks as related to the capture of land by the mining companies. This constitutes a deprivation of physical asset from which the rural activity of farming is undertaken as a means of obtaining livelihood. Related to this is the loss of income which could have accrued to the households if crops were harvested and sent to the market. The study, therefore, classifies the shocks in the vulnerability context into two: as physical and economic shocks.

Physical shocks

The intensification of mining and operations of mines in the communities resulted in impacts on the livelihoods of the rural households specifically on their livelihood activities in the foremost. The mines claimed lands on which these rural households undertake their farming activities as their concessions.

It is noted by one respondent that farmlands do not only constitute the basis for undertaking a livelihood activity but also recognized as important livelihood assets. In all, over 50% of the interviewed heads of households have suffered destruction of farms and

losses of farmlands to the mines in the studied communities (Appendix A12). The mines claimed the farms were cultivated on lands, which are part of their concessions.

This apparent destruction of livelihood activity caused strains on the livelihoods which to some of the heads of households led to hunger and hardships. The mines' claim over lands leads to increase in rent for temporary farmlands, commuting over long distances to newly acquired farmlands and difficulty in moving to new lands due to fear of future capture. Others are problems in the acquisition of new lands, lost of livelihood or employment, inability to educate family, hardships, hunger and poverty.

Those who are still engaged in farming do so by commuting over long distances to newly acquired lands. Aside from fatigue due to long distances to farms, some of the interviewees claim that though they continue to farm, yields have fallen considerably as a result of pollution of soil with chemicals from the mines.

The mines according to the respondents usually pay relatively less money as compensations. They explain that, the less money is because they would have obtained more money as incomes than the compensations given them if they had harvested and sold their produce. The consequences of these low compensations according to the respondents are hunger, joblessness, and absence of alternative lands for farming, hardship and poverty.

“Farmers had worked so hard over the years not expecting this sudden invasion by the mines. All they have on their farms were destroyed but compensation not commensurate enough. Now many are disillusioned and disenchanted” (quote from Mr. Ernest Amoateng, the Assembly man of TAAA – Field Interview, 22nd July, 2006).

Other physical shocks include cracks in buildings as a result of blasting activities of the mines and degradation of the environment in general (*see fig. 6*).

Economic shocks

Increased cost of living has become a difficult phenomenon for the poor farmers to deal with, especially those who lost farming as livelihood activity. The reason is that with the claim of lands from the farmers by the mines and inadequate, sometimes no compensations given, most of these farmers are not in a good position to buy even basic items, prices of which are high because of competitive miners' income. Another reason has been that food has become scarce because only a few farmers are farming. In the Akyempim community food has to be brought to the market from other towns.

Though farmlands were taken over as concessions by mines, crop compensations have not been paid to many. Where such action of compensations is taken, money given are very little and far incommensurable. These coupled with soaring unemployment levels have tended to worsen the plight of farmers in the communities.

5.2.4 Stress

Chambers and Conway (1992) describe stresses as pressures which are typically continuous and cumulative, predictable and distressing. These increase gradually to affect resource accessibility.

Uncertainty and fear in moving to and farming on new lands are the immediate forms of stress acknowledged by the heads of households interviewed. The operations of the mines keep expanding. The taking over of lands from the farmers by the mines as concessions is therefore done intermittently. The farmers do not know which lands are not included in the concessions of the mines as nothing like demarcation lines or borders are provided. In this regard farmlands can be taken over by the mines at any time and can happen to any one consecutively.

One head of household in the Adeyie community has suffered three times of land seizures by the mines. This creates uncertainty, anxiety and fear in moving to another land for

farming activities. Some of the affected farmers have now lost interest in farming because of these unfavorable conditions.

Some of the respondents in view of this expect the government to provide the farmers and the entire community with demarcation lines specifying which lands within the community have been granted to the mining company as concessions. This is expected in order to remove the fears that farmers have in working on existing lands and encourage those not farming at all because of such fears to have confidence in existing lands. Education on environmental and health impact of the operations of the mines is again important to some of the respondents in reducing and forestalling diseases that are widespread in the communities.

It is expected that government intervene to ensure that adequate compensations are paid and that they are made on time. Related to this is land compensation, which is also expected to be regularized with the practice of paying just portions of land, but not the entire land discontinued. The reason is that the remainder of the land cannot be used for farming side by side with the mines activities.

5.2.5 Trends

Declining incomes has been the trend in the livelihoods of some of the affected farmers, i.e. those who are still engaged in farming. This is partly the result of decline in farm yields due to pollution of soil by chemicals used in the mining process.

5.3 Impact on Stock of Capital Assets

In the livelihood frameworks of Carney (1998), DFID (2000) and Ellis (2000) the various capital assets available to households for use in pursuit of livelihoods are identified as physical capital, human capital, financial capital, natural capital and social capital. The attainment, enhancement and use of the stock of capital assets by the households in the communities are impacted upon by mining. The impact is either positive or negative on each household though some households claim that mining and the operations of the

mines in their communities have resulted in both negative and positive impacts on their livelihoods.

The introduction of mining and the operation of mines in the communities of TAAA and Akyempim have helped in enhancing the livelihoods of some of the people according to the survey. Asked whether he believes mining and the operations of his mine have enhanced the livelihoods of farmers, the head of Community Relations Officer (CRO) of GAG answered in the affirmative. He gave reasons that the company started the “Hand in Hand Program” for communities in the mine concession. He explains that “Hand in Hand Program” involves capacity building of members of the communities in agriculture, micro-credit management, micro enterprises and supply of inputs for selected income generating activities. In his view the agricultural training has direct benefit to the livelihood activity in respect of livelihood activity improvement. In the area of livelihood assets, he explains that about 20 households in the Iduapriem community have been resettled at Adeyie community while they have again provided school, electricity, and clinic as well as bore holes with pumps.

He further states that there have been other livelihood opportunities and benefits like medical outreach programs, especially extension of HIV/AIDS peer educators program of the mines to the communities, and the support rendered to them in the form of other income generating activities like crop farming, animal husbandry, micro-credit, micro enterprises, etc.

According to the CRO of WGL, the existence of the company has improved the road network in the area thereby enabling farmers to transport their produce to the market. To him, this has yielded direct benefit to the farmers in respect of their livelihood activity as the company has opened up the area. This is corroborated by the Assembly man of the Akyempim who believes that the road networks have made it possible for the people to enjoy from the regular flow of food from other rural communities even as most of farmers are not working, and therefore food production has become low. In the opinion of the CRO of WGL, the road networks aside from providing infrastructure and thus a boost to the livelihood asset of the farmers have again brought improvement in the finances and

health of the people. This has been achieved through the establishment of a clinic in the community to provide health care services.

He believes that mining has not impacted negatively on the livelihoods of all farmers who lost land in the sense that those farmers who used their compensation money profitably benefited, while those who could not manage their compensation money well did not see any improvement in their livelihoods, but rather saw their plight worsening.

He acknowledged the existence of the negative impacts of their operations on the livelihoods of the poor farmers, but reiterated that measures have been put in place to start alternative livelihood projects in the catchment communities of the mine to improve the condition of the farmers in the community. He again admitted that negative impacts exist in the form of problems related to resettlement culture, which has created the problem of long distance to farms. There is also complaint about dust pollution and cracks in buildings.

Approximately three out of four heads of households interviewed in TAAA and Akyempim communities claim they have not realized any livelihood enhancement since the mines began operations in their communities (Appendix A4). In the TAAA communities those affected most are residents in the communities of Teberebie, Abompuniso and Agege.

Those who find mining an enhancement of their livelihoods are mainly in the Adeyie community. To these residents of Adeyie, mining has helped to attain greater well-being by repairing their roads and enhancing easy transportation of produce, provision of market for their farm produce, the construction of clinic, school and workshop and extension of electricity to the community.

To these residents of Adeyie, training in alternative livelihood activities other than crop farming, especially in animal rearing (poultry, grass cutter, pigs etc.) and financial management training, have provided them with new skills and knowledge through which additional incomes could be obtained.

A little over twenty five percent of the heads of households interviewed in the studied communities admit that the introduction of mines into their communities and the operation of the mines in general have enhanced their livelihoods (Appendix A4). To them mining has provided a market for their farm produce, promoted the local economy in general (business better than at first) and brought about the establishment of school that educate children, who used to travel several miles of distances to school, and finally the establishment of milling factory by mine workers which also saved them the trouble of commuting over long distances.

Nearly three out of four of the heads of households interviewed, however, state that mining has not enhanced their use of any skills, knowledge, abilities, etc. that accrue additional income to them (Appendix A6).

5.3.1 Physical Capital

In the TAAA and Akyempim communities, mining has enhanced the physical capital base of the heads of households interviewed in the first place through the promotion of farming activities. To these heads of household, farmlands constitute and exist as important physical capital by which they can attain greater well-being.

Enhancement of the physical capital stock of the rural households is realized through the repair of roads which makes it possible for easy transport of farm produce, the construction of community school, clinic and workshops as well as the extension of electricity to the communities.

Respondents in the Akyempim community view the establishment of corn milling centers as a positive impact on their physical capital stock. Man-power spraying machines are given to the farmers as inputs by the mines. Palm seedlings are also received by some of them, all of which promote the farming activities of the farmers in the communities under study particularly in the Adeyie community.

In spite of the positive impact on the physical capital stock of the farmers, mining has had negative impact as well. Many have had their farmlands claimed by the mines, an action that deprives them of a viable physical asset (farms) which forms the means of attaining their livelihoods. Blasting of ores creates noise and vibrations which directly result in cracks in buildings in the communities. In the TAAA communities, Teberebie community is the one that receives the worst impact, while the entire Akyempim community is at risk.

Resettlement done by the GAG mines in the affected Teberebie community again caused loss of housing quality to some of the farmers. This group of unsatisfied farmers asserts that their former houses had more rooms and compound (spaces) than the houses, in which they have been resettled because of the effects of the mines' operations. For instance, one affected household in the Teberebie community, that had a house with five rooms and large space, was resettled in a house with three rooms in a crowded space resulting in the loss of quality housing as previously enjoyed. There are, however, other communities which have not been resettled yet, and thus people continue to live in houses directly affected by the operations of the mines, especially in buildings with cracks.

5.3.2 Human Capital

The alternative livelihood programs of GAG, particularly to the affected farmers in the Adeyie community, have equipped them with skills and knowledge in other livelihood activities, like animal rearing, including poultry, grass cutter, snail and pig rearing, and palm kernel oil extraction. Financial management training also provided by GAG through OICI has provided the affected farmers with new skills and knowledge in order to enhance their financial capital and sustain their activities. Affected farmers in the Adeyie community are the most beneficiaries of the ALP of GAG. In the Akyempim community, however, the Wexford Goldfields Limited mines are yet to undertake its ALP for the benefit of the affected farmers.



Fig 6 Picture showing cracks in building
Source: photo taken by author (July 2006)



Fig 7 Picture showing ALP beneficiary with pigs
Source: photo taken by author (July 2006)

Table 5: Education level of respondents

Status	Frequency	Percentages
never went to school	8	21.6
primary	7	18.9
junior secondary	5	13.5
senior secondary	2	5.4
post-secondary	3	8.1
polytechnic	1	2.7
university	1	2.7
other: MSLC	10	27.0
Total	37	100

Source: Field sample survey (July 2006).

It is worth noting that the construction of school and clinic by the GAG and WGL mines in the TAAA and Akyempim communities have direct positive impact on the human capital stock of the farmers. In the Abompuniso community not only has GAG built a school to educate children of the rural households for better human capital, but also the mining company pays 15% of teachers' salary. There is also the institution of a scholarship scheme for wards of farmers as support for higher education.

Apart from the construction of clinic to provide the farmers especially those in the Adeyie community, with health care services, GAG undertakes projects like the construction of bore-holes to give the people potable and good drinking water. This goes to improve the health and general well-being of the farmers. Similar social services and

projects by WGL mines in Akyempim community also enhance the human capital base of the rural households in general. In the view of one opinion leader interviewed in the Akyempim community, the establishment of clinic in the community, though they pay for medical attention, has brought considerable improvement in the health conditions of the farmers in general.

Mining and the operations of GAG and WGL mines have, however, had adverse effects on the human capital stock of the rural households. Over sixty five percent of responses confirm this (Appendix A11). Explanation for this is very varied. Water pollution by chemicals from mines has been the concern of the majority. This, according to them, causes diseases and the fear of dying from drinking from streams. Related effect of this water pollution is the physical drudgery and the burden of carrying water in gallons over long distances to farms as stated by one respondent. Tired after the long distance, fatigue which is the consequence of this affects productivity as it comes with reduction in productive work on farms.

Dust, fumes, noise and vibrations due to blasting works of the mines cause health and safety hazards. Headaches, catarrh and running nose are the direct results of these. Other explanation given for the negative effects of mining on the human capital stock of the rural households is rain water pollution (rain water has been the substitute to the streams), which also causes diseases.

5.3.3 Financial Capital

Though in terms of direct permanent employment the affected farmers have not benefited much because of lack of requisite skills, the farmers benefit when the mines offer employment on contract basis to the community, a percentage of which goes to fund development projects. It is admitted by some of the respondents that such contract jobs, offered to the farmers in the TAAA communities by GAG, have been very supportive of their livelihoods, and wished they were regular.

Provision of training in alternative livelihood activities and financial management to the affected farmers by the mines is complemented by micro-credits. Approximately twenty percent of the heads of household interviewed in the TAAA communities admitted that mining has generally improved their finances through the provision of livestock free of charge, seedlings and micro-credit (revolving fund) as start up capital (Appendix A7).

Another way, in which mining has improved the financial capital of the farmers, is in the availability of ready market for the produce of the farmers as a result of attraction of many people to the communities in addition to the high effective demand of the mine workers. The Assemblyman of the Akyempim community identifies market boost as one of the direct ways mining has promoted the livelihoods of the farmers. He explains that farmers' income from sale of farm produce increases with the increase in market size. The produce of the farmers, he noted however, command good prices because very few foodstuffs are brought to the market.

Mining in spite of the boost that it gives the financial capital of the farmers also exerts negative impact on the finances of the farmers. There is in the foremost the destruction of livelihood activity of the farmers. Some of the affected farmers did not have the chance to harvest their labor at all before the mines claimed their lands. Compensations received by most of them, as claimed, are far incommensurable, hence losing great deal of money as a result. Those who are still farming suffer low crop yields because of the chemical pollution of soils aside from facing unfavorable land tenure. All these exert a negative impact on the financial capital of the farmers, thereby causing adversities in their livelihoods.

The assemblyman of the Akyempim community again disclosed that mining in the community has brought about high cost of living, which has affected the finances of the farmers adversely. The farmers, he states, have to now compete with the mine workers who receive better and regular wages in the same market. This is corroborated by an opinion leader who emphasized that farmers cannot afford the cost of items in the community and cannot generally cope with the high cost of living. In his view, mining

has changed the entire social and economic lives of farmers in the community for the worse.

5.3.4 Natural Capital

The operations of the mines in all the communities under study are characterized by water, air and soil pollution which degrades the stock of natural capital available to these rural households. Pollution of streams and rain water causes widespread diseases and fear among the farmers in coming into contact with the waters of the streams in the communities. Pollution of air by fumes and dust particles put the farmers at various health and safety risks which includes respiratory tract infections, headaches and catarrh. Soil pollution by chemicals used in the mining operations has tended to affect the attractiveness of crop yields both food crops and cash crops.

Also the loss of farmlands by the households is a loss of natural capital available for the household to the mines.

5.3.5 Social Capital

Employment to other members of the households has been acknowledged by some of the heads of households as helpful to livelihoods as social capital stock within the household is boosted.

Mining however has also had adverse impact on the social capital of some of the households particularly in the TAAA communities. In the disbursement of the micro credit to the affected farmers, certain groups of farmers in the Adeyie community were favored. This according to one respondent has tended to bring conflict among some households.

CHAPTER SIX

6.0 Effects of Transforming Structures and Processes

6.1 Introduction

Carney (1998) acknowledges the significance of transforming processes, policies and structures also by stressing the importance in determining the accessibility to assets to attain a viable livelihood. Access to and even control over the use of assets is determined by institutional structures and processes. In this chapter attempt is made to examine the effect of processes, policies and institutions on the livelihood activities, assets and capabilities of individuals and the entire households in the rural communities studied.

6.2 Structures

DFID (2000) describes structures as public and private organizations that set and implement policy, legislation, deliver services, purchase and perform all manner of other functions that affect livelihoods. Well-working structures are therefore very important because their absence is an obstacle to obtaining viable and sustainable livelihoods by making asset accessibility difficult. The legislative bodies in any country are important because they make laws that are used in governance. DFID (2000) further asserts that structures make processes function.

6.2.1 Levels of Government (Public Sector Mining Support Organizations)

Under levels of government, emphasis of the discussion is dwelt on the public organizations that control or influence the mining operations and the mines in general. These include the Ministry of Mines, the Minerals Commission and the local government. Concerns raised by most of the heads of households center on government interventions in the issues of compensations, demarcations of the concessions of the mines in order to give security over farmlands, supervision of the activities of the mining

companies to curtail hazards and ensuring mines' compliance with environmental and safety regulations, as well as governmental support for livelihoods.

The mining industry receives public sector support from an institutional framework of organizations. These are: the Ministry of Mines and Energy, the Minerals Commission, the Geological Survey Department, the Chamber of Mines, the Mines Department, the Environmental Protection Agency, Lands Commission, Land Valuation Board and the Forestry Commission. These organizations are required to provide support to ensure optimal exploitation of the country's natural resources.

The Minerals Commission

The Minerals Commission is a public institution responsible for the administration of the mining and investment laws. Under the mining sector reforms, the Minerals Commission was set up in 1986, to ensure a one-stop service for investors and to minimize bureaucracy. It is responsible for formulating regulations, amending and modifying existing legislation as necessary to set up a sound regulatory framework for the sector. It develops guidelines and standards for monitoring of the environmental aspects of mining activities. The Commission also makes recommendations on minerals policy, advises the government on mineral matters and reviews, promotes and develops mining sector activity (Biney 1998 cited in Akabzaa and Darimani 2001).

The Ministry for Mines and Energy

The Minister for Mines and Energy is responsible for all aspects of the minerals sector in the Ghanaian economy and is the grantor of mineral exploration and mining licenses and leases. Within the Ministry, the Minerals Commission has the responsibility for recommending mineral policy, promoting mineral development, advising government on mineral matters and serving as a liaison between the government and the industry.

The Geological Survey Department

The Ghana Geological Survey Department conducts geological studies and prepares geological maps for government. The Mines Department is responsible for safety in the mines. The Ghana Chamber of Mines is a private association of operating mines. It seeks

to promote mining interests and communicates and exchanges information on mining matters with government and other public and private bodies. It also engages in discussion of proposals for legislative bodies and also negotiates miners' compensation and benefits with the National Union of Mine Workers.

The Lands Commission

The Lands Commission maintains legal records of exploration licenses and mining leases, and participates in the examination of new license applications. The Commission also seeks to initiate policies relating to stool and state lands. The Valuation Board provides rates for valuation of property affected by mining operations.

The Environmental Protection Agency

The Environmental Protection Agency tries to strike a balance between the demands of the rapid economic growth and the need to protect the country's natural resources, and protect the health and welfare of the people, ensuring environmentally sound resource extraction. It conducts and promotes studies, investigations, surveys, research and analysis relating to the improvement of the country's environment, and to maintain sound ecological system (Biney 1998).

The Forestry Commission

The Forestry Commission is responsible for the management of the country's forest. The department is supposed to work with the Minerals Commission on the granting of exploration licenses and mining leases to ensure a balance between mineral extraction and sustainable forest resources. This collaboration became particularly necessary when the Chamber of Mines started lobbying for mining concessions within forest reserves (Akabzaa 2000).

The defined roles of the various institutions are the statutory roles. There are, however, no effective cross-sectoral linkages among these institutions. This lack of effective collaboration among the sector institutions contributes to some of the environmental problems resulting from mining. A number of exploration companies are currently operating in forest reserves because local forestry authorities are not always aware of the

grant of licenses to companies to operate within forest reserves until these companies commence exploration activities in such areas. The growing encroachment of forest reserve and the growing conflicts among communities displaced by mining and mining companies over payment of compensations reflects lack of harmony among mining sector Institutions (Akabzaa 2000 also in Akabzaa and Darimani 2001).

Local Government

The local government constitutes an important structure in the mining and operation of the mines in the communities under study. The formation of groups of affected farmers, concerned farmers and other groups can be made recognizable, when the presiding member of the local government for the communities is represented. The mines recognize and deal directly with local assembly members rather than with the farmers. The Assemblyman in these rural communities is thus the spokesperson for the affected farmers in meetings with the mines.

6.2.2 Private Sector

The private organizations in focus here are the mining companies. The two mining companies under study viz, AngloGold Ashanti Goldfields Limited (GAG) and Wexford Goldfields Limited (WGL) have different programs for operations in their respective catchment areas. This is evidenced by their approaches towards claim over concessions occupied by the farmers and accompanying issues like compensations, resettlement of affected households, community capacity building programs, the provision of social services and development projects and alternative livelihood programs.

In the TAAA communities, though GAG provided alternative livelihood programs, over sixty percent of heads of households are not satisfied with the operations of GAG in the communities (Appendix A10). Varied reasons are given for this general dissatisfaction. Some state point-blank that mines don't give any benefits, assistance, nor give development projects, and where they are given, they are inadequate as compared to the damage to farms and livelihood assets, like buildings that are collapsing.

Concerns are that development projects like provision of electricity and water are unfairly distributed. Some communities like Abompuniso and Agege are not benefiting from electricity extension and potable water provision; hence continue to drink from streams, with high risk of pollution and health hazards. For one respondent the high environmental pollution and the accompanying widespread diseases are the reasons for his dissatisfaction with the operation of the mines in the community. Roads are left untarred and usually rough, and in bad condition, both in rainy (muddy) and dry season (dusty).

WGL is yet to undertake alternative livelihood program in the Akyempim community for the benefit of the affected farmers. Though compensations are paid, the practice just like done by GAG, leaves the affected farmers with no say or control over the amount to be received, while some farmers have not been paid compensations due them after land has been claimed. In some cases compensations are paid over long period, which in effect denies the affected farmers full benefits at the instance when farms are destroyed.

6.3 Processes

Processes refer to the policies, institutions, legislations, and culture and power relations. Processes determine the way in which structures and individuals operate and interact. Policies identified could be macro, sectoral, redistributive or regulatory. Institutions according to Ellis (2000) are formal or informal codes of behavior. Carney (1998) and DFID (2000) also claim that processes include markets, societal beliefs and norms in addition to power relations, which include gender, caste or class.

Policies grant or deny access to assets, and through markets people are able to transform one type of asset to another. DFID (2000) again establishes that policies have a strong influence on interpersonal relations specifically how different groups of people interact with each other. Households, as noted by DFID (2000), are limited by the processes that frame their livelihoods, which restrict their opportunities for advancement.

6.3.1 Policies and Legislations

A policy is defined as a course of action designed to achieve particular goals or targets. In 1986 there were massive mining sector reforms as part of the macro-economic policy reforms of the economic recovery program (ERP) initiated in 1983. Sectors, like mining that had the potential to generate export revenue, were the priority targets of these reforms. Among the broad objectives of the structural adjustment program was to establish an incentive framework to stimulate growth, encourage savings and investment and strengthen the balance of payments.

World Bank policy recommendations for restructuring the key export sectors, especially mining, under the structural adjustment program included the need for a coordinated program of rehabilitation of state-owned mines, a satisfactory degree of management autonomy, gradual divestiture of such mines to private investors, together with financial assistance in order to reverse the downward trend of production.

Mining Sector Reforms

The mining sector as a potential major contributor to gross foreign exchange received priority attention under SAP with the aim of ensuring increased production and productivity. According to Jacob Songsore (1994) two types of policy actions positively impacted on the mining sector, namely macroeconomic policy reforms and sector specific policy reforms (also in Akabzaa and Darimani 2001). In more specific terms, the mining sector policy reforms included changes in mining sector legislation to make the sector attractive to foreign investment, increasing fiscal liberation of the mining sector, strengthening and reorientation of government support institutions for the mining sector, privatization of state mining assets, enactment of environmental laws and other mining sector legislative changes.

At the macro level, the policy framework focused on trade liberalization policies, public expenditure policies, state-owned enterprises reform and public sector management. Liberalization of imports and export promotion policies were crucial in turning the mining sector around. The reform exercise facilitated access to foreign financing for

buying the equipment and spare parts for the rehabilitation and expansion of existing mines, and for the development of green field mines.

During the first years of the program, mining sector policies aimed to increase the worth of existing mines through rehabilitation. Some mines enjoyed loans from multilateral and bilateral financial agencies facilitated and guaranteed by the government for expansion and rehabilitation, while others were put on management contracts to improve their efficiency. Ashanti Goldfields had substantial funds during the period for expansion and rehabilitation, while former state entities, such as the Tarkwa gold mine and Prestea Mine, were given out to various groups of investors under management contract agreements.

6.3.2 Institutions

The land tenure institution is one that affects the ability of the affected farmers to maintain their livelihood activities after the mines have claimed lands, on which they have been farming as their mining concessions. Existing lands that have not been taken over by the mines keep diminishing as the mines expand their operations. This phenomenon makes land owners put high premium on their lands and as such charge affected farmers, who are interested in them, high rent and sometimes additionally face unfavorable terms of acquisition. It is important to note here, that some of the households owned lands on which they occupied for their farming activities. Most of these lands have been inherited from ancestors, who had long occupation over such lands. By law, all allocation of lands should be done by the government and the statutory institutions have oversight responsibility for that.

6.3.3 Power Relations

Power relations are very important in determining access to and use of livelihood assets, capabilities and livelihood opportunities. The existence of power can act as the enabler or otherwise in obtaining a viable livelihood.

In the TAAA communities the provision of support to the affected farmers by GAG through ALP (Alternative Livelihood Program) and even general development projects and provision of social services, has favored Adeyie community, and apparently the affected households there, much more than the rest of the communities in the catchments of the mines. The reason for the skewed provision of these benefits is mainly political than scarcity of resources noted by a respondent. The presence of the chief of Adeyie community is the main political influence. The chief has aligned himself with the mining officials to procure the kind of support for the affected farming households, which he is a part of. Some of the affected farmers however find this alliance of the chief with the mine officials, in which he fails to channel the grievances of the affected farmers, as only favorable for his household. One respondent, a woman farmer, stated that the chief gets all the benefit to the disadvantage of the farmers who suffer the most from the operations of the mines.

The rest of the communities which support the assembly man who represents the voice of the people by speaking against the negative effects of the mines are cut off from the program or delayed in obtaining the alternative livelihood programs and benefits. Some people in Adeyie are even dissatisfied and the entire community is almost polarized, as disbursement of micro-credit to participants of the training, and even the free provision and distribution of sheep, goats, fowls, pigs and cattle for rearing are not done fairly.

Some also decried the corrupt practices of leaders of groups of affected farmers recognized by the chief and the mine officials for the disbursement of micro-credits. To them the leaders are cheats and must be removed for direct dealings between mine officials and the affected farmers themselves.

“Leaders are not trustworthy. They are corrupt and cheat. The mining company must deal with the affected farmers directly” (Abena Nyarkowah, an affected farmer in Teberebie- Field interviews, 21st July 2006).

In the Akyempim community, the affected farmers complain about the immense power wielded by the mines. Some explain that crop and land compensations have been very unsatisfactory, especially as it leaves them with no power to negotiate with the mines for the best and commensurable prices. In spite of all the problems they face, like their water being polluted, bad roads and buildings collapsing with cracks in them due to blasting activities of the mines, the mining company refuses to listen to their grievances or cooperate with the community, and above all, rejects the proposals of their meetings as affected farmers.

Access

Close to 90% of heads of households interviewed in the TAAA communities admitted, that access to other livelihood activity, the market, and the use of certain skills, knowledge, talent, etc. in the communities is not a problem at all (Appendix A39). In other words, the market system, government institutions, structures and processes in the communities do not make it difficult for the heads of household or affected farmers in accessing their preferred activity, the use of their special skills, etc.

However, little over 10% of the heads of household interviewed in the TAAA communities claim that access is a matter of concern in their livelihood activity, especially in their new found activity (Appendix A39). One respondent complained that government structures, particularly the local forestry authority, prevent them from collecting firewood from the farms. Firewood is collected by one household and burnt into charcoal (fuel for domestic activities) for the market. She complained bitterly that *“.....but we don’t fell trees, we only collect the firewood left on farms. The forestry authority should allow us since we don’t burn the firewood in the farms”* (Akua Kwakyiwaah, woman farmer of Abompuniso- Field work interviews, July 2006).

Another problem of access identified by an interviewed head of household, who is a palm plantation farmer, is inability to access fair market prices for his produce. He complains about BOPP (Benso Oil Palm Production), an institution which exists as a buying agent

for palm produce. He is dissatisfied about dealing with this institution which to him cheats in pricing produce.

None of the respondents (Appendix A35) finds access a problem in the Akyempim community. All heads of households who were interviewed said that the market system, government institutions, structures and processes in the community do not make it difficult in accessing their preferred activity or using any special skills or knowledge.

Summary

This chapter establishes that the livelihoods of the rural households are influenced by governmental structures and processes, the operations of the private sector, institutions, policies and power relations. It explains the rationale and the institutional support for the expansion of concessions and operations of the mining companies. The liberalization and subsequent intensification of mining and operations of mines created vulnerable conditions which affected the livelihoods of the rural households.

CHAPTER SEVEN

7.0 Coping and Livelihood Strategies and Livelihood Outcomes

7.1 Introduction

In view of the diverse impact of mining and the operations of the mines on the livelihoods of the farmers in the communities under study, the strategies and coping mechanisms adopted vary. The coping strategies again vary with households and as such the livelihood outcomes identified differ. The chapter discusses these livelihood strategies and the measures employed to deal with the adversities that were visited upon the livelihoods of the households in the communities selected for the study by the mining operations. Further to that, the livelihood outcomes are discussed.

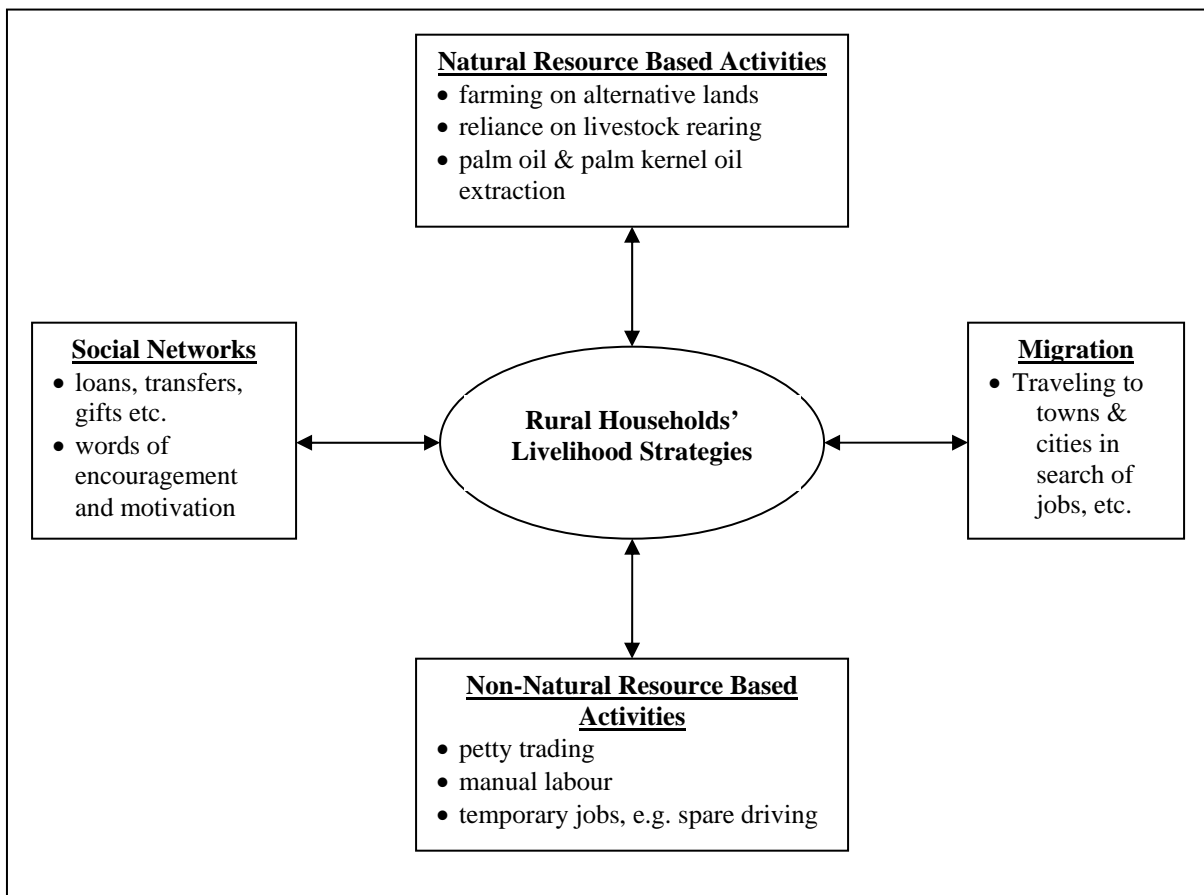


Fig 8 Model for Analyzing the Livelihood Strategies
Source: Developed by Author Based On Livelihood Concepts.

7.2 Coping and Livelihoods Strategies of Affected Households

The information gathered from the study areas show varied coping and livelihood strategies available to and used by the households that are adversely affected by the operations of the mines. These range from the support of mines through Alternative Livelihoods Programs (ALP), the assistance from spouses, siblings, parents and other acquaintances, to traveling out of the community in search of jobs. As illustrated diagrammatically, these measures of coping with livelihood difficulties by the adversely affected households are categorized into four namely, natural resource based activities, non-natural resource based activities, social networks and migration.

Table 6: Coping Strategies of Rural Households

Livelihood Strategy	Frequency	Percentage
Natural Resource Based	5	21.7
Non-Natural Resource Based	6	26.1
Social Networks	5	21.7
Migration	2	8.7
Others: Combined Activities	5	21.7
Total	23	100

Source: Based on Author's Field Work (July 2006).

7.2.1 Natural Resource Based Activities

In all the rural communities studied, approximately 62% of the farmers disclosed that they have lost farmlands to the mines (Appendix A14). However, almost 55% of those who suffered loss of land have been able to acquire alternative lands for farming (Appendix A16).

There is therefore continuation of livelihood activity by this strategy of acquiring another land. One other advantage of this strategy is that it ensures that the households' level of stock of physical capital is maintained to sustain their livelihoods.

However, there are certain challenges with this coping measure adopted by some of the adversely affected farmers. One head of household asserts that though he is still farming, he does so in great sense of insecurity as he fears that land can be captured in the next moment. Another interviewee claims that though he continues to farm, yields have fallen considerably as a result of pollution of soil with chemicals from the mines. Farmers who managed to counter the loss of lands by finding alternative lands are also faced with long distances to farms in addition to unfavorable terms of land acquisition from land owners, like high rent.

The mining companies also undertake alternative livelihood programs (ALP), called the “Hand in Hand Program”. This is geared at capacity building in the catchment communities and this directly benefits the affected farmers. GAG which operates in the TAAA communities has already started the ALPs but WGL is yet to begin such programs in the Akyempim community for the benefit of the affected farmers. The ALPs of GAG include training of the farmers in alternative livelihood activities like livestock rearing (e.g. piggery, snail and grasscutter rearing, sheep and goats etc.), and also training to equip the farmers with financial management skills. These ALPs are natural resource based activities, which enable the affected farmers to cope with the livelihood crisis introduced by the loss of crop farming.

Another form of training received by the affected farmers from GAG is palm oil and palm kernel oil extraction, a project for which the mining company has established workshops particularly in the Adeyie community. All these projects and programs are to make the affected farmers more able to cope with the disturbances experienced by their livelihoods, as a result of mining and the operations of the GAG mines in their communities. It is worth noting here that GAG provides these animals free of charge to the farmers for rearing after their successful completion of the livestock rearing training, and promise to give market for such produce. Through the training obtained in ALPs and financial management, the affected farmers acquire new knowledge and skills that expand their human capital base, and thus help to sustain their livelihoods.

7.2.2 Non-Natural Resource Based Activities

A second category of coping strategy by the affected farmers is the engagement in non-natural resource based activities. This includes offering services as a laborer (manual work) on other people's farmlands, petty trading and spare driving.

Four out of ten heads of household interviewed in the TAAA communities change their livelihood activity of farming for another activity in order to deal with the livelihood crisis they face. Similarly some of the affected farmers in the Akyempim community change their livelihood activity as a way of coping with the livelihood adversity they face. Some offer their services as laborers to farmers who are still engaged in farming, while others engage in trading. Twenty five percent of heads of household interviewed in the TAAA communities have relatives employed in the mines as security personnel, drivers, etc. (Appendix A8). This goes to improve the livelihoods of the household in general. In the Akyempim community, 5 out of 10 respondents admitted that though they themselves are not working in the mines, other members of the household like wards, siblings, spouses etc. are working for the mines (Appendix A8b).

Though these strategies provide livelihood activities alternative to the farming they had lost, and also ensure that the affected farmers have maintained financial assets to sustain their livelihoods, there are disadvantages. These include lack of guarantee for getting services or labor continuously hired and the difficulty of finding jobs. Also affected households who resort to the petty trading strategy require financial capital for such venture which may not be easy to acquire.

The mining companies, however, gave crop compensations to the farmers whose lands were claimed. Some of the farmers were able to undertake viable alternative activities that enhanced their livelihoods. In the Akyempim community the Assemblyman noted that some purchased vehicles, which are used for commercial purposes between the community and the surrounding ones. According to him, those who used their money in this direction have been able to cope with the shock of land seizure suffered from the mines.

Moreover, in the Adeyie community some of the affected farmers have received micro credit and loans from GAG to enable them undertake their diversified activities, like soap making.

7.2.3 Social Networks as a coping mechanism

Another aspect of the non-natural resource based livelihood strategy is the use of social networking for support which includes, gifts, loans, giving of alternative lands for livelihood activities, remittances and motivation. Some of the affected rural households cope by getting financial assistance from siblings, parents, members of the extended family, and from spouses, who are still engaged in farming and other activities like trading. Others have been able to cope by relying on the generosity of friends, family members, sympathizers and well-wishers, who offer gifts and words of motivation.

Interestingly, one respondent said in the face of such livelihood crisis there is nothing that can possibly be done and that she is helpless and does nothing.

As evidenced by the table above, over 20% of the affected households rely on social networks to reduce the livelihood crisis they face. Respondent affected farmers said they receive assistance or support from relatives, friends and acquaintances in their community. The type of assistance that is received includes parents taking care of their children, financial assistance for petty trading and gifts, which could be cash or food items and words of motivation.

Support from associations or groups are also recognized by some respondents. One respondent admitted receiving financial support from siblings. Another respondent also receive assistance in the form of gifts and transfers from members of the community and the church.

These social benefits derived, as a result of living in the community and being part of an association, come in the form of monetary contribution and the donation of inputs for

livelihood activity. Assistance from associations or groups also may come in the form of advice and moral support and encouragement.

This coping strategy induces dependency and as such its sustainability cannot be guaranteed. Thus, aside from the demerit of difficulty to measure how much of that capital can be drawn to support the livelihood of the affected household, there could be high degree of uncertainty about its continued availability for the use of the affected farmers throughout the period of livelihood crisis. Others may not have such social networks at all, or they do not exist for their benefit in their livelihood difficulties.

Four out of five of the affected farmers in the studied communities for instance claim they do not have such social benefits and support in order to help them deal with the livelihood difficulty posed by mining in their communities (Appendix A20 & A23). The reasons given are either that the other members of the household or the extended family also had their farmlands claimed or that they have nobody to turn to. One of such respondents sadly admits that she has no siblings at the moment as she had lost all her 5 siblings. With a heavy sigh in sadness, she said *“I’m alone and therefore suffer and wallow in abject poverty”* (Abena Nyarkowah, Teberebie community, Field interviews, 21st July, 2006).

7.2.4 Migration as a Coping Strategy

Migration has been one of the strategies affected farmers employ in the face of the adversities caused by mining on their livelihoods. It involves movement to towns and cities in search of jobs. These jobs are the kind of jobs that do not require high qualification and skills like cleaning, washing of cars and floors of offices, offering of services as a manual worker in building contraction companies among others.

Even though, this livelihood strategy could build the stock of financial capital of the affected household through the flow of regular income, it involves frantic search of jobs, which may be non-existent in the cities. It is discovered in the field interviews that this livelihood strategy has the potential to wreck social ties back home when the migrant

head of household stays long away from the community. One respondent said her husband who is one of the affected farmers had to travel to the city in search of job. She remarked with concern that this action of migration necessitated by the loss of land to mining almost ruined her marriage when the husband traveled to the city for several months.

7.3 Livelihood Outcomes to Individuals and Households

The livelihood strategies employed by the rural households at the face of the impact of mining on their livelihoods are different so are the livelihood outcomes identified in the communities under study. Whether or not such strategies led to more incomes, wage employment, reduction of livelihood vulnerability or more agricultural activities by a particular household depend on the community and the mining company's programs mapped out for the affected farmers. In short, some of the rural households have been able to obtain greater well-being in general, while others have not (Refer to figs. 9 & 10 below for the diagrammatic presentation of the livelihood outcomes).

7.3.1 Economic gains

Interview of the Assemblyman of Akyempim community established that affected farmers, who utilized their crop compensations money to pursue other livelihood activities like trading and commercial transport operation (taxis usually), gained economically afterwards. Also farmers who are still engaged in farming have good markets for their produce because of the increased market size and high miners' incomes. This type of economic gains as outcomes is identified in all the communities studied. In fig. 11 below, it shows that more incomes are obtained when crop compensation leads to engagement in other livelihood activity or facilitate farming on alternative lands.

That notwithstanding, most of the affected farmers interviewed in the Akyempim community reiterated that either they have not received crop compensations from WGL, or the money received do not match the income they estimate to have obtained if they had harvested their produce and sent to the market. This implies that these farmers have lost

financial returns or money as a result of the operations of the mines in the Akyempim community.

In the communities of TAAA, however, livelihood outcomes appear better for most of the affected households in respect of economic gains. Apart from crop compensations, that most have received, the mining company has within its community capacity building program implemented ALPs, under which participant affected farmers are given training in alternative livelihood activities. Beneficiary farmers who successfully completed this training were given micro-credits as start up capital for such activities. In addition to maintaining a viable livelihood activity after mining's negative impact on their livelihoods, these beneficiary households obtain greater economic gains from these diversified activities.

7.3.2 Diversified livelihood activities

In all the communities most of the affected farmers who received crop compensations from the mines either acquire other lands to continue their farming activities or engage in other livelihood activities. In some cases the heads of households undertake petty trading in addition to farming on alternative lands acquired after the mines claimed their farmlands as their concessions (refer to table 6). The ALP projects and the community capacity building programs also encouraged the farmers to get involved in different livelihood activities other than their traditional crop farming. In the ALP of the GAG mining company, the affected farmers were trained in livestock rearing, as well as provided skills in the extraction of palm oil and palm kernel oil in addition to soap making.

7.3.3 Reduced Vulnerability

Livelihoods in the communities under study were originally characterized by single activity, which was crop farming. The seasonality of harvest and the singleness of the activity made these rural households highly vulnerable. In the Akyempim community the payment of compensations for crops destroyed by the mines enabled some of the affected

farmers to undertake other livelihood activities other than crop farming. In some cases the farmers combine their new livelihood activities with crop farming. This is very positive as it enables the livelihood of such household more capable of dealing with any shocks that might develop. The same is the case in the TAAA communities. Most communities in the TAAA, however, stand a better chance of experiencing reduced vulnerability as GAG has provided them with ALP and help to establish them in other livelihood activities with start up capital. In fig. 10, it could be understood in the diagram that, the provision of capacity building programs promotes more livelihood activities, gives new skills and knowledge and improve health all of which leads to reduction in vulnerability and help sustain livelihoods.

7.3.4 Increased Agricultural Activity

The ALP projects of GAG mining company in the TAAA communities have been essentially agrarian in character. The training of the affected farmers in the TAAA communities in livestock production, and the extraction of palm oil and palm kernel oil as well as soap making, brought about increase in agricultural activities. Worthy of mention here is that though the crop production base of the communities has declined, the ALPs ensured diversification of the rural agricultural activities performed by the farmers. Thus, in addition to the production of crops like cassava, maize, plantain, and cocoa, the farmers now have other agricultural produce, like goats, sheep, pigs, snails and grasscutter. Those trained in palm oil and palm kernel oil extraction also enjoy increased variety of agricultural produce in their harvest.

In the Akyempim community, however, the mining company has not yet begun its ALP projects, though it has plans for such venture. There has therefore been a decline in agricultural activities in the Akyempim community after the mines claimed farmlands as concessions. The construction of roads and their maintenance by the mines according to the Assemblyman has, however, ensured regular flow of food into the community from neighboring towns. Food security is therefore realized in spite of the impact of the operations of the mines on the agricultural production capacity of this rural community.

When the Assemblyman was asked the question, he was of the opinion that the farmers are not satisfied with the treatment meted out to them by the mines in respect of livelihood, but believed the mines can do better than what they have done in enhancing the livelihood of the affected farmers in particular. One of the opinion leaders contacted confirmed that the farmers are not at all satisfied with the operations of the mines, as they have not enhanced or improved their livelihood (fig. 9).

Some of the respondents are of the opinion that instead of receiving benefits from the mining company and its operations, all they receive are rather misery and hardships inflicted on them. This is corroborated by another opinion leader, who emphasized that farmers cannot afford the cost of items in the community and cannot generally cope with the high cost of living. In his view, mining has changed the entire social and economic lives of farmers in the community for the worse. This negative outcome is illustrated in fig. 10. It shows that the mines' claim of land creates multiples of effects, including high rent due to shortage of available land for farms, reduced farming activity and low yields, all of which lead to increased cost of living.

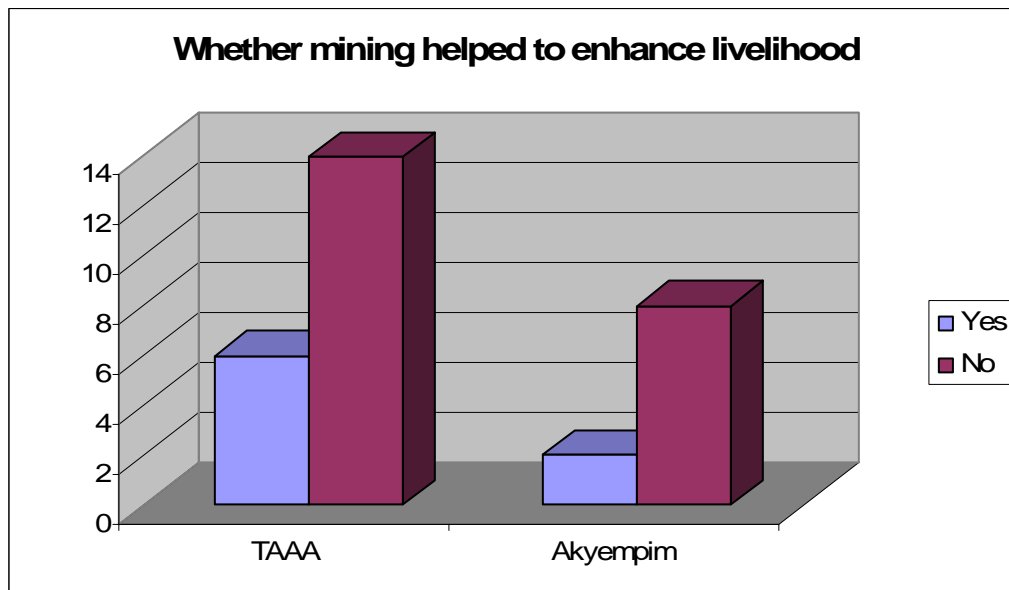


Fig 9 Responses on Whether Mining Has Enhanced Livelihoods.
Source: Based on Data from Field Interviews (July, 2006).

CHAPTER EIGHT

8.0 Summary of Findings, Conclusions and Recommendations

The study sought to ascertain the impact of mining on the general livelihoods of the rural households in the TAAA and Akyempim communities in the Tarkwa mining region of Ghana. It aimed at finding out the positive impacts as well as the negative impacts of mining on the livelihoods of the rural households in the communities under study. It further sought to find out how the affected individual farmers and their entire rural households cope with the negative impact mining and the entire operations of the mines in their communities, have visited upon their livelihoods. The study then after assessing the strategies mapped out by the affected households, sought to examine the livelihood outcomes.

Presented in the introductory chapter is the background of the study, the drive for intensification of mining and mineral processing in the country, which propelled the expansion of mines' concessions in these rural communities. Also in the introduction are the objectives of the study, the research questions and the justification for the study.

In the chapter two are presented the theoretical framework (analytical model), justification of its use and a discussion of coping strategies. The study adopted a modified version of the livelihood framework of Diana Carney as the tool for its analysis. This was done in order to make the model operational and suitable to the livelihood situations in the communities studied. The access model (the pressure and release model) was also modified in its application for suitability to the study.

The research design and methodology for the study was discussed in the chapter three of the study. In this third chapter is the rationale for choice of the study areas, also the process for field work and methods of data collection and the sampling techniques used. The main sources of data were interviews with heads of households, who have been affected by the operations of the mines, opinion leaders, the chief farmers, and heads of concerned farmers groups and the respective Assembly members of the communities to

the Wassa West District Assembly. The public and community relations officers of the two mining companies in operation in the selected communities were also analyzed in the effort to answer the research questions. Great deal of information for the study was also obtained via conversation with the locals supplemented with observation in the field. The limitations to the field study were also explained in the third chapter, in addition to the justification for choosing the methods and techniques of data collection.

Information about the study areas and the mining region, as well as the country, was given in the chapter four of the study. This is very significant, as it presents the strategic geographical features of the study areas which make the studied communities attractive for mining activities and for the mines to expand their operations. The economic activities in the communities, which are predominantly agrarian in character (crop farming), are also presented in the chapter four. The chapter concludes with information about the operations of the two mining companies, viz GAG and WGL, whose catchment areas cover the communities selected for the study.

8.1 Summary of Findings

The summary of the findings herein presented is based on the livelihood model employed in the study. It is further elaborated in chapters five, six and seven of the study. As stated above the livelihood framework was the analytical tool employed in the study, but modified to suit the situation of the study. It is a synthesis of the livelihood model of Diana Carney. The five capital assets recognized by the parent model were identified as the stock of livelihood resources available to the rural households in pursuit of their livelihoods. These capital assets are organized by the rural households in the face of the influences of transforming structures and processes, which the study identified to include the local authority, the mining company's policies and programs and access capabilities.

Livelihood strategies, which the study includes in its broad discussion of coping mechanisms, differ in the studied communities from those used in the model of Carney. The study finds out that the households whose livelihoods are negatively affected by the

operations of the mines in the communities maintain their livelihoods by pursuing other livelihood activities like petty trading, and also through the support (in the form of cash and kind) from friends, acquaintances, siblings and groups to which they are affiliated. Reliance on social capital is therefore a significant coping strategy utilized by the affected farmers in the communities studied.

Generally chapter five of the study discussed the vulnerability context and capitals available for the households. The study reveals that traditional livelihoods of the farmers are characterized by single income generating activity, which is crop farming. The practice of subsistence farming also makes these rural households vulnerable. The seasonality of farm produce again makes livelihoods of the rural households vulnerable. It is found that most of the households in these communities have over dependence on one-man breadwinner for living. This means that, with the farmland of this breadwinner taken over by the mines as their concession, the livelihoods of the entire household suffer.

Related to the vulnerability context also the study identified shocks, stress and trends as core factors, which affect the livelihoods of these rural households. Shocks, which are unpredictable events with destructive effects on assets, are physical shocks and economic shocks. The study finds out that the operations of the mines in the communities resulted in the loss of land, an important physical asset of the farmers to the mining companies. This, coupled with cracks introduced in the buildings of the farmers as a result of the blasting works of the mines, adversely affects the livelihoods of the farmers in the studied communities. Main economic shock identified by the study is the increased cost of living, which makes it difficult for these rural households to obtain a viable livelihood.

The livelihoods of these rural households receive further strains from trends, like declining incomes to those who managed to acquire alternative lands for farming, and stresses, like the continuous expansion of the concessions of the mines that result into further claims of farmlands. Stress, which is a gradual, predictable occurrence, is identified in the study to include the expansion process of the mines' operations, which leads to the loss of land by the farmers. It is revealed that as a result of this phenomenon,

those farmers, who are still engaged in farming activities, do so in an atmosphere of uncertainty and with a sense of fear. Some of the farmers who had already lost lands to the mines are afraid of future land claim by the mines, and are as a result unwilling to move to other lands.

Chapter six of the study examined, among others, the effects of transforming structures and processes on the livelihoods of the rural households. The implementation of the Structural Adjustment Program (SAP) in 1986 in Ghana brought about massive liberal mining sector reforms that attracted foreign investment into the sector (Akabzaa 2000). Policies initiated by the government, therefore, saw the expansion of mining concessions to the existing mining companies and the commencement of new ones. This intensification of mining led to the loss of land by the farmers in the communities studied to the mines as their mining concessions.

The mining companies, after taking over lands from the farmers, are expected to provide compensations to the farmers for the crops on their lands. The farmers, however, do not feel completely relieved from the difficulty that the loss of farmlands to the mines brought on their through the compensations. Crop compensations, which are not paid before the farmlands are destroyed, but rather afterwards, take a while before being received by the affected farmers. In most cases the compensation paid to the affected farmers are less than incomes, which the farmers expected to obtain after harvest and market.

Power relations are also discovered by the study to be of paramount significance in the livelihoods of the rural households. In the TAAA communities, particularly in Adeyie community, the mining company (GAG) has actively implemented its Alternative Livelihood Program (ALP) as part of its community capacity building exercise, including community development projects and the provision of social services, while the rest of the communities within the catchments of the mining company have not seen the full benefit of such programs and projects. It was discovered, that the presence of the chief of Adeyie as a traditional power, who has aligned himself with the mining company has been the main factor. The rest of the communities within the catchments of the mines in

the TAAA communities, namely Teberobie, Abompuniso and Agege, which support the Assemblyman in speaking against the negative practices of the mines, are delayed in receiving such benefits. Power relations, therefore, play an important role in the livelihoods of the affected farmers.

In chapter seven, the study assesses the livelihood strategies and the coping strategies adopted by the affected farmers, and their entire households in dealing with the adverse impact of mining on their livelihoods. These strategies are natural resource based livelihood strategies, non-natural resource based, migration and the use of social networking.

The study finds out that some of the affected farmers after losing farmlands to the mines, found alternative lands to continue their farming activities. This natural resource based livelihood strategy; however, have limitations and constraints. The farmers usually pay high rent to land owners, and sometimes face unfavorable terms and agreements in addition to traveling long distances to the alternative lands for their farming activities. Moreover, beneficiary farmers of the ALP of the mines cope by such other rural livelihood activities as livestock rearing and palm oil extraction.

The study also reveals that migration is one of the ways that the rural households cope with livelihood crisis. This involves abandoning farming and other rural livelihood activities, and traveling to the city in search of jobs. It also came to light that social networks and networking are useful coping mechanisms for most of the affected farmers in the studied communities, who receive money, gifts items, transfers, loans, and also words of encouragement and motivation from relations, friends and acquaintances, and groups of affiliation. These measures enable some of the adversely affected individual farmers and the rural households cope with the shocks received from the operations of the mines.

Also presented in the chapter seven are the livelihood outcomes which are; increased agricultural activity, diversified livelihood activities, sustainability of livelihoods, economic and financial gains, and reduced vulnerability.

The ALP projects of the mines to the affected farmers, essentially agrarian in character, involved the training of the affected farmers in livestock production, and the extraction of palm oil and palm kernel oil as well as soap making. This has created increased agricultural activities as livelihood outcome to the beneficiary affected farmers. Thus, in addition to the production of crops like cassava, maize, plantain, and cocoa, farmers, who benefited from the ALP training, now have income from other agricultural produce like goats, sheep, pigs, snails and grasscutter. Those trained in palm oil and palm kernel oil extraction, also enjoy increased variety of agricultural produce in their harvest.

In all the communities most of the affected farmers, who received crop compensations from the mines, either acquired other lands to continue their farming activities, or engaged in other livelihood activities. In some cases the heads of households undertake petty trading, commercial transport system or temporary labor in addition to farming on alternative lands acquired after the loss of original farmlands.

Another livelihood outcome, realized from the livelihood strategies of the affected farmers in the studied communities is the sustainability of livelihood activities. As stated in the paragraph above, most of the affected farmers had to combine non-natural resource based livelihood activities with their traditional natural resource based livelihood activities. This ensured that livelihood activities of these rural households are sustained. In other words, even with the destruction of one arm of their livelihood activities, these rural households could continue to obtain viable livelihoods, as there is the other arm of livelihood activities to depend on.

Another livelihood outcome discovered by the study is reduction of vulnerability in the livelihoods of the rural households (see fig. 11). Livelihoods in the communities under study were characterized by single livelihood activity, which was crop farming. The seasonality of harvest of these crops, and in some cases the long gestation periods, made the livelihoods of these rural households vulnerable. As noted above, after receipt of crop compensations from the mines, some of the affected farmers engaged in other livelihood activities, other than crop farming, and in some cases combined their new activities with crop farming. This is very positive as it sustains the livelihood of such households.

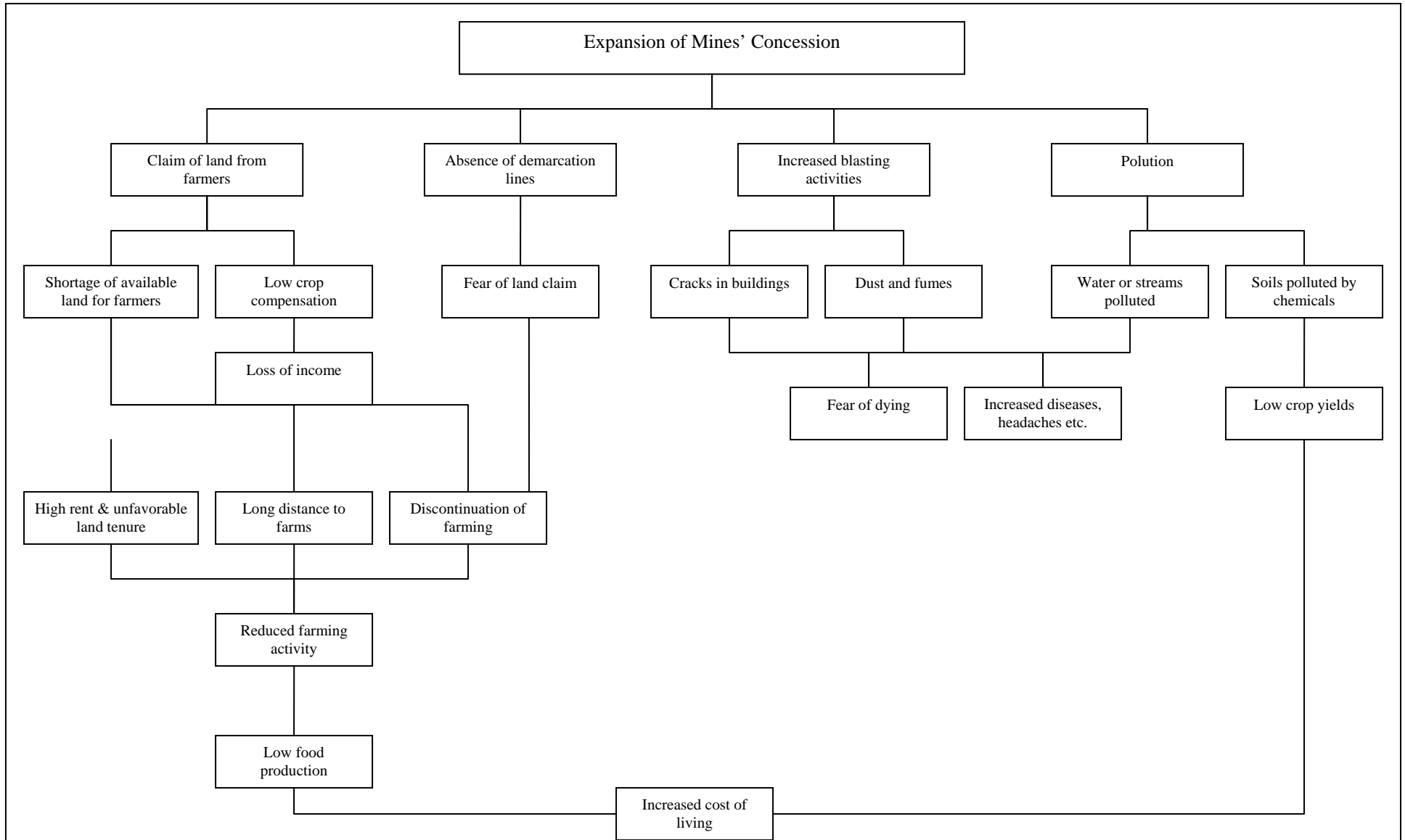


Fig 10 Schematic diagram for explaining the adverse impact of mining on livelihoods of the rural households
 Source: Developed by author based on problem analysis of the Logical Framework Analysis.

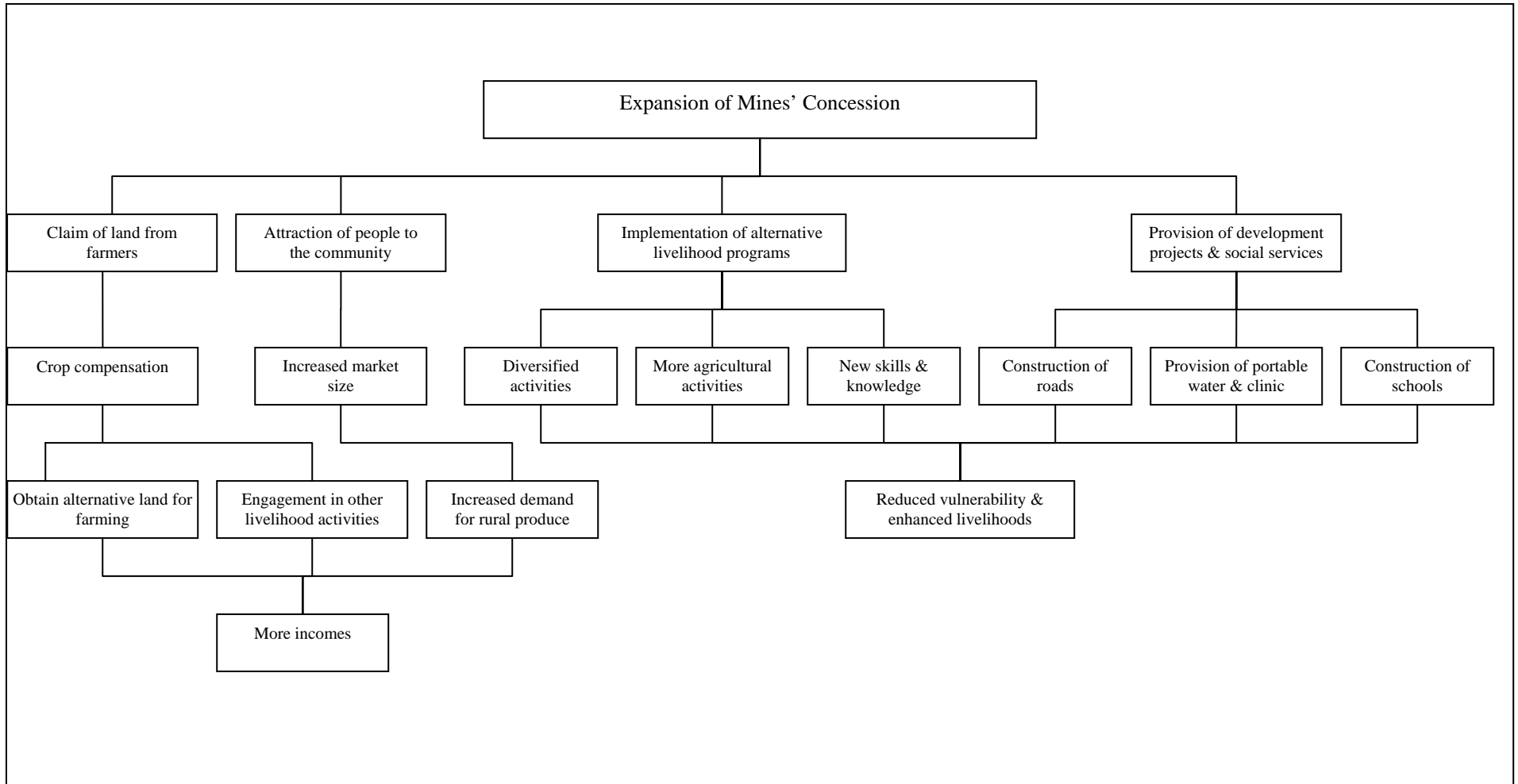


Fig 11 Schematic diagram for explaining the positive outcomes of mining on livelihoods of the rural households
 Source: Developed by author based on problem analysis of the Logical Framework Analysis.

8.2 Conclusions

In conclusion, this study about the impact of mining on the livelihoods of rural households with the case reference of the communities of Teberebie, Adeyie, Agege, Abompuniso and Akyempim in the Wassa mining region of Ghana, has shown that:

- There have been positive outcomes to the livelihoods of some of the rural households as a result of mining and the operations of the mines in the studied communities. These included increased agricultural activities and diversification of livelihood activities, which ensured sustainability and reduction in vulnerability of the livelihoods of some of the rural households (see fig.11). There have also been economic and financial gains to some of the farmers in the communities studied.
- There are nonetheless negative outcomes to the livelihoods of some of the rural households, owing to the operations of the mines in the studied communities. For some of the households in these rural communities, the loss of land led to the entire loss of livelihood activity and they have to rely on social networks and relations, bringing their livelihoods under worse conditions. Crop compensations to the affected farmers, aside from being usually delayed in payment, have been incommensurable with expected incomes from farm harvest causing financial losses to them. The ALP and the capacity building programs of the mines, which could help mitigate these adverse repercussions on their livelihoods, have not been extended to most of these affected farmers yet.
- Some of the affected farmers also managed to procure alternative lands to continue their farming activities in order to cope with the loss of original farmlands. In view of the difficulty in finding available lands for farming, the farmers usually pay high rent to land owners to acquire lands. Apart from commuting over long distances to new farms, a physical drudgery, which reduces working hours and productivity, some of the affected farmers, who are still engaged in farming, do so in some degree of uncertainty, insecurity and fear of losing farmlands to the mines at any time. Other

negative outcomes to the livelihoods of the rural households as a result of mining are low and unattractive yields and financial losses, owing to chemical pollution of soil by the operations of the mines (see fig.10).

- Mining and the operations of the mines have caused decline in food production in the rural communities studied (refer to fig.10). The reason is that only a few farmers are working after most of them had their farmlands destroyed by the mines, when they claimed the lands as their mining concessions. As noted above, those who continue to farm face the problem of low yields due to chemical pollution. The shortage of food has increased the cost of living in the studied communities and, even though food is sent to their markets from neighboring towns, the farmers with limited finances are priced out, and cannot compete in the market with the mine workers who receive high and regular salaries. The decline in food supplies in the communities affects the livelihoods of the farmers adversely.

8.3 Recommendations

8.3.1 Provision of commensurable compensations

Though the mines have plans for crop compensations to farmers, from whom lands are claimed, they sometimes delay the payment of such compensations, and in some cases either partially honored or not at all. In order to enable the affected farmers mitigate the livelihood adversities that are introduced to the farmers and their entire livelihoods, the mining companies must keep or fulfill their promises of crop compensation and this must be done promptly. Crop compensations must be adequate and made before farms are taken over or crops destroyed. In order not to cause loss of expected incomes to the farmers who suffer land claims, compensations paid must be commensurate with the actual total cost of farm at the current market prices.

Valuation methods, used by the mines in paying crop compensations, must be regularized and not left in arbitrariness. Government liaison is expected in order to ensure justice and fairness, as arbitrariness in payments of crop compensations results in tension and, oftentimes, conflict between affected farmers and mine officials. Also the mining company should work to eliminate bureaucracy in the payment of compensations. The mines must allow the affected farmers to negotiate for good value for their farmlands if a regular and a fairer system of compensations is not instituted.

Land compensation must also be paid to those who had ancestral ownership over lands, or at least alternative lands must be given. The practice of paying the value of just portions of farmlands, on which expansion of operations begins, but not the entire land, must be discontinued. The reason is that the remainder of the land cannot be used for farming side by side with the mines' activities.

8.3.2 Financial Assistance

In order to improve livelihoods of the affected households, their financial capital base must be improved. Financial assistance in the form of loan is needed to expand and diversify livelihood activity for greater well-being. Another way to support the livelihoods of the rural households is to give financial assistance to the farmers to enable them mechanize farming and to purchase fertilizers. This will help to reduce human effort and increase yields. Soft loans or micro credit disbursement by the mines must be given at suitable times, and repayments effected only after crops are harvested.

Financial assistance is also needed in order to fund alternative livelihood activities, like livestock rearing, soap making, palm oil and palm kernel oil extraction, and for petty trading in addition to farming activity. By this, rural activity diversification or simply put livelihood diversification, which is very crucial in the livelihoods of the rural households, can be attained.

8.3.3 Employment Opportunities

Another way to support the rural household to attain viable and sustainable livelihoods is to offer employment opportunities. Since farming has become unattractive, the mines should at least give casual employment to the affected rural households. If the affected farmers do not have the requisite and employable skills to the mining companies, they can be given on-the-job training for future regular employment with the mines. Spouses of the farmers should also be considered for jobs with the mines, so as to support the livelihood of their household. Contract jobs offered by the mining companies to the community must be continued and made regular, so that the affected rural households can benefit from them. This will help the rural households have extra sources of income, and enable them expand their financial capital base, attain viable livelihoods and reduce livelihood vulnerability.

Employment opportunities should also be guaranteed for wards of the affected farmers after graduation to support livelihood of the household. By this, the children will be able to cater for the farmers when farming is no more profitable.

8.3.4 Provision of Economic Infrastructure and Social Amenities

To enhance the stock of capital assets of the rural households, there must be the provision of economic infrastructure and social amenities and services like construction of roads, clinic (health centers), schools, and provision of scholarships and awards to wards of these rural households, provision of good drinking water and electricity from the government, the mining companies, NGOs and other institutions.

The construction and maintenance of roads will enhance accessibility and facilitate the transport of goods and services, especially the transport of farm produce to the market. The construction of clinic and the provision of health care services will help control the widespread diseases brought about by the operations of the mines. This will improve the health of the rural households and enhance their human capital for better livelihoods.

The provision of electricity will promote other livelihood activities, like the milling and extraction industry, aside from opening up and developing the communities. The health, and therefore the human capital assets of the households, will improve with the provision of clean potable and drinking water. The human capital stock of the rural households will also gain a significant boost with a scholarship program to support children of farmers in higher education. Schools should also be established in the communities.

In view of the increased distance from the communities to farms and the town, and subsequently increased transportation cost following the change of access routes by the mines, bus transportation services should be provided in the communities. This could be operated privately, but supported and subsidized by the mining companies.

8.3.5 Provision of Demarcation Lines of Mines' Concessions

The mining companies have knowledge of their concessions and the timetable for their expansion activities and should provide the farmers and the communities with demarcation lines, specifying which lands within the community have been granted to them as concessions and their expansion schedule. This is expected in order to remove the fears that farmers have in working on existing lands, and encourage those not farming at all because of such fears, to have confidence to resume their livelihood activities.

8.3.6 Environmental Awareness and Education on Health Hazards

Education on environmental and health impact of the operations of the mines is again important in reducing and forestalling diseases that are widespread in the communities. Moreover, the mining company, the government, and NGOs are expected to help bring the high incidence of diseases under control. Further to that, regular education must be given to the farmers and all in the community on the pollution and blasting activities, as well as their effects in order to curb health hazards.

8.3.7 Even Distribution of Alternative Livelihood Program

Among the foremost measures to mitigate the negative effects of mining on the livelihoods of the rural households as well as enable the affected farmers cope with the livelihood crisis they face due to mining is the provision of alternative livelihood programs and support.

REFERENCES:

- Aase Tor H. (1997): *“Interpretation of categories, observation, concepts and category.”* (Translated by Siri Pedersen, 1997)
- Akabzaa, T. (2000): *“Mining Boom- a Gain for Africa?”* Third World Resurgence No.93
- Akabzaa, T and Darimani, A (2001): *“Impact of mining sector investment in Ghana: A Study of the Tarkwa Mining Region.”* Sapri.
- AngloGold Ashanti (2006): *“The Social Licence to Mine”*. A Presentation to the Media, April, 2006.
- Ashley, C. and Carney, D. (1999): *“Sustainable Livelihoods: Lessons from Early Experience.”* Department For International Development (DFID), London.
- Bauer, P.T. (1976): *“Dissent on Development.”* Cambridge, MA: Harvard University Press.
- Beall, J.; Kainji, N. (1999): *“Households, Livelihoods and Urban Poverty, Urban Governance, Partnership and Poverty”*. Theme Paper 3: 1999.
- Bhattarai, K.P. (2005): *“Livelihood Strategies of Squatter Households in an Urban Environment, A Case Study of Kathmandu Metropolitan City, Nepal”*. University of Bergen, Bergen Norway.
- Biney, K. (1998): *The Mining Sector- Too Much Concession?* Business Watch, Vol.2 No.1 June.
- Bryceson, D.F. (2002): *“The Scramble for Africa: Reorienting Rural Livelihoods”*. Vol. 30, No. 5. Great Britain.
- Carney, D. (1998): *“Implementing the Sustainable Rural Livelihood Approach”*, in Carney, D (ed), *“Sustainable Rural Livelihoods, What contributions can we make?”* Department For International Development (DFID), London pp 3-23, 1998.

Casley, D.J. and Lury, D.A. (1987): “*Data Collection in Developing Countries.*” 2nd Edition. United Kingdom: Clarendon Press.

Chambers, R. (1989): “*Vulnerability, Coping and Policy*”, IDS Bulletin 2002, 1989, Vol.20, no.2, pp. 1-7.

Chambers, R. and Conway, G. (1992): “*Sustainable Rural Livelihoods: Practical Concepts for the 21st Century*”, University of Sussex, Institute for Development Studies, DP 296, Brighton.

CCPA Monitor, (2003): Publication Titled “*Canadian Mining Companies Set to Destroy Ghana’s Forest Reserves*”, October, 2003, www.policyalternatives.ca

Dercon, S. (2001): “*Income Risk, Coping Strategies, and Safety Nets*”, The World Bank Research Observer, Vol. 17, No. 2 (Fall 2002), pp 141-166.

E.A.G. (2001): Article of the Environmental Action Group, Ghana titled “*Information, Education and Communication on the Environmental and Socio-economic Effects of Surface Mining*”, September, 2001, www.rainforestinfo.org.au/projects/ghana.htm.

Ellis, F. (1998): “*Household Strategies and Rural Livelihood Diversification*”, Journal of Development Studies, Vol. 35, no. 1, pp. 1-38.

Ellis, F. (2000): “*Rural households and Diversity in Developing Countries*”. Oxford University: New York Press Inc.

Ellis, F. and Freeman, H.A. (2004): “*Rural Livelihoods and Poverty Reduction Strategies in Four African Countries*”. *The Journal of Development Studies*, Volume 40, No. 4. April 2004, pp 1-30. Taylor and Francis Ltd.

Fontana, A and Frey, J.H. (2003): “*The interview, From Structured Questions to Negotiated Texts*”, in Denzen, Norman K. and Yvonna S. Lincoln (Eds.) “*Collecting and Interpreting Qualitative Materials*”. Thousand Oaks: Sage Publications, pp. 61-106, 2003.

Grootaert, C. (2001): *“Does Social Capital Help The Poor? A synthesis of Findings from the Local Level Institutions Studies in Bolivia, Burkina Faso, and Indonesia”*, The World Bank, Sustainable Development Network, Local Levels Institutions, Working Paper no. 10, 2001.

Hay, I. (2000): *“Qualitative Methods in Human Geography.”* New York: Oxford University Press Inc.

Helomore, K. and Singh, N. (2001): *“Sustainable Livelihoods; Building on the Wealth of the Poor.”* USA: Kumarian Press.

IFAD (2001): *“Rural Poverty Report 2001- The Challenge of Ending Rural Poverty”*. New York Oxford University Press.

ISSER (1998): *“The State of the Ghanaian Economy”*, ISSER, University of Ghana, Legon

Kantor, P and Nair, P. (2003): *Risks and Responses Among The Urban Poor in India*, Journal of International Development, Vol. 15, Issue 8, pp. 957-967, 2003.

Kitchen, R. and Tate, N. J. (2005): *“Conducting Research into Human Geography, Theory, Methodology and Practice”*. Pearson Education Ltd. (2005).

Limb, M. and Dwyer (2001): *“Qualitative Methodologies for Geographers: Issues and Debate London.”* Oxford University Press Inc.

Mayew, Susan & Penny Anne (1992): *“The Concise Oxford Dictionary of Geography”*. Oxford: Oxford University Press.

Minerals Commission (1995): *“Project Implementation Plan: Mining Sector Development and Environment Project”* (Unpublished).

Padgett, D. K. (1998): *“Qualitative Methods in Social Work Research, Challenges and Rewards.”* USA: Sage Publications Inc.

- Patton, M.Q. (1980): “*Qualitative Evaluation Methods*”. Great Britain: Sage Pub. Inc.
- Rakodi, C. and Lloyd-Jones, T. (2002): “*Urban Livelihoods- A people-Centered Approach To Reducing Poverty,*” pp. 4-20. Earthscan Publications Ltd. (2002).
- Scoones, I (1998): “*Sustainable Rural Livelihoods: A framework for Analysis*”, University of Sussex, Institute for Development Studies, WP 72, Brighton.
- Shankland, A (2000): “*Analyzing Policy for Sustainable Livelihoods*”. Institute of Development Studies, Sussex, England. Research Report 49, September 2000.
- Sida,(2004): “*Strategic Guidelines for SIDA Support to Market-Based Rural Poverty Reduction. Improving Income among Rural Poor*”. Department of Natural Resources and the Environment, Stockholm, Sweden.
- Songsore, J. (1994): “*Mining and the Environment: Towards a Win-win Strategy. A study of the Tarkwa-Aboso-Nsuta Mining Complex in Ghana*”. Published by ISSER, Legon.
- UNDP (1996): “*Gender, Urban Development and Housing*”, UNDP Publication Series for Habitat II, Vol.2, 1996.
- Wisner, B., Blaikie, P., Cannon, T and Davies, I. (2004): “*At Risk, Natural Hazards, Peoples Vulnerability and Disasters*”. Second Edition. Routedledge, London.

APPENDIX A: TABLES OF FINDINGS

TEBEREBIE, ADEYIE, ABOMPUNISO, AGEGE AND AKYEMPIM COMMUNITIES

Earnings from farming and other rural activity

1. Income rank

Income rank	Frequency	Percentages
Below 100,000	3	10
100,000-500,000	9	30
500,000-1,000,000	1	3.3
1 million and above	10	33.3
Don't know	7	23.3
Total	30	100

2. Income sufficient?

Response	Frequency	Percentages
Yes	4	13.3
No	26	86.7
Total	30	100

3. Number of family members working in addition to the respondent

Number	Frequency	Percentages
0	4	20
1	12	60
2	1	5
3	2	10
4 and above	1	5
Total	20	100

Personal benefits from mining (as head of household)

4. Whether helped/enhanced livelihood

Response	Frequency	Percentages
Yes	8	26.7
No	22	73.3
Total	30	100

2b – Income sufficient? (AKYEMPIM)

Response	Frequency	Percentages
Yes	1	10
No	9	90
Total	10	100

5. How mining promoted activity as farmer

Ways	Frequency	Percentages
Road repairs	1	4.5
Market	2	4.5
Education	1	4.5
Funding/capital	0	0
Electricity Provision	1	4.5
NA	14	63.64
Others: clinic, workshop	6	22.7
Total	22	100

6. Whether mining has enhanced use of certain skills, etc. for additional income

Response	Frequency	Percentages
Yes	8	26.7
No	22	73.3
Total	30	100

7. Benefits to livelihood activity, assets, opportunities

Benefits	Frequency	Percentages
Employment/contract	1	4
Provision of livestock	4	16
Micro-credit	6	24
Market	3	12
Training	5	20
Electricity	1	4
Others (palm seedlings)	5	20
Total	25	100

8. Any member of household works in the mine?

Response	Frequency	Percentages
Yes	10	33.3
No	20	66.7
Total	30	100

8b. Any member of household works in the mine? AKYEMPIM

Response	Frequency	Percentages
Yes	5	50
No	5	50
Total	10	100

9. Other benefits apart from employment opportunities

Response	Frequency	Percentages
Scholarships	1	7.7
Healthcare	1	7.7
Development projects	1	7.7
School building	2	15.4
Potable water & repairs	3	23.1
Repair of roads	2	15.4
Monthly contract jobs through OIC	1	7.7
Palm oil and palm kernel oil extraction	1	7.7
Provide livestock free of charge	1	7.7
Total	13	100

TAAA**10 – Are you satisfied with benefits that household receives?**

Response	Frequency	Percentages
Yes	4	15,4
No	16	61,5
NA	0	0
Not really	6	23,1
Total	26	100

Adverse impact on livelihood of individual**11. Whether admit that mining has adversely affected livelihood**

Response	Frequency	Percentages
Yes	22	66.7
No	8	33.3
Total	30	100

12. Explanation if yes

Response	Frequency	Percentages
Blasting affects health (headaches)	5	7.2
Water polluted by chemicals	14	20.3
Schools not built for children	1	1.4
Land/soil pollution by chemicals	3	4.3
No assistance	1	1.4
Rain water polluted and made dark	2	2.9
High cost of farm lands	1	1.4
Diseases	6	8.7
High/rising cost of living	3	4.3
Destroyed livelihood activity	4	5.8
No proper/satisfactory crop compensation (breeds litigation)	6	8.7
Lack of short access routes to farms	1	1.4
Noise causes health problems and cracks in buildings	5	7.2
Burden of carrying water in gallons to farms	1	1.4
No job opportunities	2	2.9
Destroyed education (children can't get buses to schools)	1	1.4
False promises (assistance and compensation)	4	5.8
Insecurity and fear as you farm	1	1.4
Crop yields affected (low yield)	3	4.3
All brought hardships	6	8.7
Harassment	1	1.4
Total	69	100

13. Whether lost any livelihood assets (e.g. land etc.)

Response	Frequency	Percentages
Yes	16	53.3
No	14	46.7
Total	30	100

14. Details of the answer above

Response	Frequency	Percentages
Lost farmlands	8	61.5
Given unsatisfactory compensation	5	38.5
Total	13	100

15. Effect of loss of livelihood assets on a livelihood/general well-being

Effect/impact	Frequency	Percentages
Hunger	4	14.3
No lands to farm	4	14.3
Renting farmlands expensive	1	3.6
Hardships as compensations unpaid	7	25
Travel over long distance to farms	2	7.1
Illnesses and sicknesses	1	3.6
Live in abject poverty	2	7.1
Unemployment & movement from community	4	14.3
Difficulty in educating wards	2	7.1
Difficulty in movement and land acquisition	1	3.6
Total	28	100

Loss of entire livelihood activity and impact**16. Whether lost livelihood activity as a farmer**

Response	Frequency	Percentages
Yes	8	36.4
No	12	54.5
Not really	2	9.1
Total	22	100

17. Explanation of answer above

Response	Frequency	Percentages
Land taken	1	25
Lost livelihood activity	1	25
Insecurity in farming	1	25
Unfavourable terms of land acquisition	1	25
Total	4	100

18. Effects of loss of livelihood activity on household

Impact	Frequency	Percentages
Destroyed/strained marriages	1	6.7
Unemployed/jobless	3	20
Poverty	2	13.3
Hardships	5	33.3
Movement from community	1	6.7
Farming on bad land tenure	3	20
Total	15	100

COPING STRATEGIES

19. How they cope with/solve livelihood crisis

Response/coping	Frequency	Percentages
Help from sons and daughters	1	4.3
Travelled to city for jobs	1	4.3
Petty trading	1	4.3
Parents care (especially of children)	1	4.3
Acquire different land or alternative land (at higher rent)	5	21.7
Compensation from mines	1	4.3
Manual labour/temporary jobs	5	21.7
Spousal help	2	8.7
Can do nothing about it	5	21.7
Gift (kindness of friends & well-wishers)	1	4.3
Total	23	100

Support from relatives, community, associations and groups (social capital)

20. Whether get any support from relatives (outside of the community)

Response	Frequency	Percentages
Yes	4	20
No	16	80
Total	20	100

21. If yes, what type of assistance gotten from them

Response	Frequency	Percentages
Parental care of children	1	20
Financial help (from brother for petty trading)	1	20
Help from siblings	2	40
From association (donate money)	1	20
Total	5	100

22. What socio-economic benefits do you get living in this community?

Response	Frequency	Percentages
Contribution from local associations/groups	1	50
Get farming inputs as women farmers group	1	50
Total	2	100

23. Whether when in livelihood crisis, assistance received from association, groups, organisations etc. of which a member

Response	Frequency	Percentages
Yes	3	15
No	17	85
Total	20	100

24. If yes, state the kind of assistance gotten

Kind of assistance	Frequency	Percentages
Monetary Contribution to relieve of burden	1	33.3
Advice and encouragements	1	33.3
Gift and benevolence of church	1	33.3
Total	3	100

Compensation from mining company as a coping strategy**25. Whether receive any compensation/help from the mining company, government and private institutions, NGOs and CBOs, that go to mitigate the impact**

Response	Frequency	Percentages
Yes	11	42.3
No	14	53.8
Not really	1	3.8
Total	26	100

26. If yes, give details of the kind of support received from them

Response	Frequency	Percentages
Received compensations	9	100
Total	9	100

Change of livelihood activity as a livelihood strategy/coping strategy

27. Do you change/search for another economic activity when you are in crisis?

Response	Frequency	Percentages
Yes	2	40
No	3	60
Total	5	100

28. If yes, what kind of job do you search for?

Response	Frequency	Percentages
Spare driving	1	33.3
Selling of firewood	1	33.3
Petty trading (tomato trading)	1	33.3
Total	3	100

29

Other sources	Frequency	Percentages
Yes, other sources	5	50
No other sources	2	20
NA	1	10
Other: rely on others, esp. wife, seamstress/trader	2	20
Total	10	100

30

Type of other sources of income	Frequency	Percentages
Temporary	4	30.8
Permanent	2	15.4
Daily wages	0	0
Other:		0
Family member	2	15.4
Petty trading	3	23.1
NA	0	0
Palm wine trading	1	7.7
Pension payment	1	7.7
Total	13	100

Benefits to general household

31. Whether mining has enhanced the livelihoods of the household in general

Response	Frequency	Percentages
Not really	1	10
Yes	1	10
No	8	80
Total	10	100

32. Reason/how it enhanced or not

Response	Frequency	Percentages
Corn mills set up by those mine workers saved trouble over distance	1	33.3
Trade boosted	1	33.3
Employment (to wards)	1	33.3
Total	3	100

33. Are you satisfied with benefits that household receive?

Response	Frequency	Percentages
Yes	0	0
No	10	100
NA	0	0
Not really	0	0
Total	10	100

34. Explanation for response above

Response	Frequency	Percentages
Refuse to cooperate with community members, esp. reject meeting proposals	1	7.1
Not at all satisfied	4	28.6
Water pollution rampant	1	7.1
Inflict/induce hardships	1	7.1
Bad roads	1	7.1
Unsatisfactory compensations	2	14.3
Cracks in buildings due to blasting	1	7.1
No (direct) benefits	3	21.4
Total	14	100

Access to the use of skills, knowledge etc.

35. Whether the market system, government institutions/structures and processes make it difficult in accessing the preferred activity, use of skills etc.

Response	Frequency	Percentages
Yes	0	0
No	4	100
Other	0	0
Total	4	100

36. Gender of respondents

Sex of respondent	Frequency	Percentages
Male	13	43.3
Female	17	56.7
Total	30	100

37. Age of respondents

Age group	Frequency	Percentages
20-29	4	10.8
30-39	10	27.0
40-49	10	27.0
50-59	8	21.6
60 and above	5	13.5
Total	37	100

38. Marital status of respondents

Status	Frequency	Percentages
Single	0	0
Married	33	89.2
Divorced	0	0
Separated	1	2.7
Co-habiting	0	0
Widowed	3	8.1
Total	37	100

TAAA

39 – Whether the market system, government institutions/structures and processes make it difficult in accessing the preferred activity, use of skills etc.

Response	Frequency	Percentages
Yes	2	12,5
No	14	87,5
Total	16	100

APPENDIX B: INTERVIEW GUIDE FOR THE HEADS OF HOUSEHOLDS

INTERVIEW GUIDE FOR HEADS OF HOUSEHOLDS IN THE SELECTED MINING COMMUNITIES IN TARKWA- SEMI STRUCTURED INTERVIEW.

(Household In-depth Interviews)

Name of community..... Date:.....

Questionnaire no. House no.

A) Background Data:

1. i) Name of the household head.....ii) Sex:

iii) What is your age?

- (a) 20-29 yrs (b) 30-39 yrs (c) 40-49 yrs (d) 50-59 yrs (e) 60 and above

iv) Marital Status:

- (a) Single (b) Married (c) Divorced (d) Separated (e) Co-habiting
(f) Widowed

v) Education Level:

- (a) Never went to school (b) Primary (c) Secondary (d) Post-secondary
(e) Polytechnic (f) University (g) Others:

B) Questionnaire on impact dimensions

2. Present Occupation/ Job:

3. How long have you been engaged in the work above?

4. Is the above stated occupation the activity you have been engaged in since you lived in this community? Yes () No ()

5. If the answer to the question above is “No” please state your former occupation/ job:
.....

6. Could you please explain or give reasons why you changed your income generating activity?.....
.....
.....
.....
.....

7. Is the job mentioned in question 2 the main source of income to your household or family? Yes () No ()

8. (a) How did you get this new job?
.....
.....

(b) Did anybody help you to get this new job? Yes () No ()

9. How many hours do you work in a day?

10. How much income on the average do you get from this job in a month?
.....

11. Is the income from this type of work or job sufficient to maintain daily/ monthly expenses of your family? Yes () No ()

12. If the answer to Q7 is No, what are other sources or alternative sources of income to your household budget?
.....
.....
.....

13. What type of job(s) is this alternative source?
(a) permanent (b) temporary (c) daily wages (d) other: specify.....

14. How much do you earn from other sources of income per day?.....
per month.....

15. How many members of your family are employed or engaged in income generating activity?.....

16. Would you say that mining has enhanced the livelihoods of your household in general? Yes () No ()

17. Please give reasons for your answer above.
.....
.....
.....
.....

18. What in your own view or opinion are some of the benefits from the mines in terms of livelihood activity (farming), assets and opportunities to your household in general?
.....
.....

.....
.....
.....
19. Does any member of your household work in the mines? Yes () No ()

20. How many members of your household have gained employment directly or indirectly with the mines?

Directly.....

Indirectly.....

21. What other benefits apart from employment opportunities does your household receive from mining and the mines in this community?

.....
.....
.....
.....
.....
.....

22. If your household receives any benefits, are you satisfied with the benefits that your household receives from the mines in respect of livelihood advantages?

Yes ()

No ()

23. Please explain or give reasons for your response to the question above.

.....
.....
.....
.....
.....

24. What benefits in terms of livelihoods do you expect to receive from mining and the mines in this community?

.....
.....
.....
.....
.....

25. Has mining and operation of mines in this community helped your own livelihood (activity as a farmer, your assets, capabilities, and the general stock of livelihood resources) and thus made you secure a greater well-being? Yes () No ()

26. If yes, how has mining and operation of mines in this community promoted your livelihood activity as a farmer?

.....
.....

.....
.....
.....
27. Has the operation of mines in this community enhanced your use of certain skills, knowledge etc. to secure an additional or alternative means of living apart from farming?
Yes () No ()

28. If yes, please explain how.....
.....
.....
.....

29. If your response to Q.25 is No, would you say that mining in this community has adversely affected your livelihood? Yes () No ()

30. If yes, please explain.....
.....
.....
.....
.....

31. Did you lose any livelihood assets (e.g land, physical structures etc.) as a result of mining and the operation of the mines in this community? Yes () No ()

32. Please give details if the answer above is yes.
.....
.....

33. How did the loss of livelihood assets as enumerated above affect the livelihood and general well-being of your household?
.....
.....
.....

34. Have you lost your livelihood activity as a farmer owing to mining activities in this community? Yes () No ()

35. Please explain how if the answer given above is yes.
.....
.....

.....
.....

36. How did that loss of livelihood activity affect you and your entire household?

.....
.....
.....
.....
.....

37. Has mining in this community adversely affected the livelihood of members of your household? Yes () No ()

38. If your response to the question above is yes, please explain how mining in this community has impacted negatively on the livelihoods of members of your household?

.....
.....
.....
.....
.....

39. How did/do you cope with such livelihood crisis?.....

.....
.....
.....
.....
.....

40. Do you get any assistance/ support from relatives outside of this community?

Yes () No ()

41. If yes what type of assistance do you get from them?

.....
.....
.....
.....

42. What socio-economic benefits do you get living in this community?

.....
.....
.....
.....

43. When in livelihood crisis, did/ do you get assistance from any associations, groups, organizations, etc of which you are a member? Yes () No ()

44. If yes, please state the kind of assistance you got/ get from them.
.....

45. Do you receive any compensation or help from the mining companies, government institutions, NGOs, private and community-based organizations, etc. that go to mitigate the impact on your livelihoods? Yes () No ()

46. If yes, give details of the kind of support you receive from them.
.....
.....
.....
.....

47. Do you change/ search for another economic activity when you are in crisis (like sick, debt, fire outbreak, death, etc) or need extra money? Yes () No ()

48. If yes, what kind of work/ job do you search for at such abnormal times?
.....
.....
.....

49. If “NO”, how do you solve or face such problems of livelihood crisis?
.....
.....
.....
.....
.....

50. Do the market system, government institutions, structures and processes make it difficult for you and members of family in accessing your preferred activity or the use of any skills, knowledge, talent etc.? Yes () No ()

51. If your response is yes, please give details of how access is a problem to you.
.....
.....
.....
.....

52. What are your expectations from the mining companies, the government, NGOs and other institutions in respect of livelihood enhancement and opportunities?
.....
.....
.....
.....

**APPENDIX C: INTERVIEW GUIDE (QUESTIONNAIRES) FOR THE
COMMUNITY RELATION OFFICERS OF GAG & WGL MINES, THE
COMMUNITIES' ASSEMBLY MEMBERS AND OPINION LEADERS IN THE
SELECTED COMMUNITIES.**

A) Background Data:

1. i) Name of the Respondent:..... ii) Sex:
- iii) What is your age?
(a) 20-29 yrs (b) 30-39 yrs (c) 40-49 yrs (d) 50-59 yrs (e) 60 and above
- iv) Marital Status:
(a) Single (b) Married (c) Divorced (d) Separated (e) Co-habiting
(f) Widowed
- v) Education Level:
(a) Never went to school (b) Primary (c) Secondary (d) Post-secondary
(e) Polytechnic (f) University (g) Others:
- vi) Occupation / Position:

B) Questionnaire on impact dimensions

2. In your estimation how long has the current mining company been operating in this community?
3. Have you or any member(s) of your household been engaged in farming activity over the period since the operation of the mines in this community? Yes () No ()
4. Would you say that mining in this community has in some ways enhanced the livelihoods of farmers in this community? Yes () No ()
5. Please give reasons for your answer above.
.....
.....
.....
6. What in your opinion are some of the benefits farmers have derived from the mines in terms of :
(a) livelihood activity (farming):
.....
.....

.....
.....
.....
.....
(b) livelihood assets (e.g skills, knowledge, health, infrastructure, finances etc.):

.....
.....
.....
.....
.....
.....
.....

(c) other livelihood opportunities/ benefits:

.....
.....
.....
.....
.....
.....

7. Would you say that they are satisfactory or that the farmers are satisfied with the benefits received so far? Yes () No ()

8. Please explain or give reasons for your answer above.

.....
.....
.....

9. In your view how has mining impacted negatively on the livelihoods of farmers in your community?

.....
.....
.....
.....
.....
.....
.....
.....
.....

10. Is your company aware of the negative impacts of its operations on the livelihoods of the farmers in this community? Yes () No ()

11. If yes, what has your company done to repair the damage caused to the livelihoods of the farmers?

.....
.....
.....
.....

.....
.....
.....
.....
.....

12. What in your own view should be done in order to sustain the livelihood of the farmers in this community?

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....