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ENVIRONMENTAL, SOCIAL AND SOCIAL CHANGE IN COMMUNITY AROUND NICKEL MINE: A CASE STUDY IN PT. BDM NICKEL MINE, FATUFIA, MOROWALI, INDONESIA

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ABSTRACT

This study discusses environmental, social and cultural change taking place in a community who lives around a nickel mine in Fatufia village, Bahodopi region, Morowali, Central Sulawesi. The approach used in the study was social fact. The data collection methods were interview, observation, documentation and library study. The interview was conducted to 5 community members from Fatufia village. Purposive sampling was used to select these 5 informants. The data analysis method was path analysis. The findings were environmental change took place in the form of land conversion from agricultural area or plantation to mining and residential area; modernization and increasing business activities represented social change taking place in Fatufia village; and a shift in social interaction and solidarity represent cultural change happening in the area.

KEY WORDS

Mine, environmental change, socio-cultural change, villagers.

In the last four decades, the national mining sector has become one of the most controversial public discourses from economic, political, environmental and socio-cultural perspectives. It has been proven that the national mining industry has made significant contribution to the national economy; however, it has damaged both the environment and ecosystem and is responsible for eradication of cultural value and local wisdom. Even though this sector makes less contribution to the national budgets compared to agricultural sector and fisheries, mining industry is still attracting a lot of attention because it creates a lot of job vacancy, generates higher income and fosters business activities more particularly in rural areas.

Robinson & Mukhlis (1986) elaborated how significant penetration of multi-national companies is towards the proletarianization of farming communities around mining. Robinson and Mukhlis' dissertation revealed that people lost the most productive land for agricultural activities because it was taken over by the mining industry. Those farmers were forced to work as low-level laborers in the mine, while most farmers who were not qualified to work in mining industry worked part-time job in informal sector (Robinson & Mukhlis, 1986).

One of the Indonesian companies that holds nickel mining business licenses and later becomes the site of this study is PT. Bintang Delapan Mineral (BDM). This LLC started nickel mining in 2007. It is located in Fatufia village, Bahodopi district, Morowali. Starting from their exploration to exploitation process, PT.BDM mining has resulted in land conversion, socio-economic and cultural changes. Due to the land conversion, subsistence farmers and fishermen lost major proportion of their income.

From the social and cultural perspectives, environmental change causes more complex social dynamics. Nickel mining attracted a lot of people to move to Fatufia and other villages nearby. This migration causes interaction between people from various ethnic groups. These people come to work in the nickel mine. The locals of Fatufia village took advantage of this opportunity and started their business. Urbanization has taken over Fatufia and the villages nearby gradually. More people live in the villages and their economic sectors grow rapidly. There is significant increase in number of stores, food stalls, boarding houses and recreational facilities in those villages.

The mining workers and their families are two reasons for the rapid growth of business in Fatufia Village. Catering service, food stalls and laundry service, for example, has

provided job vacancy for the locals. Some of the locals built boarding houses for the workers to rent. These businesses generate higher income for the locals (Andal, 2013). In short, most businesses in Fatufia village are locally-owned. Although they have started new business ventures, most of the locals are still working as farmers. Popkin (1986) called these people 'rational farmers' which means a group of farmers who work not only to maintain their living but also to gain more profit.

The presence of these various businesses is a response to the immediate needs of employees / workers and their families who live in Fatufia Village. The growth of catering services, food stalls, laundry services for example, has provided additional employment opportunities for local workers from nearby villages. Likewise for housing needs for workers, in Fatufia Village there are enough boarding houses available for workers, these things contribute to improving the welfare of their lives (Andal, 2013). All of these activities are mostly carried out by the local community, most of whom still maintain their old profession as rice farmers / gardens. By Popkin (1986), the actions of rural communities like this are called 'rational farmers' who work not only to maintain subsistence but also go further to gain profit.

The nickel mining attracted the locals' attention because it provides various job opportunities. The locals are determined to get socio-economic benefits from the mining industry because prior to the nickel mine most of the Fatufia locals are poor. As most of them are either farmers or fishermen, they rely on their farm, plantation or number of fish they can catch. An aspect to highlight is that the nickel mining requires the locals to compete with people from other regions or even foreign countries to get a job in PT.BDM. Such competition and similar competition at business sector may result in social conflict among members of a community.

Land conversion from agricultural area, plantation and fish farm to mining has caused a lot of people to leave their job as farmers or fisherman and work as mining workers. Mining workers get more money than farmers whose farm or plantation is below one hectare. However, based on the socio-cultural perspective, farmer is a more prestigious occupation compared to mining worker for Fatufia locals because farmers can pass down their farm to younger generation. Besides that, the only type of occupation available for the locals in the nickel mine is unskilled labor. Some locals hope that they can afford their expenses after working as unskilled labor in the nickel mine. Unfortunately, the local workers are facing discrimination repeatedly. PT.BDM does not treat their skilled labor who many times are coming from other areas and the local workers, those from Fatufia village, equally. The company does not give any opportunity for the local workers to hold strategic posts because of their lacking skills. It is an example of discrimination against the local workers.

Besides the economic change, the nickel mine also brings some cultural changes. Fatufia locals are known as their agrarian culture and associated to 'cooperative work,' 'communal-based' work ethics and strong 'social solidarity.' Unfortunately, these characteristics have begun to disappear. There is a shift from 'cooperative work' to 'individual work' when the number of farms and plantations in the village is declining slowly. As an addition, 'communal-based' work ethics slowly becomes 'contractual-based' interest. 'Community-based' disappeared gradually into 'personal and materialistic.'

In terms of working culture, the mining industry introduced competition and individualism. The nickel mining job market becomes more competitive because number of job vacancy is limited and PT.BDM only recruits skilled labor who has particular background of education. These phenomena result in social jealousy.

Previous researchers have discussed the impact of industrialization towards village community. In 2014, Etty Mediatris, Nuha, Tykson, Salman conducted a study entitled "Social, Economic and Spatial Change in Batui, Banggai Liquid Gas Project." Andri Aditya Irawan conducted a study entitled "Economic and Social Impact of PT. Tanito Harum Coal Mining towards Community Members in Loa Tebu, Tenggarong" in 2013. In 2010, M. Ilmi Hidayat conducted a study entitled "Impact of Coal Mining towards Socio-Economic Aspect of Community Members in Sei Pinang, Banjar, South Kalimantan." The three studies reported that industrialization has positive influence towards locals' income.

Based on the elaboration on the impact of industrial sector towards the environment and social dynamics in Fatufia village, the researcher is interested in conducting an in-depth study based on the following considerations. First, the local community has experienced both positive and negative impact of the nickel mining. The nickel mining has influenced livelihoods of the local community and they changed their job as part of adaptation strategies. Secondly, despite of the negative effects of the nickel mining, the local community continues to maintain good relationship with PT.BDM. Third, both the company and local community have always seeked for solution to minimize the impact of the nickel mine.

LITERATURE REVIEW

Socio-cultural impact refers to overall consequence and change of all components in particular society over time. Concrete examples of socio-cultural impacts are changes in population, quality of population, livelihood, population composition, methods of communication and social interaction, value and norm, institutions, perceptions, and at last behavior.

As an impact, socio-cultural change includes changes that occur within social system (there are differences between state of a particular system in different time periods). In other words, change happens in certain amount of time, deals with differences in circumstances while being observed between before and after a certain period of time.

Wilbert Moore (Lauer, 1993) stated that social change refers to "important change in social structure." Social structure means "patterns of behavior and social interaction." This definition involves various expressions about structure such as norm, value and cultural phenomenon. Besides that, literatures have discussed definition of social change in broad sectors, for instance social change as variation or modification in every aspect of social process, social patterns, social elements and 'every modification of well-established interrelational pattern and standardized behavior.'

Furthermore, Sztompka (2004:3) explained that the concept of social change is ideas of a social process as series of interrelated social changes. Pitirim Sorokin then mentioned a classic definition corroborating that 'every subject changes in the course of time, whether change of place and space or modification of quantity and quality.'

Herbert Spencer, a classical sociologist, also stated that change through modernization will result in heterogenous society. His perspective on social development emphasized on increase of both quantity and quality in different aspects of a system. Spencer explained that the law on development of organism is general. Development has always involved evolution from a simple to sophisticated being (Sztompka, 1994; Soekanto, 1989). Spencer described social development from homogenous to more heterogenous society. The analogy is the development from primitive society (homogenous) to modern society (heterogenous). Social evolution, according to Spencer (Sztompka, 1994), takes place through structural and functional differentiation as follows: *first*, from a simple to sophisticated concept; *second*, from non-existence to a system with multiple aspects; *third*, from uniformity and homogenous into specific and heterogenous; and *fourth*, from unstable to stable. These four types of process are universal. Increasing population is the first stage of social development and is followed by establishment of social organizations. Development has always been characterized as increasing quantity, various forms and stability. As a matter of fact, evolution consists of several stages of development, namely: *first*, conservative society. Characteristics of this type of society are isolated, similar activities and absence of political organization. *The second* is complex society, characterized by job division between individuals, different function among different elements of society, and hierarchical political organizations. *The third* is increasingly complex society, which is characterized by public space, constitution and permanent law and regulation. *The fourth* is civilization or the most sophisticated social construction of which characteristics are establishment of nation-state, federation consisting of several countries or large empire (Sztompka, 1994).

Furthermore, Durkheim argued that evolution and/or change will result in division of labor and social solidarity. According to this expect, one should describe social solidarity

while explaining social reality (Samuel, 2010). He observes social changes from primitive (traditional) society to industrial society. Durkheim focuses on division of labor in both types of society. He assumed that division of labor in primitive community (traditional society) is less sophisticated than that in industrial community. The main factor that causes change in labor division is increase of population. In addition, social labor division is directly related to moral density or social dynamics. Moral density refers to level of interaction between community members. Higher population increases moral density level and then relationship between community members. Relationship between groups results in new social interaction. This will increase cooperative work and induce emergence of new ideas, more particularly ones about labor division, in the community (Lauer, 1982; Samuel, 2010).

Durkheim observed that increase of labor division system caused change in social solidarity. He explained two types of social solidarity that are associated to level of labor division in the society. Mechanical solidarity appears in a society with a low labor division, while organic solidarity appears in a society with complex labor division (Lauer, 1982; Samuel, 2010). In short, mechanical solidarity is developed because of the mutual similarity between community members, while organic solidarity is developed based on differences between members of society. Because of these differences, members of community should rely on each other.

Based on the elaboration, it can be concluded that the concept of social change (1) is associated to changes, (2) refers to similar social system (taking place in particular society or causing change in the society as a whole), (3) is associated to cause-effect relationship and goes beyond factor that accompanies or precedes other factors, (4) change takes place in sequential order, for example social process from macro to micro level, namely industrialization, democracy, expansion of war, social movement, friendship and family crisis.

More specifically, Parker (1990) stated that industrial sector brings tremendous impact to those living in rural areas. Industrial sector changes value, infrastructure, industrial interest group, behavior and work ethics of particular community where it is located. These change may have direct influence towards industrial sector or appear as effect of industrial sector. Other communities will take advantage of service or other sectors but industrial sectors.

Based on the aforementioned phenomena, it can be concluded that industrial sector leads to social transformation. A shift from agriculture to industrial sector is an example of the social transformation. Increasing number of people living in the villages will shift from agricultural sector to industrial one.

As the effect of industrial sector, rural area along with its traditional social structure and culture will transform into modern society. Internalization of social industry, the result of rural economic development, will lead to social, cultural, environmental and demographical change.

METHODS OF RESEARCH

The study was categorized as a descriptive qualitative study. There were 5 informants that consisted of 3 members of the local community (Fatufia village), Head of Fatufia village and 1 public figure. The data collection techniques were structured interview, observation and library study. The data analysis technique was path analysis.

RESULTS OF STUDY

Environmental Change. Establishment of PT. BDM's nickel mine in Fatufia village had caused land conversion from farm land or plantation to nickel mine and factory. Most of the forest in the village was turned into nickel mine. Besides that, locally-owned plantation was turned into nickel factory and its facilities such as steam electricity power plant, water treatment, conveyor for cut and fill and hauling for mobilizing mining equipment, materials and nickel itself.

These land conversion decreased quality of Bahodopi River, located near PT. Bintang Delapan Mineral's nickel mine dan Kumpi River, located near PT. Indonesia Morowali

Industrial Park (PT.IMIP). The nickel mine and factory caused some sedimentation on the rivers. In the long run, this will cause water crisis and damage to Fatufia village environment.

Establishment of the nickel mine and factory also resulted in deforestation. Majority of the forest in Fatufia village was severely damaged. Fatufia village and the nearby areas were prone to land slide particularly during rainy season because PT.BDM did not apply the terracing system for their nickel mine. The nickel mine also left behind giant holes of which depth was between 3 and 4 meters. In short, the nickel mine and factory had damaged the natural resources and vegetation.

Heavy equipments the nickel mine had caused water degradation and land conversion and released heavy metals to the rivers. Besides those, the heavy equipment damaged the ecosystem and decreased soil productivity. As the consequence, the locals could no longer use their farm land or plantation for growing crops. Furthermore, soil erosion also became a major threat. The soil on the surface was not fertile but unfortunately, the farmers could not access the fertile soil below the surface. Subowo (2011) reiterated that living organism that used to live on the surface and help fertilizing the soil was either sunk below the surface, dead or malfunctioned.

The data showed that PT.BDM's nickel mine had contaminated the farm land and plantation nearby. As the result, soil fertility, productivity and harvest were declining sharply.

Unable to rely on their farm land any longer, the farmers were frustrated and began to leave their farm land unattended. Those farm land and plantation were gradually turned into waste land. When PT.BDM needed some more areas to expand their nickel mine and develop nickel manufacturing industry and its equipment, the locals decided to sell their unattended farm land or plantation to the company. Nevertheless, there were some locals who sold their productive farm land or plantation to the company through the workers who were acting as broker. Their objective was to gain some money and start their own business.

Social Change. The establishment of IMIP industrial area had changed the landscape of Fatufia village from agriculture and fishery-oriented to capital-intensive industry. Business such as food stall, coffee shop, convenience store, laundry service, cafe, electronic store, leasing agent, motorcycle wash, repair station and karaoke started blooming. Few years ago, people had to travel to Bahadopi, the capital of the region to find a food stall that can serve more than ten customers. At present, there are 3 large food stalls that can serve more than 10 customers simultaneously in Fatufia village. Due to the nickel industry, the locals of Fatufia village began their activities very early in the morning. The food stalls served breakfast for both the mine labors and the locals. Most of the mine labors had breakfast from 9 a.m. to 11 a.m.

Besides food stalls, many locals decided to run a coffee shop. Until recently, there are 5 five coffee shops spread in strategic locations in the village. Those coffee shops had always been crowded. Serving snacks and meal, the coffee shops opened at 9 a.m. until 11 p.m. local time.

Based on macro economic estimation, average income of the Fatufia locals prior to the nickel industry was 500,000 rupiahs/month. Their income increased sharply to 2,000,000 rupiahs/month after the establishment of the nickel mine. In other words, the nickel mine had significant influence towards poverty rate in Fatufia village; poverty rate in the area plummeted from 35 to 15 households.

Another factor that contributed to the decline of poverty rate was increasing land price. During the construction phase, land price was 500% higher as PT.BDM needed large area to develop and expand their nickel mine. The locals of Fatufia were looking forward to this phase because land price increased from 2,200/m² to 7,500 m² once the nickel industry was established.

Analyzing the social reality above, the nickel industry had caused mass job migration from farm to off-farm. The job migration occurred because of two important social aspects, namely: (1) the local farmers were not able to rely on their harvest any longer. It took significant amount of time before they could earn money from their farm land or plantation. Furthermore, they earned very little money selling their harvest; (2) the locals were able to

earn more money from mining and industrial sector without having to make as much effort as they used to.

The job migration among the locals of Fatufia represented the Marxian Class Theory. The locals left their farm to improve their social and economic status. They could not make ends meet from farming anymore. Therefore, they decided to live a more practical lifestyle in which they can earn more money and improve their socio-economic status.

The nickel mining and nickel manufacturing industry created a lot of job vacancy. In addition, they had positive contribution towards Local Own-Source Revenue, such as tax, royalty and grant. These two had direct implication towards the local economy. The most vital implication was that people who lived around the industrial area could work for the PT.BDM when they the company's requirement. In short, PT. Bintang Delapan Mineral created job vacancy for Fatufia locals. Having been running for a while, PT.BDM has transformed from nickel mine to nickel manufacturing industry. Ownership of the company had changed and therefore, there were some adjustment in staff and labor recruitment.

As hightech industry, nickel mining and nickel manufacturing industry needs specific set of skills. This had become major problem for years. The industry needed skilled workers immediately and consequently, could not afford to wait for some time for job training to finish. They were looking for competent, experienced workers. Unfortunately, most of the locals did not have any competence to work as skilled workers in the nickel industry. PT.BDM/IMIP then conducted open job recruitment where anyone could apply. They even had to hire migrant workers from China to run their nickel mine and nickel manufacturing industry.

The locals of Fatufia perceived the phenomenon as discrimination because they were hopeful that they could work for the company. According to the locals, the company did not make the locals a priority during the job recruitment. The locals were disappointed and decided to commit violent act against PT. BDM. One of the informants, a 57-year-old local named Muh. Ali stated that: "...the locals were looking forward to the establishment of PT. BDM in the area. The company promised to hire local people more particularly those whose farm land and plantation were converted into nickel mine. However, the company hired other people due to various consideration...".

Getting a job at the nickel mining and manufacturing industry had never been an easy process. There were particular requirements to meet. The locals tried to meet the requirement because they needed a job. Currently, PT.BDM HRD was responsible for job recruitment. Instead of simplifying the job recruitment process, the human resource department made some additional requirements. Some people bribed the company (between two and three million rupiahs) and some others were willing to give away the first two months of their salary to people helping them getting a job in PT.BDM. The Head of Labota village stated that sexual exchange was a method to get a job in the company. However, he continued that the staffs involved in the sexual exchange had been fired from PT.BDM.

The government has issued laws and regulation on labor to protect the rights of employees. Both public and private institutions should obey these law and regulation.

One of the aspects Indonesian laws and regulation on labor discusses is wage system. Based on the informants, PT. BDM had violated this regulation. An informant said "PT.BDM workers have decent amount of wage but it is still below the minimum amount of wage stated in Indonesian laws and regulation on labor." The local workers staged a protest against this wage system.

Cultural Change. People living in rural areas have always had stronger connection to their environment compared to those living in the city. This assumption is based on the fact that most people in rural areas work as farmers. In other words, rural areas have always been associated to agrarian culture. It means norm, value, belief system, point-of-view and action applicable in rural areas are derived from their agricultural system. Some words associated with agrarian culture are simple, practical, socio-communal.

The nickel mine in Fatufia has caused social, economic and cultural change. The mining industry forced the locals to adjust to modernization and industrial lifestyle. Some of the locals may have culture shock due to this drastic change in the last few years.

Financial condition of the locals in Fatufia village was improving both in quantity and quality. However, this improvement, according to Mercuse is temporary. Financial condition of the locals may have improved quite drastically. However, there is a decline in moral, cultural and religious value. Human used technological advances and objects to fill the void in their private life.

The locals then spent their salary in recreational facilities, game centers, and shopping malls. They were unaware that they had turned into consumer groups. Many people were trapped in a consumptive and hedonistic life style. To become industrial community, community members should realize that they would be exposed to certain value they may never heard of and be prepared to accept a set of values that goes hand in hand with industrialization (Nurcholish Madjid, in Ibrahim, 2010). Industrial society usually has job division which is derived from increasingly complex fields of work in the industry. Job division leads to prestige, income gap and eventually a stratification in society (social pyramid). This social stratification classified community members based on attitudes and characteristics of each group member.

Rapid economic growth in Fatufia village also caused some changes in consumption pattern and lifestyles. The locals were getting more consumptive and started to adopt luxurious lifestyle. One household in Fatufia had between 2 and 3 motorcycles. The locals who worked in the nickel industry would own a motorcycle that costs between 20 and 30 million rupiahs. The informants stated that the sale of motorbikes in Bahodopi increased so sharply that some brands of motorcyle decided to open their dealership in a village with relatively small population like Fatufia. Besides motorcycle dealership, leasing companies began to appear in Fatufia. More locals and local administrative could afford a car.

Cultural change has always been preeceded by change in value and behavior. The establishment of nickel industry in Falufia allowed the locals to work in PT. BDM. However, due to their background of education and lacking skills, very few locals got hired as skilled workers in the company. Majority of the locals became non-permanent unskilled workers.

At the same time, the nickel industry had motivated the locals to start their business, for example food stalls, coffee shop and office supply store. The nickel industry encouraged the locals to be effective, efficient and profit-oriented.

Despite of the modernization, particular members of the local community were striving to maintain the agrarian culture. Ogburn used the term "cultural survival" to describe the phenomenon. These group of locals kept working at farm land or plantation even though they had to go to other villages where farm land and plantation still existed. However, they also had business venture in Fatufia at the same time. Nadir (36 years old) who raised rooster in his spare time stated that:

"I used to go to the plantation every day and go to the forest to pick some fruits....., Once I started a family and worked in IMIP, I do not have any time to do those anymore. I have collected some money and bought a plantation in the suburb of Bahodopi. I know that I cannot rely on this plantation but I still grow some plants there. I like farming and always head to the plantation in my spare time ." (Interview was conducted on Saturday, August 18, 2017, in Fatufia)

Change in value and behavior also took place in Falufia village; one of which was social interaction between the locals and non-locals or migrant workers. Cultural integration happened at the initial stage when non-locals brought their custom and habitual actions to Falufia. Interaction between the local community and non-locals (migrant workers) in both at or outside work resulted in cultural encounter between both groups.

The nickel industry also caused "cultural conflict," in which simple and traditional farmers were forced to adapt to complex and modern industrial community. Farmers did not stick to particular schedule because they can go to their farmland or plantation anytime. Farmers may not work when they have other activities such as wedding or house-warming parties. Farmers had culture shock once they worked in PT. IMIP. They had to wake up early and be at work at 8.30 a.m since late coming would result in penalty. They were not allowed to leave work until their shift was over. They focused more on their job rather than communal activities. As an example, factory workers had to wake up early and went to work. They came

home from work tired and thus, went straight to bed. As the result, they had very little time to interact with their neighbors.

Basruddin (38 years old) described his adjustment to his factory work.

"The first few days, I am very excited to work in PT. IMIP. I was told that I have to follow some regulations. I have to be on-time and cannot leave before I finish working. When I worked as a farmer, I did not have any timetable. I made my own schedule." (Interview was conducted August 18, 2017)

Such condition forced the locals to become money-oriented individuals. They would rather paying other people some money to do their house chores or finish their paper work than taking a leave from work. They began to think that money can substitute time and effort. The locals became more self-centered just like people who lived in industrial area. Ria (21 years old), a public administration staffs in Fatufia village stated that:

"Most of the factory workers asked other people to finish their paper work. They do not have time to come here. Sometimes, they ask for help from our staffs whom they know well before. We are given some amount of money for our help." (Interview was conducted August 20, 2017)

The nickel industry brought electricity to the village. As the effect, the village were getting lively and the locals were able to carry on their activities for 24 hours. People began to buy electrical equipment such as television, antenna, cellular phone, electric iron and video player.

The community members spent more time watching television. They were interested in watching various TV programs. Television had become the most current source of information for the locals. They copied what they had watched on TV. The locals also spent more money buying consumptive goods having watched some advertisement on TV. Television had also affected local children. They were glued to the TV and reluctant to have Qur'an recital practice in the late afternoon.

Diceritakan oleh Adas (40 Tahun) bahwa:

"Once the cement factory has been built, they finished installing the electricity. This village is getting livelier in the evening. Some people bought TV immediately. The children were very keen on watching TV and staying up late. After that, very few people are going to the mosque. The children prefer watching TV to have Qur'an recital practice." (Interview was conducted August 20, 2017)

As an addition, the locals began to purchase means of communication and more furniture. Once Telkomsel, cellular phone provider, reached Fatufia village, the locals began to purchase mobile phone. Younger generations and the locals who worked in the nickel industry bought android cellular phone that has high camera resolution to access their social media. Cellular phone vendors, cellular phone accessory vendors, cellular phone repair station and top-up kiosk started blooming in Fatufia village.

Related to the cellular phone phenomenon, Yunus (47 years old) stated that:

"Cellular phone has made things a lot easier. We do not have to go out while the sun is shining brightly any longer. All we have to do is to pick up our cellular phone. If I want to have a family gathering here, I can just call my relatives in Bahodopi and Bahomakmur asking them to come. I do not have to go to Bahodopi and Bahomakmur like I used to." (Interview was conducted August 18, 2017)

Cellular phone made people more private, for example an individual would turn off his or her cellular phone when he or she wanted to take a rest after a long day of work or were busy working. However, the individual may miss important call from his or her relatives or friends. Furthermore, Yunus (47 years old) stated that:

"Cellular phone is really beneficial, but it has several disadvantages as well. People will turn off their phone to avoid seeing other people. They do not interact with other people as much or meet other people in-person." (Interview was conducted August 18, 2017)

Nevertheless, those phenomena did not occur in certain community groups. The locals who did not work in the nickel industry were able to maintain the local value and tradition. As an example, cooperative work, one of the characteristics of agrarian community, was a common phenomenon in the suburb of Fatufia village. Members of this community were able

to work together and interact with one another because they had fulfilled their primary need. Thus, they could devote more time to their community.

As an example, one of the informants Ahmad (38 years old) was renovating his house. Even though he had hired carpenters for the project, his neighbors still came to help finishing the project. Ahmad then stated that "Fatufia is a close-knit community where the locals were more than willing to help each other. They will come to every social gathering should they be invited. The locals who work in the nickel industry and thus, are not able to attend the social gathering will ask their family members to attend the social event. In short, social interaction here is pretty well-maintained." (Interview was conducted in August, 2017).

Based on the elaboration, cultural changes taking place in Fatufia village were evident. Recently, the locals focused on modernization, for instance effectiveness, time-efficiency, specialization and privacy.

DISCUSSION OF RESULTS

Based on the perspectives of environmental sociology and ecocentrism, not only does land conversion damage the ecosystem, but it also is harmful for human being. These perspectives allow individuals that all living beings depend heavily upon the environment. Furthermore, based on the perspective of cosmology, human being, nature and God are parts of one system. It means damage to one element will affect the other two, for instance damage to environment will have negative influence towards human beings.

Aditjondro (2003) used the term 'environmental degradation' to describe environmental damage since ability of the environment to support living beings is declining. Aditjondro also classified environmental degradation as the first generation effect from three generations effect.

Based on Neo-Marxist economic determinism, a piece of land is a commodity because it has production 'value.' Neo-Marxist also described that 'a piece of land' is not only a location (material) but also space that has production value (non-material). Mining and industrial area are areas for natural resource exploration. At the same time, they are social space in which interaction and transaction (production) occur.

Besides damaging the environment, mining and industry cause socio-cultural changes. Aditjondro (2003:362-374) categorized this as the first generation effect. The first generation influence is some phenomena that have direct relationship towards mining and industry. The first generation effect consists of (a) land conversion from farm land, plantation or fish farm to mining or industrial area, and (b) water, soil and noise pollution at work.

Socio-cultural impacts are overall consequences and changes of all components of society over time induced by an event. Concrete examples of socio-cultural impacts are changes in population, quality of population livelihood, composition of population, methods of communication and social interaction, values and norms, institution, perception and behavior.

Using the socio-cultural phenomena in Fatufia and theoretical analysis above as the reference, this study shows that the nickel mining and industry has caused a revolutionary change in Fatufia. Revolutionary change means rapid and change. This change, according to Wilbert Moore, is characterized by change of demography. A lot of people come to Fatufia village to work in the nickel industry or start a business around the industry. The socio-cultural impact of the nickel industry can be seen in the form of cultural interaction that leads to assimilation, diffusion and acculturation.

The cultural interaction brings 'Cultural Lag' and 'Cultural Survival' that the local employees and local communities should experience. Local employees who are accustomed to traditional agrarian culture experience 'Cultural Lag' while working in a company that has a set of formal rules. The local community experience 'Cultural Survival' when they start a business around the nickel mine but still maintain their former occupation as farmer at the same time.

With regard to the cultural issues, Wilbert Moore argued that a shift from agrarian culture to industrial area causes significant change in 'interaction.' People change occupation from farmers to factory workers. Previously, farmers spent a lot of time in their farm land,

plantation or forest so that it was difficult to meet them in the afternoon. Once they have become factory workers, everyone can meet them in the afternoon particularly during the breaks.

Aditjondro then stated that the nickel industry caused a "third generation impact" towards value system in the community. The change of value system has direct and indirect influence towards the environment.

In Fatufia village, the change of socio-cultural system as the third generation impact took place more quickly than the prediction. It was predicted that change of socio-cultural system would take place within decades, but instead, it only took 5 to 6 years for socio-cultural system in Fatufia to change. It happened because the nickel mining and industry and the 'culture' it brought along has caused extreme shift to the local culture. This phenomenon is called 'Cultural Reversal'.

Some examples of the cultural reversal are: *First*, the establishment of community-specific activities such as laundry service, office supply store and fruit shop. It indicates social differentiation. *Second*, land conversion from agriculture to mining and industrial areas. It indicates a change from subsistence agrarian economy to a capitalist mode of production and economic activity. These two cause changes in every aspects of the locals of Fatufia, including their social life. *First*, there is a change in the economic structure of the community. *Second*, there is a change of mindset due to transformation of value and interaction between the locals and non-local workers and the industrial environment.

Socio-cultural shift as the "impact" of industrialization is characterized by social change from simple to the more sophisticated and from being uniform to diversified. The society develops from *gemeinschaft* to *gesellschaft*. Based on the social change, *gemeinschaft* includes close social interaction, kinship and friendships, while *gesellschaft* is voluntary, contractual and self-based social interaction (Tonnies as cited in Garna, 1996: 148).

On the other hand, the local community in Fatufia village has evolved from a small tradition (a society with a simple culture) to a larger tradition (great cultural society) (Redfield, 1985). Society also moves from mechanical solidarity to what Durkheim (1964) described as organic solidarity. Weber (Ritzer, 2012) focused on human interaction, where society develops from traditional into a society that acts rationally. The social change will eventually develop several more complex social units (differentiation) (Smelser in Weiner, 1994: 71). The development is also strongly influenced by change of individual behavior that occur in the environment where the individual is at where his or her current behavior has some consequences and affects his or her future (Skinner as cited in Ritzer, 2004: 70).

CONCLUSION

The findings of the study have shown that the nickel mine has caused socio-cultural changes in Fatufia village. These socio-cultural changes have positive influence towards the community members in and around Fatufia village. The nickel industry helps the locals increasing their income. Even though the nickel industry has some negative influences towards the village, these do not really affect the community members.

The nickel mine has introduced modern and industrial lifestyle to the community in and around Fatufia village. As the result, the community members should make some adjustment to adapt to the current way of living. In other words, the nickel mine helps developing the local community.

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