



**ARTISANAL/ SMALL SCALE GOLD MINING ACTIVITY AND ITS ROLE IN  
SUSTAINABLE LIVELIHOOD OF THE RURAL COMMUNITY:  
A CASE OF HADEMDEMI VILLAGE, GASH BARKA REGION, ERITREA**

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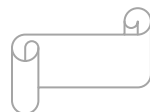
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## List of Acronyms

AS	Artisanal Small Scale
ASGM	Artisanal Small Scale Gold Mining
ASM	Artisanal Small Scale Mining
DFID	Department for International Development
DoM	Department of Mining
MoEM	Ministry of Energy and Mining
MRM	Mineral Resource Management
NGOs	Non-Governmental Organizations
UNECA	United Nations Economic Commission for Africa

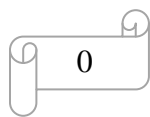
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## **ABSTRACT**

This thesis deals with the potential of Artisanal Small Scale Gold Mining (ASGM) as a sustainable livelihood strategy. This as a livelihood strategy is measured by the ability of ASGM activities in facilitating access to the five sustainable livelihood assets or capitals - financial, human, social, physical and natural and for resilient, sustainable and secure livelihoods. The study is focused on the sustainability of ASGM in Hademdemi Village, Gash Barka Region Eritrea, and its role in enhancing the sustainable livelihoods of the gold miners by facilitating accesses to the different assets. The main question was to investigate how ASGM impacts the gold miners' ability to cope with and recover from shocks and stresses. A qualitative data was collected by interviewing household gold miners, community leaders, Ministry of Energy and Mining Experts (MoEM) and children gold miners was conducted in Hademdemi village. Findings of the study discovered that ASGM activities allow gold miners to survive. However, their access to financial, human, social, natural and physical asset is very insufficient comparing with what they deploy. Majority of the interviewee expressed their concerns about insecure and non-resilient livelihoods as a result of ASGM activities. Though it enables them to survive during very critical conditions, it's doesn't enhance their well-being as a livelihood strategy.





## CHAPTER ONE:

### 1. INTRODUCTION

#### *1.1. Research Problem*

*“She was born from a very poor family and no one wanted to marry her because her parents were too poor to give dowry to the bridegroom’s family. She lived alone for more than 36 years until she started to engage in a traditional small scale mining. In 2010 she got certain amount of gold when she was digging a hole which suddenly changed her entire life and her social status within the community to have two children soon”.*

Such kinds of stories are commonly told by the people who are engaged in the informal ASGM activities in Eritrea in places where other economic alternative is critically limited.

ASGM activities have been practiced since the times of the Egyptian Pharaohs and persisted during the colonial period. After Eritrean independence in 1991, the Eritrean government though gives some recognition, has blamed the sector as unsustainable and risky (MoEM Database, 2015:2).

Mining has recently become the main economic source in Eritrea especially after new large deposits of ore were explored recently in southern, central and western parts of the country. The Gold mining sector incorporated large scale mining including big companies from all over the world and traditional mining mostly practiced in rural communities in 11 districts and sub-districts of the country mostly use primitive and traditional techniques (Eritrean Mining Journal 2014:4).

Eritrean people in general and the people in Gash Barka Region in particular livelihoods are greatly based on agriculture though it’s not sustainable since the area has short and unpredictable raining season. Hence, a large number of people especially after the 2009 drought in large parts of the country people were rushed to engage and turn their way towards (MoEM Database 2015:5).

People who directly or indirectly engaged on ASGM activities claim that ASGM has as great role as agriculture for their subsistence. As the stories told by the community who are engaged on ASGM from different areas of the country indicates, the sector has a role to play in enhancing the livelihood of the community though the Eritrean government blamed the sector as fundamentally unsustainable where the cost of the sector in environment, economic and social terms exceeds its benefits.

In Eritrea there is a debate among different stakeholders on its contribution and sustainability of the sector. The government claimed it as unsustainable where its costs exceeds its benefits while people and village administrators claimed for its contributions and potential in enhancing the livelihoods as well as its role in poverty alleviation of the poor rural community.

Though the government policies claimed the sector as economically, socially and environmentally unsustainable where its costs outweighs its benefits large number of people are still engaged on the sector with limited alternative to other economic sources except agriculture. Taking those two debates into consideration, the extent to which this informal sector takes part in socio-economic empowerment of the poor rural community and its potential in enhancing the livelihoods poor rural community will be great concern of this research paper.

There are different opinions in literature on the applicability of the concept of sustainability of ASM. This paper will discuss the issue in relation to the current situation in the ASGM industry in Gash Barka Region by taking Hademdemi village as a sample study. A careful analysis of the steps will be taking in improving human conditions in terms of social, economic and its environmental impacts in relation to its ability in building secure and resilient livelihoods.

## ***1.2. Research Objective***

The aim of this research paper is to examine the nature and extent of ASGM activity and its potential in enhancing secure, resilient and sustainable livelihood of the AS gold miners in Hademdemi village, Gash Barka Region.

## ***1.3. Research Questions***

General Research Question

1. Is ASGM activity in Gash Barka Region sustainable, which factors makes it sustainable or unsustainable?

### **Specific Research Questions**

1. What is the nature and context of ASGM practiced in the area?
2. What are the institutional and regulatory frameworks, and processes of governing the ASGM activities within the context of Eritrean mining industry?
3. What are the Push and Pull factors for gold miners' involvement in ASGM activity in Hademdemi?
4. What roles and limitations do ASGM have in enhancing secure, resilient and sustainable livelihood for AS gold miners in Hademdemi village?

## ***1.4. Research Methodology***

This research has applied qualitative approach to explore the ASGM activities and its socio-economic and environmental sustainability in Gash Barka Region by taking the Hademdemi village as a sample study.

The research has been conducted on the Hademdemi Village as it was difficult to cover all the mining areas in the region.

The primary research is conducted on the based on the socio-economic contributions, limitations, and its sustainability, organizational and technical context, environmental impacts as well as polices within the Eritrean ASGM taking place in Hademdemi village as a sample study using qualitative approach. An important element in the study bring out through semi-structured interview both formal and informal interviews, which enables the respondents to elaborate their ideas freely and able to generate new ideas about its contributions, limitations and potential in enhancing secure and resilient livelihoods potential limitations.

### ***1.4.1 Data Collection***

Field data collections were conducted from to August 15/ 2015 – 25/2015. The research is conducted on Gash Barka Region, by purposely selecting one village called Hademdemi where ASGM activities are highly practiced. The study includes 20 intentionally selected household miners' samples, 2 community leaders, 5 children gold miners and 4 informal interviews with Ministry of Mining and Energy (MoEM) experts. Since

the area is far away from the regional town and is difficult to get transportation, the research is limited in only one site.

The semi-structured interview is conducted in Hademdemi as well as Haykota sub-town since majority of the villagers come to Haykota for market. The interviewees in Haykota were easier to talk to and hence the researcher was able to extract more comprehensive data than that of Hademdemi as it wasn't easy to build full trust among the villagers within the limited time the researcher had to stay there. The researcher used local language called Tigre in conducting interview with the households and children gold miners while using Tigrinya language, a language the researcher can fully listen and understand, with the community leaders and experts from MoEM only.

The second methodology which was intended to be used is observation. In order to have full understanding of the process and operations as well as their daily life, we went to the main mining areas of Hademdemi( Shambotai, Merit, Abashawil, Kuwait) and was helpful in getting first hand information. Our observation was mainly focused on *what are they doing, how are they doing and why do they do it (motive behind)*. In addition to this, the AS miners invited us to drink traditional coffee with them and this helped us to build good rapport and favorable environment between us and our respondents to get more and detailed information of their activities and daily lives.

**The primary data gathering includes:**

1. In relation to the socio-economic contributions, limitations and its potential in enhancing secure and resilient livelihood within the AS gold miners in the sector, the primary data collection use purposely selecting household gold miners samples in Hademdemi village, this research is conducted on 20 households across one site using semi-structured (formal) interview in Hademdemi.
2. Technical data collection including observation in the mining valley focusing on what, how and why questions.
3. 4 informal interviews with selected MoEM experts, 2 community leaders in relation to their understanding and knowledge of the sector's contributions and limitations in enhancing the livelihoods of the community
4. 5 children gold miners who have role to play in ASGM activities to get first hand information on how and why they are involved in the sector and in what effect.

**Secondary Data collection**

Since no previous research was conducted on the sector before in Eritrea, getting secondary data is very difficult and was limited. The study deploys secondary data for literature review, contextual background from the limited data available in MoEM in relation to its institutional arrangements and large scale mining activities in Eritrea.

***1.5. Structure of the Paper***

The research paper will be organized into five chapters. The first one will be dedicated to an introduction. The second chapter will deal with the conceptual and theoretical framework of the study. Chapter three will be focused on the national context of mining industry in relation to large scale mining activities and ASGM with its regulatory and institutional frameworks. The fourth chapter will analyze the field findings of the ASGM activity in relation to its outcomes in access to human, social, economic, natural and physical assets or capitals and its role in enhancing resilient and secure livelihood of the Hademdemi AS gold miners. The last chapter will draw the conclusion.

## ***1.6 Limitation and Ethical Challenges***

Since ASGM is an informal and illegal sector in Eritrea, there are limitations in getting enough information. In most parts of the sub-region, communities who are involved in ASGM activity are afraid to tell their real story and income as the practice is illegal. In addition to this constraint, at the time we went to the mining site for interview majority of the gold miners were outside the mining area due to military intervention by the government. Majority of our interviewee were hiding in the caves and the research team was unable to get them all at the time of our interview.

The research is conducted using Tigr local languages in Hademdem area. Though researchers have 80% ability to understand the ideas and arguments of the respondents, it was difficult to grasp all.

There is also limitation in getting enough secondary data information because of the lack of previously conducted research in the sector in addition to the lack of enough databases in the MoEM in relation to ASGM activities.

As ASGM in Hademdem is illegal and informal activity as researchers, we have the responsibility in ensuring the ethical standard of the research. In order to get enough information and protect the research participant's privacy and safety we try to provide sufficient information on the objective, significance and nature of the research and in using them anonymously in our research finding by establishing good rapport between the researcher and participants.

The researcher also use tape records and ask permission for the record and make sure for them not to be used for other purposes and will be destroyed after we finish our research project.

## CHAPTER 2: CONCEPTUAL AND THEORETICAL FRAMEWORKS

### ***2.1 Artisanal Small Scale Mining (ASM) Concept***

In the past decades, many experts and researchers are trying to devise universal definitions of ASM but until now they couldn't reach in any agreement. Though the United Nations in 1980's spent a lot of time to devise one universal definition for ASM but the problem continues across countries and languages (Mwaipopo *et al* 2004:4).

According to Maponga (2004:4) countries have different definitions for ASM based on different criteria's as follows:

- Stage of mechanization (Brazil, Burkina Faso Ghana and Sri Lanka).
- Size of Concession (Ghana, Zambia and Zimbabwe).
- Depth of working (Colombia, Senegal and Ethiopia).
- Capital investment (Argentina, Mexico, South Africa, Pakistan and Thailand).
- Levels of employment (Chile).
- Levels of Production (Philippines and Senegal).

Countries also make a distinction between types of small scale mining in relation to their degree of legislations. Some countries associated it with illegal activities and in other countries with semi mechanization and organization (Souza 2002:2).

Globally AS gold miners are engaged in extraction and processing of a range of commodities such as gold, diamonds, gemstones, industrial minerals or construction materials (Hilson and Mapping, 2003:10).

Barry (1996:1) defines small scale mining as a process where groups or individuals extract potential minerals usually illegally or informally through manual and mechanized mining in basic processes.

Hilson (2002:864) also defines

*“ASM’ as an encompassing label for the non-mechanized, labour demanding activities of the mining sector in which its operations and management techniques makes it unique”*

Unlike the large scale mining activities which is highly mechanized with machinery and skilled workers, small scale mining activity are generally rudimentary and portrayed as a highly manual process (Ibid).

According to Hilson (2002:864) ASM refers to the mining activity which is conducted by individuals, groups, families or cooperatives having limited or no mechanization, most of the time informal and illegal sector of the market.

As Maponga & Ngorima (2003:5) stated small ASM has become the crucial economic activity having go beyond farming in many parts of the world but also has been a valuable addition to people's livelihoods as secondary to agriculture.

While a number of definitions and distinctions have emerged, this particular research paper will try to elaborate its analysis based on what Hilson (2002:864) defines ASM as mining activity which is conducted by individuals, groups, families or cooperatives having limited or no mechanization, most of the time informal and illegal sector of the market. Since the Eritrean ASM or context is clearly defined by Hilson's definition.

In an International Roundtable conference on Artisanal Mining, which is hosted in the world bank delegates stated that, *‘to a large extent, informal or traditional mining is a poverty driven activity’*. Considerably this marked the creation of a link between rural impoverishment and the growth ASM (Barry 1996:1). ASM is practiced in more than 55 countries and is important source of livelihoods. ASM activities are as important as large scale

mining activities, mainly in terms of the numbers of people employed. As reports from International Labor Organization indicates 11.5 and 13 million people are directly employed in the sector in Africa, Asia and Latin America (ILO 1999:7). Several researchers including multilateral organizations such as the United Nations as well as UK Department for International Development (DFID) observed that 'because ASM activity is highly linked to poverty', it has grown as an economic activity, setting off more traditional forms of rural subsistence earnings (Hilson 2009:2). Reports from mining, minerals, and sustainable development project also come up with similar conclusions, arguing that small scale mining is a '*livelihoods strategy which adopted in most rural parts of the world as one of the most promising income and economic opportunity*' (Hilson 2002:3).

In most sub-Saharan Africa countries the failure to recognize the sector's growing economic role has impeded the development of the region. As they are largely affected by widespread poverty and limited employment opportunities, a formalized ASM could help to deliver much needed short-term economic and social benefits (Ibid: 6).

As most of the literature review of Sub-Saharan African countries especially Ghana and Tanzania revealed there are profound economic and social impacts of the industry at the local and national levels with positive as well as negative results for individuals, families and communities who are directly involved in these activities (Banchirigah 2006:167).

ASGM in Ghana was treated as an informal industrial sector, which employs thousands of people but largely characterized as traditional, unmonitored and uncontrolled sector (Hilson 2001:2). In 1980s for the first time in history of small scale gold mining in Ghana, the Ghanaian government formalizes the sector after identifying the potential earnings and revenue of the industry largely (Ibid).

Since the new regulatory policy of the sector, approximately two-thirds of the Ghanaian AS gold miners are engaged in the extraction of gold and this resulted in increase of gold production nearly tenfold since 1989, from 17,234oz in 1990 to 107,093oz in 1997. Because of its labour intensity nature, ASGM operations generate significant employment avenues in remote rural areas where alternative jobs are limited and low paying. Apart from this, it has also generates a significant number of indirect jobs in the other sectors of the economy (Amankwah & Sackey 2003:7).

ASGM also constitutes a major employer and livelihood support for families throughout Tanzania. The importance of the sector to rural communities and the national economy is officially accepted by the national strategy for Growth and Reduction of Poverty since it has great role in providing other economic alternative for poor rural community (Bryceson & Jönsson 2010:380). As a result of this new agreement, ASGM sites have flourished over the past three decades leading to an estimated 300,000 AS gold miners (Drechsler, 2001: 63). At the same time At the same time ASGM activities has also been associated with a number of immediate and long term adverse effects of environment and health hazards (Fisher 2008:21).

### **2.1.1 Artisanal Small Scale Mining in Relation to Sustainability**

Hilson (2005:3) also tries to define ASM in relation to its sustainability as a:

*“Subsector continues to be an activity beset with problems of sustainability. These stem from an overall inadequate legal and regulatory framework and low productivity, exacerbated by the application of rudimentary and inappropriate technology, which in turn impact on capacities to generate income”.*

Similarly, Hoadley & Limpitlaw (2004:2), argued that in dealing with sustainable livelihoods in ASM activities one needs to consider the sustainability of the poor people livelihoods in four related ways;-

1. The ability of a community to deal with and recover from poverty shocks and stresses.
2. Economic effectiveness and ability to generate other economic alternative by employing minimum inputs to generate greater output in the long run.
3. Nature of the mining in relation to push and pull factors for gold miners engagement in the sector.
4. The ability to have ecological integrity by taking the degradation of natural resource in to consideration.
5. The capability to build social equity for all groups within the sector.

In addition to this, Hentsche & Priester (2000:15) stated that, sustainable development in mining refers to the ability and capability to transform mining to other economic alternative that could have potential to replace the depilated mining ore. *‘With respect to ASM it often means the ripple effect into other economic activities’.*

United Nations Economic Commission for Africa (UNECA) officers based on the previous World Bank work also argued that community who are engaged on ASM should not be viewed or treated homogeneously. With thus they try to categories them into four groups as gold rush miners, permanent gold miners, seasonal gold miners and poverty driven gold miners though they overlap with each other (Weber-Fahr at el 2001: 449).

As Weber-Fahr at el (2001: 449) stated the sector's sustainability is highly dependent on the nature of mining, if the mining nature is seasonal or rush activities, the sector is highly unlikely to be sustainable as far as the community is unable to get revenue to be invested on other economic activities such as schools and health centers. People are branching out to ASM because they face unstable financial situation and are desperate to escape poverty (Mondlane& Shoko: 2003:10).

As we have seen in the above discussions ASM definitions, nature, role and sustainability is under a lot of debates and arguments. Since this paper going to examine the relationship between ASM activities and sustainable livelihood approach the following parts of the chapter will focus on the sustainable livelihood approach and its frameworks as well as the concepts of resilience and livelihood security within the sustainable livelihood approach.

## ***2.2 Sustainable Livelihood Approach***

The sustainable livelihoods Approach which was launched by the Brundtland Commission on Environment and Development maintain to be important part of the development debate. The approach expanded when the United Nations Conference in Environment and Development adhere for the achievement of sustainable livelihoods as a broad goal for poverty reduction in 1992. UNDP, IISD, CARE and Oxfam are among the early organizations who adopt Sustainable livelihood approach.



Robert Chambers and Gordon Conway 1992 proposed the following several definition of a sustainable rural livelihood approach, which most of the time practical at the household level:

*“A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living; a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contribute net benefits to other livelihoods at the local and global levels and in the short and long term”*

According to Robert Chambers and Gordon Conway, among the variety of components of a livelihood, the most complex is the portfolio of assets, which includes both tangible assets (resources) and intangible assets such as claims and access out of which people build their living. They also stressed that, any sustainable livelihood approach has to include the ability to cope or avoid or recover from stresses and shocks.

Similarly Carney (1998:4) and DFID (1999:5) define Livelihood approach as encompassing

*“The capabilities and assets (material and social) resources and activities required for a means of living. A livelihood is considered to be sustainable when it can cope with and recover from stress and shocks and maintain or enhance its capabilities and assets both now and in the future without undermining the natural resource base”.*

### ***2.2.1 Sustainable livelihood Framework and its Elements***

Sustainable livelihood framework is one of the most widely used livelihood frameworks which provide an organizing structure of analysis as a core to sustainable livelihood approach. The DFID sustainable livelihood approach sets out to conceptualize how people or community function in a vulnerable context which influenced by different factors including seasonal constraints, opportunities, economic shocks and longer term trends, how they represent on different types of livelihood assets including the vulnerability context, range of institutional process and how they use their asset base in developing different types of livelihood strategies to achieve the desired goal in livelihoods outcomes (DFID 1999:4).

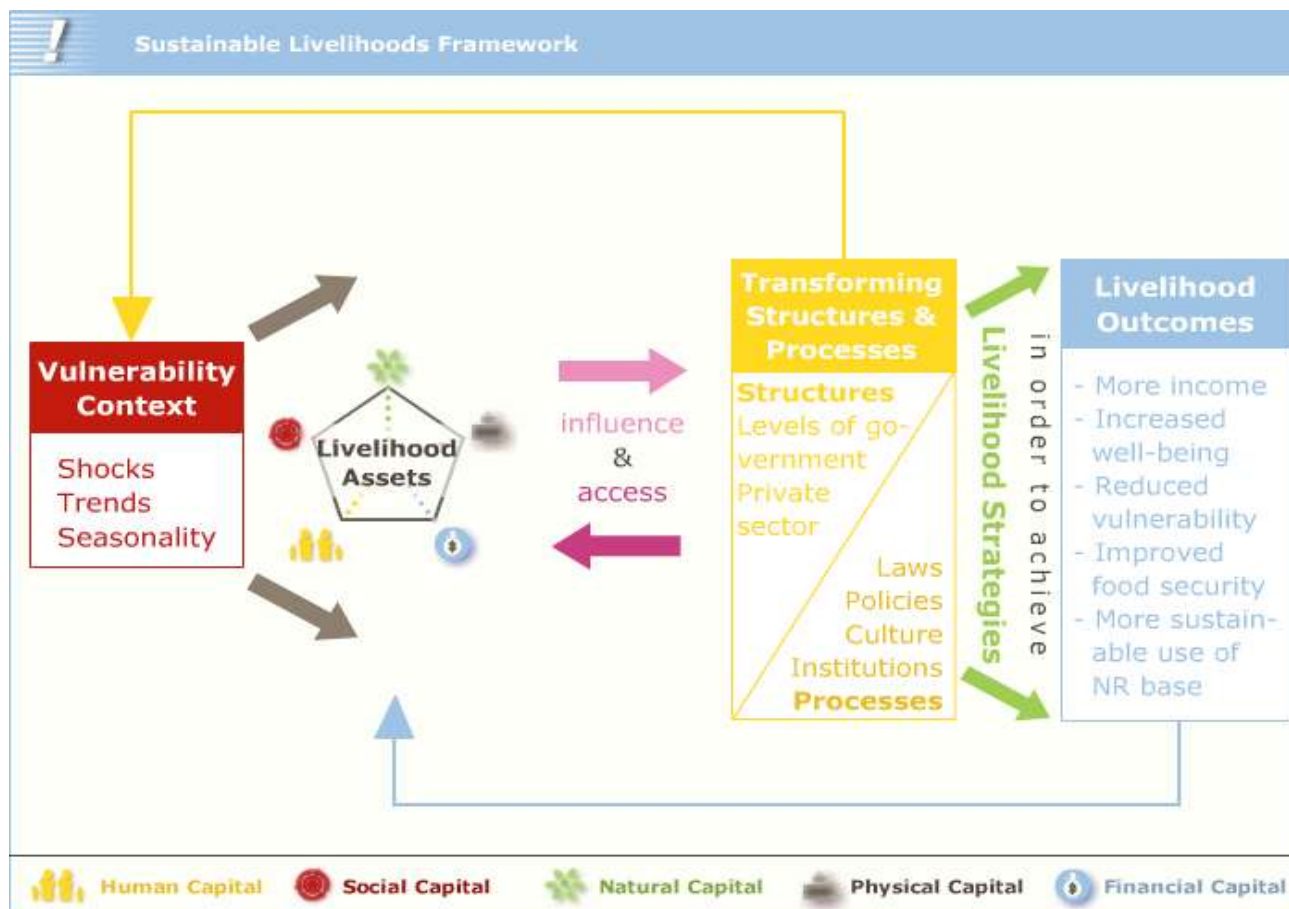


Figure 1 Sustainable livelihood Framework, Source DFID (1999:1)

DFID (1999:2) try to summarize the main elements of sustainable livelihood frameworks as follows:  
*“The framework depicts stakeholders as operating in a context of vulnerability, within which they have access to certain assets. Assets gain weight and value through the prevailing social, institutional and organizational environment (policies, institutions and processes). This context decisively shapes the livelihood strategies that are open to people in pursuit of their self-defined valuable livelihood outcomes”.*

### 2.2.2 Vulnerability Context

The vulnerability context encloses the external situation people exist. The critical trends as well as shocks and seasonality in which people have limited or no control at all, have great impacts on the livelihoods of the people as well as the availability of assets. Vulnerability appears when people have to face shocks and harmful treats with limited and inadequate ability to respond effectively (DFID 1999:6).

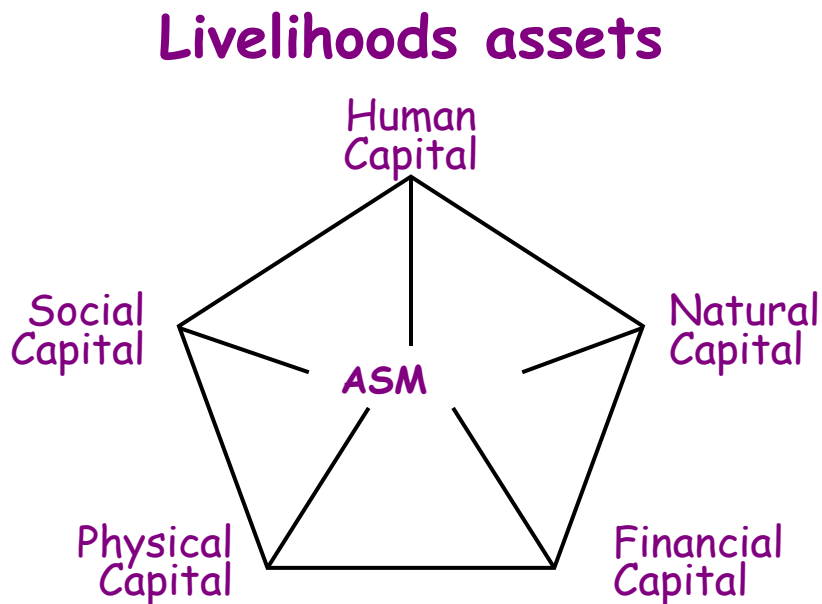
Similarly Scoones (2009:6) stated that, trends (economic & resource), shocks (conflict, health, economic and natural resource stocks such as earth earthquakes and drought) and seasonality (seasonal price fluctuations, production, health and employment opportunities) are the main factors that can directly affect people’s assets and alternatives in perusing valuable livelihood strategies.

DFID stated that, there is sharp difference between risk and vulnerability which has relevant in measuring the cause of poverty. DFID (1993:3). DFID (1999:3) defines risk as

“the likelihood of occurrences of external shocks and stress plus their potential severity, whereas vulnerability is the degree of exposure to risk including hazards, shocks and uncertainty, and the capacity of households or individuals to prevent, mitigate or cope with the risk”.

### 2.2.3 Livelihood Assets

Since Sustainable livelihoods are more focused on people, it needs to gain an accurate and realistic knowledge of people or households capability and strength both in terms of assets and capitals. The approach is mainly founded based on a belief that in order to attain positive livelihoods outcome people need to gain a range of different assets. Therefore the sustainable livelihood approach comes up with five types of assets or capitals upon which individuals or household livelihoods are depend on. These assets or capitals include financial, human, social, physical, and natural (DFID 1999:7). Krantz (2001:19) and Carney (1998:7) came up with short definition of these components which includes;



*Figure 2 Ccomponents of Livelihood Approach; source DFID (1999:5)*

#### Financial Capital

Financial capital compromises the financial resource available for people such as savings, credit, remittance and pensions which provide community with different livelihood options (krantz 2001:19 & Carney 1998:7)

#### Human Capital

Household's labor resource has both qualitative and quantitative dimensions. Qualitative deals with the number of individuals or household members and time available for them to involve in income earning activities while the quantitative deals with the individual or households level of educational, knowledge, health status, skill, capacity to wok and the capacity to adapt in which people enables to hunt and improve their livelihoods (Ibid).

## **Social and Capital**

The social resources is a combination of networks, , relationships of trust, membership of groups and reciprocity, access to wider institutions of society, formal and informal groups, common rules and sanctions, collective representation, mechanisms for participation in decision making and leadership on which households, individuals and community enables to hunt and secure their livelihood (krantz 2001:19 & Carney 1998:7).

## **Physical Capital**

Physical capital compromised the basic infrastructure such as transportation, shelter, water, energy, sanitation, communication, technology and tools (equipment) for production in which community or people enable to hunt their livelihood (Ibid).

## **Natural capital**

The natural resource capital refers to the resource flows useful to livelihoods including land, water and environmental resource, services, wildlife, wild foods and fibers especially common pool resource (Ibid).

### **2.2.4 Households Strategies**

In order to have safe and secure livelihoods, households need to have access to portfolio of assets or capitals both tangible - cash, land, physical or skills and intangible claims on the other and the government and access rights, for earning land, to form cooperation's, unions and to develop mutual understanding and networks. The strategy open to households depends on the assets owned or held and the ability to find and make use of livelihood opportunities (DFID 1999:8).

Most of the time strategies are adopted aiming to deal with and recover from stress and shocks in order to provide sustainable livelihood opportunities for the future generations. Households develop coping strategies to protect their social reproduction and enable recovery. These strategies have highest potential to be ineffective and inefficient in the long term, if consumption decline and or assets are lost permanently or if successive entitlements on particular strategies deplete the natural resource or financial resources base on which households, individuals and communities depend. Poverty thus portrayed not only by a lack of access assets but also lack of options with respect to alternative strategies. The poor and most vulnerable households and community are forced to adopt a strategy which enables them to survive but not to improve their well-being (Rakodi 2002:7).

### **2.2.5 Policies, Institutions and Processes**

Policies, institutions and processes are important are important components of livelihoods framework. They have the ability to determine access to different assets, strategies and the decision making bodies. They have also ability to operate in all levels - households, national and International as well as influence in all spheres of people's livelihood (DFID 1999:9).

### **2.2.6 Livelihood Outcomes**

Livelihood outcomes refers to the outputs or achievements of certain livelihood strategies resulting in more income, increase in well-being of society, reduce vulnerability and improved food security with more sustainable use of natural resource (DFID 1999:12).

### ***2.3 The Concept of Resilience***

There is much debate between scholars and policy practitioners on how to come up with a precise definition and meaning of resilience. According to Longstaff (2010:3) resilience as a concept can be best defined by the “*the ability of a system to absorb disturbance, undergo change, and retain the same essential functions, structure, identity, and feedbacks*”. Resilience is mainly focused on the ability of a system to bounce back after a disruptive event or shocks to recover the state of stability and balance. This can be best explained as the characteristics of households, community, individuals, small groups, networks, organizations, regions, nations, or ecosystems. Resilience doesn’t only mean that the system will look like the period before disaster happened but also tries to look at the change that occurs and its new developments with the system. Thus, a resilience strategy is more focused to guarantee long-term sustainability of the system rather than short-term stability (Ibid).

Vulnerability appears when people have to face shocks and harmful treats with limited and inadequate capacity and ability to respond it effectively (DFID 1999:6). A livelihood which is protected from shocks and stresses or has the potential to respond it effectively is a resilient one (Longstaff *et al* 2010:3). Hence, the concept resiliency is essential in a sustainable livelihood approach.

### ***2.4The Concept of livelihood Security***

Livelihood security refers to the sufficient and sustainable access of income and resources by households or individuals to meet basic needs for their well-being such as potable water, adequate access to food, health, educational, housing, rights of ownership, adequate time for participation and social integrations. The risk of failure in livelihood of households or individuals determines the level of vulnerability of their income, food, health and social insecurity. Therefore, to have secure livelihoods, households or individuals needs to have secure access and ownership of resources and income earning activities such as reserves and assets, to balance risks, alleviate shocks and meet contingencies (Frankenberger & McCaston 1998:31). Thus, the concept of security is essential in a sustainable livelihood approach.

This conceptual and theoretical framework which stated in the above tries to give out highlights of the debates on the concept, nature, definitions of ASM and the sustainable livelihood approach and its framework by including the concepts of resilience and livelihood security. Yet again, it is through these concepts, theoretical approach and framework discussed will analyse the relationship among ASM and the sustainable livelihood approach. So the next chapter will deal with the nature and context as well as its legal and institutional environment of the Eritrean mining industry in relation to large and AS mining activity to have broad understanding of the sector and its contextual background.

## **CHAPTER 3: NATIONAL CONTEXT OF MINING INDUSTRY IN ERITREA**

### ***3.1 Eritrean Mining Industry***

Eritrea is a small East African country with over 60 percent of its land is enclosed by the Arabian Nubian Shield area having relatively under-explored and home for various valuable minerals like gold, potash, zinc and copper (Bhansali 2014:7). Though Eritrea has long history of mining activities the modern mining was begun in the 20<sup>th</sup> century during Italian colonization period in a small scale. Mining and related operations continued throughout the country though it was intermittent in nature. In the early seventies those operations resulted in the development of modern mine in Debarwa, before the war for independence forced to close (MoEM Database 2015:1).

After Eritrean independence from Ethiopia in 1993, Eritrea began to produce a variety of minerals, rock products and semi manufactured goods which includes basalt, cement, coral, gold, granite, sand, silica sand, salt common clay, kaolin, lime, limestone, , pumice, marble, quartz, gravel and gypsum. In addition to this Eritrea also has deposits of metals which include chromium, copper, iron, lead, magnesium, nickel, silver, and zinc and industrial minerals including, potash barite and feldspar (Yager 2002:2).

The explorations activities have revealed that gold is availability is widespread in many parts of Eritrea and has great potential in developing more deposits. Previously exploration reveled the availability of gold in Central Highlands of Hamasien Gold Field, South Western lowland and Southern parts of the country. In Exploration activities in the last ten years has also proven the occurrence of gold deposits in Northern and Western lowlands parts of the country. The Eritrean gold mineralization most of the time hosted in quartz veins and shear zones associated with felsic volcanic rocks, volcanic rocks and other different schist's. The availability of gold in exhalative deposits and weathered zones become more evident when additional deposits were found in Debarwa, Adi-Nefas (central highlands) and Bisha and Harena in western lowlands (Eritrean Mining Journal 2014:7).

### ***3.2. Institutional and Legal Environment of the Mining Industry in Eritrea***

The current institutional framework grants the Eritrean central government full power to handle mining affairs in Eritrea. The MoEM is a single and formal licensing agency having the responsibility of administration, regulation and coordination activities of the energy and mining sector. Within MoEM the Department of Mines has the responsibility in managing the mineral sector and encompasses the geological survey, mineral resource development and the Mineral Resource Management Divisions (MRM). A laboratory service is provided by a small unit under DoM. Following the enhancement of the ministry law in 1995 and issuance of licenses in 1996, the Eritrean mining sector has shown rapid development. Pursuant to recently introduced policy large scale mining operations, exploration and mining are administered by MRM representing MoEM, while ASM operations owned by local community for construction and industrial minerals are administered by regional administrations under the guidance of MoEM (Ibid:4).

MoEM also has the responsibility of sector's promotion, licenses issuing and monitor compliance. In addition to this MoEM developed a national minerals database aimed at the provision of preliminary information for exploration companies interested in conducting detailed investigations (Ibid).

## **Mining Legal Policy**

The legal framework carry out all mining and related operations within the Eritrean territory is based in a mining policy proclamation *No 68/1995*. The proclamation amended in 2011 by proclamation *165/2011* mining regulation legal notice of *No 19/1995* stated that;

*“All mineral resources in Eritrea are public property. The State has a duty to ensure the conservation and sustainable development of these resources for the benefit of the people” (Eritrean Mining Journal 2014:4).*

This policy is mainly aimed to motivate exploration and mining development; to reduce or eliminate the adverse social and environmental impacts. It also aimed to endorse and facilitate minerals and marketing arrangements and to create a favorable condition for foreign investment as measure source of skill and capital for long term sustainability of the sector (Eritrean Mining Journal 2014:4).

All mining license operations are under the mandate of the MoEM. The mining license, once granted from MoEM entitles the person to whom the grant is made to mine in Eritrea. The types of licenses available are a prospecting license is valid for one year and non-renewable; the exploration license is valid for three preliminary years while the mining license is valid for a period of 20 years with optional 10 year renewals (Ibid).

In regard to ASM in Eritrea, Proclamation No 68/1995 which was then amended by proclamation *165/2011* stated that, *“An artisanal mining license granted in respect to the surface area of an existing exploration provided” (Ibid).*

The new mining law places the Eritrean government’s stake in any mining project at 10 percent with an opportunity to buy further 30 percent of the project without paying for the stake up-front or fund exploration costs. The government has established new mining policy to have extra incentive in promoting political stability in order to attract more foreign investment though it doesn’t entitle local miners to legal mining license in ASM. As it is stated on the mining law, in respect to ASM no other minerals to be mined except construction minerals, mineral water and geothermal deposits. As a report from the MoEM indicates, the Eritrean government mining policy is not in a position to support ASGM as far as it has negative impacts that exceed its positive impacts (MoEM Database 2015:4).

### ***3.3 Large Scale Mining Activities***

In the large scale mining activities, there are twenty exploration and mining companies representing Canada, Australia, China, UAE, UK and Barbados (Eritrean Mining Journal 2012:6). Among the biggest mining companies and their shares are:-

#### **3.3.1 Bisha Mining Share Company**

Bisha mining share company (BMSC) is one of these companies which are operating in mining activities in Eritrea formed by venture agreement between Eritrea’s National Mining Corp (ENAMCO) and Canada’s Nevsun resource Ltd Company. The first modern mining system is successfully managed and begun to operate with BMSC. BMSC was started end of 2010 and begun its commercial production of gold and silver in February 2011 (Ibid).

As reports from the mining company indicates, Bisha Mining is expected to produce more than 1.14 million ounces of gold, one billion pounds of zinc, 11.9 million ounces of silver and 821 million pounds of copper at its primary production period within 13 years. The Eritrean government decided to purchase the

30%, with 10 percent carried interest. Eritrean government involvement in the project was also equity financed without any debt or hedge (Ibid)

### **3.3.2 Sun Ridge Gold**

Sun Ridge Gold Corp is also a Canadian development company which engaged in mining activities in areas around Asmara (Emba-Derho, Adi-Nefas and Gupo and Debarwa area) having successfully defined four independently estimates in gold, zinc, silver and copper minerals. The four mining deposits areas have indicated NI 43-101- resources which contain 2.5 billion pounds of zinc, 31.2 million ounces of silver and 1.28 billion pounds of copper (Ibid).

### **3.3.3 Chalice Gold**

Chalice mining company controls a total of eight exploration licenses in northern part of Eritrea with an area of 1,370 sq. Km which includes Zara North, Zara Central and Zara South exploration licenses of Hurum and the Mogoraib exploration license. Chalice merged with Sub-Sahara Resources NL in 2009 and it owns 69% interest of the Zara Project. During the time of merging with Sub-Sahara, Chalice gained a further 11.12% interest of the total Zara Project (Ibid).

## ***3.4. Artisanal Small Scale Gold Mining Activities in Eritrea***

Eritrean traditional mining activity was started in 4BC during the era of Egyptian pharaohs and shows great progress with the coming of Portuguese in 17<sup>th</sup> century. Modern mining was begun with the coming of Italian colonization. Though Eritrean traditional mining includes limestone and gold but this particular research will only focus on largest traditional mining activities in gold (MoEM Database 2015:1).

Traditional gold mining activities were largely practiced during the Italian colonization but it didn't show any progress until 1984. In 1984 gold mining activities Gash Barka Region especially in areas around Mogoraib and Haykota show great progress. In 1993 in large parts of Gash Barka and Southern Region of Eritrea which includes Maimine, Maiduma and Qahayin and in 1996 in Anseba Region around Sela (Rikeb), Kerkebet, Hurum, Habero, Maiawalid, Hagaz, Hashishishay large number of people started to engage on the traditional gold mining activities (Ibid).

Though the Eritrean government mineral policy before 1995 doesn't give legal framework for ASGM, in 1993 the government tried to allow the Eritrean Bank to buy the traditionally mined gold in order to control the illegally smuggled gold outside Eritrean border. The MoEM with the help of Eritrean Bank gave license to military veterans which organized in unions and other private owners to buy gold from the traditional gold miners (MoEM Database 2015:5).

The Eritrean government taking all colonization policies in mining in to consideration came up with new mining proclamation in 1995 which intended to give more room to development (Ibid). The Proclamation known by *No 68/1995* which was then amended by proclamation *165/2011* stated that,

*An artisanal mining license may be granted in respect to part of the surface area of an existing exploration license provided. The license is restricted only to construction materials, mineral water, and geothermal deposits to a depth of five meters if the land is not subjected to any license before application*



Despite the government policy in 1995, a large number of people continue to be engaged in ASGM activities especially after the 2009 drought. The government tried to implement its policies on ASGM activities by claiming the overall costs in environment, economic and social terms out weighted the sector's benefits provided by the activity. The government denies giving legal license and begun to use military forces to eliminate the sector. Due to this, ASGM and other precious minerals remain as illegal and informal activities where large number of poor people still engaged and depend there to hunt their livelihoods as an economic alternative (MoEM Database:2015:7). Therefore ASGM in Eritrean context can be best explained by what Hilson (2002:864) defines, as mining activity which is conducted by individuals, groups, families or cooperatives having limited or no mechanization, most of the time informal and illegal sector of the market.

### 3.4.1 Artisanal Small Scale Gold Mining Contributions for National Economy (1993-2009)

*Table 2 Amount of Gold by year 1993-2009 (Source: MoEM Database 2015:4)*

N.O	Year	Amount of Gold	Area processed	Activity
1.	1993	12,115.23 Gram	Kohayto and Haykota	Bought
2.	1994	78,278.33 Gram	Kohayto, Shilalo & Haykota	Bought
3.	1995	57,027,2005 Gram	Shilalo& Haykota	Bought
4.	1996	92,478.72 Gram	Unidentified areas	Entered to Bank
5.	1997	950,369.85 Gram	Unidentified areas	Entered to Bank
6.	1998	583,383.12 Gram	Unidentified areas	Entered to Bank
7.	1999	503,383.12 Gram	Zara	Entered to Bank
8.	2000	268,772.29 Gram	Zara	Entered to Bank
9.	2001	48,317.00 Gram	Unidentified areas	Only six months
10.	2002	-	-	-
11.	2003	18,157.28 Gram	Unidentified areas	Entered to Bank
12.	2004	32,809.5 Gram	Unidentified areas	Entered to Bank
13.	2005	24,660.03 Gram	Unidentified areas	Entered to Bank
14.	2006	10,668.19 Gram	Zara &Gash Barka areas	
15.	2007	73,597.5 Gram	Zara &Gash Barka areas	Entered to Bank
16.	2008	28,681.5 Gram	Zara	Entered to Bank
17.	2009	28,220.00 Gram	Zara	Entered to Bank

As table No. 1 indicates the amount of gold mined started to increase after 1993 but it immediately fell to small amount during the last few years though the number of areas as well as people who are engaged on it increased in large number.

The un-sustainability of agriculture and the unpredictability of rain in addition to an increase in the price of gold worldwide enable large number of people in Eritrea to search for an alternative economic source especially in the last six years. Hence, to this large number of people seemed to join the illegal gold mining activities in different mining areas of the country. With thus the Eritrean ASGM activities is characterized as poverty driven and seasonal in nature as far as majority of gold miners go there during winter time. Based on this, yearly around 700 kilogram of gold is mined and sold with and around 20 dollars per gram. Though the mined gold is increased from year to year, the expected amount of gold to be entered to the bank is falling from year to year. According to community leaders the fluctuation in the amount of gold

entered to bank is mainly because of lower price of the bank comparing to the illegal smugglers price(Interview with Community Leaders, Haykota, on 20<sup>th</sup> Aug).For example in 2007 the Bank only gets 950,369.85 gram of traditionally mined gold (MoEM Database 2015:8).

### 3.5 Artisanal Small Scale Gold Mining Activities in Gash Barka Region

An ASGM activity in Gash Barka Region has been practiced long time before by individuals but the activity seems to get more attention since the year of 1993. ASGM activities in the region showed a great progress in 2009 when the region was hit by serious drought. Majority of the people were unable to farm their land and feed their families. Therefore, a large number of people forced to be engaged in ASGM activities as a main economic alternative to feed their families (MoEM Database 2015:7).

ASGM activities are practiced in 6 Sub-Zones of Mensura, Haykota, Molki, Shambiko, Gonee and Mogolo where around 20,500 people from the region as well as migrants from the other regions are engaged either individually or organized in groups and family members (Ibid).

In addition to this, ASGM activities in Gash Barka Region is usually takes place in winter time since most parts of the gold mining areas are located in around the rivers beds makes the mining operations difficult (Ibid).

This chapter examines what the mining industry in Eritrea looks like by describing the nature, extent legal and institutional policies of both large scale and AS mining activities. Though there is great progress in nature, process and contribution of the large scale mining activities, the nature, process, contribution and its institutional and legal environment of the ASGM is yet to get much attention from policy makers. Even though the Eritrean government issued a proclamation for eliminating ASM in precious minerals, because of draught and lack of other economic alternative thousands of people are still depending on the ASGM for their daily life. An ASGM activity in Eritrea is highly rudimentary and manual which lacks technological access, skills as well as legal framework while the large scale mining is highly mechanized with skilled manpower and generates great revenues. The following part will sketch out how the concept of ASM and framework discussed will integrate with the data gathered to answer the above research questions. The next part of the paper will give focus on the activities, operations, process and the pull and push factors for AS gold miners involvement in the sector in addition to the sector's potential in enhancing resilient and secure livelihoods of the poor rural community through measuring their accesses to the five livelihoods capitals.

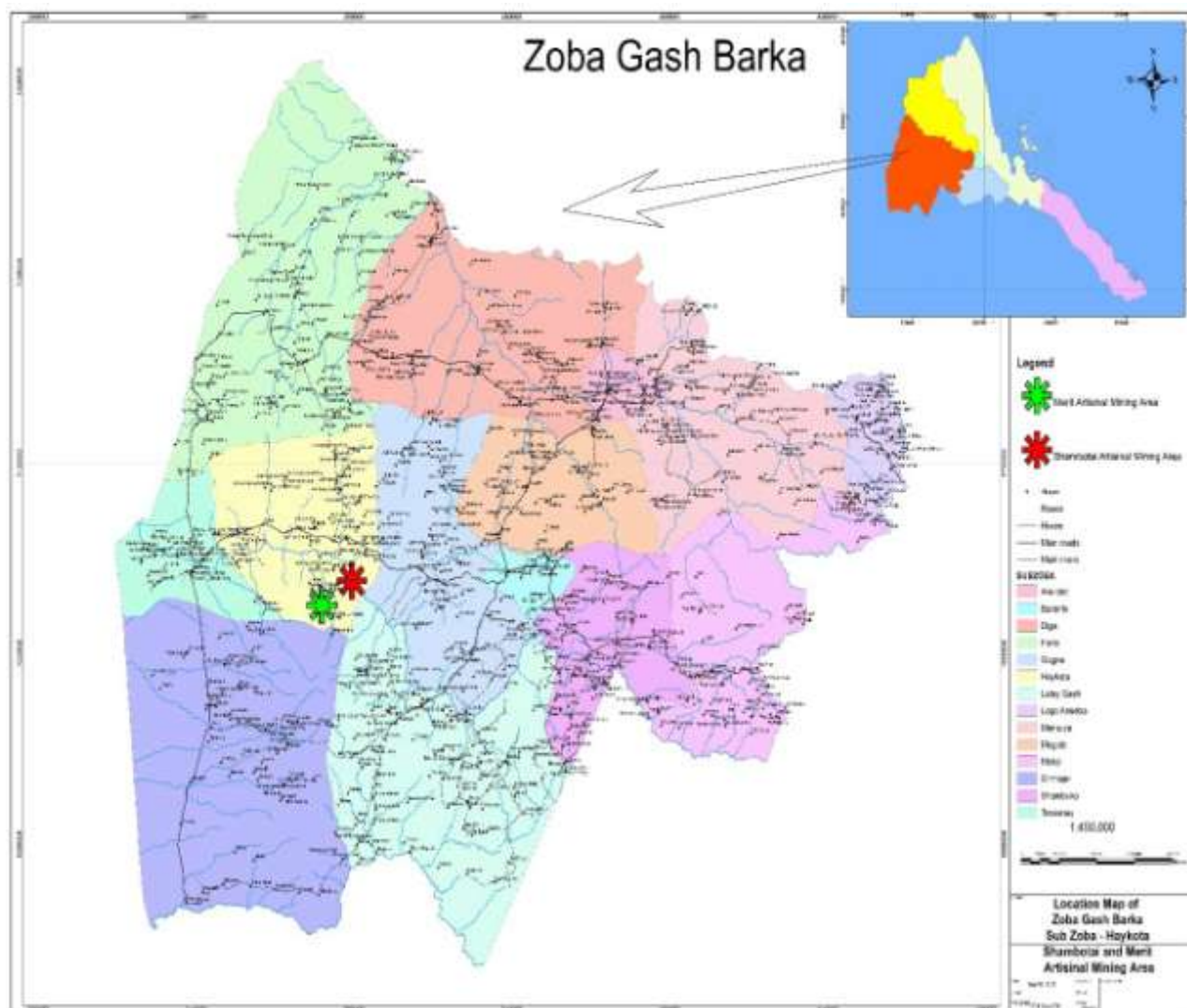
## **CHAPTER 4: ARTISANAL SMALL SCALE GOLD MINING ACTIVITIES AND ITS POTENTIAL IN BUILDING SUSTAINABLE LIVELIHOODS**

### ***4.1 Operationalization***

In order to analyze our finding we will use ASM concept and sustainable livelihood framework including the concepts of resilience and livelihood security. The framework suggests that the access to financial, human, social, physical and natural capitals is a precondition in securing sustainable livelihood. The study questions whether ASGM as a livelihood strategy can essentially operationalize access to those capitals through its activities including income generation potential, training and social relations in relation to its sustainability. Rakodi and Llod-Jones (2002:5) stated that, operationalizing a livelihoods approach means increasing of access to assets and resource as well as supporting organizations, policies and process which affects the livelihoods of poor rural community. With this section the thesis will give focus on AS gold miners' activities, operations and process, pull and push factors for their involvement as well as its potential in enhancing resilient and secure livelihoods of the poor rural community through measuring their accesses to livelihood capitals including supporting organizations, policies and process of the strategy.

## 4.2 Nature of Artisanal Small Scale Gold Mining Operations in Hademdemi Village

### 4.2.1 General Background and Operations of Artisanal Small Scale Gold Mining Activities



**Map 1** Location of Hademdemi Village (Shambotai and Merit)

Haykota Sub-Region is one of the 11 sub regions of Gash Barka Region having 12 administrative districts and 93 villages. Haykota has 11,658 households in which their livelihoods is highly dependent on Agriculture while few of them depend on trade. ASM activities in Haykota were started before Eritrean independence and it starts to get more attention in 2007 in about 5 kilometers area around Hademdemi village.

Hademdemi is one of those 93 villages who compromises the Haykota Sub-Region and is 15 kilometers far from the center Haykota. The area is well known by its traditional gold mining activities especially after 2009 when a large part of Eritrea is highly affected by drought. People not only from Gash Barka Region

but also from remote parts of the country migrated to different areas where gold is mined traditionally including Hademdemi in search of economic alternative (MoEM Database 2015:10).

Hademdemi mining site is an alluvial site in around 5 kilometers in the Shambotai valley having seven different mining parts which include Merit, Abashawil and Kuwait. Majority of the AS gold miners who live in the valley don't have permanent house there except those who live in the Hademdemi village. The migrants depend in the social service providing organizations for their daily live and there are about 80 different service providing organizations. Though majority of the Hademdemi community engaged in mining activates but there are also people who are engaged there as gold traders, service providers (water, tea, coffee, cloths, soft drinks, alcohol etc) as well as prostitutions (MoEM Database 2015:14).

ASGM activities in the area are practiced by group having of around 2000 people from different parts of the country. According to estimates from MoEM, in Hademdemi village, AS gold miners on average can get around 100 grams of gold daily and sold it with around 1200 – 1700 Nakfa (around 20 Dollars) per gram to illegal gold traders and smugglers. However, this only happens when there is favorable environment without military intervention or when farmers abandon their farming lands mostly during dry season. The main problem of this mining area is that since the area is agricultural area, there is conflict among the farmers and the gold miners. Most of the time mining activities in this area are well practiced during winter time while most of them are involved in agricultural activities during summer time (Ibid: 7).

#### 4.2.2 Gold Mining Operations in Hademdemi



*Figure 3 Gold Washing Operations in Hademdemi*

Gold mining and extraction in Hademdemi Village is a labour intensive activity at all stages. Once a rich gold occurrence is located, thousands of artisanal gold miners and families' start dig the alluvial site usually between 5 and 20 m deep. In the Hademdemi area, Gold miners usually use plastic shoes to identify whether the alluvial soil has gold or not. They put little soil and water on the back side of a black plastic shoe called 'Congo' and begun to wash and pan it several times. Naturally since gold has heavier weight than the mad it has greater possibility to remain and glitter at the backside of the black plastic shoe away from the mad. If the Miners find any glittering point in the plastic shoe they immediately start to dig holes using digging tools such as rudimentary axe, pick, and shovel. The holes have distance between 5 and 20m while horizontally goes kilometers to enlarge them to four directions in a very risky manner as we have seen in almost all parts of the mining valley (Interview with Household Gold Miners, Hademdemi, on 15<sup>th</sup> Aug, 2015).

When the holes go deeper than 5 meter gold miners start to use wooden ladders to reach there and pull the ore to the surface in plastic containers and buckets ranging from 20-25 kg capacity by using ropes to pull them out. Once the ore is pulled to the surface area gold miners' gather water sources around the area. The alluvial site in Hademdemi has advantage of water source since the river Gash is flowing around the mining site. Gold miners wash and pan their ore using plastic containers 3 to 4 times in order to identify the gold from the ore. Once they got a point or two points of gold at a time they put it in a safe small plastic container or bottle until they collect enough and sold it. Since gold mining activities in alluvial soil is not

difficult as the hard sedimentary rock, gold miners don't use mercury for amalgamation and purification of gold from the ore. The Gold mined in the alluvial site of Hademdemi goes directly to the market without any purification and amalgamation (Ibid).

Gold trade both in Haykota Sub-Town and in the mining sites of Hademdemi are handled by local merchants and gold traders or middlemen from Haykota who mainly smuggle it to neighbouring country Sudan. And there is some sort of clientele between AS gold miners and the middlemen. Gold miners weigh and sell gold in Haykota shops in return of getting household consumer goods at prices ranging from 120 to 170 Nakfa (1 to 2 Dollars) for a point of gold. In most cases dealers supply loans to AS gold miners in hard times especially when the gold miners are unable to find enough to feed their families and at times of military interventions. Gold miners use locally made balances to weigh their gold which is not always well standardized. Thus, cheating in gold weighing is common phenomenon in the area (Ibid).

AS gold miners usually process their activities organized in groups called "Maitot" since the sector has high labour (physical) demand. Most of the time they are organized in 7 – 10 groups of people since it's difficult to work there alone; either organized by family or place of origin or close friends. The gold miners have division of work among them, some of them dig the holes, others pull the ore to surface or bring water to wash and pan the ore. While men work the heavier part of the operations including digging and carrying the ore out to wash, majority of the women do subordinate work like washing gold, transporting water, cooking, panning, and processing including prostitutions in and around the Shambotai valley and Haykota. However few of them involve in planning activities around their home in holes ranging 1- 5 meters (Ibid).

Miners process their activities hiding under caves or big trees for shelter because of the harsh climatic condition of the area in addition to the fear of military forces interventions (Ibid).

#### **4.2.3 What are the Push and Pull factors for Gold Miners Involvement in Artisanal Small Scale Gold Mining Activities?**

UNECA categories AS gold miners into four groups as Gold-rush miners, permanent gold miners, Seasonal gold miners, and poverty-driven gold miners though they often overlap with each other (UNECA 2003:1). As Weber-Fahret *al* (2002 449) stated the sectors sustainability is highly dependent on nature of mining. If the mining nature is seasonal or rush activities, the sector is highly unlikely to be sustainable as far as the community is unable to get revenue to be invested on other economic activities such as schools and health centers. People are branching out to ASM because they face unstable financial situation and are desperate to escape poverty (Mondlane& Shoko 2003:10).According to Hilson 2009 AS gold miners are pushed or motivated more by survival than by adventure. Most AS gold mining activities takes place in areas where the daily average income is one or two dollar per day as poverty act there as main catalyst and consequence(Hilson 2009:19).Similarly Dreschler (2001:105) stated that for thousands of people who are suffering from povertyASM is "*God-given answer to their woes*"

In the case of Hademdemi village, majority of the households who are engaged on it are poverty driven and seasonal gold miners since majority of them are low income farmers where their daily average income is 1- 2 Dollars having no any other livelihood alternative. As the finding revealed majority (75%) of men, women and children gold miners currently employed in the sector have farming backgrounds and only 25% of them were either teachers or students who left school or workers who were engaged in public and privet jobs. Majority of the respondents claim that, agricultural poverty and shortage of rain pose a great challenge to



create sustained livelihoods for them and their families' needs forced them to find for other economic alternatives (Interview with Household Gold Miners, Hademdemi, on 15<sup>th</sup> Aug, 2015). Despite these young operators (< 18) respond that their main reason for their involvement is school drop outs and lack of family support (Interview with Children Gold Miners, Hademdemi, on 15<sup>th</sup> Aug 2015).

*“It is hard to leave small scale/artesian mining as far as the gold continues to wash and glitter when we piss on our land while our children stomach is empty”.*

This is quoted from one of the respondents who try to explain what makes him to be involved in the sector. As he tries to explain the availability of abundantly distributed gold in the area is washing when they piss on their land and is difficult to leave it when their children are waiting for food with very critical limitations for other economic alternative in the area. The attractive geological environment with alluvial soil around the river bed around enables the gold miners to explore and get gold easily is one of the main pull factors were majority of the respondent's claim.

According to Dreschler (2001:105) ASM is also a *“fast track process to their earthly riches”* for miners as far as it most accessible and lucrative in nature. In Hademdemi site, four of the respondents claim that the main pull factor is the need for cash and fast track in generating wealth since their main economic source agriculture has limited availability of cash forced them to be engaged in ASGM (Interview with Household Gold Miners, Hademdemi, on 15<sup>th</sup> Aug, 2015).

#### ***a. Livelihoods and Artisanal Small Scale Gold Mining Activities in Hademdemi***

### **4.3.2 Financial Capital Access of Gold Miners**

Financial capital comprises the financial resource available for people such as savings, credit, remittance and pensions which provide community with different livelihood options. A community or households to have secure livelihood needs to have accesses to financial capital (DFID 1999:7).

Though it depends on the hardworking as well as chance of the gold miners, 72% of the respondents respond that, they can minimum get from 120 up to 170 Nakfa (1 - 2 dollars) per day and can feed themselves and their families with. Though they get 120 - 170 Nakfa daily, 16 out of 20 household respondents didn't have secure livelihoods. 10 of the respondents characterized it by 'gambling', one can get today and feed his family but it doesn't mean that they get all the time. The probability of getting not only depends on hard work of miners but it also depends on luck. One can get 1 gram of gold in 1 meter pit and the other can or can't get it in 15 meters pit. *“We couldn't manage to stop ASM as far as we believe one day we will win and change our life and status within the community, we always think we can get more and more by fully engaged and investing our labour resource and time, for us it's just like gambling, we are addicted”* (Interview with Household Gold Miners, Hademdemi, on 15<sup>th</sup> Aug, 2015).

In dealing with sustainable livelihoods in ASM activities (Hoadley & Limpitlaw 2004:9) argued that the sustainability of the sector depends on number of factors including the economic effectiveness and the ability to generate other economic alternative by employing minimum inputs to generate greater output in the long run. As in the case of ASGM in Hademdemi Village, it is a “hand to mouth” kind of activity in which majority of them consume what they get rather than saving or investing on income generating activities (Interview with Household Gold Miners, Hademdemi, on 15<sup>th</sup> Aug, 2015).

Out of the 20 households who interviewed only 3 of them respond that they can at least save from 500 – 1000 Nakfa (10-20 Dollars) monthly, though it depends on the luck and hardworking of the gold miners. While majority of them agree on the sector's consumption nature. For majority of the respondents, the sector is matter of survival as they are unable to save or invest any portion of their earning. *“The only thing we can get from our involvement is getting money to feed our family and survive; we don't own any assets rather than our labour” (Ibid).*

As Frankenberger and McCaston (1998:31) stated livelihoods in order to be secure, households or individuals need to get sufficient and sustainable access and ownership to income and resource (Frankenberger & McCaston 1998:31). As in the case ASGM in Hademdemi the sector has failed in building secure livelihoods for households as far as gold miners are unable to get sufficient and sustainable access and ownership of income and resources.

Out of the 20 households interviewed, only 4 of them invest on income generating activities like opening shops, engaging in sheep, goat and cattle raring activities as well as trade. Out of the 20 households respondents only 2 of them agree on the ability of the sector in solving poverty shocks and stress in long run while 18 of them agree on the short-term financial efficiency than long-term (Interview with Household Gold Miners, Hademdemi, on 15<sup>th</sup> Aug, 2015).

Gold miners in Hademdemi village possess very limited financial assets. After they wash and process it, they sell it to illegal merchants and gold smugglers in the Sub-Town Haykota with 1200-1700 Nakfa per gram. Though it depends on the hard work as well as chance of the gold miners to get, as estimates from the community and Haykota Sub-Region indicates, daily on average they can get 120- 170 up to 1200- 1700 Nakfa (2 up to 20 dollars). One can get a point of gold and the other can get gram of it (Ibid).

ASGM in Hademdemi, since the sector has no formal and strong institutional support, gold miners sell their gold to illegal gold traders below the market value though they are deploying all their resource to extract and wash the gold. In addition to this due to their lack of knowledge of real value of the gold miners are not in a bargaining position as they are in position of need of money at a given period of time (MoEM) Database, 2015:15). According to the community leaders the gold miners get very minimum wage and revenues from their activities while the intermediaries (middle men) get the highest revenue from selling it (Interview with Community Leaders, Haykota, on 18<sup>th</sup> Aug, 2015).

As it is stated in ILO (1996:6), ASM has '*spillover*' or '*domino*' effect in the local economy since it has the potential to generate revenues to be invested in local economic development such as food, water, accommodations and social services. ASM also has the potential to create local purchasing power and increase in demand of locally produced goods and services which includes tools, food, housing and infrastructure.

In regard to the ASGM in Hademdemi area, as ILO (1996:6) stated, it has domino effect in local economic development. According to the community leaders interviewee, the Hademdemi area market and demand for goods and services in general and the Haykota Sub-Town market and demand in particular shows dramatic change when ASGM activities start its process while showing dramatic fluctuation in demand when ASGM activity is limited (Interview with Community Leaders, Haykota, on 17<sup>th</sup> Aug, 2015). *“When I work in the gold mining activities, not only do I feed my family, the whole sub-town of Haykota community also get benefit from it by selling food, water, housing and other basic services in and around the mining site, with thus Haykota sub-town livelihoods is highly attached with ASGM in Hademdemi village”* (Interview with Household Gold Miners, Haykota, on 17<sup>th</sup> Aug, 2015).

A livelihood which is protected from shocks and stresses or has the potential to respond it effectively is a resilient one (Longstaff et al 2010:3). As in the case of ASGM activities in Hademdemi village for majority of the people, the sector is a matter of survival, gold miners can manage to feed their family but never get a chance to break from the cycle of poverty. Majority of the household gold miners argued that, though they can feed their family the sector has little to do with their self-reliance and cope with the challenges they face. The sector has little to do in building more secure and resilient livelihoods for the majority household gold miners in the village as far as it failed in enabling them to get sufficient access to assets and cope with stress and shocks (Interview with Household Gold Miners, Haykota, on 17<sup>th</sup> Aug, 2015).

Majority of the household gold miners characterized it as a short- term, inefficient, consumption oriented, having limited role in dealing with and recover from poverty shocks and stresses in long term sustainability(Ibid). In addition to this during our visit to the valley we observed that majority of the gold miners are incapable and unable to recover from poverty shocks and stress as their economic strategy have very limited role in economic empowerment of the poor rural community.

According to Hoadley & Limpitlaw (2004:7) the main financial problems in creating sustainable livelihoods within the ASM mining lies in the organizational and legal support, access to land, availability of training, availability of micro credits and investment from revenue(Hoadley & Limpitlaw 2004:7). Similarly, ASGM in Hademdemi as it is illegal and informal activities without any financial support or financial credit provided by the government or other NGOs pose great challenge for the sector's role in enhancing the sustainable livelihoods of the rural community.

### 4.3.1 Human Capital Access of Gold Miners

Human capital is defined as “*the labour resource available to households, which have both quantitative and qualitative dimensions. The former refers to the number of household members and time available to engage in income-earning activities while qualitative aspects refer to the levels of education, skills and health status of household members*” (Carney 1998:7). The availability and enhancement of human capital is very crucial in building secure and resilient livelihoods of poor community. The lack of human capital without tangible skills, lack of literacy, and poor health are the main source of poverty and deprivation in community as well as households (Develtere et.al 2008:8).

As in the case ASGM in Hademdemi village, gold miners process their activities organized in groups called “Maitot” since the sector has high labour (physical) demand. Most of the time they are organized in 7 – 10 groups of people since it’s difficult to work there alone; either organized by family or place of origin. The gold miners have division of work among them, some of them dig the holes, and others bring water to wash the soil (Interview with Community Leaders, Hademdemi, on 15<sup>th</sup> Aug, 2015).

Among the 20 household gold miners interviewee only 2 interviewee agreed on the increase of their human capital while 18 of them claim that, though every member of their family have role to play in the sector as it is demanding high labour, they didn’t get any opportunities in getting training and education since the sector is illegal and informal in nature. Governments as well as NGOs are not in a position to provide them both training and education. Out of 20 household representative respondents only 5 of them have basic level of education while 15 of them have no any educational background (Interview with Household Gold Miners, Hademdemi, on 15<sup>th</sup> Aug, 2015).

The interview we have conducted with children gold miners also revealed that majority of the children gold miners especially those of migrants doesn’t have any chance to get educational access (Interview with Children gold miners, Hademdemi, 15<sup>th</sup> Aug, 2015). According to the community leaders the informal and illegal nature of the sector is the main problem in giving services such as education, health, transportation and other social services. Thus majority of the children gold miners especially the migrants doesn’t have any clear future in getting access to educational as well as health services (Interview with Community Leaders, on 18<sup>th</sup> Aug 2015).

In their operations the gold miners use plastic shoe and little water to identify whether the soil has gold or not. After they identify it they start digging the soil ranging from 2- 5 meters holes while horizontally goes to kilometers in a very risky manner. They use picks and shovels to dig and remove the soil and they transport it using ropes and buckets from the ground pits to surface in a very manual way (Interview with Community Leaders, Hademdemi, on 15<sup>th</sup> Aug).

Since there is river around the site they wash the soil there using plastic containers to differentiate the gold from the mud and usually choose areas under the trees because of the harsh weather of the site. The gold processing system is very inefficient, traditional and primitive in nature since most Hademdemi area gold miners are poor to afford technologies and there is no financial credit provided by government for training.

Though the ASGM in Hademdemi area has role to play in creating employment opportunities for the poor community ASGM has limited role in building the human capital of the poor gold miners. As majority of them process their mining activities using primitive and inadequate techniques without enough skills and knowledge in addition to their lack of access to education and health services.

## Health and Safety Risks



Figure 4 Risky Pits in *Hademdemi Site*

Air pollutions through blasting and dust fumes have adversely affects the health and well-being of gold miners as well as communities residing around (ILO 1999:7). ILO identified five major health risks with the activities of ASM which includes exposure to dust, mercury, effects of noise and vibration, effects of poor ventilation (lack of oxygen, heat and humidity). According to ILO report, those major health risks are caused by rock falls, lack of ventilation, and lack of technical know-how and training, lack of rule of law and poor equipments.

As in the case of Hademdemi mining site though gold miners don't use mercury for amalgamation process, 85% of the respondents claim that ASM is a very risky and dangerous activity like ventilation; inadequate roof supports injuries which mostly resulted from cave-ins and fire from flammable material in the mining pits (Interview with Household Gold Miners, Hademdemi, on 15<sup>th</sup> Aug, 2015).

Gold miners are vulnerable to high incidence of STDs and HIV/AIDS and communicable disease such as Malaria and TB as health services are limited to tackle them (Labonne and Gilman 1999:12). In Hademdemi

area the availability of young in addition to their mobility contribute to the spread of sexually transmitted disease including HIV/AIDS and communicable disease such as malaria and TB (Interview with Community Leaders, Hademdemi, on 20<sup>th</sup> Aug, 2015).

ASGM activities in Hademdemi village have high risks and accidents in pits and underground areas. Gold miners dig holes 5- 20 meters even kilometers, and try to enlarge them in four directions. As a report from the community leaders indicates, in the last 6 years alone 13 people are dead and others are injured when they were digging inside the pits due to the collapse of shaft (Interview with Community Leaders, Hademdemi, on 20<sup>th</sup> Aug, 2015).

In addition to this, as majority of the interviewee stated Hademdemi village's AS gold miners access to health services is very limited (Interview with Household Gold Miners, Hademdemi, on 15<sup>th</sup> Aug, 2015). According to the community leaders health access is very limited due to its informality, remoteness and location of the mining site. Similarly local leaders claim that, since their activities are illegal and informal majority of the gold miners though they try to get health services but they don't have willingness to be registered within health providers (Interview with Community Leaders, Haykota, on 20<sup>th</sup> Aug, 2015).

### **Child labour**

The involvement and engagement of children gold miners in ASM are broadly acknowledged and observed. While some of them children in gold mining activities after school, the others involved full time (Dreschler 2001:120 & ILO 1999:9) According to Mwaipopo *et al* (2004:28) ASM could be both a family livelihood strategy and good opportunity for young people but it could also take place from family breakdown and divorces..



***Figure 5 Child Labour in Hademdemi***

Though it's difficult to get the exact figures of child labour involvement on the sector, reports from the MoEM as well as the Sub-Region of Haykota indicates that, child labour is a big problem within the ASGM activity in Hademdemi village. As reports from MoEM revealed, majority of the children gold miners who are involved in the sector have the age of 7 to 16. Those children gold miners are not only part of the gold miners which organized in groups or individually but also they participate there as family members or migrated there with their family (MoEM Database 2015:15).

As in the case of most other countries, Hademdemi village children who are involved in mining sector fulltime are either early drop outs from school or don't have any educational background. According to the

reports of the MoEM, ASGM in Hademdemi has adversely affected the children's opportunity to get education since they are highly involved as full time workers. In addition to this, getting educational opportunity in the area is very limited since majority of the teachers are also highly involved in the sector (Ibid: 12).

Children gold miners' respondent of the study explained that, most of them leave school to get money to support their family and cover their daily life expenses. In addition children are vulnerable to number of health risks. As majority of the children gold miners interviewee points out they are exposed to wide range of dangers particularly health risks (Interview with Children Gold Miners, Hademdemi, on 15<sup>th</sup> Aug, 2015).

### 4.3.3 Social Capital Access of Gold Miners

According to DFID (1999:4) social and political resources refers to the networks, membership of groups, relationships of trust and reciprocity, access to wider institutions of society on which people enables to hunt and secure their livelihoods. To have secured livelihoods, households and communities need to have strong social organizations, networks and relationships among them. There is crucial variation between social capital and social interaction. In order to create social capital one needs to have strong social interaction and trust or knowledge that people can pull (Rakodi & Lloyd-Jones 2002:10). According to Krantz (2001:7) having strong relationships, trust, cooperation's and mutual Understanding can facilitate development and protect the community against shocks and stress as a key aspect in livelihood sustainability.

As Drechsler (2001:7) stated in unregulated and informal ASM has great potential to create various opportunities for extreme exploitations within the community as well as within a household. When there is no legal framework or formal organization, gold miners have no any other option except to organize themselves into groups, gangs in order to work a claim. According to Heemsker (2002:330) the process and operation of ASM is a labour intensive activities where gold miners' labour is generally divided into (diggers, transporters, washers, machinists, etc) to maximize the efficiency of the activity. Hence, gold miners need to form strong cooperatives in order to get benefits from their activities.

In Hademdemi Village as Drechsler (2001:7) stated, since gold miners has no legal framework or formal organization. ASGM activity in Hademdemi village household gold miners 'process their activities organized in groups called "*Maitot*". Most of the time they are organized in 7 – 10 groups of people since it's difficult to work there alone; either organized by family or place of origin. According to the community leaders respondents, fighting, robbery, gambling and crime are among the common phenomena created in the mining site. Gold miners have low level of trust and reciprocity (Interview with Community Leaders, Hademdemi, on 18<sup>th</sup> Aug 2015). Therefore, gold miners in Hademdemi lack strong organizational support as well as cooperatives in dealing with their claims.

In Eritrea, land is under public ownership where state has the power to administer them. And therefore, AS gold miners have no any legal entitlement or the right to own land (Eritrean Mining Journal 2014:4). As the village community leaders in Hademdemi area stated, though they know there is a dispute among the gold miners especially in issues related with land ownership systems, they are not in a position to take actions as the sector has no legality and hence no clear institutional support. Similarly, gold miners are not willing to go to the community leaders for mediations as they don't have any organizational support and legality. Generally speaking gold miners in Hademdemi village don't only have lack trust of among them but also are unable to form cooperatives and institutions which have a great role in creating secure livelihoods for the community (Interview with Household Gold Miners, Hademdemi, on 15<sup>th</sup> Aug, 2015).

In addition to this, since there is no strong organizational support for ASGM and no one has responsibility in the sector. The gold miners are always vulnerable to different social problems. When we went to the valley, the gold miners were hiding themselves in pits and caves in fear of military intervention. Because, in order to regularize and eliminate the sector, the government uses military forces in areas where those activities are practiced. Thus, gold miners not only lose trust among each other but also among gold miners and military forces in the area. As majority of the gold miners stated, military forces and the actions they take is main problem in their daily mining activity. As one of our respondents stated, “*military forces are headache for us, because of them we don’t have secure life, we don’t trust each other, we always think one day they will get us, those situations are not helpful in building trust and cooperatives with each other*”(Ibid).

Therefore, households who are involved in the sector have limited access to social capital as a result of their involvement in the sector since there is a critical limitation in institutional and leadership support, mutual understanding among gold miners themselves and the lack of cooperatives to claim their rights.

#### **4.3.4 Physical Capital Access of Gold Miners**

Physical capital comprises the basic infrastructure such as transportation, shelter, water, energy, sanitation, communication, technology and tools (equipment) for production in which community or people enable to hunt their livelihoods (krantz 2001:19 & Carney 1998:7).

ASM access to basic to physical assets is mainly affected by the remoteness of the area which they operate, illegality of the operations and the lack of institutional attention in providing services (ILO 1999:17).

Hademdemi community access to basic services is also affected by what ILO identified. Hademdemi is around 15 kilometers away from Haykota Sub-town having no transportation and communication systems. Our community leader’s interviewee informed that, the community has no infrastructure such as access to transportation, to portable water, sanitation, energy and communication system is very limited due to the remoteness of the site from the center. Illegality and lack of institutional support from the government also creates major problem in service provision activities by the local government (Interview with community leaders, Haykota, on 20<sup>th</sup> Aug 2015).

Out of the 20 households interviewed, only the indigenous community interviewee has access to shelter while the migrant gold miners live in temporary houses like caves, mining pits or places have big trees around for shelter (Interview with Gold Miners, Hademdemi, on 15<sup>th</sup> Aug, 2015).

In relation to their access to technology and tools (equipment) the Hademdemi households process their activities using basic tools such as shovel; pick, rudimentary axe and pan which seems inadequate. Gold miners in the area have critical limitations in using technology. Out of our 20 household interviewee 15 of them claim that, they use basic and inadequate techniques and technology since they don’t have capital assets to afford mechanized technology while 5 of our households respondents claimed for the illegal nature of their activities. Majority of the interviewee also stated that, since they don’t have technological asset their productivity is very low while it takes large physical power to process it (Interview with Household Gold miners, Hademdemi 15<sup>th</sup> Aug, 2015).



### 4.3.5 Natural Capital Accesses of Gold Miners

The natural resource capital refers to the resource flows useful to livelihoods including land, water and environmental resource, services, wildlife, wild foods and fibers especially common pool resource (krantz 2001:19 & Carney 1998:7).

As it is stated in the Eritrean mining law land is owned by public where the state has power to administer and regulate (Eritrean Mining Journal 2014:4). As access to land is one among the main factors which affects the outcomes of a certain strategy in enhancing sustainable and secure (Labonne, 2002:8). Since ASGM is operated illegally, gold miners have no legal procedure to own the land. Land ownership is not secured and become source of conflict among the gold miners themselves as well as between miners and farmers in the mining as common phenomenon in the site (MoEM Data Base 2015:9).

The state has also responsibility to administer and regulate water sources in continuation to the land ownership policy in Eritrea. Miners though they don't have rights to own water source they use water from the Gash River around the area in operating their mining actives. Just the mining land water sources are also source of conflict in the area as far as the minor's lack ownership right (Interview with Community Leaders, Haykota, on 18<sup>th</sup> Aug, 2015).

ASM as a livelihood strategy has higher environmental costs than the large scale mining. ASM has great number of individual polluters and has significant impacts in environment. ASM creates negative environmental impacts on physical environment during its different stages of exploration, processing and closure (Hilson 2000:36).

As in most case of other mining communities, ASGM in Hademdemi area has also principal environmental problems. Though they don't use mercury for amalgamation process, the area is exposed to land degradation, deforestation, dam siltation, land escape destruction and soil erosions. During our personal visit to the shambotai valley, we observe that the gold miners are damaging the land.

In Addition to the above mentioned negative impacts, ASGM since most of the gold miners leave their gold mining pits openly which adversely affect livestock and wild life resource in the area (Interview with Community Leaders, Haykota, on 18<sup>th</sup> Aug, 2015).

ASM as a livelihood strategy to have sustainable outcomes must be able to build ecological integrity by taking the degradation of natural resource in to consideration (Hoadley & Limpitlaw 2004:2). However, the case of ASGM activities in Hademdemi the sector is unable to build the ecological integrity of the area as it has negative impacts on the environment and role in the destruction of land, water sources, wild life, and livestock resources.

### ***4.4 Overriding Constraints of Livelihood in Artisanal Small Scale Gold Mining***

As we have seen in the above though the livelihood approach has good fit with the concept of ASM in relation to access of gold miners to financial, human, social, physical and natural capitals it gives no consideration to issues related inequalities of power and conflicts of interest among indigenous gold miners and migrant gold miners, men and women (gender inequalities) which always goes hand in hand with ASM activity.

#### 4.4.1 Relations between Men and Women

According to ILO (1999:2) and Hinton & Beinhoff (2003:25) women constitute around 30% of the world's artisanal gold miners in which most of them are engaged in roles ranging from labour intensive mining activities to lighter tasks such as sorting, crushing, and carrying alluvial soil or ore though it varies from region to region.

ASM activities offer a key source of livelihoods for women (Hentschel et al 2003:2). In most ASM context women are positioned or engaged in lower status and lower paid activities. The sector is well known by its male dominance nature as in most countries as women's access to assets of social, financial, knowledge and time is dominated by men (Drechsler 2001:18).

As in the case of the ASGM in Hademdemi, as database from MoEM indicates, though mining is dominated by men, women also constitute significant number in Eritrean ASGM (MoEM Database 2015:12). In Hademdemi (Shambotai Valley) there are 16 female headed households who are directly or indirectly involved in the sector (Interview with Community Leaders, Haykota, on 18<sup>th</sup> Aug, 2015).

In addition to this as (Drechsler 2001:18) stated majority of the female headed households who are engaged in the mining activity are placed in the very bottom end of the sector's hierarchy, mainly involved in subordinate work like washing gold, transporting water, cooking, panning, processing including prostitutions in and around the Shambotai valley and Haykota while few of them are involved in panning activities around their home. Hademdemi ASGM activity is not gender balanced sector as the sector is male dominated and place women in the lower strata within the mining community (Interview with Household Gold Miners, on 15<sup>th</sup> Aug, 2015).

However, most of the time the male headed household controls the income derived from AS gold mining and women do not always receive the proportional amount of the income generated (Ibid). As in the case of Hademdemi village, in almost 14 of the male headed household's respondents, women always depend on men for cash as far as it's controlled by men, they only get very minimum benefit from it (Interview with Household Gold Miners, on 15<sup>th</sup> Aug, 2015).

Women involvement in the sector can directly promote the benefit of the family since they have better control of family revenues and spending than the male headed family. While six the female headed household's respondents spend all the generated income on their family, only seven of the male headed household's respondents spend the whole generated income on their family and half of them spend in alcohol, gambling and food for themselves (Ibid).

#### 4.4.2 Land Dispute and Migration

ASM is also well known by its migratory nature. While certain locations are known by indigenous people's involvement, it is common to have combinations of indigenous and migrants (Heemsker2002:236). ASGM in Hademdemi is also lays with this category as gold miners are mixture of indigenous and migrants. Migrants as new settlers in the area have to negotiate their relationship with the indigenous community either by peacefully coexistence or through violence (Chachage 1995:12).

Similarly, in Hademdemi, conflict and violence among gold miners and migrants are common. Since the area is agricultural area in addition to the lack of protected land ownership system conflict among the farmers and the gold miners is common. As reports from the MoEM shows, most of the gold miners come from different areas of the country as illegal gold miners while the people who reside in Hademdemi use the land for agricultural and pastoralist activities (MoEM Database 2015:8).

Majority of the indigenous population stated that, *“they don't feel well with the availability of those illegal migrant gold miners. They take our agricultural land, which our life depend on, they don't give care to environmental pollution, culturally their different and are computing with us in getting social services are among the common response given”*(Interview with Household Gold Miners, Hademdemi, on 15<sup>th</sup> Aug, 2015).

According to the community leaders in Hademdemi, since the sector is illegal and informal there is limited government as well as local leader's intervention to solve their land ownership problems (Interview with Community Leaders, Hademdemi, on 15<sup>th</sup> Aug, 2015).As reports from the MoEM shows, the migratory nature and increasing population in ASGM site in Hademdemi, creates lot of social displacement and more favorable condition for communicable disease like HIV/AIDS, Malaria and tuberculosis (MoEM Database 2015:8). During our visit to Shambotai valley, gambling, alcohol, prostitution, thieves, banditry, lack of security are among the common social illness are observed.

This chapter analyze the data gathered in Hademdemi village in relation to the concept of ASGM and the livelihood approach and its framework including the concepts of resilience and livelihood security. The study with this chapter examine and measure ASGM activities, operations, nature, motive for gold miners' involvement and its potential as a livelihoods strategy in facilitating access to the five livelihood assets in building secure and resilient livelihoods. Based on those measures and analysis above findings of the study revealed that an ASGM activity in Hademdemi village is poverty driven and ineffective to become sustainable livelihood strategy on the following basis:-

- For majority of the household gold miners access to financial capital is very insufficient while the wealth generated benefited the middlemen and have spillover effect in local economic development. ASGM has its own limitations in creating secure and resilient livelihoods due to the instability and low level of income of gold miners. Household gold miners though they can feed their family from the limited generated income, majority of them don't feel secure and resilient to cope or face future challenges. Majority of the household gold miners have problem of saving and investment. They consume what they get rather than saving and investing in income generating activities. In addition to this the lack of strong institutional support, availability of micro credits and investment from revenue of the sector has also affected the ability of miner's access to formal financial institutions for saving and investment.
- While sustainable livelihoods require social capital and people's participation in decision making, the AS gold miners has very limited role in securing the social capital and participations of miners as the

nature and the manner of ASGM in Hademdemi do not meet any of those requirements. Though gold miners work in groups they are failed to form strong social organization and cooperatives to claim their rights. ASGM activity failure to form social networks and good governance is mainly because of its illegal nature. ASGM as a livelihood strategy its outcomes in relation to social capital is effective and insufficient as it has also role in creating social illness like gambling, robbery, prostitutions and too much consumption of alcohol rather than building strong social networks, cooperatives and good governance as the main building blocks of social capital in building resilient and secure livelihood.

- Though the ASGM has role to play in creating employment opportunities for thousands of poor household gold miners in Hademdemi Village, it has limited role in providing access to human capital of the poor household gold miners. Majority of them process their mining activities with traditional and inadequate techniques without enough skills and knowledge in addition to their lack of access to education and health services. Hence, the sector's lack of strong institutional and legal framework, household gold miners are unable to get access to training and skills. In addition to this the sector is also well known by the involvement of children in the labour work. Gold miners are also more vulnerable to health hazards and safety risks, vulnerability to communicable and STDs disease. ASGM activities are also ineffective in building human capital of the miners.
- In relation to gold miners access to physical capital, mining households have no access to infrastructure such as access to transportation (road), portable water, shelter, sanitation, energy and their communication system is very limited due to the remoteness as well as its illegality and lack of institutional support. In addition to this, gold miners also lack technological access to process their operations. Most of the time they process their operations using very primitive and traditional systems and equipments which adversely affect the level of their productivity and environment.
- Miner's access to natural capital is also limited since the ASGM as a livelihood strategy is unable to provide AS gold miners with secure land ownership rights. It has also limitations in providing access to secure water source. In addition to this ASGM in Hademdemi area resulted in the destruction of the ecosystem by exposing the area to land degradation, deforestation, dam siltation, landscape destruction, soil erosions, wildlife and livestock destructions. Due to this ASGM is failed to bring ecological integrity in the area.

Thus, ASGM activity in Hademdemi village as a livelihood strategy is poverty driven, ineffective and inefficient in enhancing secure, resilient and sustainable livelihoods. Based on those findings the next part of the study will conclude with highlights of the main findings and recommendations.

## CHAPTER 5: CONCLUSION

This research paper examines how ASGM participation in the context of Hademdemi, Gash Barka Region facilitated access to livelihood assets and made gold miners feel more resilient and secure. The concepts of ASM and sustainable livelihood approach as well as the concepts of resilience and livelihood security within the livelihood approach were used to frame the analysis.

In this study though there is good fit between the theories of sustainable livelihoods in relation to ASM concept, we can't conclude that sustainable livelihood approach is sufficient as far as it has limitations in giving consideration in issues related to the inequalities of power and conflicts of interest among indigenous gold miners and migrant gold miners as well as the relationship of men and women (gender inequalities) in the sector. With this in mind the relationship between ASM and the sustainable livelihoods approach needs further consideration.

The linkage of main theories to findings shows the relationship between ASGM and Sustainable livelihood approach through measuring the AS gold miners' access to social, financial, human, physical and natural assets and their abilities to form resilient and secure livelihood.

According to (MacGGregor *et al* 2005:5) poverty is multidimensional which mainly resulted from the lack of economic, social, physical, human and natural assets or capitals. People or households to have sustainable livelihoods needs to secure a set of both financial and non-financial livelihood capitals which can determine verities of livelihood strategy options available to achieve the desired livelihoods outcomes. In addition Rakodi (2002:7) stated that, poverty is not only portrayed by the lack of capitals, but lack of options with respect to alternative strategies. The poor and most vulnerable households and community are forced to adopt a strategy which enables them to survive but not to improve their well-being.

Therefore, the study not only focused on how the livelihood assets of financial, human, social, physical and natural are accessed but also, in what ways do those assets make people feel more resilient and secure for their future well-being. The data collected in the village highlighted that, by joining an ASGM activity household gold miners are unable to get the required and sufficient access to capitals to have secure and resilient livelihood.

AS gold miners though the sector enables them to feed their family and do their daily activities, for majority of them the sector is short- term coping mechanism rather than long term as it is economically, socially and environmentally inefficient, consumption oriented, illegal which lacks co-operatives, good governance and communal objectives. Nevertheless, several resources limited and poor people are still involved in the sector, to feed their families because they don't have any other alternatives. The sector has limited role in dealing with and recover from poverty shocks and stresses in a long term sustainability since it has very limited contribution in improving household miners' access to the capitals.

ASGM activity is more of '*hand to mouth*' kind of activity resulted in insecure and non-resilient livelihoods where household gold miners ability to respond to shocks and stress they face is very limited. In accordance with Rakodi 2002 the poor and most vulnerable households and communities are forced to adopt a strategy which enables them to survive but not to improve their well-being (Rakodi 2002:7). AS gold miners are mainly motivated by survival than by adventure in which it mainly takes place in areas where the daily average income is one or two Dollars per day as "*Poverty is both the catalyst and consequence of ASM*" (Hilson2009:19). Similarly, in the case of ASGM activity in Hademdemi village majority of the household gold miners are involved in the sector mainly because they are vulnerable to drought and average income less than two dollars per day with in addition to their critical limitations in getting other livelihood

alternatives. ASGM provides a form of livelihood for the household gold miners but it's efficient and effective in improving their well-being. The AS gold miners livelihoods can be best explained as a *'dying to live'* situation as gold miners are fighting and endanger their life to survive by involving in a sector where its benefits are outweighed its costs.

Generally speaking, the finding revealed that ASGM in Hademdemi village has value in livelihoods of rural community of Hademdemi village as a disaster-coping mechanism (short-term) vs. sustainability.

As a final note, ASGM activities have very limited potential to facilitate access to important livelihood capitals. Because it failed to build secure and resilient livelihood for majority gold miners, but this doesn't mean that the public and private sectors should seek to eliminate the sector. As it is stated before ASGM will continue as far as poverty continues to necessities them while gold miners have very limited option to survive without it. So governments as well as development practitioners should first need to consider how to alleviate poverty and vulnerability within the AS gold miners before taking any actions. Alternatively ASGM activities need to consider other local economic sectors (agriculture, large scale mining, and tourism, trade) to generate additional incomes. Participatory approach need to be adopted by all relevant stakeholders to assist AS gold miners for better livelihood. As far as gold miners lack other economic alternatives for their survival especially during drought period trying to eliminate the sector would result in ineffective and dangerous situation in the livelihood of the poor rural community.

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## APPENDIX

### Appendix A

#### Interview Guide for Household Gold Miners (Semi-Structured Interview)

No.Q	Questions Directed to 20 Household Gold Miners Respondents	Response
1.	Basic Demographic Parameters 1. What is your Age? 2. Gender? 3. Marital Status? 4. Educational level? 5. Size of household? 6. Years in ASGM activities? 7. Place of origin? 8. Previous occupation?	1. 2. 3. 4. 5. 6. 7. 8.
2.	What are you really doing in ASGM activities?	
3.	Why do you do it? For what reason did you join the ASGM activity and why do you stay involved? What are you hoping to achieve?	
4.	How do you do it? How do you process the mining operations within the ASGM activities? What are the stages of the operations?	
5.	In what ways does ASGM allow you to meet or not met your expectations from the sector?	
6.	What are the key benefits of involvement in ASGM? (In what specific aspects of ASGM activities facilitate access and benefits – Financial, social, human, physical, natural as well as environmental).	
7.	Has your involvement in ASGM activity made life less stressful, reduce your risk, or feel more resilient and protected? If yes, how (explain)	
8.	Has your involvement in ASGM activity made you more self-reliant and able you to cope with challenges that you face in your life? In what ways do you feel better prepared to cope and deal with the problems?	

### Appendix B

#### Interview Guide for Children Gold Miners (Semi-Structured Interview)

No.Q	Interview Questions Directed to 5 children Gold Miners Respondents	Response
1.	What is your age? Gender? Years of involvement?	
2.	Are you a student? If not why? What are you really doing in ASGM activities? Are you full time employer in the sector? If yes, why?	
3.	Why do you do it? For what reason did you join the ASGM activity and why do you stay involved? What are you hoping to achieve?	
4.	Are there any difficult aspects or problems in your involvement in ASGM activities? If yes, specify?	

## Appendix C

### Interview Guide for Local community Leaders (Semi-structured Interview)

No	Questions Directed to 2 Community Leaders	Response
1.	Your position in government or community?	
2.	To what extent does small scale practised in the area? Who are the main actors in the sector?	
3.	How do AS gold miners' process mining operations? What are the stages of their operations?	
4.	For what reason does the community join the ASGM activity and why do they stay involved?	
5.	What are the institutional and legal frameworks of the sector? How does it influence the livelihoods of AS gold miners?	
6.	What key benefits do of AS gold miners get from their involvement in ASGM? (In what specific aspects do ASGM activities facilitate gold miners' access and benefits – financial, social, human, physical and natural?	
7.	Does ASGM have role in gold miners' self-reliance and enable them to cope with challenges they face? If yes, in what ways?	
8.	Are there any difficult aspects or problems within in ASGM activities? If yes, explain? What will you think about its solutions as a community leader?	
9.	Do you think ASGM activities have impacts in local economic development comparing with other sectors? If yes in what way?	

## Appendix D

### Interview Guide for Ministry of Energy and Mining Experts (Informal Semi-structured Interview)

No	Questions Directed to 4 MoEM Experts	Response
1.	Your position in MoEM?	
2.	To what extent does small scale practised in the area? Who are the main actors in the sector?	
3.	What are the institutional and legal frameworks of the sector? How does it influence the livelihoods of AS gold miners?	
4.	For what reason does the community join the ASGM activity and why do they stay involved?	
5.	What are the key benefits of AS gold miners from their involvement in ASGM? In what specific aspects do ASGM activities facilitate gold miners' benefits and access to financial, social, human, physical and natural capitals?	
6.	Are there any difficult aspects or problems in within in ASGM activities? If yes, explain it? What do you think the solutions as an Expert in the Department?	

