

Thomas Putranto <putranto@ft.undip.ac.id>

Fw: EEC-F- 600 - Your paper in Ecology

2 messages

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Title of the paper: THE IMPACT OF TRADITIONAL GOLD MINING IN GUMELAR BANYUMAS INDONESIA

Authors: Muslihudin M., Azis Nur B., Eko Hendarto, and Thomas Triadi P.

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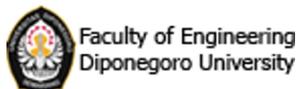
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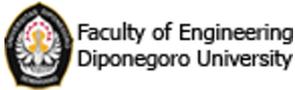
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ECOLOGY, ENVIRONMENT AND CONSERVATION

VOL. 24 (2) : 2018

CONTENTS

- 1–10 Investigating of cultivating the autumn sugar beet in Fars Province (Zarghan)
—*Navid Adibifard, Davoud Habibi, Dariush Fathollah Taleghani, Dariush Fathollah Taleghani and Mohammad Nabi Ilkai*
- 11–18 Histological changes resulting from the use of sublethal concentrations from insecticide Abamectin in the common carp (*Cyprinus carpio* L.1758)
—*Ahmed Jasim Mohammed, Shaimaa Abdul-Kareem, Aseel Najeeb Ajaweed, Ayat Munaf Hameed and Beadaa Abdlaqader Mahdii*
- 19–25 Using landsat 8 OLI data to predict and Mapping soil salinity for part of an-Najaf Governorate
—*Ebtihal T. AL-Khakani, Watheq F.AL-Janabi, Sa'ad R. Yousif and Hamziya M. Al-Kazaali*
- 26–32 Tourism economic advantages in the physical and functional transformations of rural settlements in the Central District of Lahijan
—*Mohadese Hatami Shah Khali and Hamid Jafari*
- 33–39 Factors influencing satisfaction in housing area infrastructure management service in Pampang Riverbanks
—*Darwis Baso, Antariksa, Harsuko Riniwati and H. Andi Tamsil*
- 40–45 Numerical study of flow pattern in rectangular channels with side intake
—*Ali Saeidpur and Saeid Shabanlou*
- 46–54 The potential of constructed wetland as wastewater treatment technology for sustainable small industry of Coffee processing
—*Erina Rahmadyanti, Elizabeth Titiek Winanti, Dewie Tri Wijayati Wardoyo and Diah Wulandari*
- 55–61 The impact of traditional gold mining in gumelarbanuyumas Indonesia
—*Muslihudin Muslihudin, Azis Nur Bambang, Eko Hendarto and Thomas Triadi Putranto*
- 62–68 The variability of productive traits estimation in Kalmyk cattle
—*Anatoly Foadovich Shevkhuzhev, Foat Galimovich Kayumov, Nikolay Pavlovich Gerasimov and Dagir Ramazanovich Smakuev*
- 69–76 Application of chicken manure compost as organic fertilizer to improve the quality and productivity of Potato (*Solanum Tuberosum* L.)
—*Yohanes Setiyo, Ketut Ayu Yuliadhi, I Gusti Ayu Lani Triani, I. Dewa Gde Mayun Permana, Ida Bagus Wayan Gunam and Nyoman Semadi Antara*
- 77–81 The role of international organizations in the development of environmental rights
—*Safdar Zeinali and Mehdi Abbasi Sarmadi*
- 82–85 A comparative study of the role of tourism in the development of entrepreneurship in rural areas (Case Study: villages in central district of Rasht)
—*Masoume Bloki Asli, Mohammadali Ahmadian and Hamid Jafari*
- 86–90 Evaluate toxicity of oxamyl pesticide by using albino Mice
—*Maad Nezar Mahdi and Ahmed Jasim Mohammed*
- 91–95 Impact of different policy levels change on dianthalexin content in *Dianthus caryophyllus* L.
—*Bushra M. J. Alwash, Sattar A. Shlahi and Sumaya F. Hamad*
- 96–102 Interpretation of land use and land cover at lowland area using by NDVI and NDBI
—*Andriani, Dinar Dwi Anugerah Putranto, Azhar Kholiq Affandi and Eddy Ibrahim*
- 103–107 Water balance model for environment supportive power simulation (case study at Kota malang)
—*Bambang Suharto, Ruslan Wirosoedarmo and Liliya Dewi Susanawati*

-
- 108–117 Preferences for settlement improvement in urban Riparian Indonesia
—*Maya Fitri, Sugeng Triyadi and Ismet B Harun*
- 118–125 Spatial analysis of soil texture and peat soil by NDSI method at swamp area of Banyuasin District
—*Indrayani, Erika Buchari, Dinar D.A. Putranto and Edward Saleh*
- 126–130 Explanation of the spatial pattern of tourism capabilities in the development of rural entrepreneurship (case study: Villages of Rasht, Guilan Province)
—*Masoume Bloki Asli, Mohammadali Ahmadian and Hamid Jafari*
- 131–137 Assessment of genetic diversity in Oat (*Avena sativa* L.) genotypes using agromorphological traits under drought stress condition
—*Midia Naleyni and Seyed Mehdi Safavi*
- 138–147 Energy conservation along with generation expansion planning – A solution for Tamil Nadu electrical Power Shortage
—*A. Bhuvanesh, S.T. Jaya Christa and S. Kannan*
- 148–159 Enumerate the groundwater contamination and confiscation of benzene by column study – A lead effectual approach
—*M. Senthil Kumar, G.V.T. Gopalakrishna, V. Sivasankar and K. Omine*
- 160–165 An overview related to the different approaches of synthesis of different metallic nanoparticles with various advantages in modern science
—*Monika Sharma, Ishita Yadav and Chandra Kant Sharma*
- 166–171 Eco-biology and Life cycle study of common grass yellow butterfly (*Eurema hecabe*) from the fringe areas of Mumbai (MS), India
—*Swapnesh Rangnekar, Anurag Mistry and Aparna Ghadigaonkar*
- 172–176 Comparative yield performance of rice varieties (high yielding and hybrids) under drought prone conditions in Jharkhand
—*Yogesh Kumar and M.S. Anantha*
- 177–183 Mechanical properties of high strength concrete using eco-friendly construction materials
—*V. Arivudamai and R. Velkennedy*
- 184–190 Visible light based photocatalytic degradation of ambient NO_2 using doped nanophotocatalyst
—*Vinod Kumar R. and S. Karthikeyan*
- 191–195 Magnitude of carbon in different viral proteins
—*Parul Johri, Mala Trivedi and Mohammed Haris Siddiqui*
- 196–200 Effects of automobile exhaust pollution (From 2-stroke and 4-stroke Engine vehicles) on the haematological parameters of female rat during winter season
—*Sukhvinder Kaur*
- 201–205 Evaluation of physico-chemical properties of rice straw and rice husk-derived biochar
—*Kanku Deka, B.K. Medhi, G.G. Kandali, R. Das, K. Pathak, L. Sarkar and K.D. Nath*
- 206–211 Design of hybrid power control using exotic adaptive neuro-fuzzy inference system for hybrid renewable applications
—*K. Mahendran and S.U. Prabha*
- 212–216 DNA based investigation of century old freshwater sponge species from Indian Museum tank
—*Shibananda Rath, Vikas Kumar, Shantanu Kundu, Kaomud Tyagi and Boni Amin Laskar*
- 217–225 Critical risk factors associated with construction Projects of Tamilnadu
—*Thirumuruga Poiyamozhi M.V.V. and P.S. Kumar*

-
- 226–234 **Jalkund an alternative potential rainwater harvesting structure in wokha District, Nagaland – A case study**
—*Laishram Kanta Singh, Kangjam Sonamani Singh and S. Roma Devi*
- 235–246 **Environmental applications: Effective analysis of land classification for change detection of satellite images in Chennai region**
—*N. Prabhakaran, S.S. Ramakrishnan and N.R. Shanker*
- 247–255 **Stimulus of agro-industrial waste to make eco-concrete-A review**
—*S. Praveenkumar and G. Sankarasubramanian*
- 256–261 **Analysis of groundwater for potability at coconut husk retting Area, Kanyakumari District, Tamilnadu, India**
—*I. Jessy Mol and T. Baskaran*
- 262–270 **Assessment of phytodiversity and their socio-economic dimensions from the submersed zone of Naitwar-mori hydroelectric power project in tons Valley, Garhwal Himalaya, India**
—*Dinesh Singh Rawat, Radha Ballabha and C.S. Rana*
- 271–276 **Process optimization and economic analysis of biodiesel production from waste cooking oil using copper doped zinc oxide Nanocatalyst**
—*R. Sandhya, R. Velavan and J. Ravichandran*
- 277–283 **Effect of sewage water irrigation on soil properties: A case study of Parakkai Lake in Tamil Nadu**
—*S. Sahaya Vasanthi and S. Adish Kumar*
- 284–288 **Toxicant stress on protein and ascorbic acid contents in different tissues of freshwater bivalve *Parreysia cylindrica* from different reservoirs of Nashik District**
—*Rahane Balasaheb and Bhalla Resham*
- 289–302 **Performance of irrigation canal before and after rehabilitation – A case study**
—*K. Punithavel, N. Mahendran and P.K. Suresh*
- 303–310 **Histopathological changes in the heart and blood of Indian major carp *Catla catla* (Hamilton, 1822) exposed to Cadmium nanoparticles**
—*S. Sangeetha, S. Deeparani and V. Padma Priya*
- 311–315 **Experimental investigation on a compression Ignition engine fueled with corn biodiesel with diesel blends under different compression ratio**
—*S. Nagaraja, C. Krishnaraj, K. Sooryaprakash and M. Sathish Kumar*
- 316–324 **Framework for environmental impact assessment (EIA) in urban detailed plans, case study: Tehran, Iran**
—*Ali Reza Sadeghi, Elham Zabetian and Elham Nahavandi*
- 325–333 **Flood disaster preventive measures using GIS and multicriteria technique in the water sheds area of Ambasamuthiram town**
—*M. Seenirajan, M. Natarajan, R. Thangaraj and S. Shanmugasundaram*
- 334–342 **Wild barely (*Hordeum spontaneum* Koch) populations response to sulfosulfuron herbicide**
—*Mojtaba Hosseini, Reza Ghorbani, Mohammad Hassan Rashed mohassel, Mohsen Yassaie*
- 343–350 **Application of amalgamated SSF & Uasb in greywater treatment – A revolutionary approach**
—*B. Venkatesan, S. Praveen and M. Senthil Kumar*
- 351–356 **Effect of Zn on anocatalyst on biodiesel synthesis from different feedstock**
—*C. Chinmasamy and D. Tamilselvam P.*
- 357–363 **Eco-friendly high strength concrete production using silica mineral waste as fine aggregate – An ecological approach**
—*Selvaraj Kumar P., Murthi P., Gobinath R. and Paul Awoyera*

-
- 364–371 Performance analysis of diesel engine using corn oil biodiesel and preheating of Inlet Air: The Taguchi approach
—*V. Gopinath and P. Shanmughasundaram*
- 372–383 Application of GIS techniques in Mapping of flood and erosion risk areas
—*Olumuyiwa Idowu Ojo, Masengo Francois Ilunga and Isaiah Oluwakayode Ogunwobi*
- 384–393 Analysis of maximum velocity, bed shear, and sediment distribution towards the effect of groyne placement
—*Pitojo Tri Juwono, Dian Sisanggih and Iskandar*
- 394–399 Performance and emission analysis of VCR single cylinder four stroke DI diesel engine using Punnagam oil
—*K. Murugan, R. Thirumalai and K. Rajkumar*
- 400–407 Measuring cultural development degree in Ardabil province (IRI)
—*Gholam Reza Miri, Simin Abafat and Parisaghaderi*
- 408–415 The effect of molting hormone (20-hydroxyecdysone) toward molting of mud crab (*Scylla Olivacea* Herbst, 1976)
—*Andi Tamsil and Hasnidar*
- 416–423 The vulnerability analysis of mangrove forest status as a Tourism Area
—*Nuddin Harahab, Harsuko Riniwati and Zainal Abidin*
- 424–430 Citizens' color preferences in the Urban landscape based on participation-based approach
—*Elham Zabetian¹, Ali Reza Sadeghi^{2*} and Arsam Salahi Moghadam*

The impact of traditional gold mining in Gumelar Banyumas, Indonesia

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ABSTRACT

Traditional gold mining that grows without planning and only on the will of the community in order to obtain coffers, then the negative impact cannot be avoided. The gold mining of the people in Gumelar sub-district Banyu as is also part of traditional gold mining. The purpose of this study was to identify the impact of traditional gold mining in Gumelar sub-district Banyumas. The method used is qualitative descriptive. The results show the positive and negative impacts of the traditional gold mining. Positive impacts are more dominant in the economic and social aspects of society such as increased community revenues and emerging job opportunities, as well as the emergence of new business opportunities that follow, as well as increased levels of formal education of the community. Negative impacts are included in environmental and social aspects, such as the environmental pollution phenomenon of mercury waste as part of the mining instrument used and the lifestyle changes of miners leading to hedonistic and consumerism. The suggestion is the minimization of negative impacts and the maximization of positive impacts.

Key words : Impact, Traditional, Gold mining, Banyumas

Introduction

Any activity undertaken by the people in order to fulfill the necessities of life is the right of every citizen. However, activities must always consider the benefits for the actors themselves, the community, and the environment. On the other hand that should be considered is the loss that may arise from an activity, which is not only for the perpetrators of activities but also for the community and the environment.

Gold mining is also one of the activities that clearly have the potential to affect the society and

the environment both on biotic, abiotic and social components. It is generally known that mining activities are classified as activities that directly extract natural resources which are then processed in a process that is not simple, even using chemical components so it is potentially very dangerous and will pollute and damage the environment so that the sustainability of environmental functions will be disrupted.

Act No.32 of 2009 provides guidelines that activities should be oriented towards sustainable development. What is meant is a conscious and planned effort that combines environmental, social and eco-

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conomic aspects into a development strategy to ensure the integrity of the environment and the safety, abilities, welfare, and quality of life of present and future generation?

The focus of the impact assessment is Mabel (2014) who stated that small-scale gold mining contributes positively to improving people's lives in terms of employment, income, health, education and basic family needs. However, this mining also negatively impacts the environment. Simbarase (2014) also concluded that gold mining in Zimbabwe Africa positively impacts socioeconomic communities, but has a negative impact on environmental quality. Abraham (2006) states that in general gold mining has a negative image caused by potentially very high pollution, while the cost is internalized to the public, especially miners. Vivian (2011) concluded that gold mining in Ghana resulted in 58% deforestation and 45% lost of agricultural land. Heledd (2006) who reviewed industry-related CSR said that with CSR needs to be put on hold in mining to gain social and environmental endorsement.

Research Method

This study was designed as a study with a combined method of qualitative and quantitative (Brannen, 2005). Surely this research is different from the experimental research that requires researcher intervention on the object of study. This research only reveal the phenomena that exist and occur in the community, especially those linked with the existence of traditional gold mining. Therefore, the data collection method were in-depth interview, documentation and observation.

In addition, this research is a qualitative research. However, it is not classified as grounded research, which purely departs from the field with empty hands which then compiles the theory of the findings in the field. This research still departs from the theory that then through the process of deductive thinking moves into the empirical realm which then through the process of inductive thinking leads to the theory of the field again. On the other hand, this study is neither purely qualitative nor absolute without data or quantitative methods. Therefore this research as a research with combined method. Specific research methods are qualitative in nature such as interviews, sometimes quantitative dimensions and data obtained can be analyzed by various methods including quantitative methods (Bullock and Willham, 2005).

The definition of impact is change as effect of an activity, so environment impact is change influence on environmental life which is affected by an effort and/or activity (RI. No.23th 2009).

Results and Discussion

The results show that the presence of traditional gold mining in Gumelar has positive and negative impacts.

Positive Impact of Gold Mining

Prominent positive impacts are on the economic and social fields. The indications are apparent, among others;

Labor

Traditional gold mining is categorized as labor-intensive; hence its existence absorbs a significant workforce. In real terms accurate data does not exist, but from various sources informants that the absorption of labor from gold mining is quite a lot. The labor involved directly from the clear mining of 2 villages of Paningkaban and Cihonje is about 1500 people. Not to mention the people who work not directly in mining but his work as a multiplier mining activities. Such jobs include food traders, food stalls, grocery stores, timber suppliers for mining needs, gold traders, etc.

The number of workers absorbed as well as the reduction of unemployment in the absence of mining activities is relatively high because conditions in the village Paningkaban and Cihonje belong to rural areas that are not many job opportunities except the

Table 1. Population working in the mining sector in Gumelar sub-district.

No.	Village	Mining	Percentage
1	Cilangkap	13	1.17
2	Cihonje	333	29.97
3	Paningkaban	615	55.36
4	Karangkemojing	20	1.80
5	Gancang	23	2.07
6	Kedungurang	75	6.75
7	Gumelar	19	1.71
8	Tlaga	5	0.45
9	Samudra	2	0.18
10	Samudrakulon	6	0.54
	Total	1,111	100

Source: BPS Banyumas Regency, 2016.

agricultural sector. Agriculture is relatively low because of the lot of land in the form of highland plantations.

Such condition is then before the gold mining, many young people in the village work abroad as migrant workers. After the gold mining the young population did not go abroad, but at work became a gold miner. Data on the number of people working in the mining sector according to Banyumas BPS data can be seen in Table 1.

The data show that the population in Gumelar sub-district working in mining as many as 1.111 people. Although the data do not specifically mention gold mining, it is implicitly in gold mining. This is evident from the highest number of villages in two villages where the gold mines are Cihonje and Paningkaban, 333 and 615 respectively. The remaining workers are those from outside Gumelar sub-districts even outside Banyumas district, such as from Tasikmalaya, Bogor, Yogyakarta and so on. Of the number of workers who are about 1500 people, then the number of people who depend on this gold mining can be 3 or 4 times as much. Assuming 1 family consists of 4 residents then it means there are 6000 of the population whose life depends on the gold mining in Gumelar District Banyumas Regency.

New Business Growth

A gold mining activity that involves a lot of people for a long time and generates income, has implications for the economic sector that usually follows.

Table 2. Growth of trade facilities (shops/kiosks/stalls) in Gumelar Sub-district.

No	Year	Amount
1	2011	721
2	2012	750
3	2013	886
4	2014	943
5	2015	1.024

Source: BPS Banyumas Regency, 2016.

The types of informal businesses that grow as in the form of shops, kiosks and stalls are an indication of an increase in people's purchasing power. Increased purchasing power also means the increase of people's income. Table 2 above shows that there is a very significant trend of growth of the informal sector in the 5-year period along with the existence

of gold mining activities in the area. No one determines that the cause of such economic activity is purely due to the existence of gold mining, but this can be an indication of the positive impact of gold mining.

Increasing Community Revenue

Community revenues that have increased since gold mining activities are recognized by the community as well as outside parties and even local government officials. Quantitative data does not exist, but the results of interviews with various informants all recognize that the existence of gold mining gives the impact of increased incomes of society. The explanation was revealed by a village Head Mr. Sukarmo.

Successfully mine gold, people to build houses, so the house is good. The value of land here is now high, even difficult to find the land sold. This village was classified as a disadvantaged village (IDT), but now its houses are getting better all the way. The growth of major roadside shops has also emerged since mining, and the shop owners are all natives here.

High low income is relative in nature, but how much actual income miners from his work in this gold mining. Miners and other informants can-not be sure how much they spend per day or per month. Only when compared to income from prior work that most of the farms and estates become recognized miners are definitely up.

Their income is uncertain because there is a system like this. When not getting the results is the daily wage of workers, but when getting a percentage, therefore the results up to millions per day. Similarly, told by a miner who has been there for 8 years, his name is Sumanto:

The bottom line of the above information is that their income keeps them working in the mines, although it is difficult to say exactly how much they earn per day or per month. The uncertainty of earning such income seems to have been well recognized by the miners, either for the workers or the owners of their capital. That is why most of the workers in gold mining are people having supplies for themselves and families left behind. In other words though they are as workers but not synonymous with labor. For example the economic condition of the successful population in gold mining can be seen from the condition of their homes. Here's a picture of some of the houses belonging to the resident of

his business in gold mining either as landowner or capital owner.



Fig. 1. The houses of the people involved in gold mining.

The conditions of such luxurious houses are in the Paningkaban village. It seems that the irony in the villages belonging to the villages spread like houses in a big city. No other and not that the owners are the villagers whose income from gold mining, either as landowners, owners of capital, or gold traders of mining products in the village.

Religious Social Condition

The social codes of people who appear to be positively affected by gold mining are the level of formal education. The formal education of the population has increased in line with the increase of the people's income. This can be seen from the level of education of mined family children, where parents increase their income so they can send their children to college. As told by Mrs. Astri, an owner of a food stall that daily serves the gold miners.

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Fig. 2. The solid land surface of the tailings is infertile.

The land is packed with unused mining rock tailings into views around the wells. Of course the land covered with such rocks becomes less fertile than before the gold dug wells. The size of the land is thus wider as the gold mining runs. For that to be drawn the longer the proposition of gold mining goes, the more land is covered with tailings, which in turn reduces soil fertility while reducing the vegetation growing on the land. Hagos *et al.* (2016) con-

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Indications of mercury contamination in the environment are not visible to the eyes. Even miners also feel that they have not felt the impact of mercury on their health. However, various studies have shown that mercury contamination is significantly exposed in the mining environment. One study conducted to know the mercury contamination of gold mining in Gumelar, illustrated that mercury contamination is present in many minerals; tailings minerals, soils and rocks, river sediments, river water and groundwater (Fahmi *et al.*, 2014). Mercury grade and mercury in Mineral Ore, the result of mercury level measurement on 3 samples of ore minerals with sample code of PWT 02A, PWT 02B, and PWT 03 showed varied values respectively 0.007 ppm, 0.012 ppm, and 0.005 ppm. Of the three samples, the average value is 0.008 ppm.

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Lifestyle

Lifestyle is difficult to determine that the change is caused solely by the existence of gold mining. How-

ever, from various information obtained that the improvement of socio-economic conditions is recognized has increased since gold mining. Prior to mining there were many people who did not work or worked in agriculture and plantations that were mostly irregular and erratic work, so that unemployment was high. After gold mining, almost all of the unemployed population remain directly or indirectly involved in mining activities.

Changes in the rhythm of life that was from non-technical agrarian directly to the industry and even a kind of mass / household industry, then a little more influence on their lifestyle. Social activities that were still thick lost because their free time that they have increasingly narrow. Social activities as part of the manifestation of the values *gotongroyong* no longer because time and energy has become a very valuable production factor and make money. Patterns of social solidarity that are *peguyuban/gemeinschaft* increasingly faded. On the contrary the pattern of *patembayan/gesellschaft* society is increasingly prominent in which solidarity is built on the basis of economic interests and industrial relations (Sztompka, 2004).

As the lifestyles of industrial society are running out for work, then on holidays they use to rest and refreshing. This pattern also became commonplace done by gold miners especially young ones, filling the time of Friday to refreshing the negative as drinking, gambling and disco/*dugem*. As informed by Mrs. Nuriya's informant;

Among miners if the gamble is now not there, there used to be but continue to be caught and continue to disappear. If there is a drink there may be but it is not far outside in this village. I also heard that every Friday night is a mine worker's holiday, in Baturraden where crowds are visited by miners. There was even a word "Puriwisata a night entertainment place like karaoke and discotheque in Baturraden Purwokerto, if Friday night dominated by the paningkaban people".

This means that the negative impact on the social aspects of gold mining can-not be denied. If it is not classified as negative, at least shows there is a change in lifestyle of people who become familiar with hedonist lifestyle.

Conclusion

The existence of gold mining in GumelarBanyumas has positive and negative impacts. Positive impacts

are on social and economic aspects consisting of; high employment of local workers, while also reducing unemployment for the population. Recalling the incomes of society which in turn warned the well-being of their lives. The growth of new businesses as a multiplier effect of gold mining activities. The social condition of the community also increases, especially in the increasing field of formal education of the population, as well as increased religious social activities as well.

Negative impacts that occur in the environmental and social aspects. The once fertile and vegetation-laden land conversion is now becoming barren due to the large amount of unused mine tailings rocks. The presence of damaged infra-structure is also the effect of gold mining because mining excavations are not controlled either inside or direction. Mercury pollution is exposed to soil, sediment, ground water and river water. The hedonic lifestyle and faded old values that have been considered as the legacy of his ancestors.

Acknowledgment

I would like to thank the village Heads of Paningkaban and Cihonje who have given permission and much information about gold mining in their village. Thanks also to the miners, owners of capital and local communities are very open to provide much information. Students, Tigris and Sakti who have helped in field activities.

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The impact of traditional gold mining in gumelarbanyumas Indonesia

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ABSTRACT

Traditional gold mining that grows without planning and only on the will of the community in order to obtain coffers, then the negative impact cannot be avoided. The gold mining of the people in Gumelar sub-district Banyu as is also part of traditional gold mining. The purpose of this study was to identify the impact of traditional gold mining in Gumelar sub-district Banyum as. The method used is qualitative descriptive. The results show the positive and negative impacts of the traditional gold mining. Positive impacts are more dominant in the economic and social aspects of society such as increased community revenues and emerging job opportunities, as well as the emergence of new business opportunities that follow, as well as increased levels of formal education of the community. Negative impacts are included in environmental and social aspects, such as the environmental pollution phenomenon of mercury waste as part of the mining instrument used and the lifestyle changes of miners leading to hedonistic and consumerism. The suggestion is the minimization of negative impacts and the maximization of positive impacts.

Key words : Impact, Traditional Gold Mining, Mercury.

Introduction

Any activity undertaken by the people in order to fulfill the necessities of life is the right of every citizen. However, activities must always consider the benefits for the actors themselves, the community, and the environment. On the other hand that should be considered is the loss that may arise from an activity, which is not only for the perpetrators of activities but also for the community and the environment.

Gold mining is also one of the activities that clearly have the potential to affect the society and

the environment both on biotic, abiotic and social components. It is generally known that mining activities are classified as activities that directly extract natural resources which are then processed in a process that is not simple, even using chemical components so it is very potential once will pollute and damage the environment so that the sustainability of environmental functions will be disrupted.

Act No.32 of 2009 provides guidelines that activities should be oriented towards sustainable development. What is meant is a conscious and planned effort that combines environmental, social and economic aspects into a development strategy to ensure

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the integrity of the environment and the safety, abilities, welfare, and quality of life of present and future generation?

The focus of the impact assessment is Mabel (2014) who stated that small-scale gold mining contributes positively to improving people's lives in terms of employment, income, health, education and basic family needs. However, this mining also negatively impacts the environment. Simbarase (2014) also concluded that gold mining in Zimbabwe Africa positively impacts socioeconomic communities, but has a negative impact on environmental quality. Abraham (2006) states that in general gold mining has a negative image caused by potentially very high pollution, while the cost is internalized to the public, especially miners. Vivian (2011) concluded that gold mining in Ghana resulted in 58% deforestation and 45% lost of agricultural land. Helled (2006) who reviewed industry-related CSR said that with CSR needs to be put on hold in mining to gain social and environmental endorsement.

Research Method

This study was designed as a study with a combined method of qualitative and quantitative (Brannen, 2005). Surely this research is different from the experimental research that requires researcher intervention on the object of study. This research only reveal the phenomena that exist and occur in the community, especially those linked with the existence of traditional gold mining. Therefore, the data collection method were in-depth interview, documentation and observation.

In addition, this research is a qualitative research. However, it is not classified as grounded research, which purely departs from the field with empty hands which then compiles the theory of the findings in the field. This research still departs from the theory that then through the process of deductive thinking moves into the empirical realm which then through the process of inductive thinking leads to the theory of the field again. On the other hand, this study is neither purely qualitative nor absolute without data or quantitative methods. Therefore this research as a research with combined method. Specific research methods are qualitative in nature such as interviews, sometimes quantitative dimensions and data obtained can be analyzed by various methods including quantitative methods (Bullock, Little and Millham, 2005).

The definition of impact is change as effect of an

activity, so environment impact is change influence on environmental life which is affected by an effort and/or activity (RI. No.23 th 2009).

Result and Discussion

The results show that the presence of traditional gold mining in Gumelar has positive and negative impacts.

Positive Impact of Gold Mining

Prominent positive impacts are on the economic and social fields. The indications are apparent, among others;

Labor

Traditional gold mining is categorized as labor-intensive; hence its existence absorbs a significant workforce. In real terms accurate data does not exist, but from various sources informants that the absorption of labor from gold mining quite a lot. The labor involved directly from the clear mining of 2 villages of Paningkaban and Cihonje is about 1500 people. Not to mention the people who work not directly in mining but his work as a multiplier mining activities. Such jobs include food traders, food stalls, grocery stores, timber suppliers for mining needs, gold traders, etc.

The number of workers absorbed as well as the reduction of unemployment in the absence of mining activities is relatively high because conditions in the village Paningkaban and Cihonje belong to rural areas that are not many job opportunities except the agricultural sector. Agriculture is relatively low be-

Table 1. Population working in the mining sector in Gumelar sub-district.

No.	Village	Mining	Percentage
1	Cilangkap	13	1.17
2	Cihonje	333	29.97
3	Paningkaban	615	55.36
4	Karangkemojing	20	1.80
5	Gancang	23	2.07
6	Kedungurang	75	6.75
7	Gumelar	19	1.71
8	Tlaga	5	0.45
9	Samudra	2	0.18
10	Samudrakulon	6	0.54
	Total	1,111	100

Source: BPS Banyumas Regency, 2016.

cause of the lot of land in the form of highland plantations.

Such condition is then before the gold mining, many young people in the village work abroad as migrant workers and migrant workers. After the gold mining the young population did not go abroad, but at work became a gold miner. Data on the number of people working in the mining sector according to Banyumas BPS data can be seen in the following table.

The data above shows that the population in Gumelar sub-district working in mining as many as 1.111 people. Although the data does not specifically mention gold mining, it is implicitly in gold mining. This is evident from the highest number of villages in two villages where the gold mines are Cihonje and Paningkaban, 333 and 615 respectively. The remaining workers are those from outside Gumelar sub-districts even outside Banyumas district, such as from Tasikmalaya, Bogor, Yogyakarta and so on. Of the number of workers who are about 1500 people, then the number of people who depend on this gold mining can be 3 or 4 times as much. Assuming 1 family consists of 4 residents then it means there are 6000 of the population whose life depends on the gold mining in Gumelar District Banyumas Regency.

New Business Growth

A gold mining activity that involves a lot of people for a long time and generates income, has implications for the economic sector that usually follows.

Table 2. Growth of trade facilities (shops/kiosks/stalls) in Gumelar Sub-district.

No	Year	Amount
1	2011	721
2	2012	750
3	2013	886
4	2014	943
5	2015	1.024

Source: BPS Banyumas Regency, 2016.

The types of informal businesses that grow as in the form of shops, kiosks and stalls are an indication of an increase in people's purchasing power. Increased purchasing power also means the increase of people's income. Table 5 above shows that there is a very significant trend of growth of the informal sector in the 5-year period along with the existence

of gold mining activities in the area. No one determines that the cause of such economic activity is purely due to the existence of gold mining, but this can be an indication of the positive impact of gold mining.

Increasing Community Revenue

Community revenues that have increased since gold mining activities are recognized by the community as well as outside parties and even local government officials. Quantitative data does not exist, but the results of interviews with various informants all recognize that the existence of gold mining gives the impact of increased incomes of society. The explanation was revealed by a village head Mr. Sukarmo:

Successfully mine gold, people to build houses, so the house is good. The value of land here is now high, even difficult to find the land sold. This village was classified as a disadvantaged village (IDT), but now its houses are getting better all the way. The growth of major roadside shops has also emerged since mining, and the shop owners are all natives here.

High low income is relative in nature, but how much actual income miners from his work in this gold mining. Miners and other informants cannot be sure how much they spend per day or per month. Only when compared to income from prior work that most of the farms and estates become recognized miners are definitely up. An description is the statement the village head, Mr. Sarnoto;

Their income is uncertain because there is a system like this. When not getting the results is the daily wage of workers, but when getting a percentage, therefore the results up to millions per day. Similarly, told by a miner who has been there for 8 years, his name is Sumanto:

The miner was an uncertain outcome. Because I was 2 years without success, around the year 2010an. But that is still lived, because if it can be to close. There is the term "drought a whole week of wet rain all". This means the results of a week can pay for work a year.

The bottom line of the above information is that their income keeps them working in the mines, although it is difficult to say exactly how much they earn per day or per month. The uncertainty of earning such income seems to have been well recognized by the miners, either for the workers or the owners of their capital. That is why most of the workers in gold mining are people having supplies for them-

selves and families left behind. In other words though they are as workers but not synonymous with labor. For example the economic condition of the successful population in gold mining can be seen from the condition of their homes. Here's a picture of some of the houses belonging to the resident of his business in gold mining either as landowner or capital owner.



Fig. 1. The houses of the people involved in gold mining.

The conditions of such luxurious houses are in the Paningkaban village. It seems that the irony in the villages belonging to the villages spread like houses in a big city. No other and not that the owners are the villagers whose income from gold mining, either as landowners, owners of capital, or gold traders of mining products in the village.

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scale gold mining in the country.

Lifestyle

Lifestyle is difficult to determine that the change is caused solely by the existence of gold mining. However, from various information obtained that the improvement of socio-economic conditions is recognized has increased since gold mining. Prior to mining there were many people who did not work or worked in agriculture and plantations that were mostly irregular and erratic work, so that unemployment was high. After gold mining, almost all of the unemployed population remain directly or indirectly involved in mining activities.

Changes in the rhythm of life that was from non-technical agrarian directly to the industry and even a kind of mass / household industry, then a little more influence on their lifestyle. Social activities that were still thick lost because their free time that they have increasingly narrow. Social activities as part of the manifestation of the values *gotongroyong* no longer because time and energy has become a very valuable production factor and make money. Patterns of social solidarity that are *peguyuban/gemeinschaft* increasingly faded. On the contrary the pattern of *patembayan/gesellschaft* society is increasingly prominent in which solidarity is built on the basis of economic interests and industrial relations (Sztompka, 2004).

As the lifestyles of industrial society are running out for work, then on holidays they use to rest and refreshing. This pattern also became commonplace done by gold miners especially young ones, filling the time of Friday to refreshing the negative as drinking, gambling and disco/*dugem*. As informed by Mrs. Nuriya's informant;

Among miners if the gamble is now not there, there used to be but continue to be caught and continue to disappear. If there is a drink there may be but it is not far outside in this village. I also heard that every Friday night is a mine worker's holiday, in Baturraden where crowds are visited by miners. There was even a word "Puriwisata a night entertainment place like karaoke and discotheque in Baturraden Purwokerto, if Friday night dominated by thepaningkaban people".

This means that the negative impact on the social aspects of gold mining can-not be denied also occur. If it is not classified as negative, at least shows there is a change in lifestyle of people who become familiar with hedonist lifestyle.

Conclusion

The existence of gold mining in GumelarBanyumas has positive and negative impacts. Positive impacts are on social and economic aspects consisting of; high employment of local workers, while also reducing unemployment for the population. Recalling the incomes of society which in turn warned the well-being of their lives. The growth of new businesses as a multiplier effect of gold mining activities. The social condition of the community also increases, especially in the increasing field of formal education of the population, as well as increased religious social activities as well.

Negative impacts that occur in the environmental and social aspects. The once fertile and vegetation-laden land conversion is now becoming barren due to the large amount of unused mine tailings rocks. The presence of damaged infra-structure is also the effect of gold mining because mining excavations are not controlled either inside or direction. Mercury pollution is exposed to soil, sediment, ground water and river water. The hedonic lifestyle and faded old values that have been considered as the legacy of his ancestors.

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