JIMMA UNIVERSITY

COLLEGE OF LAW AND GOVERNANCE

DEPARTMENT OF GOVERNANCE AND DEVELOPMENT STUDIES

SOCIO-ECONOMIC and WORK-RELATED SAFETY CONDITIONS OF COAL MINE WORKERS: THE CASE OF ACHIBO-SOMBO (YAYO AREA) COAL MINING SITE, OROMIA NATIONAL REGIONAL STATE ETHIOPIA.

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October 23, 2016

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Declaration

I, the under signed, declare that this thesis is my original work, not presented for degree in any academic institution and that all the sources used in this thesis are duly acknowledged.

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ABSTRACT

This study is designed as descriptive case study to assess the socio-economic and safety conditions of coalmine workers at Achibo-Sombo of Yayo district, Ilu Abba Bor Zone, Oromia National Regional State, Ethiopia. The main objective of this thesis was to assess the Socio-economic and safety condition of coalmine workers by focussing on medical benefits, safety measures, employment relationship, labour union, wage/salary and psychosocial state. To this end, the research employed descriptive case study design guided by mixed research approach. The empirical data were obtained from 70 respondents via questionnaire, FGD and interview. Data collected by survey were analyzed using in to SPSS for descriptive statistics then presented in table and charts in the form of cumulative frequency, percentage, correlation and chi-squire, while the qualitative data were analyzed descriptively by cross-analysis methods. The study has found out that the employment of a contractual nature does not take a formal legal procedure; mine workers were not organized, in form of union, to defend/safeguard their interest and rights; lack of appropriate safety measures and health checkups, and low wage/salary. On the basis of findings, provisions of safety measures, medical benefits including pre and on job health examination for coalmine workers, issues of minimum wage policy, sort of employment in coalmining and forming trade union are serious issues of concern that should be addressed.

Key Words: *socio-economic condition, safety and health, wage, coalmine worker, wellbeing, coal-mining*

CHAPTER ONE: INTRODUCTION

1.1. Background of the Study

Work is the essential part of our life, and counted as core activity, central to the wellbeing of individuals Kalleberg,(2009); Layard, (2010) as cited in (Vervakel, 2014). But, the kind of condition in which workers perform their job may be disparate, but all are people those strive to improve their life condition. For instance, among various activities, coal mining is one in which peoples involve to attain their daily basic needs. Coal mine workers are those involved in coal mining industry which has its own contextual characteristics. These contextual characteristics are kind of exposure, medical treatment, job stability, benefits and payment, and the evidences that exist within these conditions and measures to be taken to address them.

With its unique contextual characteristics, mining of coal is currently predominant worldwide activity for electricity generation (thermal power) and industrial raw material that requires manpower. According to Wright (2004) despite its economic benefits, coal mining is the industry with worst health and safety performances in China. It is obvious that coal is important source of energy for both developed and developing countries to fuel industrialization so as to improve the standard of living in the world (Finkelman & K.Gross, 2002, p. 425). From this angle, literature displayed that how much the coal was contributed in shaping the economic and political development of Europe in the 19th and 20th century. From the beginning of the industrial revolution in the 1960s, fossil fuel was massively consumed and its utilization was constantly raised. In the aftermath of World War II, coal had also become an important part in the reconstruction of Western Europe's economy Rudianto, 2006, p. vii; Mohr *et al* 2003).

Study by Frinkelman and K.Gross (2002) shows that relative to other energy sources, coal is found in abundant form in the world, and the cheapest source of energy. Due to this, the use of coal has been growing (Finkelman & K.Gross, 2002, pp. 426,427). The evidence from World Coal Institution (WCI) also verifies that the real need for coal is in increasing. From such literature point of view, the researcher entails that as the need for energy increases, the involvement in alternative energy sources such as

coal mining increases. As the activity of coal mining expanded, the number of workers employed in coal mining also increase in case of manual mining.

Furthermore, Epstein; *et al*., (2011, p. 73) shows that the quantity of electricity generated from coal have been growing 3.1% per annual. As a result, still in present day coal generates about 40% of world electricity (Epstein *et al*, 2011, p. 73). The recent practices of the world largest coal producers such as China showed the need for coal as domestic energy sources. In contrast to China case, most developed countries such as USA, where residential coal use constitutes small fraction of 1% coal consumption, but contributed 50% of energy source for industry. The reflection is that no more wood is the primary sources of energy in China.

In the case of Africa, South Africa is a major producer of coal. In South Africa during the Apartheid, coal was used to produce oil to fight against embargo and to boost industry that was still flourishing. While provided an avenue for advancing Afrikaner capital, and it now the focus of a programme for building a black middle class through participation in coal mining (Victor, 2010, p. 6).

In Nigeria, even though the oil production is high, the energy produced remains very low. To satisfy the energy demand for development, Nigerian government have been working to diversify electricity generation mix by encouraging private sector participation in the energy sector and targeted 30% electricity generation from coal by 2015 (Ohimain, 2014, p. 37; Odesola et al, 2013, p.68).

Coming to Ethiopia, the government has claimed, to have registered double digit economic growth for over a decade. It is obvious that this is naturally demands high energy production. In addition to hydropower, geothermal and wind energy sources, Ethiopia has been developing the coal production projects at Delbi Moye, Geba basin, Achibo-Sombo, Chilga and Delgi (Ahmed, 2008, p. 76).

Despite its economic benefits at international, national and local levels, coal has direct health adversity on the communities closely resides to the mining area, particularly mine workers. The reason is that each stages at the life cycle of coal (extraction, transport, processing, and combustion) generates multiple hazards such as CO_2, Chemicals and other toxic wastes to health and the environment (Epstein; et al., 2011, p. 73; Frinkelman et al, 2002, p. 427). The exposure to such hazards cause direct

health problems which may be very severe (leading to death), widespread (affecting many people), complex (requiring multidisciplinary approach). This is serious in countries where the mining activities are labour intensive and where less technology is applicable. For instance; in US coal burning employ sophisticated pollution control systems that efficiently reduce the emission of potentially hazardous substances and employ technology for mining activities (Epstein, et al., 2011, p. 76).

In nut shell, from aforementioned no matter what the adversity of coal on social and environmental life, its economic benefit which includes job opportunities diverts the attention of both developing and developed countries towards coal production (Kirsch, 2014).

In this course, assessing the current workers' socio-economic and work-related safety conditions enables to understand the workplace condition, safety and health practices, salary/wage, social supports, sort of employment and role of labour union in safeguarding workers interest. The favourable events at workplace expected to yield mineworkers' satisfaction which in turn positively affects mineworkers' wellbeing. But, the reverse of this, the adverse events, negatively affect mineworkers' wellbeing.

1.2. Rationale of the Study

The rationale of this study is based on ever-contentious positions between the negative effects of coal mining on human health and wellbeing on one hand and its economic benefits on the other hand. With regards to its adverse effects, what is written about the coal mining industry in popular literature and media emphasizes its "dirtiness." For example, Bjureby (2008, pp. 11-19) referred coal as "the dirtiest" mineral. It is called the dirtiest, because of its intensive contents of toxic elements and compounds, including sulphur dioxide, nitrous oxides, particulate matter, hydrogen chloride, hydrogen fluoride, arsenic, and heavy metals like chromium, actinium, and mercury (Keating, 2001, p. 1). It is also a largest source of carbon dioxide, the leading culprit in global warming. These substances have major health and environmental effects (Lockwood et al., 2009, p. 35).

On the flip side, coal mining has also been consistently defended as engine of economic growth and development and by extension source of workers means of income and wellbeing. For instance, Kirsch (2014), in his book "Mining Capitalism"

stated that the coal mining industry is defended in terms of creation of wealth and employment (p. 4). It is fact that mining contributed in solving unemployment problem. In addition to this, Kirsch stated that as the result of this, the attention of most states diverted to coal economy. This implies the continuity of coal mining despite opposition's critics such as humanitarian and environmentalist groups. For example, though, the dangers of coal mining is publicized, many countries reserve the right to extract coal for future use, arguing that it has many advantages in industrial sectors. For instance, the USA Energy Policy Act of 1992 (EPACT) directs the U.S. Department of Energy (DOE) to establish programs for developing environmentally acceptable coal-based technologies for a broad range of applications, notably electric power generation and the manufacture of liquid and gaseous fuels and nonfuel products, such as carbons and coal-derived chemicals under the title; "coal: energy in the future" (p. 1).

Meanwhile the coal industry, through its mouthpiece, the World Coal Industry (WCI), has argued that it is possible to extract coal in an environmentally and human friendly way; that the so-called "dirty" aspects of coal mining are manageable (institute, n.d.); (Keating, 2001) . In addition to the above argument, Priddle (2002) argued that in the current and future sustainable development, coal play/will play important role in energy system through alternative approach (clean coal technology) that recognized economic and social consideration. This implied that still coal mining have been ongoing with the notion of minimizing its adversity on human and environment.

But a (Wright, 2004) stated that despite many regulations, coal mining is the worst industry in health and safety performance in China. In addition to this, Paul R.Epstein; et al., (2011) also stated that even though coal is cheap fuel, when we calculate the true economic benefits of coal, we can assess much of the damage like the cost of health care, harm caused by climate change, land degradation, water pollution, mining accidents in-financial terms. With this all controversies, coal production and the energy demand for ongoing economic growth which particularly enables one to predict as most countries divert their attention, coal mining has high probability to continue in the future. Miners also exist, except in sophisticated technological based mining. The question is that who is/ are involved in coal mining? According to Kirsch, (2014, pp. 5,31) the answer is those who are unskilled labour

forces. This reflects that coal mining may not require formal education and qualification, but it does not mean that they are not open to educated ones. In addition to this, Kirsch also stated that this labour works underground, in hazardous conditions, and easily replaced if they had injured or killed in mining accidents.

Coal mining like other mining activities is known as rural industry. According to Kirsch, however, peoples living in the rural areas expect the provisions of higher standard of living, better education, health care, and new economic opportunities from mining companies; limited economic benefits hinder them from achieve their ambition. In line with this, Kirsch (2014, p. 18) also stated that in practice people living in the catchment area of these projects end up bearing a disproportionate share of their costs-from coal mining. This is mostly associated with the socio-economic and work-related safety conditions of coalmine workers.

1.3. Statement of the Problem

This study was conducted on the ground that the existence of disagreements between the economic benefits and adverse effects of coalmining on human wellbeing, particularly on coalmine workers. The study is not about assessing the degree of disagreements on the issue of coal benefits and its adverse effect on human health. Rather it is about assessing the state of socio-economic and work-related safety conditions of coalmine workers at Achibo-Sombo. This was because of though each stages at the life cycle of coal (extraction, transport, processing, and combustion) generates multiple hazards such as CO_2, injuries, Chemicals and other toxic wastes to health and the environment (Epstein; et al., 2011, p. 73; Frinkelman et al, 2002, p. 427), the problems associated with coal mining have masked in its economic benefits. Furthermore, Kirsch (2014), in his book "Mining Capitalism" stated that the coal mining industry is defended in terms of creation of wealth and employment (p. 4). It is fact that mining contributed in solving unemployment problem. In addition to this, Kirsch (2014) stated that as the result of this, the attention of most states diverted to coal economy.

Different study findings show that in the process of coal mining, there are all kinds of hazardous that should be controlled: such as dust, noise, poisons, load, roof fall, machine, high humidity and temperature that can potentially cause occupational hazards and pose a great threat to life safety and body health of miners Zhu-Wu, Guan

Peng, Ping-Young (2011, p. 2158). However, the above literatures publicize the hazards from working in coal mining; Salahahuddin (2013) stated that workers do not know the impact of coal mining like the exposure to hazardous working conditions or environmental degradation other than to earn some money for their family. In line with this, Levine (1930/1997), showed that the trend from China indicated as some migrant workers from other provinces work without contracts and have no knowledge of coal mining, nor are they informed about safety operation. Some only sign an agreement of mining stating that the minor will be compensated if she or he dies in an accident and on the condition that no law suit will be pursued by his family. In addition to these, the coal workers are usually illiterate and poor; hence they do not care for their health and work more than their capacity for the sake of earning small petty amount.

Wright (2011) stated that trade union (labour union) pay significant role in representing the workers to protect the interest of member workers. He also stated that trade union is voice for workers, mediator for conflict resolution, shaping the relationship between employee and employer. From those, the trade union of coal mine worker from its establishment to involvement in decision making is essential to evaluate the condition of workers related to trade union.

Concerning conditions of coal mine workers emotional state, jing-Gang and Wu Lei, (2013, p. 1508) stated that accident occurs frequently when people are fatigued. The higher the fatigue degree is, the higher the probability of an accident is. The occurrence of accident beyond victimized worker negatively affects at first line relatives, state's manpower, material resources and frustration of the co-workers (Jing-Gang and Lei 2013, p. 1508). For instance, as most study result indicated; the co-workers injury or killed from the occupational accident resulted in an emotional reaction or traumatic events by which one is outside the normal range of everyday life event (Trakofler and Vaught,2012).

Furthermore, most literatures at international level revealed, coal mining as one of the world's most dangerous occupations and results in severe socio-economic consequences particularly for workers and society in general (Cui et al, 2015, p. 2). Coal mining is with hazards that can create dangerous work settings, which, in turn, negatively impact health and wellbeing among workers. By direct implication the

absence or protection and prevention of hazards may positively affect health and wellbeing (National Research Council, 2014).

On other hand with these all adverse effects, coal mining creates job opportunity and contributes for local and national economic development (Juneau & Anchorage, 2015).

In course of this contention, this study aimed to be done on coalmine workers' socio-economic and work related safety condition from the grounds yet in Ethiopia there is no study from the researcher knowledge on this area. To fill the gaps of lack of information about current state of socio-economic and safety condition of coalmine workers at Achibo-Sombo, this study was needed to be conducted.

1.4.Objectives of the Study

1.4.1. General Objectives

The general objective of this study was to assess the current socio-economic and work-related safety conditions of coalmine workers at Achibo-Sombo.

1.4.2. Specific Objectives

Based on the above general objective, the following specific objectives were stated:

- To identify and describe the socio-demographic characteristics of Achibo-Sombo coal mine workers..
- To evaluate the condition of work place in which the Achibo-Sombo coalmine workers undertake their daily activity.
- To examine the extents of workers satisfaction with the salary/wage they earn from working in coal mining and sufficiently fulfill their basic consumption.
- To identify existing workers' organizational structure and its involvement in defending workers' interest and rights.
- To describe psychosocial state of Achibo-Sombo coalmine workers participating in coal mining activities.

1.5.Research Questions

Main research question

How do Achibo-Sombo coalmine workers perceive/see their current socio-economic and work related safety conditions?

Specific questions:

- What are socio-demographic characteristics of Achibo-Sombo coalmine workers?
- To what extent Achibo-Sombo coal mine workers are satisfied with the condition of their workplace?
- How much the workers are satisfied with the salary they earn from coal mining?
- To identify and describe the role of workers' organization in collective bargaining or decision making in order to secure workers' wellbeing?
- What is the circumstance of current Achibo-Sombo coalmine workers' psychosocial state (focusing on social support)?

1.6. Significance of the Study

This study is significant to understand the current socio-economic and work-related safety conditions of coalmine workers at Achibo-Sombo. The information provided about current socio-economic and work-related safety conditions would help policy makers and company in order to make intervention which in turn contributed for improvement of productivity.

It also ensures sustainable development of coal industry through attracting the labour forces towards mining activities. At national level it also serves as policy input to care for human power in the journey of building the political economy of nation. In addition to this study also serves as steppingstone for further studies.

1.7.Delimitation/Scope of the Study

This study was conducted on the coalmine workers' of Achibo-Sombo socio-economic and work-related safety conditions in the year 2016. Achibo-Sombo is the local name of place located in Yayo Woreda, South Western part of Ethiopia, approximately 556 km from Addis Ababa.

During this study there were about 70 total peoples involved in coalmining and these were the study population from which the relevant data collected on their socio-economic and work-related safety conditions. Since the issue of socio-economic and work-related safety conditions broad and difficult to cover all of its aspects, this study bounded to assess it through the lens that the condition of workers such as relations between the employer and employee, safety measures, access to medical benefits, working hours and economic conditions such as wage/salary, psychosocial state such as feelings, perception, satisfaction and happiness, and labour organization leaders role in the process of bargaining.

1.8. Limitation of the Study

However in this case study, addressing all aspects of socio-economic and work-related safety conditions of coal mine workers was difficult from its multidimensional aspects, the researcher tries to overcome it by conveniently focussing on some socio-economic variables. This is because the concept of wellbeing is interpreted from multi-dimensional perspectives of multi-disciplinary research i.e. different things for different field of study. For example; wellbeing for health professionals and economists may not exactly have the same connotation. Thus to overcome this constraint, the researcher preferred to focus on the reciprocal aspect of the wellbeing. Accordingly the work-related safety of the mine workers was considered to solve the vagueness of the meaning for wellbeing.

The time limitation and the budget constraint might be high. To handle this, planned time frame and hardworking were the strategies designed. Next to that the procedure the researcher passed through to get consent from authority was complex and challenging. The strategies designed to solve it were receiving letter of cooperation from university, dealing with Ilu Abba Bor zonal administration.

The other problem was lack of access of transportation to the study site. The journey from Mettu to Jimate about 46Km was by public transportation service. Then after, the company's manager provided with bicycle from the main office (Jimate) to the Achibo-Sombo site which is 9km.

1.9. Organization of the Paper

This paper is organized into five chapters. Chapter one presents general introduction of this research. It consist background of the study, rationale of the study, statement of the problem, research objectives and research questions, significance of the study, scope of study, and limitations of the study.

Chapter two presents reviewed of related literature which comprises revisions on coal and coal mining related issues, workers in coal mining and its adverse effect on them.

Chapter three also presents the research methodology which contains the research design, research method, data collection methods, sources of data, sampling techniques, operationalization and conceptualization (determining variables), methods and procedures of data analysis (i.e. descriptive statistics: frequency and percentage). Chapter four presents results, interpretation and discussion**.** The result of the data obtained is organized in table and classified in frequency and percentage. Its interpretation and explanation provided by referring to the literature and the contextual collected data.

Chapter five is conclusion and recommendations: this part sum up the major findings, suggest the possible solution and possible areas that need further study.

CHAPTER TWO: LITERATURE REVIEW

2.1. Coal Mining in Ethiopia

Coal is formed from fossilized prehistoric plants subjected to heat and pressure over millions of years. Coal is classified into four main types, or ranks, based on moisture and carbon content: lignite (25–35% carbon content), sub-bituminous (35–45%carbon content), bituminous (45–86% content), and anthracite (86–97% carbon content). High-carbon coals produce the most energy when burned and low-carbon coals produce the least. Lignite is the lowest rank of coal, having the highest moisture content and the lowest energy content. Sub-bituminous coal is the next highest rank, with lower moisture content and higher carbon content than lignite. (Lockhood, Hood, Rauch, & Gottlieb, 2009); (Juneau & Anchorage, 2015).

Ethiopia is one of the countries endowed with coal. The occurrences and deposits of coal in Ethiopia have been exploited since the 1940s. Some coal deposits were intensively mined by Italians between 1937 and 1940. From 1940 to 1983, the Geological survey of Ethiopia and Addis Ababa University carried out some exploration to locate and assess coal deposits in the country. From this exploration work, coal deposits and occurrences in various parts of the country are reported (Energy, 2009, p. 4). Geographically, coal occurrences are widely scattered throughout the country, with perhaps over 80% of these being centred in the South-Western part, including Delbi Moye, Achibo-Sombo (Yayo area), Geba basin (Yayo area) deposits (Energy, 2009, pp. 1-6) and (Wolela, 2008, p. 74) . However, Chilga and Delgi deposits in the North-Western part are worth mentioning while there are few sporadic occurrences confined to the central part.

Yayo area coal mine has the potential to produce 300,000tons of urea using 9.2 million tons of coal with 35,000 workers, 250,000tns of DAP fertilizer, 20,000tons of ethanol and 90 megawatt of electric power, 75,000ton of solid waste products that can be used as an input for the production of construction materials such as brick and cement, annually with 730 million dollar project cost (Energy, 2009, pp. 7-9) and (Wolela, 2008, p. 74). Recently, the General contractor Metal and Engineering

Corporation (MetEC) received responsibility from the owner (National Chemical Industry Cooperation) to construct fertilizer factory which use coal as raw material and energy sources(thermal power) to produce Urea and DAP. The corporation had employed foreigners (42- Pakistani for skill transformation in coal mining) and local labour trained under Pakistani miners and has been running the mining activities. Recently the local people, with the skill and experiences, shared from Pakistani mineworkers', have been independently mining coal (Shambel Keba, 2016). There, every worker has been mining coal assisting by small machine. Some of the workers went in to the coal mining whole (cave) to dig the coal and outside of the hole; some of the workers were pushing a wheel that loaded the coal. Other workers were also carrying the coal and load it on truck assisted with loader operator.

Yayo area particular site called Achibo-Sombo coal deposit holds 121.45 $x10^6$ tons. Yayo coal mining is publically operating company. The coal have been extracting from these site to generate energy and as raw material to produce urea.

2.2. Socio-economic and conditions of coalmine workers

In most developing countries the economic considerations of mining often override the environment and social considerations. In case of social dimension to reduce its effects, it is good to search for the way of maximizing the positive effects of mining on the lives of people while minimizing the negative effects. These effects must be reflecting of mining on the present generations as well as future generations of miners and their families (Samuel Obiri; et al, 2016, p. 2). Environmental and the socio-economic effect of mining on the host communities are eclipsed by the economic gains of individual and the nation. The individual workers look for their employment and getting job opportunity as economic gain for daily life without considering its hazards on their health.

A hazard is anything with potential to do harms and the actual likelihood of harm occurrence is called risk (International Labour Office, 2011, p. 13). The potential sources of harm come from: poor safety measures, exposure to chemicals, gasses, and back ward practice and work equipment. These all may cause physical, chemical, biological, Ergonometric and psychosocial hazards.

Physical hazards are the injury ranges from the minor to death. Common causes of fatal injury include rock fall, fires, explosions, mobile equipment accidents, falls from height, entrapment and electrocution. Less common but recognized causes of fatal injury include flooding of underground workings, wet-fill release from collapsed bulkheads and air blast from block caving failure (Donoghue, 2004, p. 285). Noise is almost ubiquitous in mining. It is generated by drilling, blasting, cutting, materials handling, ventilation, crushing, conveying and ore processing. Controlling noise has proven difficult in mining and noise-induced hearing loss remains common (Donoghue, 2004, p. 285).

Chemical hazards such as silica, dust, methane, cyanide, and mercury can affect the health of workers.

Moreover, coal dust is another serious hazard in mining that causes coal workers' pneumoconiosis or 'black lung' and chronic obstructive pulmonary disease.

Ergonometric hazards are most of the time abundant in manual mining. Workers face musculo-skeletal problems during mining from lifting heavy loads and prolonged digging. Falling machines and tools can also expose the minors to musculoskeletal disorders (Donoghue, 2004, p. 285).

The effect of hazards has variation from country to country. For instance, the risks from working in coalmining have been largely controlled in developed nations by dust suppression, ventilation, and respiratory protection (Donoghue, 2004). Whereas, in developing countries due to poor safety culture, limited health service access, occupational diseases and labour intensive mining activities, the problem is vast (Donoghue, 2004).

Wherever the coalmining workers, either in developed or in developing countries, they should be prevented and protected from hazards by the Mining organization, workers themselves and government. Thus, prevention and protective measures, monitoring and managing systems should be incorporated in safety measures.

2.3. Socio-demographic Characteristics and Mining

2.3.1. Age Dynamics and Mining

The experience and age of miners are important factor affecting accidents. Studies show that the incidence of accidents reached a peak in those who had worked for one year and decreased as experience increased Cho and Lee (1978, p. 207). in line of this Cui *et al* (2015, p. 6) also stated that new comers to the mining job workers are at much higher risk of injury than more experienced staff, while shift workers and heavy physical workers also have a greater risk of being injured at work a higher risk was found for workers with job burnout and job dissatisfactions. This directly implies the well experienced are less exposed to accidents than the new employee. Most of the time new employees are young workers those are new comers to the world of job. From this we can infer that most of the time those exposed to occupational accidents is young workers. However still there is inconsistency on the exact boundaries among the child and adult age from varies cultural perspectives, the minimum age for light work is 13. For the ordinary work is 15 and 18 age for hazardous work. Age 18 is the benchmark for the childhood and adulthood according to the major international labour conventions, N^{o} 138 and 182 and the united nation Convention of Child labour (International Labour Office, 2011, p. iii).

Hazardous work is one of the worst forms of child labour. More than 53% of the 215 million child labourers worldwide do hazardous work. Hazardous work increased among older child, aged 15-17 (International Labour Office, 2011, p. iv).

To the present day the psychological, social and intellectual impacts of hazardous Work such as mining on child has not yet receive attention (International Labour Office, 2011, p. xvii).

2.3.2. Gender Dynamics and Mining

According to Abrahamsson, (2014) the mining industry in India can contribute to sustainable development by promoting women's economic advancement and reducing women's poverty, ensuring greater involvement of women in the mining sector. Kemp *et a*l (2010) as cited in Abrahamsson (2014) described how one of the world's mining companies work to integrate gender consideration at mine site. In addition to

this, Abrahamsson(2014) stated that the mainstreaming of females in mining activities requires changing of the local cultural attitudes about women and work, liberating them from old-fashioned feminine and masculine identities. In some case women have lost their work and relative economic independence and have to start earning a living informal sector (perhaps as sex workers) (Abrahamsson, 2014, pp. 17-22).

2.3.3. Educational Level and Lining

Safety training should be given initially and periodically in order to make the workers alert all the time and adopt safe working methods instinctively (K.S.Cho and S.H.Lee, 1978, p. 207). Pre-training and on job training helps for the prevention and protection of workers from hazards. Being aware of the nature of work enables the worker "how?" to operate the activities in safe way. To enhance practical training, formal education is the base for better familiarization and adoption of on job training.

In addition to the above, education has more materialistic value: it is a means to higher income, more stable employment, and better working conditions (Fields, 1980, p. 235). This directly implies that most probably, the one who has high educational status earn more income, work in safe environment and stable employee than those who have low educational status.

2.4. Undermining the Rights and Safety of Mine Workers

It is difficult to separate safety and rights of coal mine workers. The right to be informed about hazards and protection from hazards flourish the base for workers safety conditions. In contrary to this, Report from the non profit advocacy agency earth works, in Washington D.C., indicated the accessibility of less information on the consequences of exposure to hazards in poor communities. People, those have information also cannot afford to buy safety equipment. In addition to deaths and injuries on the job, mining can cause long range health problems such as respiratory diseases caused by the inhalation of dust and chemicals.

Even though almost all governments have enacted health and safety regulations that apply to the mining industry, they are poorly conceived and enforced. Because lack of effective supervision, employee behaviour, employer lack of concern about workers safety, low legal measures, corruption and low awareness level about safety.

Activists concerned about human rights and environmental issues are contradicting the usefulness of the resource of coal itself. They call it a "dirty" mineral, arguing that the benefit of coal is less than its cost. The argument therefore is that we should renegotiate the mining of coal to prevent its extraction because of its cost on life and the environment.

In response to the activist idea, International Labour Organization (ILO) developed a "Convention on Safety and Health in Mines" in 1995. The Convention requires "eliminating or minimizing safety and health risks in mines." It requires governments to oversee and report openly and transparently on the implementation of the measures, to suspend mining when violence occurs, to guarantee miners' rights to form unions, and to be informed of health and safety risks and precautions. But to date, only 20 countries have ratified the ILO and have agreed to abide by its standards.

Currently, many countries reserve the right to extract coal for future use, arguing that it has many advantages in industrial sectors For instance, (program, 1995, p. 1), stated that the USA Energy Policy Act of 1992 (EPACT) directs the U.S. Department of Energy (DOE) to establish programs for developing environmentally acceptable coal-based technologies for a broad range of applications, notably electric power generation and the manufacture of liquid and gaseous fuels and nonfuel products, such as carbons and coal-derived chemicals. Meanwhile the coal industry, through its mouthpiece, the world Coal Industry, has argued that it is possible to extract coal in an environmentally and human friendly way; that the so-called "dirty" aspects of coal mining are manageable (Bjureby, 2008).

2.5.Occupational Health and Safety and Workers' Wellbeing

The World Health Organization define the Occupational Health and Safety as multidisciplinary activity aiming at protection and promotion of the health of workers, enhancement of physical, mental and social wellbeing of workers and support for development promotion of sustainable work environment and work organization.

According to Krieger (2010, pp. 104-105) workers are people too. This is to reflect the equality of all people involved in whatever kind of work. From this, workers need to get equal health and safety provisions based on the practical condition of the work. There may be disparities based on the context of job in benefits, kinds of treatment

and payment. But societal aspects of occupational health disparity should be avoided. Most of the time societal context i.e. socioeconomic position, gender, age, citizen status, educational level and ethnicity may affect the healthy and safety condition of workers. Whatever the case, occupational health and safety is one of the most important aspects of human concern. It aims an adaptation of condition of workplace to workers for the promotion and maintenance of the highest degree of physical, mental and social well being of workers in all occupations (Takele Tadesse and Mengesha Admasu, 2006).

To promote workers healthy and safety, people's interaction with their working environment requires the study of working condition in which they perform their daily activities. The condition in which the workers perform their daily activities can reflect their health and safety conditions. To understand about the condition of working environment, Man-Machine-Environment (MME) theory is one of the basic theories which help to study ergonomics in the field of industrial safety. Ergonomics is the combination of the Greek root word ergo (work) and norms (law or custom). Ergonomics was officially born in 1950 in the United Kingdom. Tetrahedral structure International Ergonomics Association was founded in 1960; whereas Chinese Ergonomics Association was founded in 1989.

The official definition of ergonomics is the study of the anatomical, physiological and psychological factors in a certain working environment. It studies about the interaction between humans and machines and the environment. It studies also about how to balance work efficiency, health, safety and comfort issues at work or after work. MME theory studies the human technically, machine, the environment and their relations, this has decided the ergonomics study is engaged in the humanist machinery and the environment design and the relational research Jing-Gang and Lei (2013). In the case of man and the total environment of work interaction, training on safety measures, inspection and early warnings hazards such as toxic substances, natural emergency such as exploitation, heat, and training on the operation of work place equipment is very impotent for wellbeing of all occupational workers in general and coal mine workers in particular.

2.6. Working Hours and Workers' Wellbeing

In this world, there is no uniform work schedule. This stimulated the interest in non-standard working hour's effects on individual wellbeing. Some studies on interplay of hours of work and subjective wellbeing (job satisfaction, job related anxiety, depression and life satisfaction), for example, that of Bryan and Nadi, (2015); Wooden,*et al* (2009) pointed out that working hours does not reduce our wellbeing. This indicated that our wellbeing is affected by the variance of our working favourite from working hour. In this what is noticed is the direct association of working hour and identity. The negative effect of long work hours is very high among those with weak identity and very high among those with high identity. This implies those are with low identity wellbeing negatively affected with long work hours.

Working hours are also has association with job satisfaction Bryan and Nadi, (Mark Bryan and Alita Nadi, 2015); (Mark Wooden, Diana Warren & Roberto Drago, 2009). Job satisfaction is not always lower for employees who are working long hours. This is because of workers with high identity has high level of job satisfaction than those with low identity. This means those with stronger work identity will suffer less from working long hours because they gain identity utility from the match between their behaviour and self interest. The women with strong work identity satisfaction increases with hours worked and the satisfaction of women's with decreases low identity. Between male with strong identity and weak identity such relationship does not observed.

Working hours are also related with anxiety. Anxiety increases with working long hours and this is similar for both sexes. This implies workers' anxiety increases with the increasing of working hours for both male and women. Although it is similar for both sexes, it is different among workers with different identity. A worker with high identity has low anxiety compared with workers with low identity.

Working hours are also linked to job-related depression. Depression is higher for women working long hours and lower for both men and women working less than 30 hours per a weak.

Working hours are also related with job satisfaction. Hours worked have no effect on life satisfaction for men, but for women it increases with hours worked. This implies

females' satisfaction increase with hours worked (Bryan and Nadi 2015); (Wooden, Warren and Drago, 2009).

2.7. Economic Benefits of Coal and its Adverse Effects

Most literature noted the role of coal in shaping the economic development during and after the Industrial revolution. Electricity generation provides many benefits worldwide, and is synonymous with economic development, higher standards of living, and increased life expectancy. In addition to this coal mining creates job opportunity and contributes for local and national economic development (Juneau & Anchorage, 2015).

In spite of its economic benefits, coal has detrimental health effects that are associated with every aspect of its life cycle, including mining, hauling, preparation at the power plant, combustion, and the disposition of post-combustion wastes (Lockhood, Hood, Rauch, & Gottlieb, 2009).

Thus, in our world coal mining has been considered as one of the world's most dangerous occupations and related in severe socio-economic consequences for workers and society (Yan Cui et al., 2015). In line of this, Cho (1978, p. 205) also stated that the mining industry has frequently appeared in the list of the most dangerous industries in many countries. Because miners are constantly facing new adverse conditions underground and their working environment are maintained solely on artificial basis. Coal mines are apparently more dangerous than metal mines and underground mines more dangerous than opencast mines.

In line of this idea, the report from the world Coal Institute stated that, the issue of safety is a serious concern in coal mining industry. Coal mining can be in two forms: surface/opencast and underground mining. Underground mining has higher risk than opencast mining (institute, n.d.; Weeks, 1991).

To mitigate safety challenges in surface and underground mining, modern mines have a plateful of safety procedures, health, safety standards, workers education and training. These are not uniformly regulated and implemented in all coal mining industries.

There are health and safety challenges up to date in both developing and developed countries, even though its degree is better in industrialized countries. This is because technological and safety equipment has advanced in industrialized countries more quickly than developing countries where mining is labour-intensive (institute, n.d.).

2.8. Economic Conditions and Wellbeing

2.8.1. Income/wage and Wellbeing

Coal mining has a history of cheap labour and confrontation with organized labour (Victor, 2010). Munnik (2010) also stated that, mine owners in general, like other business and industry, made a limited presentation to the truth and reconciliation commission, but did not come near to accepting responsibility for, amongst others, miners' death and ongoing illness. As far back as 1903, South Africa has had laws that placed the responsibility for mining impacts on the mine owners (Victor, 2010). The other literature also stated that, the contemporary mining industry is capital intensive, and its reliance on technology means that there are relatively few employment opportunities for workers from rural areas who lack the necessary technical skills (Kirsch, 2014, p. 31). Kirsch (2014) also stated that, higher wages in the extractive sector of the economy makes other forms of labour at lower wages, less attractive to potential workers, and it may even produce negative incentives for participation in subsistence return for comparatively law returns (P. 31).

The socio-economic conditions of any person might be influenced by the amount of income he/she earn. However, wealth does not assure wellbeing, people who are poor will experience low subjective wellbeing than people who are rich. The relation between income and subjective wellbeing will be strongest for people who are poor. According to Commins (2000), on the step of homeostasis theory, as soon as the person's resources become insufficient to maintain homeostasis, subjective wellbeing will move below its normal range under the control of challenging agents. The implication of this theory is that high wealth protects against happiness through optimising and maintaining the function of their subjective wellbeing homeostasis system. In addition to this, rich people have a much better chance of avoiding situations where their subjective wellbeing homeostatic system will be compromised, as had been suggested by Ahuvia and Friedman (1998) cited in (Commins, 2000, p.

139). In addition, the amount of income earned might show one's actual social position and mode of living relative to others. This socio-economic measure to a great extent determines the standard of living (the actual mode of living condition) of any individual or group of society. The mode of living in any country depends primarily on the fundamental factors of food, shelter and clothing (Abhaya K. Naik and Krupasindhu Pradhan, n.d, p. 7)

2.9 Labour Organization and Workers' Wellbeing

2.9.1 Labour Union and Workers' Wellbeing

As per the Ethiopia Labour Proclamaton No.377/2003 (2003), article 113-115, workers shall have the right to establish and form trade union. This legal document defines "labour union" as an organization formed by workers where the members of union are ten or more. Therefore the labour organization is group of employees formed for the purposes of representing those employees with the employer as to the terms of a collective contract of employment.

Accordingly, labour organization(trade union) is an association of workers united as a single entity for the purpose of improving the worker's economic status and working conditions through collective bargaining with employers which is also known as "union". There are two types: the horizontal union, in which all members share a common skill, and the vertical union, composed of workers from across the same industry. Collective bargaining is the process of negotiating the terms of employment between an employer and a group of workers. The terms of employment are likely to include terms such as condition of employment, working conditions and other workplace rules, base pay (an employee's initial rate of compensation, excluding extra lump sum compensation or increases in the rate of pay), overtime pay, and work hours, shift length, holidays, sick leaves, vacation time, retirement benefits and health care benefits. The collective bargaining takes place between the labour union leaders and management of the company that employs that union worker. The result of collective bargaining is called a collective bargaining agreement, and establishes rules of employment for a set of number of years.

The Ethiopian case concerning labour union and workers wellbeing, labour proclamation No 377/2003 of Ethiopia article (114), displays the function of trade

union (labour union) which includes observing the condition of work, safe guarding workers interest and rights, and presenting labour disputes before the competent body when requested or delegated.

In the line with the above provision of Ethiopian Labour Proclamation, Levine comments that through the creation of the free trade, the workers experience the genuine collective bargaining power (J.Levine, 1930/1997, p. 109).

Article 42, "Rights of Labour", stated that Factory and service sector employees, peasants, agricultural workers, other rural workers, government employees below a certain level of responsibility and the nature of whose employment so requires, shall have the right to form associations for the purpose of improving their economic and employment conditions. This right shall include the right to form trade union and other associations and to negotiate with their employers and other organizations affecting their interests (Labour Proclamaton No.377/2003, 2003).

According to Elias and Najuin (n.d.), different views are reflected about the role of trade unions what sociologist's term as "Frames of Reference" in which classification is made. These are Unitary Approach: "Essentially the unitary view sees the industrial enterprise as one, where management and workers strive to achieve common objective in spite of the friction or conflict between management and workers.

This is usually attributed to factors such as poor communications, inefficient management or disruptive or politically motivated workers. The supporters of this approach further say that unionism may be justified for manual workers to improve their economic conditions and standard of living in case they are denied their legitimate demands.

According to Pluralist view, conflict in industry is inevitable, as the interests of the employees inevitably differ from those of the employers and that trade unions have an important role to play in representing those interests by regulating both market and managerial relations. The employers are more concerned about their profit and investment, whereas workers are concerned about their wages and standard of living. These different kinds of interests lead to traditional conflict between employers and workers.

The establishment and recognition of the labour union directly prevent abusive and exploitative relationship between employers and workers based on substantial inequality in bargaining power. The union can achieve social justice goal through covering all or most workers inclusive, cooperation and motivation to act for general interest of workers (Rights, 2012, p. 11).

2.10 Psychosocial State and Workers' Wellbeing

The psychological and social dimension of workers implies emotional state and social interaction or relationship respectively. Psychologists are more interested to study work related psychological wellbeing of workers than job satisfaction. Haile, *et al*. (2012) Stated that the work relates psychological wellbeing is about job related anxiety. It is an experience of the worker positive and negative over the short recall period (i.e., it can be a week). It may be within the last week. The mismatches of expectation such as salary rise or promotion with happening also measure the emotional state of workers.

The social wellbeing is satisfaction with the co-workers relation, employer program and supervisor supports. Through social interaction harmonious relationship established among co-workers, between employee and employer, sense of together developed and common understand on common interest like protecting from exploitation are created.

Hater (2003) indicates that human psychological and social (psychosocial) issues impact all aspects of adversity. They involve not only the victims but also the frontline rescuers, all members of the incident command system, and the families and communities even national and international community's connected to the events. Further, from a psychological standpoint, a mine adversity does not end when rescue and recovery efforts are complete. The psychological aftermath is often just beginning and has an effect on survivors (Trakofler and Vaught, 2012).

Man-machine environment theory stated that the disaster is an unexpected and devastating event which happens when the relationship between the three elements; man, machine, environmental (MME) discarded Jing-Gang and Lei, 2013 P.1509). The research reported by (jing-Gang and Lei, 2013), the work duration of the people determine their fatigue. As they work without rest for continues hours, they become

much tired. In this case probability of an accident is higher. Mine workers' fatigue can be divided into physiological, psychological and pathological fatigue. Physiological fatigue loads from the manual operations; psychological fatigue, also known as mental fatigue, is caused by the sprite, poor working environment, and monotonous work, mental and emotional burdens, pathological fatigue is the fatigue due to disease. Though the focus of this study is not mining workers' fatigue, it is one factor for the mine emergency which affects the victim and his/her close relatives.

A mine disaster can be one of the most stressful, traumatic events an individual experience. A traumatizing event is one that is outside the normal range of everyday life events. It is experienced by the individual as devastating. An example of a potential traumatic incident for a miner would be the serious injury or death of a co-Worker. These events can result in an emotional reaction with the potential for inhibiting a worker's ability to function either at the scene or at a later time. Another example may be in body recovery where distressing circumstances, sights, sounds, and smells result in immediate or delayed stress reactions (Kathleen M.Kowalski-Trakofler and Charles Vaught, 2012, pp. 133,149).

2.11. Conceptualizing Wellbeing

Conceptualization Ryff and her co-workers have developed a general model; context free model of wellbeing built on multi frame work which is multidimensional encompassing every aspects of human life. It is difficult to assess the whole thing of human aspect. Unlike Ryff model of wellbeing, Warr's model of mental health, focus on wellbeing in particular context (i.e., work) (Joan E.Van Horn et al., 2004, p. 366). From this our study would be context based since help us for better understanding of coal mining and its effect on employees' well-being through selected socio-economic indicators.

Accordingly, the structure and direction of the rows indicated association between indicators and its association with the outcome (i.e. wellbeing). Two approaches were used to measure wellbeing: objective indicators (socio-economic conditions) and subjective measurement (personal report of worker's feeling, thinking perceiving and satisfying) with their current Socio-economic conditions. The survey asked employees to rate on five points of Likert type scale items from very dissatisfied/very

disagreement to very satisfied/very dissatisfy on the above indicators. Michalos, (2007, p. 351) also stated that since wellbeing is determined by experiences, each person should be privileged to assess his/her own experiences and person's report of those experiences must be equally privileged. On this ground, workers' reports about their wellbeing within the boundary of the variety of socio-economic lens decisively selected for the purpose of this study, such as condition of workplace like safety, health, social support, employment relationships; wage/salary, trade union, and social support In addition to this, to minimize the possible override of the real world views of wellbeing, key informant and scientific literatures were considered. This contributed to provide good reasons for believing that worker's self reports such as perceptions towards a single socio-economic domain are more reliable, valid, warranted and reasonable.

The other reason for considering the above conceptual frame work was also the ambiguitious nature of the meaning attached to the wellbeing in different context. Obiri (2016) noticed that assessment of the wellbeing of the workers requires the consideration of subjective and objective aspects of the wellbeing measurements. Accordingly, since there is no universal context for the meaning attached to wellbeing and its perception, it is better to highlight the issues of wellbeing in relation to scholarly literatures. For instance, according to Simon (2014, p. 118), wellbeing in the work place, in case of this study coal mine workplace, increasingly common topic in scholarly journal. There are variation in the meaning and definition attributed to the term wellbeing. However the term wellbeing in the past referred to as the absence of diseases, in this time it acquire a broader meaning involving the physical, emotional, mental and social aspects. It includes both the material (objective) and intangible (subjective) aspect of an individual person which implies the multi dimensional aspect of wellbeing.

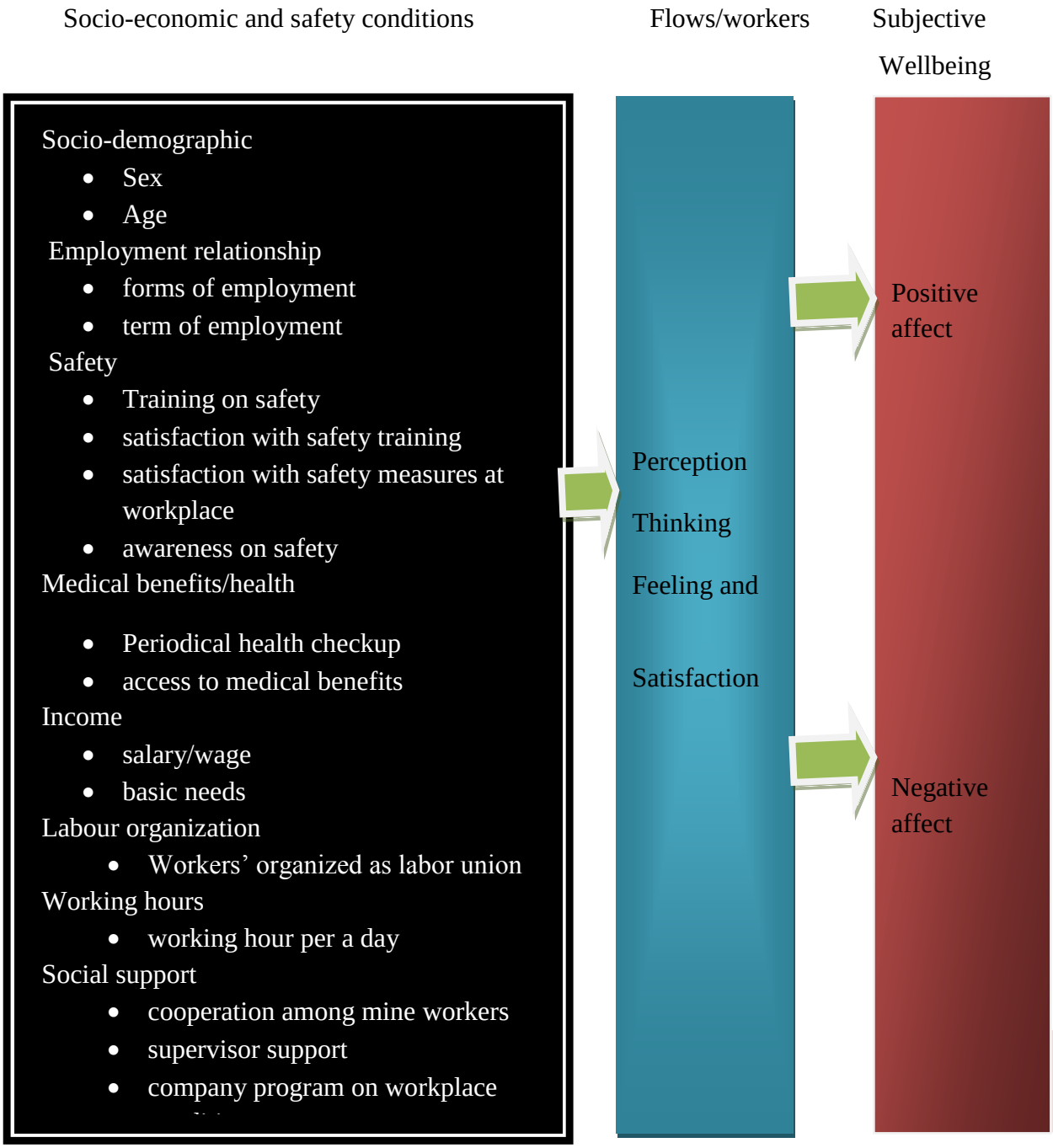
Simone (2014) also stated that the reasons for the importance of mainstreaming wellbeing in the work place as common topic in scholarly research journal are, first an individual at work, be they emotional or social in nature, and obviously influences the person while working. Second, wellbeing potentially influences both workers and organizations. For instance, workers with poor wellbeing may be less productive,

make lower quality decision, be more prone to be absent from work and make consistently diminishing overall contributions (Simone, 2014, p. 118).

There are multi-factors associated with wellbeing, and wellbeing tend to be broader concept that takes into consideration the "whole person". Beyond physical or psychological symptoms related to health, wellbeing should be used as the context-free measures of life experiences such as life satisfaction, happiness, attitude, as well as more fact specific dimensions (objective aspects).

In a nutshell the magnitude of the concept of wellbeing in this study was limited to the domains selected for the purpose of this study from the above justifications.

2.2 Conceptual Framework



The wellbeing conceptual framework was adopted from (C.Michalos, 2007*;* Dodge, Daly, Huyton, & Sanders, 2012) *with modification*

To assess Socio-economic and work-related safety conditions of coalmine workers, subjective measurement (self-report) approach would be applied. Accordingly the workers reported about their feelings, satisfaction and perception with regards to the variables: socio-demographic, employment relationship, safety, medical benefits/health, salary/wage, labour organization, working hours and psychosocial state (focusing on social support).

In this case, if the condition for each variable perceived as favourable condition by workers, it produce satisfaction and it is possible to infer the event/s is positively affect the workers wellbeing. But, if the condition for each variable perceived as distress by the workers' which produces dissatisfaction, it may inferred as the event/s is negatively affect the mineworkers' wellbeing.

CHAPTER THREE: METHODOLOGY OF THE STUDY

3.1. Description of the Study Area

This study is conducted inYayo area (Achibo-Sombo) is found in the South-West part of Ethiopia. The area is located in Oromia Regional State, Ilu Aba Bor Zone, Yayo Woreda/district. Yayo basin is situated 8^0 22'00''-$8^0$24'00''N and $35^0$36''21'-$36^0$01'22'' E latitude and longitude, respectively. Yayo is 564 km from Addis Ababa along Jimma-Bedele-Gambella road. The basin is between 1300 and 1700m above sea level.

Yayo is a place known by abundant natural forest, and by coal deposit. A total of 200,000,000 tons of coal deposits estimated in the Yayo Basin (Wolela, 2008). Exploration in Achibo-Sombo area indicates that there is very good opportunity to develop the coal deposit in the area. The total coal reserve in Achibo-Sombo is 121,457,030 tons. The coal from this area have been used for production of Fertilizer (UREA & DAP) and thermal power co-generation (Keba, 2016) Currently, the fertilizer and thermal power plant is on construction closer to the coal deposit site such as Jimate, Witate, and Achibo-Sombo.

The coal mining activities at Achibo-Sombo site was started in 2003 E.C by 45 foreigners (Pakistani) and 70 Ethiopians. The foreigners evacuated after sharing their mining experience to the Ethiopians. They had trained 70 local Ethiopians on how to mining coal. Of the total 70 trained on mining, recently 19 individuals were taking part in mining. Among this, 18 Workers have worked as driller who are also called pick man. One individual has been working on inspection of the workers under the ground. These 19 workers were employed from the early stage of Achibo-Sombo coal mining development. The rest 51 of workers were new employees instead of x-trained workers by Pakistanis.

Figure 1: Map of Ethiopia, Oromia, Ilu Abba Bor, Yayo

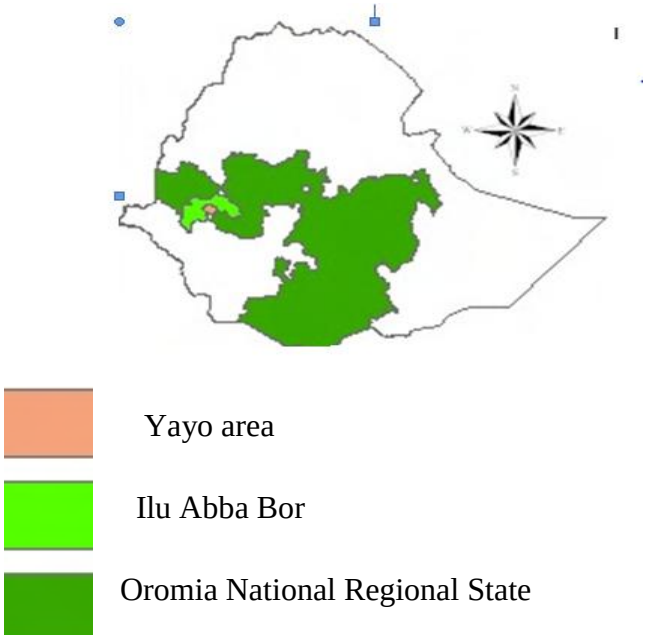
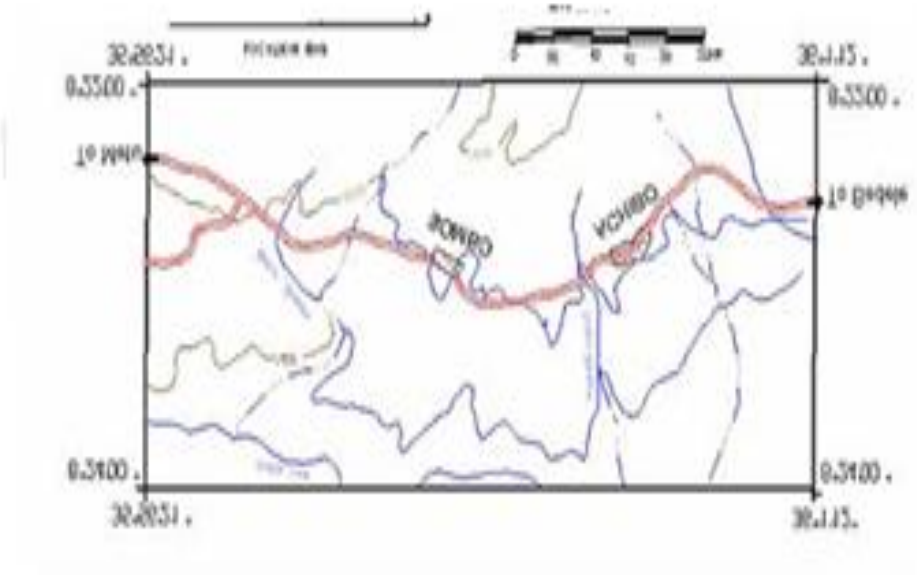


Figure 2: Yayo Coal mining location



***Source**: Geological Survey of Ethiopia and Ministry of Mines and Energy: Promotion Team of Investment Opportunities in Coal of Ethiopia:, 2009, Addis Ababa, Ethiopia*

3.2. Research Design

The logical structure of this study was descriptive case study. The reason for it is descriptive is that it attempts to systematically describe and provides information about the conditions of socio-economic and work-related safety of Achibo-Sombo coalmine workers, by focusing on socio-demographic, contractual relationship, health serves and safety measures, salary/wage, labour union and social support In addition to this it provides states of socio-economic and work related safety conditions of participants as it exist while this study conducted. Case study is appropriate when the researcher has little control on events, the questions being posed how or why, and the focus is on the contemporary phenomena within some real-life context Yin (2003).

In addition to this, Yin (2003) also stated that case study allows the researcher to retain the holistic (single unit of analysis) and real-life events. Accordingly this study also sought to gather data at single time on socio-economic conditions and work-related safety conditions through designed domains by using subjective (intangible) and objective (tangible) measurements. The subjective parts were the perception of the workers towards their socioeconomic conditions and wellbeing which are immeasurable and self-reported, whereas, the objective part of socio-economic conditions are more of quantitative. Even though this study is mixed, the qualitative is the core one (given high priority) in the data collection and analysis. From two reasons the study strategy was descriptive. First, the study provides descriptive characteristics of workers' socio-economic conditions and wellbeing. Second, the study population size is small, manageable and the respondents could easily be reached.

The study population would be the Achibo-Sombo coal mine workers. Thus the primary data would be obtained from them through questionnaire and interview. In addition to this, secondary data like attendance list, individual profiles and others documented materials were source of data for this study.

The data obtained would be organized, categorized, analyzed and interpreted by using simple descriptive statistics (charts, tables, percentage and cumulative frequency). The interpretation of the data was based on the obtained data, and should be free from personal influences. At the end, the result of the study drawn and recommendation provided.

3.3 Research Method

The research approach was mixed approach (i.e., combination of qualitative and quantitative method with the qualitative component is given significantly higher priority.) The quantitative part is the survey questions presented to the target population in the Likert type scale. The content of this survey were categorical, interval and ordinal questions that were administered to the entire Achibo-Sombo coal mine workers. The inclusion of quantitative data is likely to provide richer data and interpretations.

The qualitative data were collected through focus group discussions (FGDs) with ten groups of workers each group having five to seven members. The areas of the discussions were the challenges at workplace from natural and artificial (manmade) angles, the safety culture of mine workers, rights and interests of workers, the general life condition such as housing condition, family size, job opportunities and challenges of mining. In addition to the data collected by survey questionnaire and focus group discussion the key informants from multi-sector and professional back ground contributed for validity of the data. Key informants gave detailed explanation and information on the workers' rights and interests (function of trade union to be defending) from legal and social affairs point of view, health consequences of exposure to coal related hazards from health professional perspective, and the employment condition from the company manager at local level.

The rationale/purpose of combining the qualitative and quantitative methods in this study is for complementarities, triangulation and expansion purpose. For details, Greene, Caracelli, and Graham (1989) cited in (Combs, 2011, p. 1) explain triangulation (i.e., quantitative findings are compared to the qualitative results); complementarities(i.e., results from one analysis type [e.g., qualitative] are interpreted to enhance, expand, illustrate, or clarify findings derived from the other strand [quantitative]); development (i.e., data are collected sequentially and the findings from one analysis type are used to inform data collected and analyzed using the other analysis type); initiation (i.e., contradictions or paradoxes that might reframe the research question are identified), and

expansion(i.e., quantitative and qualitative analyses are used to expand the study's scope and focus).

The methodological triangulation is a powerful way of demonstrating concurrent validity, particularity in qualitative research. Campbell and Fiske (1959), identifies two categories in his typology 'within methods' triangulation and 'between methods' triangulation. Triangulation with in methods concerns with the replication of a study as check on reality and theory confirmation, while the triangulation between methods involves the use of more than one method in the pursuit of set objectives Campbell and Fiske, (1959) sited in Cohen, *et al*, (2007:144); Denzin (1970b) sited in Cohen, *et al, (*2007:144),. To check validity of the study, the between methods approach embraces the notion of convergence between independent measures of the same objectives (Campbell &Fiske, 1959 sited in Cohen, et. al, 2007:143). This increases validity and reduces bias and brings objectivity.

The results from one method (either qualitative or quantitative method) would be interpreted to enhance, expand, illustrate or clarify results from the other scores (either qualitative or quantitative methods). In addition to this, triangulating data helped to increase the validity and reliability of this study by comparing and cross checking data.

The purpose of triangulating this study method is also on the lookout to expand the breadth and range of the investigation by using different methods for different inquiry components such as open ended and close ended questionnaire, unstructured interview and focus group discussion.

3.3.1. Sources of Data

Both primary and secondary data were used in this study.

A. Primary sources

The primary data were obtained from Achibo-Sombo coalmine workers and selected local professionals on legal, labour and social affairs, supervisors/company manager and health issues from expertise point of view from the locality. The strategies used to obtain data were face to face. The information was obtained through survey questions, focus group discussion and key informant interviews.

B. Secondary data

To obtain the secondary data literature review was conducted. The literature review was on the issues related coal and its socio-economic and work-related safety condition of the workers. It is obvious that a little have been known about the condition of workers involved in coalmining from empirical reality in Ethiopia. From this, the researcher believes that reviewing of literature related with coal mining phenomenon would be expected to provide information on the experiences of coalmine workers.

3.3.2. Methods of Data Collections

Based on the above literature review, the researcher preferred to administer three data collection tools for the primary sources. These are questionnaire (open ended and close ended), focus group discussion, and key informant interview.

A. Survey questionnaires

The survey questionnaire was prepared in English and translated to the local languages Afan Oromo and Amharic by experts. The translated survey questionnaires were administered to the whole coalmine workers of Achibo-Sombo according to their language skill. The aim is to show the socio-demographic characteristics of workers' which include sex, age and educational levels, condition of workplace included employment relations, safety measures, access to medical benefits, economic conditions included the wage/salary, working hours, labour organization included the establishment of workers' trade union and the role it have been played in safe guarding the interests and rights of workers, psychosocial states included the workers perception towards their occupation and social support. Within the domain of theses, the participants' self-reported assessment of their own socio-economic and work-related safety condition reflects the state of workers' wellbeing. Survey questions is mix of Linkert type items and aim to capture an individual's well-being by measuring how people think and feel, for example, by asking about their life satisfaction, happiness, and psychosocial wellbeing.

Hicks, (2011) Stated subjective well-being questions are not just subjective because the questions are self reported, objective questions can also be self-reported if the information required is factual, such as employment status or household income.

B. Focus group Discussion

The aim of the focus group discussion was to debate, share and verify the study participants' responses and to obtain deep and validated data through open focus group discussion. The workers were grouped in to ten total groups each group had 5-7 participants. The aim was to assess rich data and verify issues like the condition of work place, workers' rights and interests, challenges at mining workplace, employment conditions, the general workers' perceptions on the coalmining occupation and factors that negatively or/ and positively influenced the wellbeing of the workers.

C. Key informant interview

To complement the information obtained from survey questionnaires, Focus Group Discussion (FGD) and key informant interview were conducted with purposefully selected informants like project manager/supervisors, legal experts, labor &social affairs, and public health officer and some workers accidentally at study area (site). The key informant interview was aimed at:

a. Capturing information that may not have been collected through other tools
b. Capturing information related to issues such as legally provided protections to coalmine workers with especial case, and participation on general workplace condition and workers wellbeing.

3.4. Sampling and Sampling Methods

The targeted group of this study was the coal mine workers of Achibo-Sombo coal mining site. At the time of the study, the total numbers of the workers were 70. Geleto (2009) stated that if all population under consideration can be covered by the study we can use census methods. Accordingly, since the size of the study population is small and manageable, the researcher preferred to use census method. To make all inclusive, the data have been collected for two consecutive weeks at workplace. This was contributed to make all study population inclusive via providing opportunities for all participants. In addition to census method, convenience sampling (sampling those most convenient) employed for personal interview.

3.5. Methods of Data processing and Analysis

The questionnaire items were coded and then the data entered into statistical package for social science version 20. Analysis of the data was done by using the descriptive statistics: frequency, percentages and charts.

In the process of this mixed research approach, the qualitative analysis component was given priority and the analysis is a qualitative dominant mixed analysis. The qualitative data and the quantitative data collected by the tools employed were organized, categorized/classified by using tables and charts. Each table holds the items related to major topic and analysed separately by using frequency and percentage followed by qualitative analysis.

3.6. Methodological Triangulation

Table 1: **Objectives, Unity of analysis and methods**

Objectives	Unit of Analysis	Unit of Observation	Method
To identify and describe socio-demographic characteristics of Achibo-Sombo coal mine workers	a) group of worker	individual worker,	survey questionnaire
	b) project manager office	supervisor/inspector	key informant interview
To assess the condition of workplace in which the Achibo-Sombo coalmine workers undertake mining	a) workers	individual worker	survey questionnaire,
	b) legal expert, physician, social affairs, project manager/supervisor	, public health officer, social affairs expert, project supervisor	key informant focus group discussion
To identify existing Workers' organizational structure and mechanism	a) groups of workers	individual worker, leader of labour union, manager at	survey questionnaire, key informant
	b) workers' trade union leader		

of bargain with project managers at study area	c) project manager d) social affairs and legal expert	project level, social affair official and legal expert	interview focus group discussion
To examine the extents of workers satisfaction with the salary/wage they earn from working in coal mining and sufficient to fulfil basic consumption	a) groups of workers	individual worker	survey questions focus group discussion
To describe the psychosocial state of Achibo-Sombo coalmine Workers participating in coal mining activities	group of workers	individual worker and grouped worker	survey questionnaire Focus group discussion.

3.8. Ethical Consideration

The study was conducted for the purpose of fulfilling the master's of art. In the course of this study ethical clearance had been obtained from Jimma University, Department of Governance and Development Studies. The received letter was submitted to the Ilu Abba Bor Zone Administration and the MetEC found at Yayo. After they showed their consents, the legality of the study was assured and under taken.

The participants were informed and expected to show their full consent. Accordingly, the aim of the study and their consent was obtained before participating in this research. The informed consent letter was attached to the question paper. After the research participants read the letter of consent, and show their consent and they took part in the study willingly.

They were also informed that the information they provide is strictly confidential, and their name did not appear on the questionnaire. Instead, as the questionnaire would be given an identification number which known only by the principal investigator of this study. This identification number was used to notice that the participants have returned their questionnaire, and would not attach to the general survey.

CHAPTER FOUR: DATA ANALYSIS, INTERPRETATION and PRESENTATION

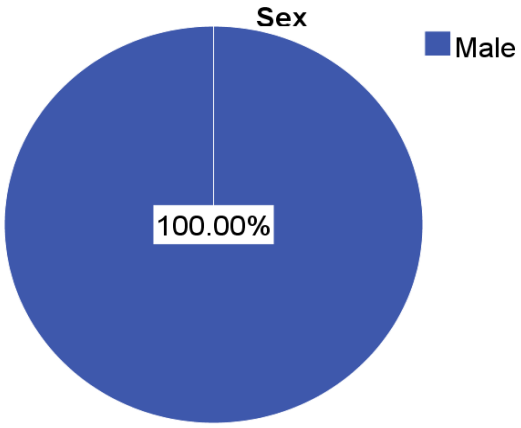
The qualitative data (i.e., nominal and ordinal data) were organized by using pie chart, bar chart, table, percentage, cumulative frequencies and mode. Relative frequency distributions are better than frequency distribution for comparing two data sets. Because relative frequencies fall between 0 and 1, they provide a standard for comparison (Weiss, 2012/1982, pp. 42-44). To simplify the interpretation and discussion, the reported levels of Likert type items with 5 point scores have been reduced and recorded in to three categories: -2 (negative position) which is dissatisfied, 0 is undecided/mid-position and 2 (positive position) is satisfied.

The quantitative data were organized by using tables. The statistical instrument used to analysis was mean and cumulative frequency.

4.1. Socio-Demographic Data of Respondents

It is elf revealing in the pie chart below that all the total respondents (100%) were male workers. From this data, females were absent in coalmine presentation and participation.

Pie Chart 1: Sex distribution of the Respondents



Source: Field Survey, April, 2016.

Even though the reason for the absence of females involvement in coalmining needs further study, the conclusion is that it was an indication of gender inequality in enjoying from coal mining project job-opportunity.

The table 3: depict that from the total census, 3(.043) workers were less than 18 age, whereas, majority of the respondents, 41 (.586) found within the 18-24 range of age, On the other hand 18 (.257), 4(.057), 3(.043), 1(.014) of respondents were found between 25-31, 32-38, 39-45 and 46 above respectively.

Table 2: Mean Age of 70 Respondents, April, 2016

Age class interval	Midpoint(m_i)	f_i	Cf	m_if_i
12-18	15	3	.043	45
19-24	21	41	.586	861
25-31	28	18	.257	504
32-38	35	4	.057	140
39-45	42	3	.043	63
46-52	49	1	.014	49
Total	**190**	**70**	**1**	**1662**

Source: field survey, April, 2016

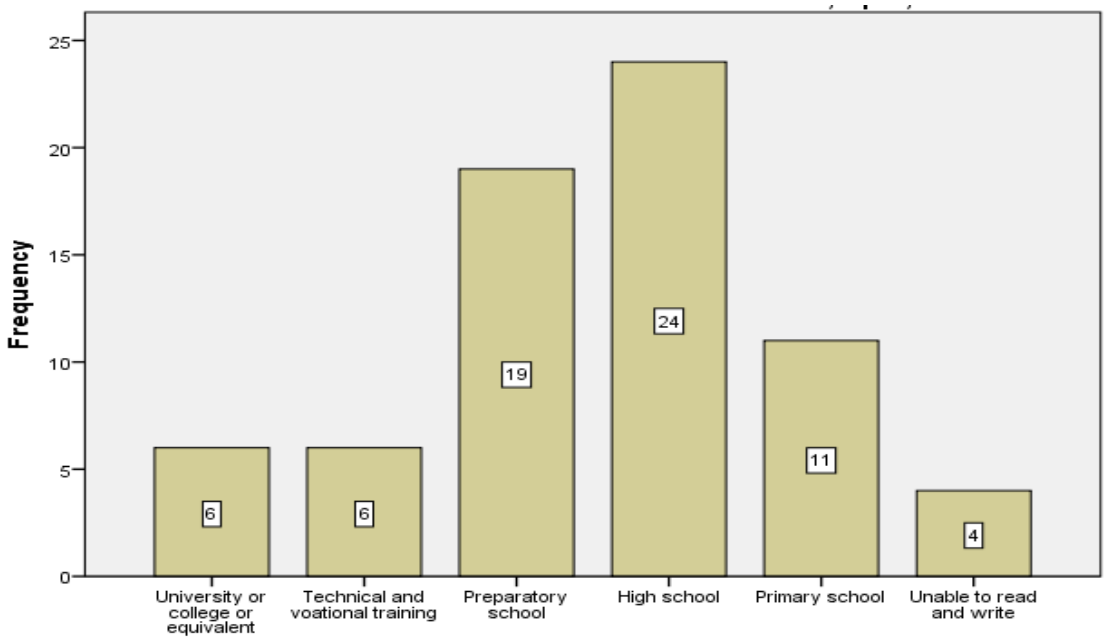
$$\text{Mean}=\frac{mifi}{\sum fi}=\frac{1662}{70}=23.74\simeq 24$$

M_i=midpoint
f_i=frequency
Cf =cumulative frequency

Majority of the participants were found in the age interval of 19-24. The mean average age of the total respondents was approximately 24. This show, majority of the respondents were found in the young age group. From this it is obvious that they were productive and active potential resources in coalmining.

With regard to the educational level of the respondents were indicated that 6(0.086) university or college or equivalent completed, 6(.086) technical and vocational training completed, 19(.271) preparatory school completed, 24 (.343) high school completed, 11 (.157) primary school completed and 4(.057) unable to read and write.

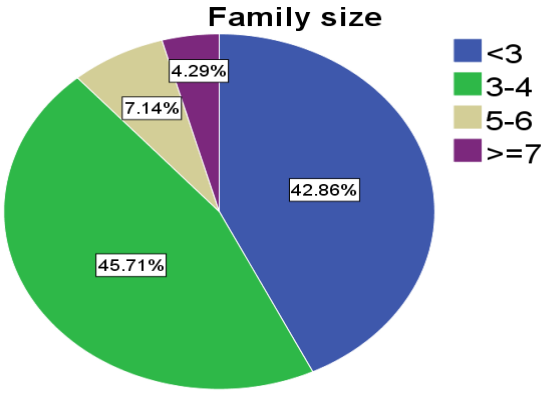
Bar Chart 1: Educational level of respondents



The above bar graph displays more than half of the total respondents were completed high school and above, which indicates that almost all of them can read and write. Thus, the respondents were literate workers participating in coalmining.

Concerning civil status, 30 (42.9%) unmarried, 37 (52.9%) married, 2(2.9%) divorced and 1(1.4%) widow. From this, majority of the workers were married and holds family responsibility. In addition to this, the following pie chart displays the range of the respondents' family size.

Pie Chart 2: Respondents' Family Size



Source: field survey, April, 2016

Majority of the participants (45.71%) were holds 3-4 family size. This implies that the high possibility of wife, husband and a child living under the same roof. Concerning the residence area of the respondents before employed in coal mining the data from survey reflected that 58 (82.98%) have been living there or nearby the mining project, 8 (11.4%) replied that had been lived in other zone of Oromia regional state and 4(5.7%) had been lived in other regional state.

4.2. Data from respondents on employment relationship

Table 3: Presents the Awareness of the Respondents concerning Contractual relationship.

Employer	frequency	cumulative frequency	mode
Company (MetEC)	34	.486	*
Government	12	.171	
Private contractor	3	.043	
I do not know	21	.300	
Total	70	1	
Forms of Contract			
Oral	65	.929	*
Written	5	.071	
Total	70	1	
Term of employment			
Permanent	4	.057	
Contract (fixed)	5	.072	
Daily labour	61	.871	*
Total	70	1	

Source: field survey, April, 2016

From the table above of the total respondents 34(.486) replied that they were employed by company, 12(.171) replied employed by government, 3 (.043) replied employed by private contractor and 21(.30) replied they did not know who employed them. From this, majority of the workers were confused or did not know who employed them. In relation to this, majority of FGD raised, the occurrence of challenges even claim their rights and interest such as payment on time.

Concerning the form of agreement/contract, 65 (.929) respondents were replied orally whereas 5 (.071) replied in written form. The participants on FGD reflected their dissatisfaction employment relationship particularly contractual form. The respondents were perceived themselves as not formally employed since they have no any written contractual agreements. Concerning this, the Ethiopian labour

proclamation 377/2003 under article 5 which displays that "employment contract shall be made in writing from and if it is not made in writing at date of conclusion of agreement, the employer have duty to prepare the agreement in writing form with in fifteen days at it was stated under article 7. Information obtained from the interview legal expert reflected that from legal point of view, contract manipulation affected the workers' claim for their rights and benefits provided to employees by labour legislation or collective bargaining.

With regards to the term of employment, among the total respondents, 4(.057) replied permanent whereas 5(.071) replied contract and 61 (.871) replied daily labour. From the majority of respondents' response, interview and FGD, the contractual relationship between employees and employer was made in oral form and the same employees have been employed in average for 2 years as daily labour. From the 5 interviewed respondents self report, they feared to ask for their interest and rights since its consequence was perceived as provoking others and even reduction/losing of job. Wagenaar (2012) stated that temporary job (daily labour work) is highly insecure work and low quality work. Thus, the fate of most employees' welfare falls in potentially risk of losing their job. Two possible reasons could justify this position.

The first is that the employers' tendency to avoid the accountability followed immediate and long term health impact of coal mining on workers, such as respiratory diseases (refer for more information chapter 2).

Contrary to this, (Vervakel, 2014, p. 31), state that the highest level of wellbeing is found within the group of employees with unlimited contracts. The inverse of this finding indicated that the lowest level of wellbeing is found within the group of employees with limited contracts. Thus, the wellbeing of workers with neither limited nor unlimited agreement or workers without fixed agreement was significantly affected negatively due to the reason that the more insecure a job, the higher the employees level of stress are expected to be, hereby decreasing level of wellbeing (Vervakel, 2014).

From this, the type of employment which is neither permanent nor contract is the worst kind of employment that negatively affects the workers' economic and social conditions. From this, the researcher again argued that such employment type is inappropriate for workers in coal mining. This is due to the researcher suspected such

kind of employment as the mechanism of disgusting the legal obligation of the company towards the workers.

On the other hand, concerning the intimacy of the relationship between employee and employer of the total respondents 25(35.78%) replied not intimate whereas 30(40%) were undecided and the rest 17(24.5%) replied intimate. From this majority of the respondents replied undecided which might be interpreted as fear of deciding their position or do not differentiate with whom they form intimacy. Next to this, 25 (35.78) respondents replied they did not have intimate relationship with their employer. In other interpretation, the gap between employee and employer were distant.

4.3. Data from respondents on safety measures at workplace.

Table 4: Responses on Safety Measures, April, 2016

Safety measures	frequency	cumulative frequency
Provision of safety training		
Yes	42	.60
No	28	.40
Total	70	1
program of training on safety		
Pre-job	17	.243
on job	34	.486
Missing	19	.271
Total	70	1

Source: field survey, April, 2016

The respondents were asked whether they received training on safety measures or whether they did not and 42(.60) replied “yes” whereas 28(.40) replied “no, they didn’t”. They were also asked to replied when the training offered to them on safety measures and of the total respondents 17(.33) replied pre-job, 34(.67) were replied on job and 19(.27) respondents missing.

Table 5: Respondents' Perception on Satisfaction in Safety Training and Safety Measures Offered to them.

Safety measures	frequency	cumulative frequency	mode
Satisfaction with safety training			
very dissatisfied	19	.27	
dissatisfied	17	.24	
undecided	21	.31	*
satisfied	11	.16	
very satisfied	2	.03	
Total	70	1	
Safety measures at workplace			
very unsatisfactory	18	.26	
unsatisfactory	27	.39	*
undecided	15	.21	
satisfactory	9	.13	
very satisfactory	1	.01	
Total	**70**	**1**	

Source: Field survey, April, 2016

Concerning satisfaction with safety training offered to the respondents, 36(.51) replied unsatisfied whereas 21(.31) undecided and 13(.19) replied satisfied. On other hand, 45(.65) participants were replied dissatisfied in safety measures at workplace, whereas 15(.21) undecided and 10(.14) satisfied in safety measures at workplace. From this data, majority of the respondents were dissatisfied in safety measures at workplace.

From the above table 5, the participants replied that safety training was offered to them either pre-job or on-job. But, majority of the respondents replied 36(51.4%)) replied that they dissatisfied in safety training offered to them. From FGD and self-report, this were due to shortage of time (workers busy) and lack of attention on safety. The respondents in all FGD reflected the advantage of awareness and skills on safety measures for workers protection and prevention from hazards. They also suggest that deep and sufficient training is mandatory for workers safety. In line with the respondents suggestion, Weeks, (1991) recommended that an individual before work as a miner should take 48 hours of training and on job miners also should receive eight hours of refreshment training. Furthermore, Safety training should be given initially and periodically in order to make the workers alert all the time and

adopt safe working methods instinctively (K.S.Cho and S.H.Lee, 1978, p. 207). In addition to this, the Ethiopian Labour proclamation Article 90(2) also provides the importance of giving proper instruction and notification for workers concerning the hazardous.

The implication is that uninformed workers might easily be exposed to hazards. From the results of data and literature, the researcher argued that lack of sufficient information and training on safety measures might be one factor for the poor safety culture. This is because participants in FGD reflected that the cause for the accidents occurred on workers were from the poor inspection and from lack of interest to use safety equipment. In addition to this, reports from the FGD reflected that some workers were seen while violating safety regulation intentionally or unintentionally. The researcher argue that workers violating the safety regulation have no concern for their safety or did not informed about obligation expected from them to protect themselves from hazards.

Using safety device is an obligation. Concerning this, the Ethiopian Labour Proclamation Article 14(2) obliged the workers to respect safety and accident prevention rules and take necessary safety precaution/measures. However, the question might be how much the workers awarded about legal obligation imposed on them concerning the use of safety measures.

The researcher also argues that the issues of safety should become the common concern of both the company and the coal mining workers. The researcher also argues that lack of sufficient safety training and legal obligation to wards oneself might increase the risk factors relate to coal mining which significantly affects workers safety and wellbeing.

Table 6: Perception of Respondents On the Use of Safety Device to Protect Themselves from Hazards, April 2016.

Awareness of safety device advantage	frequency	cumulative frequency	mode
Use of safety devices to protect oneself			
not very mandatory	9	.13	
not mandatory	9	.13	
undecided	19	.27	
mandatory	28	.40	*

very mandatory	5	.07
Total	70	1

Source: field survey, April, 2016

From the table above, 18(.26) replied that the protection from hazards is not mandatory for workers health wellbeing, whereas 19(.27) replied undecided and 33(.47) replied that the mandatory of protection from hazards though utilization of safety equipments for health wellbeing of workers

Table 7: Respondents' Frequency of Using Safety Equipment: "How Often You Use Safety Devices/Equipments?"

Frequency	frequency	cumulative frequency	mode
Never	6	.087	
Rarely	26	.37	
Sometimes	14	.20	
Often	9	.13	
Always	15	.21	*
Total	**70**	**1**	**90**

Source: field survey, April, 2016

From the table above, the respondents were asked how they frequently used safety devices and 6(8.6%) replied never, 26(37.1%) rarely, 14(20%) sometimes, 9(12.9) often and 15(21.4%) always. In addition to this data, the data from the interview with the workers (5), supervisors as well as from FGD, reflected that the occurrence of negligence and lack of interest to wear or put on safety equipments from some workers. On the other hand, information collected through interview with the supervisor and FGD also verified that workers who work under the ground removed their safety device (eye protection, ear and mouth mask) due to the temperature is high (too warm) and due to high humidity.

Despite these, from the data collected from 7 FGDs and 4 workers report, reflected that the scarce of safety devices provision and not on timely provision. From this, from this, weak safety regulation or implementation, scarcity of safety equipments and the workers poor safety culture were contributed for irregular use of safety devices., the wellbeing of the workers were in poor condition. This in turn negatively affects the workers health condition.

Table 8: Cross Tab of Respondents' Perception on the Importance of Safety Devices to Protect Oneself and Practical Use of It.

		How often you use safety devices/equipments?					Total
		Never	Rarely	Sometimes	Often	Always	
To protect oneself from hazards, safety device is?	Not very mandatory	0	5	0	3	1	9
	Not mandatory	0	5	0	0	0	5
	Undecided	2	6	4	1	6	19
	Mandatory	4	9	7	1	7	28
	Very mandatory	0	1	3	4	1	9
Total		6	26	14	9	15	70

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	31.550[a]	16	.011
Likelihood Ratio	33.949	16	.006
Linear-by-Linear Association	.956	1	.328
N of Valid Cases	70		

a. 21 cells (84.0%) have expected count less than 5. The minimum expected count is .43.

Though majority of the participants aware about mandatory of safety devices, most of them use rarely.

4.4. Medical Benefit Data of Respondents

Table 9: Response on Medical Benefits Delivered to the Respondents

Health/medical benefits	frequency	cumulative frequency
Health checkups before employment		
yes	15	.21
no	55	.79
Total	70	1.0
Periodical health checkups		
yes	7	.10
no	63	.90
Total	70	1.0
Health care access nearby workplace		
yes	32	.46
no	37	.54
Total	**70**	**1**

Source: field survey, April, 2016.

Concerning with access to health benefits, the respondents were asked whether they had health examination before they were employed in coal mining depicted that 55(78.6%) replied "no" and 15(21.4%) replied "yes". They also replied if there was regular health examination for workers on job and 7(10%) replied "yes" whereas 63(90%) replied "no". In addition, respondents were asked whether they have medical benefits (health care access) nearby mining sites and 38(54.3%) replied "no" whereas 32(47.7%) replied "yes". For example, in FGD: participants forwarded that some of co-workers were visiting hospital from respiratory trunk infection and most of them developed cough with thick sputum. The researcher suspect from this and physician report that as there might be related to the dust from coal and occupational disease even though it requires further study. In addition to this they informed that most of them were coughing with thick sputum. This strengthens the researcher suspicion even though it again requires further study. From this the researcher argued the dust from coal exposed the workers in coal mining to develop respiratory occupational disease. This is similar with Victor Munnik (2010) is finding which reported workers' inhalation of air polluted by coal dust can cause respiratory tract infections. In addition to this Howard, (2011) stated that exposure to coal mine dust causes various pulmonary diseases, including workers pneumoconiosis and chronic obstructive

pulmonary disease and recommended, periodic medical examination in order should be included in workers safety. The interview with public health officer and reports related to health consequences of coal, for example Lockwood et al., (2009), approved that unless preventive and protective mechanism is used to minimize the degree of problems from exposure to coal related substances such as mercury, silicon, and methane designed, the coal mine workers in the first line are often exposed to occupational respiratory diseases. Therefore, since respiratory diseases; for example, lung diseases can bring about impairment, disabilities and premature death which is negatively influence the health wellbeing of the coalmine workers.

Concerning the workers medical benefits the information gathered from FGD and interview with supervisor indicated that those acquired respiratory diseases have been getting treatment at higher hospital. The information from key informant and focus group discussion showed that 60% of medical expense is covered by company whereas the rest 40% is covered by the worker. Notice that, this has been in the case of workplace emergency, but do not include long term coal related health consequences on mineworkers.

On the ground of above discussion the researcher again argues that first aid or medical benefits at workplace injuries should be covered by company and individuals victimized since the coal related health impact most probably long term, it requires especial legal protection. From this, the researcher predicted that due to the absence of special legal protection for coal miners, from long term health impact of coal the probability of workers wellbeing to be affected will be high. Though the interview with the company manger indicated that the company covers 60% medical expenses for occupational accidents or diseases, but the workers complain its effectively. One of the challenges for performance, the said percent of expenses for workers health problem was lack of clear differentiation between occupationally acquired disease and natural diseases, except on job accident.

Even though, the company provided 60% medical expenses in case of immediate occurrence of accidents, there is no guarantee for long term consequences of health problems. The projection of this is that the long term burdens from occupational acquired physical damage were fall on the worker's family and disabled worker. Therefore, the researcher argued that since risk from working in coal mining have

been not the short term that limited to immediate workplace accidents, the long term impact of coal on mineworkers should get consideration from employer, government and workers.

In addition to the problem of coal dust challenges in (warm season) *Bega* season, the participants in FGD forwarded that they were working in hardship condition during the rainy season (*Kiremt*) since flood filled in the hole and sometimes the stagnant water causes malaria. They reflected that most of them had acquired malaria disease after they were employed in coal mining. Most probably the cause of malaria is stagnant water which is suitable environment for mosquito reproduction. Thus, the researcher argued that lack of early prevention consequent in the workers exposure to malaria. The interview with public health professional confirmed that the stagnant water is conducive for mosquito reproduction and epidemic malaria. In addition to this it is noted that the high morbidity nature of malaria disease leads to workers absentee from daily activities. From this, Researcher inferred that malaria affected both workers health condition and income since it causes the absentee of workers from job. As a result of this they were daily workers they did not get payment even though they bring sick leave.

Concerning the health examination, respondents reported that they did not make health examination both pre-job and on job. This contradicts with the Ethiopian labour proclamation 377/2003, Article 90(5) impose obligation on the employer to arrange, according to the nature of the work, at his own expenses is medical examination of newly employed workers and for workers engaged in hazardous work.

From this one can concluded that in the absence of health examination for workers, it is difficult to differentiate occupationally acquired diseases from natural diseases. The trend from mining company indicated that medical personnel and human resources official use HIV/AIDS and tuber closes to mask the fact that lung diseases are the result of working in the mine and so the industry saves the costs of proper compensation.

One of the strategies that mining companies used to avoid liabilities have been not to keep files (Victor, 2010). Though the intention may or may not for similar scheme, coal mine workers at Achibo-Sombo had no profiles indicating about their health history or status. From this it could also be inferred that the negligence to give

consideration for workers' health profile most probably emanated from the mechanism of avoiding liabilities.

4.5. Data from Respondents on Working Hours

Table 10: Working Hours of Respondents per a Day

Work Hours Per a Day		Frequency	Cumulative frequency
Valid	1-4 hrs	1	0.01
	5-7hrs	27	0.39
	8 hrs	42	0.60
	Total	70	1

Source: field survey, April, 2016

Concerning working hours per a day of total respondents 1(1.4%) replied 1-4 hours, 27(38.6%) replied 5-7 hours and 42(60%) replied greater than and/or eight hours.

It was possible to say that the work hour is normal hours, even though the workers reported that they fatigue at the end of their daily work. The data also indicated that there was no occurrence of accident related with the fatigue caused by working for long hour. But, accidents from roof fall damages two individuals to date of this study. Working hours is per the Ethiopian Labour Proclamation 377/2003, article (61) that the normal work hours shall not exceed eight hours a day or forty eight (48) hours a week. The Achibo-Sombo coal mine workers informed the researcher that they consequently work sex days in a week and take rest on Sunday with incentive. They also informed that the normal work hour or actual involvements in work for eight (8) hours per a day. From this the researcher concluded that the workers under study area so moderate.

In this regard, researcher argued that working within the extent of appropriate time reduces the occurrence of accident. This is most probably contributes for physical wellbeing of workers. The data from FGD also reflected that underground miners were facing shortage of oxygen which makes the digging difficult and they usually easily tired. The other challenge was after the daily work, since there is no transportation service; the fatigued workers in the area under the study travel more than 6 km per a day of work in the morning to mining site and in the evening to their

home. Therefore, the sum total of this all challenge and burden on miners significantly affected workers' wellbeing.

4.6. Data from Respondents on Salary/Wage

Table 11: Mean Salary of Respondents per a Month

salary interval/a month	Midpoint(m_i)	f_i	Cf	m_if_i
151-650	400.5	7	.10	2803.5
651-1400	775.5	10	.14	7755
1401-2350	1875.5	26	.37	48763
2351-3550	2950.5	22	.31	64911
3551-5000	4275.5	5	.07	21377.5
Total	**2080.14**	**70**	**1**	**145610**

Source: Field Survey, April, 2016.

$$\text{Mean} = \frac{mifi}{\sum fi} = \frac{145610}{70} = 2080.14$$

M_i=midpoint Cf =cumulative frequency, f_i =frequency
Source: Field survey, April 2016

Since wage or Salary is part of economic conditions the workers were asked to reply the range of the salary they earn per a month in Ethiopian birr and 7(10%) replied 151-650, 10(14.3%) replied 651-1400, 26(37.1%) replied 1401-2350, 22(31.4%) replied 2351-3550 and 5(7.1%) replied 3551-5000. The mean salary was 2080.5.

Table 12: Respondents' Response on Fulfilling their Daily Consumption by Salary They Earn

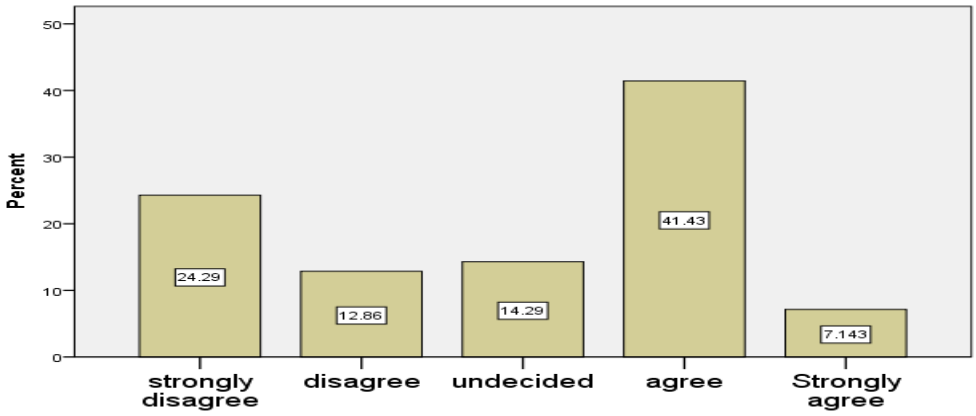
Is the salary you earn fulfilling your cost of living (consumption)?			
		Frequency	cumulative frequency
Valid	yes	10	0.143
	no	60	0.86
	Total	70	1.0

Source: Field Survey, April, 2016

Following this, the same respondent were asked whether the salary they earn enable them to fulfilled the cost of their living and 10(14.3%) replied "yes" whereas 60(85.7%) replied "no". From this reflected, majority of the respondents did not fulfil

their daily consumption expenses with the income they earn. The data from FGD also reflected that the participants claim for salary increment. From self report of interview with 5 participants, the salary they earn was low and insufficient to fulfil their basic needs. As most of reports from FGD reflected, the cost of living such as renting house, food was very expensive due to large number of population migrated to the area for job.

Bar Chart 2: Response on the statement "By working in coalmining, you are able to fulfill your basic needs."



With regards to the participants perception on current life conditions compared with that of their life before they employed in coalmining, 28(37.1%) replied unimproved, 34(48.6%) replied some change (as it was) and 17(24.3%) replied improved. To assess the perception of the respondents, the researcher also asked judgemental question "Since you have been employed in the coal mining company, you are able to fulfil your basic needs such as food, cloth and shelter. And 26(37.1 %) replied they were disagree whereas 34(48.6%) replied as they agree. From the FGD with groups, of total participants, 6 individuals were able to save from the income they earn from working in coalmining in the form of buying livestock such as sheep and goat and 2 individuals were built their own house. In addition to this, more than half of the participants in FGD were high school and technical school completed and dependent on their family before they have getting that job-opportunity. Personal interview with (D, F, A and T, (20 April, 2016), who had been unemployed and have been working in coalmining reflects their happiness with getting job-opportunity around their residence area and have hope for the better future. But, they express their life as "hand to mouth", even for survival. Thus, this data reflects, however the workers living

condition showed some improvement from that of before, the income they earn significantly did not fulfilled their living basic expenses. From personal interview with K. (20 April, 2016), since, the income workers earn was not sufficient, they eat less food, even majority of them once most of the time per a day. Beside this he said, digging, excavating, drilling and loading of coal consumes high energy. Any how such hardship work requires enough food for energy, but how that is the challenge (K. 20 April, 2016). From this, low salary which is insufficient for hardship work can affect health wellbeing of the workers, particularly mining workers.

Table 13: Cross tabulation of participants' income from working in coal mining and the life before employed in coal mining.

		While you compare your current daily consumption with that of before you employed in Achibo-Sombo coalmine work:					
		Not very improved	Not improved	somewhat improve	improved	Very improved	Total
With the income you get from working in coal mining company, you are able to sustain well your life.	strongly disagree	1	9	5	2	0	17
	disagree	0	0	6	3	0	9
	undecided	2	0	5	3	0	10
	agree	1	5	18	5	0	29
	Strongly agree	0	0	1	0	4	5
Total		4	14	35	13	4	70

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	77.592[a]	16	.000
Likelihood Ratio	49.124	16	.000
Linear-by-Linear Association	7.791	1	.005
N of Valid Cases	70		

a. 20 cells (80.0%) have expected count less than 5. The minimum expected count is .29.

The data from the focus group discussion reflects workers were happy with the creation of job opportunity around their residence. Ohimain, (2014) also approved that the economic benefits of mining show that the mining industry contribute to economy as creating job opportunities contributes to country's GDP. But, from the survey data, first the researcher observed that majority of workers was dissatisfied with the salary they have been earning. The data from FGD also confirmed that the workers were dissatisfied with the salary they have been earned. They also reported that their salary were not sufficient related to the increasing cost of life. This might be due to increasing number of population or the shift of agricultural employed labour force to industry employees. Stutzer & S. Frey, (2010) stated that "high income resulted in high opportunity to attain one's desire and the capacity of those with high income is high." This implies that they can select among the alternative presented to them, but by what means the one who has no or has less to make choice? This means in another way round no sufficient income no more alternatives to choice. The researcher argued that those with low salary have less choice relatively, less choice in this regard means choice among low quality goods and services with low price. Therefore the researcher argues that low income and consumption level of the workers has an impact on negative wellbeing.

The more severe case in addition to the low salary according to the data from FGD and interview with workers' supervisor and project manager respectively indicated that sometimes there is work termination as a result of provision machine problem or broken. In this condition the salary for workers also terminates. According to Redae, (2009); Ethiopian labour proclamation Article 54(2) a worker shall be entitled to his wage if he was ready to work but, because of interruptions in supply of tools and raw materials or for reasons not attributable to him as notable to work. Though the researcher is not legal expert the trend of this provision is that the employer has obligation to pay workers in case of its fault. This indicated since they have any more alternative workers waits until the machine purchased or maintained. The researcher argued that workers were not machines, they work for living. They eat, they drink, and they dress. These all are not without money. From this, one can infer that the condition of workers at that moment is in negative life situation.

According to the result in focus group discussion most of them have been living in rental house and the cost of house rent ranged between 500-600 Ethiopian birr. Thus, out of their salary almost nothing left in their pocket. Their living condition is just for survival. In connection with this, the researcher argued that high negotiation labour rather than determining minimum wage like public servant for daily labour was contributing for the low wage. It is also obvious that lack of negotiation and other alternatives which pushes the workers to be employed with low wage for survival. From this dimension we understood that current economic wellbeing of the Achibo-Sombo coal mine workers was in poor condition.

Poor condition of economic wellbeing means the wage/salary of the Achibo-Sombo coalmine workers earns not sufficient money to fulfil their daily consumption. It is obvious that, for example, as workers reflected on FGD, the salary they earn was not enough to feed them from a month to a month. This indicated that the existence of workers with in poor nutritional status. Because of this the workers were not happy and productive.

4.7. Respondents data on labour organization

Table 14: Responses on Respondents' Labor Organization

Do you have trade union representative/s/leader/s?			
		Frequency	cumulative frequency
Valid	yes	16	0.23
	no	54	0.77
	Total	70	1.0

Source: Field survey, April 2016

Regarding the labour organization, the respondents were asked whether they have trade union representative/leader and 16(22.9%) replied "yes" whereas 54(77.18%) replied "no" The information obtained from focus group discussion was verified that the non establishment of well organized and effective workers' trade union. Since there is no recognized and well organized trade union, the respondents were asked on the role of workers trade union in safeguarding the interest of member workers, and 50(7.4%) replied its involvement was low level whereas 9(12.9%) replied high involvement of the trade union.

Concerning the Labour organization, research by (L.Weeks, 1991) stated the function of coal mine workers union as collective bargaining and regulation. He also stated that the labour organization is crucial for advocacy of workers' health and safety. Workers union are also active participants in both mine inspections and rule making. Ethiopian labour law Article 115(1) also provides functions of labour organizations which shall have such as observation of the conditions of work, fulfil the obligations, respect the rights and interests of members, represent members in collective negotiations and labour disputes.

The data collected from respondents concerning trade union reflected that the workers consider the boss as appointed person among them as workers trade union's leader. The researcher understood from the reflection of focus group discussion in one or another way as their lack of awareness.

From the interview with the local labour and social office, the information collected indicated that company's lack of concern to organized labour. The expert from her office told me that they try to deal with the workers on their association through the company. However they tried their best she said that yet the workers were not form trade union. From this evidence the researcher argued that the bargaining power of an individual was weaker than that of trade union bargaining in behalf of the worker. From this argument, since bargaining power of an individual person is weak, his rights and interest might be violated. In addition to this, various studies indicated that the trade unions have been the voice and representative of workers in shaping the relationship between employer and employee, in conflict resolution and negotiating its members wage (F.Wright, 2011). In connection with this and results of data above, the researcher argued that the interest of non united workers interest and wellbeing might be negatively affected.

4.8. Data on participants perception on Social support

Table 15: Perception of Respondents on Psychosocial States, April, 2016

Psychosocial state	frequency	cumulative frequency
Cooperation among mineworkers		
very unsatisfied	12	0.17
unsatisfied	9	0.13
undecided	16	0.23
satisfied	31	0.44
very satisfied	2	0.03
Total	70	1.0
Supervisor support		
very unsatisfied	14	0.20
unsatisfied	25	0.36
undecided	18	0.26
satisfied	11	0.16
very satisfied	2	0.08
Total	70	1.0
Company program on workplace condition		
very unattractive	15	0.214
unattractive	12	0.171
undecided	22	0.314
attractive	6	0.086
very attractive	15	0.214
Total	70	1.0
happiness from being employed		
strongly disagree	9	0.13
disagree	15	0.21
undecided	8	0.11
agree	26	0.37
strongly agree	12	0.17
Total	**70**	**1..0**

Source: field survey, April, 2016

Concerning the psycho-social condition related to the social support at workplace as one can see from the table-16 above, 21(.30) workers dissatisfied with the workers' cooperation whereas 33(.47) satisfied with the recent workers cooperation and 16(.23) replied undecided.

Regarding the company program on workplace condition of the total respondents 21(.30) replied attractive and 22(.31) replied undecided whereas majority of them 27(.39) replied unattractive. On the other hand, the respondents asked whether they were feeling happy being employed in coal mining or whether they did not. And

24(34.3%) replied disagree whereas 38(54.3%) replied yes they agree. The data collected through interview and FGD confirmed that though getting job opportunity makes them happy, contrary the roof fall and hardship of coal mining worsening were condition.

Majority of the respondent 33(47.1%) replied that they were satisfied with cooperation among the workers. It was also verified by the interview with some workers. The researcher argued that good social communication at workplace might relief a person from stress. And relieving from the stress can increase happiness. Majority of respondents 27(.39) also replied unattractiveness of the company program on workplace condition. On FGD the workers replied that since the roof of the mining supported by wood, they did not confident enough and fear probability of roof fall. In addition to this, water collection in the hole of mining area also worsens the mineworkers from its source of malarial infection. The researcher also argued that unemployment is worse than working with low wage. Majority of the respondents replied that they feel happy being employed in coal mining. The researcher argued that what makes them happy is not the conducive nature of mining, but employment is better than unemployment and might be the result good workers relationship. From the interview with selected individual on their memory of short period the interviewee reported that being seen the buried co-workers from roof fall make them worried in their experiences. From this one can argued that workers in job related anxiety.

From the interview the data gathered on the expectation of workers and what they get really mismatched. From the interview with (D. C, 18/4/2016) reflected that his expectation was promotion based on formal educational qualification, but there was no position to him. The researcher argued that the workers expectation and what they have been getting mismatched. All of this might negatively affect their psychological wellbeing or emotional state.

In general, the respondents reported that they were satisfied with the co-workers good relationship and whereas in another way round majority 39 (55.7%) of them dissatisfied with the supervisor support. This implies that the workers have positive social supports despite several challenges of life condition.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

5.1. Conclusion

Coal mining like others mining, has significant economic importance. Despite this fact, most literatures showed that coal mining is with adverse effect on human wellbeing. But, the context and extent of risk from working in coal mining is not yet studied. Taking these as gap, this study was assessing socio-economic and work-related safety conditions of coalmine workers at Achibo-Sombo focused on: Socio-demographic of workers, employment relationship, safety measures, medical benefits, working hours, salary or wage, labour organization and social support

Socio-demographic of workers assessed in terms of sex, age, education level, civil/marital status and family size. The study founded that majority of workers were young, literate and married. Further, gender gap is founded. There is no female participation and representation in coal mining. Though the issue of gender gap was not the direct concern of this study, the study clued that the females were absent due to harsh working condition of this work based on the information collected from FGD and Supervisor.

Employment relationship was assessed in terms of contractual form, term of employment and the relationship between employees and employer. The study displayed as an employment is not formal. Still workers do not know clearly who employed them and Achibo-Sombo coalmine managers did not provide awareness so far. As result workers do not know to whom they forward their claim or complain. For instance; some of them consider as they employed by company whereas others as government or private. This confusion comes from the absence of proper contractual agreement in written form or any other form.

Safety of workers assessed in terms of training on safety and safety device using. This study showed as the safety of workers was not properly protected due to lack of deep training, shortage of safety equipments. On other hand, some workers do not use safety devices because they did not familiarize with safety devices and from their personal negligence and weak safety monitoring system.

With regards to medical benefits, there was neither pre-job medical examination nor on job periodical checkups. There were no any profiles that indicated about the pro-employment and on-job workers health status. Further, there is no first aid service in this work area. This reflects that the managers insist to profitable without concern health of workers in which workers highly affected due to absence of health service. Concerned to term of employment, majority of the workers were daily labours. There is no formalities that indicates whether permanent or temporary employees. Workers leave work based on the will of managers. The communication between employees and employer were not strong. The employer more focuses on transfer their message, give direction and keep their time rather than creating conducive workplace.

Focused on workers' monthly salary/wage, the study displayed as workers' monthly salary or wage is unsatisfactory. The salary/wage they earn monthly cannot sustain their daily consumption expenditure. This due to low salary the company pay for the workers relative to the daily consumption expenditure.

However, working hours of the workers were consistent with legal working hours of Ethiopia, eight hours (8) per a day and six (6) days per a week. These reflects workers have no complain on working hours of day and days of a week rather on their monthly salary which is not enough even to cycle month to month.

Related to labour organization, the study depicted as workers have no labour organization which safeguard their interest and rights. For this reason, workers claim and complain remain without accessing employers and getting solutions. Nevertheless workers were not organized in Labour union, majority of them have intimacy for one another at workplace and happy with the job- opportunity they get from the mining company since they have no alternative more than or equal to this job opportunity.

Conversely, majority of the workers were dissatisfied with behaviour and the way their supervisor directed them. As major respondents, their supervisor not provides social support like enhance relationship between worker and worker which, in turn, promote to realize their full potential for benefit of themselves and their employer. The workers also unhappy with super visors since he was not serve as a bridge and communicate their desire to the top manager. Furthermore the company's program on workplace condition worsens them from lack of favourable work environment.

5.2. Recommendation

First, the issue of workers in coal mining should get especial protection such as special compensation for occupational diseases, legal attention on the base of contractual relationship and liability of the company to workers' injury on job.

Second, based on the above results, the researcher recommended that the safety measures regulation should be getting consideration from the company, workers and government. The strategy for improving the safety culture of the workers should be planned and implemented. The inspection activity should be seriously focused since it is attached with the early prevention of accident. On safety promotion, there should be cooperation among the company, government and workers has great contribution.

Third, cornering workers health examination mechanisms, the researcher also recommended that it is better to implement pre-job health examination since it help to dictate occupational diseases from natural diseases. In addition to this on job regular health examination is important to prevent workers from complicated health problem.

Fourth, the researcher of this study also suggests that issue of low wage is related with the lack of minimum wage policy in Ethiopia. This requires very high negotiation capacity from the worker to secure good salary. Moreover as high unemployment affects the effective negotiation capacity of the worker while it provides high alternative for employers. This implies that even though there is no clear benchmark for what we call it low wage, workers with less or no other alternatives was forced to be employed with low wage. Therefore the researcher recommended that issues of minimum wage should get consideration from policy makers.

Fifth and lastly, since this study is steppingstone for further study in the areas the researcher recommend further study on areas such as the politics of coalmining, gender inequality in presentation and participation in coal mining, environmental issues, compensation for displaced farmers from their agricultural land, child labour involvement and impacts of coal industry on the surrounding community.

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APPENDICES

APPENDIX 1: Operational Definition

The given below definition works for the purpose of this study.

Socio-economic condition in this study for some selected social and economic condition of the Achibo-Sombo coalmine workers such as workplace condition, medical benefits and salary. **Coal** is a fossil fuel. It is a combustible, sedimentary, organic rock, which is composed mainly of carbon, hydrogen and oxygen. It is formed from vegetation, which has been consolidated between other rock strata and altered by the combined effects of pressure and heat over millions of years to form coal seams (WCI).

Age in this study refers to legally recognized age for hazardous work by international labour organization act and Ethiopian legal document.

Gender is socio-culturally constructed discrimination between male and female which negatively influence the equal representation and participation of the two sexes in the same activities.

Educational level is the status of the individual in formal education which is measured by the highest level of recently completed formal education.

Economic condition is the income earned from the work of coal mining to satisfy material wellbeing/daily consumption and saving

Income is salary, wage, commissions, bonus, or tips related to coal mining jobs

Wage means the regular payment to which the worker is entitled in return for the performance of work that he performs under a contract of employment (377/2003 Ethiopian Labour proclamation)

Condition of work place is the general situation of work place including natural and artificial conditions that may disturb workers' wellbeing.

Safety measure is the prevention and protection mechanisms of coalmine workers from hazards including safety device and training on safety.

Health benefits are the accessibility of the workers to the periodical health status examination, first aid and health care centre for further treatment.

Psycho-social state: self-report of coalmine workers mental and social state concerning workplace social support such as co-workers cooperation, satisfaction with supervisor support and company program (about workers feelings happiness and

satisfaction with relationship among each other and employer for the purpose of this study).

Feeling is sensation or our reaction towards something we see or hear or loose/gain.

Attitude is the way the workers think about the benefit from coal mining project.

Satisfaction is provision of what workers need and demand in work environment/condition and wage/salary.

Relationship is the interaction and interrelationship between employees and employer.

Happiness is living well and doing well or enjoying goods of mind (skill transferring, pleasure), body (protected from physical occupational danger) and external goods (satisfying material demands from income gained by working mining), friendly relationship with co-workers.

Occupational injury means job-related accident or diseases.

Occupational accident means any organic injury or functional disorder sustained by a worker as a result of any extraneous cause to the injured workers or any effort he makes during or in connection with the performance of his work.

Occupational disease means any pathological condition whether caused by physical, chemical or biological agents which arises as consequence working in coal mining or surroundings mining site where mine worker obliged to work during a certain period priors to the date which the disease become evident.

Labour organization is the formation of trade union or labour organization to safeguard the member workers' interest and rights through involvement in decision making and collective bargaining with the concerned organ.

Trade union means an organization formed by free will of workers greater than ten in number per the provision of Ethiopian labour law.

Wellbeing: Ryff's early work (Ryff, 1989a) identified aspects that constitute wellbeing: autonomy; environmental mastery; positive relationships with others; purpose in life; realisation of potential and self-acceptance. More recent research has placed different emphases on what wellbeing is: ability to fulfil goals as (Foresight Mental Capital and Wellbeing Project, 2008); happiness (Pollard & Lee, 2003) and life satisfaction (Diener & Suh, 1997; Seligman, 2002a) cited in (Dodge, Annette, Huyton, & Sanders, 2012, p. 223),

According to Diener & Suh, 1997, p. 200 cited in (Dodge, Annette, Huyton, & Sanders, 2012, p. 223), subjective well-being consists of three interrelated components: life satisfaction, pleasant affect, and unpleasant affect. Affect refers to pleasant and unpleasant moods and emotions, whereas life satisfaction refers to a cognitive sense of satisfaction with life. For the purpose of this study **Wellbeing** is viewed as a description of the state of coalmine workers' socio-economic and work-related safety condition from participants' point of view by focusing on socio-demographic, safety, medical benefits, and sort of employment, salary/wage, social support and labor union. Flow these variables, favorable and adverse events which yield satisfaction and distress would be subjective wellbeing that indicates degree of participants' life satisfaction.

APPENDIX 2: Operationalization

To meet the objectives of the study measurement for the survey data were summarized as follows.

Table 16: Background of respondents.

Concept	Variables	indicator	measurement
			Interval scale
Socio-demographic characteristics of Achibo-Sombo coalmine workers	Age	individual age of coalmine workers	<18 18-24 25-31 32-38 39-45 46-52 52 and above
	Sex	Gender equality in representation and participation in coal mining	Nominal Male/female
	Education	Educational level of individual coalmine worker	Ordinal scale university or college or equivalent technical and vocational training preparatory school high school primary school only Unable to read& write
	Civil status	family establishment	nominal single married divorce widow

Workplace conditions	access to medical benefits	pre-employment and regular health examination	Nominal scale (yes/No)
	safety	the training and awareness given to workers on safety measures	Nominal scale Pre-training, on job training
	workload	working hours per a day	Interval scale 1-4 hours 5-7 hours >=8 hours
Workers' organizational structure	trade union	Presence of trade union	Nominal scale yes/no
	Trade union involvement in safeguarding workers interest and rights	the involvement of trade union in decision making	Ordinal scale very low low undecided high very high
Economic conditions	income/Wage	The monthly salary of Workers	Interval scale 151-650 651-1400 1401-2350 2351-3550 3551-5000 5001<
		life condition after employment in coal mining	Ordinal scale Highly unimproved unimproved no change improved highly improved
	feeling	feeling happy	Ordinal scale

			strongly disagree disagree neutral agree strongly agree
Social support at workplace	satisfaction	Work relate social support (satisfaction With co-workers, supervisor support, company program)	Work relate social support (satisfaction with co-workers, supervisor support, company program)
	relationship	the degree of relationship with employer	Likert type scale Ordinal scale very dissatisfied dissatisfied neutral satisfied very satisfied

APPENDIX 3: Survey Questionnaire in English

POST GRADUATE STUDIES RESEARCH PROJECT

INFORMED CONSENT LETTER

Title: Socio-economic perspectives of Achibo-Sombo coal mine Workers

Contact information: Jimma University, college of laW and governance post-graduate research coordinator or head department of Governance and development studies.

Student name: Chali Etefa

Dear Achibo-Sombo coalmine Worker:

Purpose of the study

My name is Chali Etefa and I am a second year student of Master of art in Governance and development studies at Jimma University, and teacher at Mettu University. In this year I am conducting a research project as part of my Governance master of art honours' thesis. I am working closely with Jimma University, college of law and governance post graduate research coordinator and my principal advisor, Dr. Amber Murry. I would like to know if you would be willing to take part in a thesis study on the Socio-economic perspectives of Achibo-Sombo coalmine Workers. the project is part of the graduate theses in Master that seek to gather data on the conditions of coalmine work, labour union, psycho-social states, economic conditions and general characteristics of coalmine Workers and its association With Workers Wellbeing.

Procedures

You will be asked to complete survey questionnaire that will ask you about your socio-economic conditions and its links with your Wellbeing. We are also interested in your general opinion about your socio-economic condition.

Confidentiality

All the information you provide will be strictly confidential, and your name will not appear on the questionnaire. Instead, your questionnaire will contain identification number that is known only by the principal investigator of this study. This identification number is used to note that you have returned your questionnaire and will not attach to the general survey itself.

Voluntariness

Your participation as respondent in this study is voluntary. You may refuse to participate or may discontinue your participation in any time. We hope that you're willing to give as your time in completing the questionnaire.

Information about this study

We have letter of request for cooperation from Jimma University, department of Governance and development studies. If you require any further information about this research you can call the post graduate coordinator or department head of Governance and development studies at Jimma University by taking address from student's researcher.

Participant's Agreement Statement

If you agree to participate in our study, we would appreciate your oral consent and continue completing the survey questionnaire.

Thank you.

Please, Dear respondents, while you give answer circle on your choice.

Questionnaires on Socio-demographic characteristics of Achibo-Sombo Coal mine workers:

1. What is your sex?
    1. Male
    2. Female

What are challenges face you being a male or a female at coal mining workplace? List them._____

2. How old are you?

1. <18
2. 18-24
3. 25-31
4. 32-38
5. 39-45
6. 46-52
7. 52 and above

3. Civil Status:
    1. single
    2. married
    3. divorce
    4. widow

4. What is the highest level of education you have completed?
   1. university or college or equivalent
   2. technical and vocational training
   3. preparatory school
   4. high school
   5. primary school
   6. unable to read and Write

Is salary per your educational level? 1. Yes 2. No
If no What is the ground of salary scale?_____.

---

5. Family Size
   1. <3
   2. 3-4
   3. 5-6
   4. >=7
6. Where you had been living before you come here for job?
   1. In Illu Abba Bora zone
   2. In other zone of Oromia regional state
   3. in other regional state
   4. oversea/outside of Ethiopia

Questionnaire concerning the employment relationship (MetEC and Achibo-Sombo coal mine workers)

7. What is your term of employment in Achibo-Sombo coal mining company?
   1. permanent
   2. contract(temporary)
   3. daily labor
8. With whom you enter the contractual agreement?
   1. company
   2. government
   3. private contractor
   4. I do not know
9. In what form the contract of employment performed?
   1. orally
   2. Written form
10. The relation between the employer(coal mining company) and employees is:
   1. very un intimate
   2. un intimate
   3. no opinion
   4. intimate
   5. vey intimate

Questionnaire concerning the health and safety of Achibo-Sombo coal mine workers

11. Do you have safety training?
    1. Yes 2. no

If your answer is "yes" please list major areas on which you trained?

12. When do/did you get safety training?
    1. pre-job
    2. on job
13. If you obtain training, how much you satisfied on safety training?
    1. very dissatisfied
    2. dissatisfied
    3. no opinion
    4. very satisfied
    5. satisfied
14. How often you use safety equipments/devices
    1. never
    2. rarely
    3. sometimes
    4. often
    5. always

If you do not use safety device always justify the reason?

_____

_____

15. To protect oneself from hazards, safety device is:
    1. not very mandatory
    2. not mandatory
    3. no opinion
    4. mandatory
    5. very mandatory
16. Safety measure at mining site is:
    1. very unsatisfactory
    2. unsatisfactory
    3. no opinion
    4. satisfactory
    5. very satisfactory

17. Did you make health examination before employed in coal mining?
    l. no 2. Yes
18. Is there regular health examination for coalmine workers here?
    1. Yes 2. no
19. Have you medical benefited (health care) access nearby your workplace?
    1. Yes 2. no

20. How many hours you work per a day?
    1. 1-4 hrs
    2. 5-7hrs
    3. >=8hrs

Questionnaire concerning Achibo-Sombo coal mine workers economic conditions:

21. The range of your monthly salary from working in coal mining is:
    1. 151-650
    2. 651-1400
    3. 1401-2350
    4. 2351-3550
    5. 3551-5000
    6. 5001 and above
22. Is the salary you earn fulfilling your cost of living (consumption)?
    1. Yes 2. No

If it doesn't cover your living cost do you have any additional source of income/subsidiary?
_____list._____

23. With the income you get from Working in coal mining company, you are able to sustain well your life.
    1. strongly disagree
    2. disagree
    3. no opinion
    4. agree
    5. strongly agree

If you agree with question 29 what you did with the money you earn? List.
_____

24. While you compare your current daily consumption with the life before you employed in Achibo-Sombo coalmine work:
    1. not very improved
    2. not improved
    3. some change
    4. improved
    5. very improved
25. In the possible case of workers occupational disease or injuries, medical expense is covered by____.
    1. company
    2. a worker (subject) from their own income
    3. company and exposed worker
    4. free from government health sector
    5. others

Questionnaire concerning Achibo-Sombo coal mine labour organization:

26. Do you have trade union representative/s/leader/s?
    1. Yes 2. no
27. If you reply "yes", the role of workers' union in safeguarding Workers interest is
    1. very low
    2. low
    3. no opinion
    4. high
    5. very high

Questionnaires concerning the perception of Achibo-Sombo coal mine workers towards psychosocial state:

28. The cooperation among mine Workers is:
    1. very unsatisfied
    2. unsatisfied
    3. no opinion
    4. satisfied
    5. very satisfied
29. supervisor support is:
    1. very unsatisfied
    2. unsatisfied
    3. no opinion
    4. satisfied
    5. very satisfied
30. The company program workplace condition :
    1. very unattractive
    2. unattractive
    3. no opinion
    4. attractive
    5. Very attractive.
31. Being employed in Achibo-Sombo coal mining you are happy.
    1. strongly disagree
    2. disagree
    3. undecided
    4. agree
    5. strongly agree

Respondent	**Principal Adviser**	**Co-advisor**
Sign._____	_____	_____
Date _____	_____	_____

APPENDIX 4: Survey Questionnaire Translated to Afaan Oromoo

Bar-gaaffilee qomaa phiroojektii qo'annoo barannota sadarkaa digrii lammaffaa

Mata duree qo'annoo: haala haWaas-dinagdee hojjettootni albuuda kasaalaa Somboo-Aciboo baasan irratti argaman.

Qo'annicha kan gaggeessu: barataa maastarsii kan ta'eefi barsiisaa yuniversiitii Mattuu, Obbo Caalii Ittafaa

Maadda Odeeffannoo Dabalataa: Yuniversiitii Jimmaatti Koolleejjii Seeraafi Bulchiinsaa, Muummee qo'annoo bulchiinsaafi misoomaa ykn qindeessaa qo'annoofi qorannoo.

Obbo caalii Ittafaa mata duree armaan olitti ibsamerratti qo'annoo eebba digrii lammaffaatii oolu kan gaggeessan yoo ta'u baraataa qo'ataa bulchiinsaafi misoomaa Waggaa lammaffaafi yuniversiitii mattuutti barsiisaadha.

Adeemsa qorannichaa ilaalchisee mata duree jedhamerratti hojjettootni albuuda kasalaa baasuurratti hirmaachaa jiran odeeffannoo haala haWaas-dinagdee irratti argaman karaa gaaffilee qomaa dhiyaateef ni kennu abdii jedhu qabna.

Iccitii odeeffannoo isaan kennanii ilaalchisee, haala kam keessatti iyyuu iccitiin isaa kan eegame ta'uufi maqaan isaani Waraqaa deebii kennan irratti kan hin ibsamne ta'u dursinee hubachiifna.

Odeeffannoon isin kennitanis dirqiin osoo hin taane fedhii guutuu isin mataduree jedhame ilaalchisee odeeffannoo kennuuf qabdan irratti hundaa'a. Asirratti galmaga'insa qo'annichaaf fedhiin keessan merteessaa ta'uu issaati.

Qo'annoon kun seera qabeessaafi Yuniversiitti mootummaa, Jimmaa yuuniversiitiin kan beekamtii qabuufi xalayaa deggarsaa kan qabu ta'uu ibsina. kanarratti odeeffannoo dabalataa yoo barbaaddan teessoo Qindeessaa qo'annoo kanaa isinii kennuuf qo'annocha adda dureen kan gaggeessu qophaa'adha.

Dhumarratti erga yaadota armaan olii dubbiftanii booda, qo'annoo kanarratti hirmaachuuf fedhii agarsiiftaniif galatoomaa. Itti aansuun gaaffilee armaan gadii deebii keessan irratti geengessuun deebisaa.

Galatoomaa!!

1. Saali kee maali
    1. dhiira
    2. dhalaa
2. Daangaan umurriin kee keessatti argamu
    1. <18
    2. 18-24
    3. 25-31
    4. 32-38
    5. 39-45
    6. 46-52
    7. 53 fi isaa ol
3. Sadarkaan barumsaa irra geessee dhaabde:
    1. Yuniversiitii ykn koolleejii ol-aanaa
    2. teekiniikaafi ogummaa
    3. qophaa'ina
    4. sadarkaa lammaffaa
    5. sadarkaa tokkoffaafi isaa gadi

Hangi kanfaltii argattuu sadarkaa barumsan Walqabataa?_____yoo Wal hin qabatu ta'e bu'urri Wal-caalmaa kaffaltii mindaa hojjettoota albuuda baasanii maali?_____
_____

4. Haalli qacarrii keetii:
    1. dhaabbii/dhaabbataa
    2. yeroof/kontiraata yeroonsaa murtaa'e
    3. hojjetaa guyya guyyaa/kiraa
5. Walii galtee hojii albuuda kasalaa baasuu kan uumte eenyu waliini?
    1. kampaanicha
    2. mootummaa
    3. kontiraaktera dhuunfaa
    4. Waliigalteen uume hin qabu
    5. qaaman Waliin taasise adda baasee hin beeku
6. Haala gaaffii 5ffaatiin Walii-galtee kan uumte bifa kamiini?
    1. afaanii
    2. barreeffamaan
7. Haala gaaa'ilaa
    1. kan hinfuudhin
    2. kan fuudhe jiru
    3. kan hike
    4. du'aan kan addaan bahe/te

8. Osoo gara bakka hojii kana hin dhufin naannoon jiraachaa turte eessa?
    1. godina amma keessatti argamtu/Iluu Abbaa Booraa
    2. godina oromiyaa biro keessa
    3. naannoo biro, Itiyophiyaa kessa
    4. biyya alaa, Itiyoophiyaan ala
9. Baayyinni maatii waliin jiraatu(bulchitu) hangam ta'u?
    1. <3
    2. 3-4
    3. 5-6
    4. >=7

Haala naannoo/bakka hojii albuuda kasalaa baasuu

10. Walitti dhufeenyi qacaraafi qacaramaa giddu jiru
    1. daran gaarii miti
    2. gaarii miti
    3. yaada hin qabu
    4. gaariidha
    5. daran gaariidha
11. Walgargaarsiifi walta'insi hojjettoota albuuda kasalaa baasuurratti hirmaatan qaban:
    1. daran nama hin gammachiisu
    2. nama hin gammachiisu
    3. yaada hin qabu
    4. nama gammachiisa
    5. daran nama gammachiisa
12. Gargaarsa too'attoonni (suupervaayizera) hojjettoota albuuda kasalaa baasaniif taasisannitti
    1. daran hin quufne
    2. hin quufne
    3. yaada hin qabu
    4. itti quufeera
    5. daran itti quufeera
13. Sagantaan/kaaroorri kampanichaa
    1. daran hawataa miti
    2. hawataa miti
    3. yaada hin qabu
    4. hawataadha
    5. daran hawataadha
14. Ittisni balaa hojiirraa hojjettoota albuuda kasalaa baasaniif taasifamu
    1. daran gad-aanaadha
    2. gad-aanaadha
    3. yaada hin qabu
    4. ol-aanaadha
    5. daran ol-aanaadha

15. Meeshaalee/uffannaa ittisa balaa gaafa kam kam fayyadamtaa?
    1. gonkumayyuu hin fayyadamu
    2. darbee darbee yeroo muraasa
    3. gaaf tokko tokko
    4. gaafa baayyeesaa
    5. gaafa hunda

    Meeshaalee/uffannaa kan yeroo hunda hin fayyadamne yoo ta'e sababa hin fayyadamneef ibsi_____

16. Leenjiin ittisa balaa hojii albuuda kasalaa baasuurratti fudhatte jiraa?
    1. eeyyee 2. lakkii 3

    Leenjiin kan si kenname yoo ta'e ijoo gurguddoo irratti sii kenname tarreessi._____
    _____
17. Yoo gaaffii 16 irraatti "eeyyee" jette yeroo kam leenjite?
    1. hojiitti galuun dura
    2. hojii keessa ergan galee/hojii hojjechaa
18. Haala gaaffii 17 tiin deebiin kee 2(eeyyee jira) yoo ta'e Leenjiin ittisa balaa si kenname/ argatte:
    1. daran qubsaa miti
    2. quubsaa miti
    3. quubsaa
    4. daran quubsaadha
19. Meshaalee/uffannaa ittisaa balaa fayyadamuun fayyaa hojjetootaatif:
    1. daran murteessaa miti
    2. murteessaa miti
    3. murteessaadha
    4. daran murteessaadha
    5. hubannoo isaa hin qabu
20. Guyyaatti sa'a meeqa hojjetta?
    1. 1-4 hrs
    2. 5-7hrs
    3. >=8hrs
21. Gara hojii kasala baasuu kanatti osoo hin dhufin xinxala fayyumma qaamaa taasisteettaa?
    1. hin taasifne 2. taasiseera
22. Fayyummaan qaamaa hojjettoota dhagaa kasalaa baasanuu yeroodha yerootti ni xinxalamaa?
    1. eeyyee 2. lakkii hin laalamuu
23. Tajaajila fayyaa naannoo hojiittidhiyyootti ni argataa?
    1. eeyyee 2. lakkii

24. Baasii yaala hojjettoota fayyaa yeroo hojiirratti dhukkubni ykn balaan qaama irra qaqqabu eenyutu raawwata?
    1. qacara/kampaanii
    2. nama balaan irra qaqqabe
    3. mootummaa bilisa mana yaalarra
    4. qaama biro

Haala dinagdee hojjettootaa ilaalchisee gaaffii dhihaate

25. Kaffaltiin ati ji'aan argattu gulantaa isa kam keessatti argama
    1. qarshii(birrii) 151-650
    2. qarshii(birrii) 651-1400
    3. qarshii(birrii) 1401-2350
    4. qarshii(birrii) 2351-3550
    5. qarshii(birrii) 3551-5000
    6. qarshii(birrii) 5001 fi isaa oli
26. Kaffaltiin atti ji'atti argattu baasii jireenyaaf si barbaachisu haguuguu danda'aa?
    1. eeyyee 2. lakkii

    yoo ga'aa ykn kan hin haguugne ta'e, maddi galii dabalataa kee maalirrati? Tarreessi.

    _____
    _____
27. galii hojii albuudaa baasurraa argattuun jireenya kee sirriitti gaggeefachuu dandeesseetta. yaada kantti:
    1. daranan itti walii hin galu
    2. itti walii hin galu
    3. ittin waliigala
    4. daranan itti walii gala

Yoo yaada gaaffii 27 tti Waliigalte, kaffaltii asii argattuun maal maal fa'a ittiin hojjetteete ykn guuttatteette? tarreessi.

_____
_____

Yeroo bayyee guyyaatti al-meeqa sooratta/nyaatta?_____

28. Erga hojii albuuda baasuu kana keessatti hirmaatte haali jireenya keetii kan kanaan duraarra:
    1. daran kan hin fooyyofne
    2. muraasa fooyya'eera
    3. kan fooyya'e
    4. daran kan fooyya'e

Mirgaafi faayidaa hojjettoota albuuda kasalaa kabachiisuurratti

29. Bakka bu’aan hojjettootaa ni jiraa?
    1. eeyyee 2. lakkii
30. Gaheen bakka bu’aa gamtaa hojjettootaa faayidaa miseensotaa kabachiisuuf qaban:
    1. daran gad-aanaa dha
    2. gad-aanaadha
    3. yaada hin qabu
    4. olaanaadha
    5. daran ol-aanaadha
31. Erga hojii kasalaa kana keessatti qacaramtee kaasee miira gammachuutu sitti dhaga’ama.
    1. daran irratti walii hingalu
    2. irratti waliihingalu
    3. yaada hinqabu
    4. irrattan waliigala
    5. daranan irratti waliigala

Gaafannoo kan guute/tte	Gorsaa adda duree	Gorsaa gargaaraa
mallattoo_____	_____	_____
Guyyaa_____	_____	_____

APPENDIX 5: Survey Questionnaire in Amharic Version

ጥናትና ምርምር ላይ ለመሳተፍ ፍቃደኛ ሥለመሆን

ይህንን ጥናትና ምርምር የሚያካሂዱት መ/ር ጫሊ ኢተፋ ሲሆኑ በጂማ ዩኒቨርሲቲ በሕግና አስተዳደር ኮሌጅ ስር በአስተዳደር እና ልማት ጥናት የሁለተኛ ድግሪ እጩ ተማሪናቸው፡፡ ከዚህም በተጨማሪ በመቱ ዩኒቨርሲቲ በማስተማር ስራ ላይ ተሰማርተው ይገኛሉ፡፡

ከላይ ስማቸው የተጠቀሰው ተማሪ በማህበራዊ እና ኢኮኖሚያዊ ሁኔታ ላይ የከሰል ድንጋይ ሠራተኞችን አስመልክቶ ጥናታዊ ምርምር ስለሚያካሂዱ አስፈላጊውን መረጃ ለመስጠት እንዲተባበሩዋቸው የእርሶ ድርሻ ለጥናቱ ውጤት የላቀ አስተዋፆ አለው፡፡

ጠቅላላ መመሪያ

- መረጃ ሰጪዎች መረጃ ለመስጠት ሙሉ ፍቃደኛ መሆን
- በጥናቱ ላይ የሚሰጠው ማንኛውም መረጃ ሚስጥሩ የተጠበቀ ነው፡፡
- የጥናቱ ውጤት ለትምህርት ምርቃት ጥናታዊ ፅሁፍ ብቻ የሚውል ነው፡፡

ይህንን በመገንዘብ ላሳዩት ፍቃደኝነት ምስጋናችንን እያቀረብን ቀጥሎ የቀረቡትን ጥያቄዎች በማክበብ መልስ እንዲሰጡበት በድጋሚ ትብብሮን እንጠይቃለን፡፡

ፍቃደኛ ስለሆኑ አመሰግናለሁ!!

1. ፆታ
   1.ወንድ
   2. ሴት

በፆታ ምክንያት በስራ ቦታ አብረውህ በሚሰሩ ሰራተኞች የደረሰብህ ጫና ካለ ግለፅ

_____

_____

2. ዕድሜ

1. ከ 18 በታች
2. ከ18-24
3. ከ25-31
4. 32-38
5. 39-45
6. 46-52
7. 53 እና ከዚያ በላይ

3. በየትኛው የትምህርት ደረጃ ላይ ትምህርትህን አቆምክ?
   1. ዩኒቨርሲቲ (ኮሌጅ)
   2. ቴክኒክና ሙያ
   3. ሁለተኛ ደረጃ
   4. አንደኛ ደረጃ
   5. ማንበብ እና መፃፍ የማይችል

የምታገኘው ወራዊ ደመወዝ ከትምህርት ደረጃ ጋር ይዛመዳል ወይ?

1. አዎ 2. አይደለም

ካልተዛመደ የወራዊ ደመወዝ መነሻ ምክንያት ግለፅ

_____

_____

4. የቅጥር ሁኔታ
   1. ቋሚ
   2. ጊዜያዊ/ኮንትራት
   3. ቀን ሥራ
5. ሥራ ውል የገባኸው
   1. ከካምፓኒ ጋር
   2. ከመንግስት ጋር
   3. ከኮንትክተር ጋር
   4. ከማን ጋር እንደሆነ በውን አላውትም
6. በአምስተኛ ጥያቄ መሰረት ውል ገብተ እንደሆነ ውሉ የተፈፀመው፡
   1.በቃል
   2. በፅሁፍ
7. የጋብቻ ሁኔታ
   1. ያላገባ
   2. ያገባ
   3. የተፋታ
   4. በሞት የተለያየ
8. በሥራ ምክንያትወደ ዚህ ከመምጣትህ በፊት የት ትኖር ነበር?
   1. ኢሉባቦር ዞን
   2. ኦሮሚያ ክልል ሌላ ዞን
   3. ሌላ ክልል
   4. ከኢትዮጲያ ውጪ
9. የሚታስተዳድር ቤተሰብ ብዛ
   1. <3
   2. 3-4
   3. 5-6
   4. >=7

<u>የስራ ቦታ ሁኔታ</u>

10. በአሰሪ እና ሠራተኛ ያለው ግኑኝነት
    1. በጣም አስደሳች አይደለም
    2. አስደሳች አይደለም
    3. የምሰጠው ሀሳብ የለኝም
    4. አስደሳች ነው
    5. በጣም አስደሳች ነው

11. በሥራ ቦታ የሚታየው የሰራተኞች መተጋገዝ እና መተባበር ባህሪ
    1. በጣም አያስደስትም
    2. አያስደስትም
    3. የምሰጠው ሀሳብ የለኝም
    4. ያስደስታል
    5. በጣምያስደስታል
12. ሱፐርቫይዘሮች ለሰራተኞች የሚያደርጉት እገዛ
    1. በጣም አጥጋቢ አይደለም
    2. አጥጋቢ አይደለም
    3. የምሰጠው ሀሳብ የለኝም
    4. አጥጋቢ ነው
    5. በጣም አጥጋቢ ነው
13. የፕሮጀክቱ (ካምፓኒው) ፕሮግራም ወይም እቅድ
    1. በጣም መስዕብ አይደለም
    2. መስዕብ አይደለም
    3. የምሰጠው ሀሳብ የለኝም
    4. መስዕብ ነው
    5. በጣም መስዕብ ነው
14. በስራ ላይ የሚደረገው አደጋ መከላከያ ጥንቃቄ
    1. በጣም ዝቅተኛ ነው
    2. ዝቅተኛ ነው
    3. የምሰጠው ሀሳብ የለኝም
    4. ከፍተኛ ነው
    5. በጣም ከፍተኛ ነው
15. ሠራተኞች በሥራ ጊዜ አደጋ መከላከያ አልባሳት ወይም መሳሪያዎችን
    1. በፍፁም አልጠቀምም
    2. አልፎ አልፎ እጠቀማለሁ
    3. አንዳንድ ጊዜ እያፈራረኩ እጠቀማለሁ
    4. አብዛኛውን ጊዜ እጠቀማለሁ
    5. ሁል ጊዜ እጠቀማለሁ

    አዘውትረው የአደጋ መከላከያ መሳሪያ /አልባሳት/ የማትጠቀም ከሆነ ምክንያት ይሆናል የምትለውን ግለፅ

    _____

    _____

16. ከሰል ድንጋይ ማውጣት ስራ ጋር በተያያዘ የተሰጠ የአደጋ መከላከል (safety traning) አለ ወይ?
    1. የለም
    2. አለ

ተሰጥቶህ እንደሆነ ምንም ላይ እንደ ነበር ዘርዝራቸው

_____

_____

17. በጥያቄ 16 መሠረት ስልጠና አግኝተህ እንደሆነ ስልጠናው የተካሄደው
    1. ከሥራ በፊት
    2. በሥራ ላይ
18. የጥያቄ 17 መልስ ስር 2(አለ) ከሆነ ያገኘኸው የአደጋ መከላከል ስልጠና
    1. በጣም አጥጋቢ አይደለም
    2. አጥጋቢ አይደለም
    3. የምሰጠው ሀሳብ የለኝም
    4. አጥጋቢ ነው
    5. በጣም አጥጋቢ ነው
19. የአደጋ መከላከያ መሳሪያዎችን (አልባሳትን) መጠቀም ለሠራተኞች ጤና
    1. በጣም ወሳኝ አይደለም
    2. ወሳኝ አይደለም
    3. የምሰጠው ሀሳብ የለኝም
    4. ወሳኝ ነው
    5. በጣም ወሳኝ ነው
20. በቀን ስንት ሰዐት ትሰራለሂ?
    1. 1-4 hrs
    2. 5-7hrs
    3. >=8hrs
21. ወደ ዚህ ስራ ከመግባትህ በፊት የጤና ምርመራ አርገሃል ወይ?
    1. አላረኩም
    2. አርጌአለው
22. የከሸልማዕድን አውጪ ሠራተኞች የጤና ሁኔታ በየጊዜው በምርመራ ይታያል ወይ?
    1. አዎ ይታያል
    2. አይታይም
23. በስራ ቦታ አቅራቢያ የጤና አቅርቦት አለ?
    1. አዎ
    2. የለም
24. ሥራ ላይ ያሉትን ሠራተኞች የጤና መታወክ ወይም ድንገተኛ የአካል ጉዳት ከሥራ ጋር ተያይዞ ቢደርስባቸው የሚያሳክመው ማነው(የሕክምና ወጪ በማንይሸፈናል)?
    1. በአሰሪ ካምፓኒ
    2. በሰራተኛው
    3. አሰሪ ካምፓኒ እና ሰራተኛ
    4. በመንግስት ነፃ
    5. በሌላአካል

የሠራተኞች ኢኮኖሚ (ምጣኔ) ሁኔታ

25. ወራዊ የደመወዝ ክፍያ ከየትኛው እርከን ውስጥ ይመደባል?
    1. ከብር 151-650
    2. 651-1400
    3. 1401-2350
    4. 2351-3550
    5. 3551-5000
    6. ከ5001 እና ከዚያ በላይ
26. በወር የምታገኘው ክፍያ የእለት ወጪህን ለመሸፈን በቂ ነው ወይ?
    1. አዎ በቂነው
    2. በቂ አይደለም

    በቂ አይደለም ካልክ ተጨማሪ የገቢ ምንጭህ ምንምን ናቸው?

    _____

    _____

27. የከሠል ድንጋይ በማውጣት ስራ ላይ የተሰማሩት ሠራተኞች ከስራው በሚያገኙት ገቢ ኑሮአቸውን በሚገባ መምራት ችለዋል፡፡
    1. በጣም አልስማማም
    2. አልስማማም
    3. የምሰጠው ሀሳብ የለኝም
    4. እስማማለሁ
    5. በጣም እስማማለሁ

    የምትስማማ ከሆነ ከዚህ በሚገኘው ገቢ ምንምን ሰርተህበታል?

    _____

    _____

28. ከሰል ማውጣት ስራ ላይ ከተሰማራ ወዲህ የአኗኗር ሁኔታ በፊት ከነበረው
    1. በጣምያልተሸለነው
    2. ያልተሸለነው
    3. የተመሰኔ ለውጥ አለዉ
    4. የተሸለነው
    5. በጣም የተሸለነው

የሠራተኛውን መብት እና ጥቅም ማስጠበቅ

29. ሠራተኞች ተወካይ አላችሁ ወይ?
    1. አዎ
    2. የለም
30. የሠራተኞች ተወካይ ካለ የሠራተኛውን መብት እና ጥቅም የማስከበር ረገድ ያለው ሚና፡
    1. በጣም ዝቅተኛ ነው
    2. ዝቅተኛ ነው
    3. የምሰጠው ሀሳብ የለኝም
    4. ከፍተኛ ነው
    5. በጣም ከፍተኛ ነው
31. በከሰል ድንጋይ ስራ በመሰማራትህ ደስተኛ ነህ፤፤
    1. በጣም አልስማማም
    2. አልስማማም
    3. የምሰጠው ሀሳብ የለኝም
    4. እስማማለሁ
    5. በጣም እስማማለሁ

መጠየቂን የሞላ/ች	ዋና አማካሪ	ረዳት አማካሪ
ፊርማ_____	_____	_____
ቀን_____	_____	_____

APPENDIX 6: Guide questions for key Informant Interview with legal expert

Key-informant interview legal expert

Research title: Socio-economic conditions and wellbeing of the coal mineworkers: the case of Sombo-Achibo coal mining.

Date of interview_____

Name of interviewer_____

Name of interviewee_____

Address_____

Phone number_____

Country_____region_____District_

Key informant interview with:

A. Legal expert

1. What are the benefits of Workers trade union for workers wellbeing from the legal point of view?

   _____

   _____

2. How the negation power of an individual employee on wage is affected his Wellbeing?

   _____

   _____

3. Is there any mechanism of contractual relationship which affected the Wellbeing of the workers?

   _____

   _____

4. Does Ethiopia have standard for minimum wage?

   _____

   _____

5. What kind of contractual relationship affects Worker's interest? How?

   _____

   _____

APPENDIX 7: Guide Questions for Key Informant Interview with the Project manager

Key-informant interview with Coal Project manager

Research title: Socio-economic conditions and Wellbeing of the coal mineworkers: the case of Sombo-Achibo coal mining.

Date of interview_____

Name of interviewer_____

Name of interviewee_____

Address_____

Phone number_____

Country_____region_____District_____

Coal Project manager

1. How much this company contributed to unemployment problem?

   _____

   _____

   _____

2. In general from company side and workers what it looks like issues of safety measures?

_____

_____

3. How contractual relationship between employee and employer performed?

   _____

   _____

4. What the workers' social security benefits such as compensation from the company?

   _____

   _____

5. Is their Workers association or trade union? What is its role?

   _____

   _____

   _____

APPENDIX 8: Guide Questions for Interview with Yayo District Labour and Social Affaires

Key-informant interview with district Labour and social affairs expert

Research title: Socio-economic conditions and wellbeing of the coal mineworkers: the case of Sombo-Achibo coal mining.

Date of interview_____

Name of interviewer_____

Name of interviewee_____

Address_____

Phone number_____

Country_____region_____District_____

1. Does labor organization is the concern of your office?
   _____
   _____
   _____
2. How much your office helps the labour to be organized?
   _____
   _____
3. What are the benefits of labour organization?
   _____
   _____
   _____
4. How workers benefited from labor organization?
   _____
   _____
5. If any cases come to your office concerning labour organization?
   _____
   _____
   _____

APPENDIX 9: Interview with Public Health Professional

Key-informant interview public health professional

Research title: Socio-economic conditions and wellbeing of the coal mineworkers: the case of Sombo-Achibo coal mining.

Date of interview_____

Name of interviewer_____

Name of interviewee_____

Address_____

Phone number_____

Country_____region_____District_

Key informant interview with:

Public health professional

1. What are substances in coal?
2. Do such substances in coal affect human health? How?
3. How one can safely work in coal mining?
4. Is there any health related prerequisite for employees before involved in coal mining?
5. Professional recommendation concerning safety and health of coalmine workers (if any).

APPENDIX 10: Guide Questions for Selective Interview with workers

Key-informant interview: with selected workers.

Research title: Socio-economic conditions and wellbeing of the coal mineworkers: the case of Sombo-Achibo coal mining.

Date of interview_____

Name of interviewer_____

Name of interviewee_____

Address_____

Phone number_____

Country_____region_____District_____

1. How you perform contractual relationship with employer?

   _____
   _____
   _____

2. What makes you happy and what makes you worry being within the last three weeks or any you remember since you employed?

   _____
   _____

3. How much the salary you earn satisfy your consumption?

   _____
   _____

4. What are you think as safety challenges? Why

   _____
   _____

5. Have you ever get accident or saw while it happens to your coworker? What you feel know?

   _____
   _____
   _____

6. How much your expectation from working in coal mining matched with what you get in reality?

   _____
   _____
   _____

APPENDIX 11: Guide Questions for Focus Group Discussion

Focus Group Discussion

The data obtained from this focus discussion is served for Academic research. Your voluntary contribution has great value for the success of this study.

Target group_____

Number of group formed_____

Number of individuals in each group_____

Date of discussion_____

Facilitator for Each Group:
G1_____G2_____G3_____G4_____G5_____
_G6_____G7_____

Topics of Focus Group Discussion

1. How do you consider working in coalmining? Bad or good? Could you explain?_____
   _____
2. What are challenges faced the workers' at workplace?
   _____
   _____
3. How you evaluate working in coal mining in relation to mental satisfaction, physical health, and salary/wage benefits in shaping workers wellbeing?
   _____
   _____
4. Do you have any concept on the risk factors of working in mining and take care for your wellbeing?
   _____
   _____
5. How many of workers ownership of house? What are challenges concerning housing conditions?
   _____
   _____