

Research Article

The economic activities analysis of the marginal community living around the artisanal oil mining site in Hargomulyo, Bojonegoro Regency

N. T. Brata^{*1}, S. Sairin², Setiadi³

¹ Department of Sociology and Anthropology, Faculty of Social Science, Universitas Negeri Semarang, Indonesia.

² Department of Socio-Culture, Academy of Malay Studies, University of Malaya, Malaysia.

³ Department of Anthropology, Faculty of Cultural Science, Universitas Gadjah Mada, Indonesia.

*corresponding author: trisnu_ntb2015@mail.unnes.ac.id

Abstract: The focus of this paper is on a marginal society in Bojonegoro Regency, East Java Province. It is a remote area in the middle of a teak forest, far away from the centre of economy and governance, it's that makes the society find some difficulties to overcome their economic problems. There are some oil wells owned by NV BPM Company which had stopped its legal operations. Then, the society conducts illegal traditional oil mining. The purposes of this study are: (1) to study the reason of the society in making the artisanal oil mining as their livelihood, (2) to study the economic implication from their mining activities. The results showed that in a tough life to fulfil their needs, there is a creative idea from the society in seeing and understanding their infertile environment. In an environment that looks unable to provide a chance to the society for getting a livelihood, there are some people find a niche in the form of old oil wells. The society is able to find an environment niche to resolve their poverty problems. The economic implication is in the form of chance or entrance for the society to work in Artisanal Oil Mining (AOM) field.

Keywords: *artisanal oil mining, economic implication, livelihood, marginal society, poverty.*

Introduction

This paper presents a study on a marginal community living deep in the interior of the teak forest that is located within the territory of *Desa* Hargomulyo, one of the villages in Bojonegoro Regency (*Kabupaten* Bojonegoro), in the Province of East Java. It is a remote area that is far away from the centre of economy (the capital city of Cepu) and the centre of regional government administration (the cities of Bojonegoro and Blora). The community's situation is made even more difficult by the unproductive land that prevents them from relying on agriculture for a living and puts them in economic hardship. A few miles from the settlement is an oilfield that was run by a Dutch company named NV BPM in the past. This company legally operated the oil exploration site during Dutch East Indies ruling period in Indonesia.

NV BPM held a concession right for the exploration as regulated in *Indische Mijnwet* issued by Netherlands East Indies government in 1899. The concession was terminated since Indonesian government imposed *Kuasa Pertambangan* system (Mining Concession system) on mining or exploration activities in Indonesia through the enactment of PERPU No. 37 Tahun 1960 (a government regulation in lieu of law no. 37/1960) on mining, which was later confirmed in UU No. 11 Tahun 1969 (Act 11 of 1969) on the Basic Conditions of Mining. Consequently, since 1960, oil wells in Hargomulyo oilfield has not been subject to any company with concession right, and until today there has not been any corporation applying for oil exploration concession since the oil deposits in the area are considered depleted. In the following years after NV BPM ceased its operation and abandoned the oilfield, some people from the local community came to the site to search for the

remaining oil reserves and started their own exploration traditionally and illegally with the hope of resolving their economic hardship.

Generally, an economic activity is deemed illegal when it is perceived of as violating certain regulations or laws on one or several basis. So, the legal status of an economic activity subjects to the prevailing legislation. In the case of the subject discussed in this study, illegal exploration is defined as any activity related to oil exploration that has not yet been authorized through legal procedure or by a license that is regulated by the relevant legislation. Illegal oil exploration can also refer to the acts of stealing oil from the wells owned by an oil corporation committed by the corporation's employees, by other enterprises, or by individuals living in the surrounding areas. (N.T. Brata, 2016).

The people who worked illegally at the oilfield in Hargomulyo did their activities in groups and their number was fluctuating. Some groups would dissolve when the wells they worked on were out of oil and some new groups would assemble when other abandoned wells were found. The newly found wells were to be cleared out and the oil deposits in them were supposed to be extracted by a number of groups.

This study aims to: (1) discover the reasons why the people of Hargomulyo rely on artisanal oil mining (AOM/PMR/ *Pertambangan Minyak Rakyat*) as their livelihood and (2) discover what are the economic implications of the oil exploration for Hargomulyo community.

Methods

Ethnographic method was chosen in achieving the objective since the research requires thorough understanding and elucidation of the observed phenomenon from the perspective of the people involving in the study as participants. Analysis was performed on the primary and secondary data which were collected through observation, participant observation, interview with the informants, and literary study. The research was conducted in *Desa Hargomulyo* that is located in *Kecamatan Kedewan, Kabupaten Bojonegoro* in the Province of East Java. Based on some considerations related to the data derived from the results of the research.

Results and Discussion

As mentioned in the beginning of this paper, *Desa Hargomulyo* is located in a remote rural area in Bojonegoro region. Its great distance from the centres of economy and local government administration is an unfortunate condition for the inhabitants of the village especially during hard

times such as when long drought struck. In 1986 – 1987, their rice, corn, and cassava fields failed to yield harvest because of the severe drought that hit the area during that period (Brata, 2016).

Poverty has long been a prevalent issue in Bojonegoro. According to Penders (1984: 12), the unfortunate condition is caused by the limited natural resources in the region. The barren land, extreme climate instability such as low precipitation, the floods that occasionally come from Bengawan Solo River's upstream, and drought periods have all contributed to the villagers' hardship. Yet, despite the tough geographical and climatic conditions, beneath the surface of Bojonegoro land (as well as Blora and Tuban) there is abundance of oil reserves. The reserves had been found and they have been exploited since Dutch ruling period in Indonesia up to the present time. Some sources from Dutch colonial period record that from 1900 to 1942, Bojonegoro was one of the poorest and the least developed regions in Java Island. Most parts of the land are infertile and insufficiently irrigated. It also suffers poor technological supports and efforts in flood control.

As informed by Wardo (2009: 55-56), Residen Hilderling in 1924 reported that land infertility in Rembang residency (Rembang, Bojonegoro, Tuban, and Blora) had impacted on the character of its inhabitants. The tough environment has moulded them to be generally unfriendly and rigid people. They are also described as less developed communities with low living standard. Natural environment had also become one of influential factors in Rembang people's culture.

The artisanal oil mining (AOM/PMR / *pertambangan minyak rakyat*) site in Hargomulyo was called District Dandangilo during Dutch colonial period. The site was surrounded by teak forests of Gunung Piring and Gunung Jotayang which was far away from the main areas of Bojonegoro Regency. In 1927, *Desa Dandangilo* was merged with *Desa Tumo* into a new *Desa* called Hargomulyo. A large part of Hargomulyo territory is covered with the teak forest belonging to BUMN Perum Perhutani (a state-owned forestry enterprise). The land in Bojonegoro region is generally not conducive to paddy cultivation and Hargomulyo is no exception, but teak trees grow well and extensive in such geographical condition. There actually are a number of rainfed paddy fields in Hargomulyo but they are the property of only some of the villagers. Some others could only work as agricultural labours. However, most of the times the income earned as farmers and agricultural labours is not sufficient to fulfil the villagers' daily needs especially during hard times when

food are limited because of a prolong drought such as *pailan* catastrophe in 1948.

Failing to make farming a reliable source of income, Hargomulyo peasants then turned to artisanal oil exploration with the hope of having a better livelihood. They reopened the abandoned oil wells from the Dutch period, searching for the remaining oil deposits, and pulling them out from the wells. However, it turned out that exploring oil did not immediately provide better income. Low production made low wages for the labours and their low marketing skill could not improve the condition. Other alternatives of employment were scarcely available for Hargomulyo people since they generally had low educational background and access to higher education in the area was very limited.

PMR/AOM site in Hargomulyo provides four divisions of oil producing job: driver, *ajok*, *nimbel*, and *nyuling*. The drivers and the *nimbels* are the main crew in the process of extracting oil from the wells. A driver's responsibility is operating a car engine that has been modified into a tool used in lowering and pulling a wire (*seling*) that ties or holds the bucket carrying oil (*lantung*). The bucket is lowered into the well until it reaches the oil reserve and dips into it. When the bucket has been filled with oil, it is pulled out of the well. As the bucket reaches the surface, the *nimbel* who holds a shaft is supposed to shove (*nyodhok*) the bucket to make it move toward the flat surface of a block made of iron, concrete, or wood and make it hover above the surface. Afterwards, the driver tugs it to make its lid flip open so that the oil inside is spilled out across the surface. When it is done, the *nimbel* shoves the bucket back to the well for another pull of oil. The process is continually repeated throughout the working hours every day until the well is out of oil.

Before 1990 when oil extraction from the well was still carried out manually, the workers could only produce 10 drums of oil from a single well. Since manual labour had been replaced by machine made out of car (or truck) engine, 40 to 60 drums of oil could be pulled out from each well in one day. Thus, the use of technology has multiplied oil production by four to six times.

Each well stores different amount of oil reserve. The wells with plentiful amount of oil could be repeatedly scooped out by the bucket for 24 hours nonstop using two cars operated alternately (preventing the cars from breaking down easily). This method could quickly exhaust an oil reserve in a well in one period of oil extraction. For instance, there was this well which was being "scooped out" from 7 am to 7 pm. The 12-hour oil extraction depleted the whole oil volume in the well, and so this activity had to be suspended that day to be continued the next day

when another volume of oil was expected to refill the well. There was even another well that had already run out of oil in only 4-hour extraction (7 – 11 am). Many times the drained wells did not ooze out another amount of oil the next day. Therefore, there are many dry wells scattered all over the AOM site.

The term *driver* used in the description of oil extraction work above refers to the person whose responsibility is operating a used car engine that had been modified to be a machine apt for oil extraction purpose. The modified car engine functioned as a power supply that moves the tool used to scoop oil out of the well. So technically, the car is not moving, but its engine is active and its rear wheels are moving. The tyre had previously been detached from the car's rear wheel, and a wire (*seling*) was fastened to it instead. The other end of the wire was fastened to the bucket which was used to scoop out the oil in the well. When the car engine is started, the wheel will rotate and pull the bucket out of the well. The bucket is once again lowered down the well by rotating the wheel in the opposite direction to make it scoop another bucketful of oil out of the well. Modified car engine was first applied in the early 1990s to well number 108 (W.108) belonging to the oil workers of Wonocolo; followed by its application to well D.93 and D.122. The three wells marked the end of manual works and the beginning of technological adoption in the artisanal oil exploration site in this village. From then on, all of the oil workers in Hargomulyo use modified car engines and therefore the tool became a vital part of oil production in the site.

Nimbel is one of divisions in oil production in the PMR that involves shoving or thrusting (*nyodhog*) the bucket carrying oil using a wooden shaft so that it moves from above the well to a block. The *nimbel* man is sitting close to the well while doing his *nyodhog* job. He has to position the bucket in the right spot above the surface of the block to make sure that when it is nudged or shaken or tugged (*dighedhog*), it pours out the oil onto the surface in the right position. When it is done, he has to move the bucket back to the casing of the oil well.

Apart from adjusting the bucket while it is moved back and forth between the well and the block, the *nimbel* man is assigned the task of helping the driver preparing the car for the bucket pulling and lowering job. Among others he is responsible for filling the tank with diesel oil and fixing parts of the car whenever necessary. He does not have to buy the diesel oil somewhere else because it has already made available by the workers in the site who produce it from the

existing wells and refine it by themselves to save the production cost.

After poured out of the bucket onto the block, the *lantung* or the crude oil is then made flow into a drum or a container made of cement. The container can also be used to separate oil from the water when the fluid obtained from the well still contains both components. The water will float above the water. This is the part when an *ajok* plays his role.

An *ajok*'s job is separating the oil from the water. He removes the oil from the upper layer of the fluid where it floats above the water by scooping it using a shovel. He gathers it up and pours it into vessels that are provided there to keep oil up to 210 litres each. The volume of each vessel is six times greater than a 35-litre jerry can (35 litres x 6 = 210 litres). *Ajok*'s next duty is moving the vessels of oil to the furnace chamber (*pawonan*) where the oil is loaded into some containers where it is prepared for refining or distillation process. The local people often call *ajok* "*tukang angkat angkut*" (the carrier) because his duties mainly involve removing oil from the fluid in the containers near the well to be loaded into a number of vessels, pouring the oil in the vessels into a number of 35-litre jerry cans, and carrying the cans to the refinery. If the location of the refinery to which he has to go is not too far, he will transport the jerry cans on foot using a carrying pole or a shoulder pole to carry several of them at once. If it is relatively far, *ajok* will transport the jerry cans by motorcycle on which two large baskets (*rengkek*) are hung to carry several of them together. He could also use motorcycle equipped with *rengkek* to transport firewood to be sold to a *nyuling*.

During the period when KUD Bogasasono still monopolized the oil market in the PMR area by buying all of its oil production, *ajok* used to carry and transport oil in jerry cans from wells in the oilfield to a kind of oil storage depot (a depot where jerry cans full of oil were temporarily stored) standing on the side of the road that went through the PMR site and located between *Desa Wonocolo* and *Desa Hargomulyo*. KUD stands for Koperasi Unit Desa (Village Unit Cooperative). It is a kind of business organization run cooperatively by a number of individuals that is meant to create common welfare. Tanks full of crude oil were kept in there before they were moved by trucks to Pertamina's refinery in Cepu. Pertamina is a state-owned enterprise that controls oil supply in Indonesia

Since KUD Bogasasono's monopoly ended in 2006, the people of Hargomulyo refined or distilled (*nyuling*) their crude oil by themselves in the PMR site. In addition, the oil workers were free to find their own buyers or markets. Baskets

made for carrying jerry cans of oil on motorbike became commonly used by *ajok*s because they often had to transport oil through long distances to reach the buyers. The products they carried were either crude oil or refined oil (such as diesel) depending on the customer's order.

With the storage depot no longer in operation, *ajok* does not have to carry the oil from the PMR site to the depot. Moreover, there are not oil transportations from the depot to Pertamina's refinery anymore. From that time on, *ajok* is known for its duty of transporting oil products from the temporary oil storage around the wells to the refinery station. Nowadays, shoulder pole is no longer a preferred tool in this transporting work. *Ajoks* prefer transporting oil tanks by motorcycle to carrying them on foot using shoulder pole.

Refining process is the next stage in oil production after extraction process. Oil refining process can be described as the process by which the crude oil is purified or distilled into a refined product. In PMR Hargomulyo, this process is called *nyuling*. In this job division, there are two categories of worker: *nyuling* wage labours who work for a wholesaler or contractor and independent refiner. The independent refiners finance their own refinery facility. They buy crude oil from groups of oil workers, refine the oil by themselves, and market the finished products. Some of these independent refiners are individuals who are also the members of an oil-worker group. Among others there are *Pak Ton*, *Janadi*, and *Sarju*. Wanting to make their spare times productive, they buy crude oil extracted from the well at which their group's working, refine the oil into diesel, and then market them.

In *nyuling* process the workers refine the crude oil by boiling them until they bubble and emit vapours all over the furnace chamber made of clay (*pawonan*). The vessels that contain crude oil are put on the furnace and then heated using firewood as the fuel. By means of this traditional technology, oil's vapour is gathered and channelled through a metal pipe to a tank. While the pipe is filled with the vapour from the boiling oil, it is put into a basin containing cold water to decrease the temperature of the vapour to liquefy it and make it flow out through one of the pipe's end. The liquid that flows out of this pipe is called *solar* (diesel) or processed (refined) oil by the local people to differentiate it from *lantung* or crude oil. The refined oil is then stored in a tank or a container. The processed product the workers make in the refinery is usually diesel oil, but they also produce kerosene occasionally. However, kerosene's economic value is higher than the diesel's.

The workers of the four divisions—driver, *nimbel*, *ajok*, and *nyuling*—distribute their earnings from producing oil in the PMR site in the following ways. Each vessel of crude oil is sold for Rp. 250,000 to their fellow members of oil-worker group. They sell Rp. 500,000 per vessel to the external buyers. The profit earned from selling the product to the external buyers is distributed as wages as follows: the driver receives Rp. 50,000 each; the *nimbel* labour receives Rp. 30,000 each; the *ajok* labour receives Rp. 30,000 each; and the *nyuling* labour receive Rp. 50,000 or Rp. 100,000 if the firewood (*rencek*) used in fuelling the refining process is at his expense.

The income distribution can be described in detail in this following instance. The oil production at well D.90 involved 8 workers (research data taken in 2012) consisting of 2 drivers, 2 *nimbels*, 2 *ajoks*, and 2 *nyulings*. They worked together with 40 other members of the team. If they can obtain 5 drums of crude oil in one working day, then they produce 35 drums of oil in a week. They work 10 hours every day from 6 am to 4 pm. If all of the oil is bought by external buyers, then the income they can achieve in a week is Rp. 500,000 x 35 drums = Rp. 17,500,000.

Thus, the income calculation for every worker for a week of producing crude oil is: (1) the two drivers are paid Rp. 50,000 x 35 drums = Rp. 1,750,000 which means each of them gets Rp. 875,000; (2) two *nimbels* are paid Rp. 30,000 x 35 drums = Rp. 1,050,000, therefore Rp. 525,000 for each *nimbel*; (3) two *ajoks* are paid Rp. Rp. 30,000 x 35 = Rp. 1,050,000 and so Rp. 525,000 for each of them. Two *nyulings* are paid Rp. 50,000 x 35 = Rp. 1,750,000 with Rp. 875,000 for each of them. Thus, the total wage paid to the eight workers is Rp. 5,600,000.

The data show that a *nimbel* worker and an *ajok* worker of well D.90 obtain the same amount of earning, which is Rp. 525,000 per week or Rp. 75,000 per day. The highest amount of income is gained by each of the drivers and each of the *nyuling* workers, which is Rp. 875,000 per week or Rp. 125,000 per day. Those are gross amount of income before they are reduced by daily expenses such as meals and cigarettes during working hours and the average total amount of these expenses is Rp. 30,000 per worker per day. In that case, the net amounts of the workers' incomes after the expenses are as follows. Each of *nimbels* and *ajoks* gain Rp. 45,000 x 7 days = Rp. 315,000 per week or Rp. 45,000 per day. Each of *drivers* and *nyulings* can collect Rp. 95,000 x 7 = Rp. 665,000 per week or Rp. 95,000 per day. A driver and a *nyuling* worker are paid the higher amount of wage for the consideration that they are exposed to the higher risks in their workplace.

Nyuling has to deal with the possible accidents such as fire in the furnace chamber, oil explosion in the tank or drum, and heat blast from the burning furnace in the refinery. Some of them have experienced permanent burnt scar and there was even some deaths caused by accidents in this division. As for drivers, they are paid higher because their skill in operating the car engine is considered crucial in pulling oil out from the wells.

Conclusions

Having been going through hard times in earning a living because of their unproductive environment for agriculture and episodes of harsh climatic conditions, the people of *Desa Hargomulyo* sought and found a creative way of getting themselves out of the hardship. Amid scarce opportunities of finding a reliable livelihood to meet their daily needs, some of them spotted old and abandoned oil wells and attempted to create a better source of income out of them by exploring and producing oil as their main economic activities. They reopened the oil wells and found enough oil reserves to improve their standard of living and therefore alleviated poverty in their community.

Although they could procure oil from the wells, the groups of oil workers in *Hargomulyo* could not claim ownership on them because it had been legally secured by NV BPM enterprise and the land on which the oilfield rests is owned by *Perum Perhutani*. *Hargomulyo* oil workers could only use the oilfield as an artisanal oil mining site (AOM/PMR/ *Pertambangan Minyak Rakyat*) to produce oil by their own means. Thus, in practice, it is the groups of oil workers from the local community who currently hold the power over its operation (but not the ownership). The economic implication of the PMR site on the people of *Hargomulyo* so far is the availability of more job opportunities. Before becoming oil workers, they were farmers and agricultural labours with meagre income. By making their jobs in the artisanal oil production their primary livelihood, each of them could gain a relatively steady income from the weekly wage paid to them every Thursday from the sale's profit.

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