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The Sharia Practices for Establishing Sustainable Mining Industry

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Abstract

While mining is continuing and shall continue to be the cornerstone of human civilization (Ghose, 2009), on the other side, it is facing the negative images alleged by most of the world communities as the activity brings damages on the environment, and is quite a lot proved losing the local communities in terms of social and economic catastrophes. In some cases of mining operation, these issues often force the operators/companies to close the sites, but still leave problems behind. Whereas for the mining which has been established, running the operation in several countries worldwide does not mean discharging from the issues. Setting up a sustainable mining industry in order to keep civilizing the humans, as well as preserving the environment and improving the social and economic impacts on the people, should be done and would pose a challenge at once. Such a project as Mining, Minerals and Sustainable Development (MMSD) has demonstrated in responding the challenge of sustainable mining. In addition, general indicators on sustainable mining have been proposed by the Global Mining Initiative (GMI). Then, how Sharia, which is well-known as the blueprint of Muslim society, regulates a mining industry so it can comply with the sustainability concept. This paper is outlining the environmental, social and economic failures, which are caused by the implementation of current mining operation, and how sharia practically answers the challenge for establishing sustainable mining industry. The MMSD framework and the GRI indicators are included as comparisons.

Keywords

Sharia, Sustainable Mining, Industry

Introduction

Mining is like having two personalities of Dr. Jekyll and Mr. Hyde. Mining improves humans' quality of life, since the activity does not only bring the valuable minerals out of the earth but also creates multiplier effects by providing works for tens, hundreds, even thousands of people. Nevertheless, mining also gives impacts to the environment as it changes the nature and declines the biodiversity, in which any kind of remediation would not return the site to the condition as natural as it was. Meanwhile, mining is always dealing with land and local people who own them and live in or surrounding the sites. For the sake of corporate interest, which is facilitated by the government that stands on behalf of national wealth, a mining company can freely exploit the customary land, while chasing the local people away from their homeland to nowhere, besides affecting the nature and thus endangering their lives. In the sphere of economy, a mining company seems to be in favor of the country and the people. But, it is only in the case of the Gross Domestic Product (GDP), which cannot be considered as profits for the people in a broad scope.

According to the Mining, Mineral and Sustainable Development (MMSD), there are some sustainable development drivers which can be adopted by a mining industry to approach the sustainability, namely environmental, socio-economic, corporate and regulatory matters (Van Zyl et al., 2002). The Global Reporting Initiative (GRI) indicators for mining consist of three main cores namely economic, environmental, and social indicators. The economic indicator concerns customers, suppliers, employees, investors and public sectors. The environmental indicator concerns materials, energy, water, biodiversity, emission, effluent, waste, suppliers, products and services, compliance,

and transport. Whereas the social indicator includes labour practices and decent work, human rights, society, and product responsibility.

The Sharia practice in mining is based on principles written in Al-Qur'an and explained in sunnah (the practices of the Prophet Muhammad *Sallallahu 'alayhi wa sallam*). *The Sharia mining practice, which is recommended in the paper, includes economy, environment, and government as the main dimensions.*

Mining as the resource for human life

The mining era has been as old as human civilization age, as it is minerals which endorse people's needs in every realm, since hundred thousand years ago, until at present, and indeed to the future of humankind. It is most likely impossible visualizing life, or improving the quality of life without encompassing mineral mining in our life. As a recent World Bank report noted that: "...natural resource-based activities can lead growth for long periods of time. This is patently evident in the development history of natural resource-rich developed countries, such as Australia, Finland, Sweden, and the United States. Mining was the main driver of growth and industrialization in Australia and the United States over more than a century..." (OXFAM America, 2002 in Whitmore, 2006).

Industry

When *Homo habilis* serendipitously discovered a sharp edge of flint stone in some 450.000 years ago, it provided the first artefact in the technological toolbox of mankind's first miner (Ghose, 2009). Since then the human life needs to grow time after time and encourages people to develop various technologies which are very dependent on mineral resources.

Mineral has been the "food" of industry (Ziran, 1999), and is essential to everyday life, making up numerous products we all use. The mineral industry has been supplying almost all people's necessities for electronics by the sub sector of metallic minerals (e.g. iron, copper, zinc), for construction by the sub sector of construction minerals (e.g. sands, gravels, gypsum, granite, andesite), as well as for such industries as cosmetics, jewelleryes, detergents, drugs, glass, paint, paper by the sub sector of industrial minerals (e.g. borates, calcium carbonates, kaolin, plastic clays, talc, quartz, diamonds), (Azapagic, 2003).

Economy

As demand for mineral continuously grows along with the increase in people's needs, and the emerging innovation of dependent-minerals technology advancement, the mining sector has strong and direct impacts on economy. In the global economy, the mining and mineral sector is relatively small but very diverse, producing over 80 mineral commodities. The major producers include the USA, Canada, Australia, Russia, Brazil, South Africa, China and the EU, with production increasingly being concentrated in developing countries (Azapagic, 2003).

The shares of minerals total exports are more relevant than their absolute scale when considering the economical impact of mining. Minerals accounted for over 50% of total exports, and took a significant percentage in GDP in 2000 for eight countries; five of these were in Africa as shown in table 1 below (Crowson, 2009).

Table 1. Percentage shares of mineral exports in GDP and total exports, 2000 (Crowson, 2009).

Country	GDP	Exports
Botswana	40,1	92,5
Ghana	16,3	61,7
Guinea	13,6	63,6
Namibia	20,1	52
Jamaica	9,4	58,4
Suriname	42,6	75,3
Papua New Guinea	35,3	58,9

Employment

The mining industry directly opens employment; as many as 30 million are estimated to be involved in large-scale mining, representing 1% or the world's workforce, with a further 13 million works in small-scale mining [IIED (International Institute for Environment and Deleopment) and WBCSD (World Business Council for Sustainable Development, 2002 in Azapagic, 2009)].

A mining industry, especially the large-scale one, brings a multiplier effect in economical circumstance as it invites other business sectors which support the operation, including supplier companies of foods, energy, mining equipment, chemical and materials. In addition, mining service businesses serve transportation, drilling, blasting, as well as permitting and mine closure. These mining-descendent business sectors consequently lead to provide more job opportunities

Local community

The local communities, or ethnically named Indigenous People, are the members of a society which are significantly affected by the mining activities operating in their land. From the bright side (the dark side will be discussed further in the following sub headings) of mining operation, the area where the activities take place becomes a distinctively advanced region over the other areas in the country, particularly compared to those that have no such operation. This expectedly occurs because a mining process needs a complex supporting system, not only for the direct operation such as roads, bridges, water supply structures, telecommunication, etcetera, but also the indirect operations to facilitate the workers and their families such as hospitals, schools (elementary to the higher education), grocery markets, etcetera.

For instance is Freeport McMoran, the giant gold and copper mining company belonging to a U.S corporate. In order to pay back the minerals it has mined to the native people, it has built a modern city named Kuala Kencana located in Timika, Mimika regency (approximately 478 kilometers from Papua province's capital of Jayapura)¹²⁷. Kuala Kencana, which was inaugurated by President Soeharto in 1995, is an organized city with running centralized clean water distribution, a fresh sewage system and other underground-constructed common utilities.

The compatibility of mining to sustainability concepts

Mining by its nature involves the removal, processing and disposal of vast volumes of rock and disposal of vast amounts of wastes (Allan, 1995). In 1995 the gold industry moved and processed 72.5 million tons of rock to extract 7,235 tons of gold, while the rest, 99%, was left as waste (D'esposito, 2000). The United Nations Environment Programme Division of Technology, Industry and Economics (UNEP DTIE) in 2000 reported that 13 billion tons of stone, 10 billion tons of sand and gravel, and 500 million tons of clay were mined annually (UNEP DTIE, 2000).

Mining closure

Obviously, mining will greatly affects the environment through its various processes (land opening and clearing, excavation and dredging, mass transportation, mass dumping), threatening geomorphological, ecological, hydrological components dramatically, and permanently as the environmental threats of a mine do not end when the operation does moreover if companies and governments are reluctant to clean up toxins from the areas. Environmental failures are the ground from mining companies to close the operation prematurely.

The age of a mining activity also relies on economical circumstances namely those aspects which relate to supply-demand chain management, transparency and accountability, productivity and profitability. The equitable benefits should be given to the stakeholders, including shareholders, employees, local communities and business, as well as the governments by means of taxes and royalties. Therefore mine managers should be responsible for keeping costs to a minimum while maximizing revenue. Commonly covering up these expenses would end up problematically, moreover if the companies compensate the minimum costs through budget cutting for payments of employees and their insurances, or declining their technical performances in environmental monitoring and treatment, field exploration, or methodology and equipment utilizes.

The problematic environment and economic conditions encountered by mining companies commonly are hand in hand with social conflicts. The occupation of lands belonging to the indigenous

¹²⁷ http://papua.bps.go.id/site/index.php?option=com_content&view=article&id=529%3Anama-ibukota-kabupatenkota-dan-jarak-ke-ibukota-provinsi-2010&catid=245%3Ageografi-dan-iklim&Itemid=3

people is potential to create disputes between the local communities and the company, the government, as well as the security apparatuses at the other side. In addition to find their lands degraded, the indigenous people who demand equitable compensation from being exploited, commonly get nothing but violence and injustice. On the other hand, the existence of mining companies together with their urban clusters can increase wealth disparity and deepen poverty (Lins and Horwitz, 2007), especially in the local context, thus it leads to create horizontal conflicts. Large-scale metal mining is dominantly operated in developing countries across the world by capitalistic corporates. Instead of advancing these countries and the local communities' economic growth, the industry tends to pose socio-economic problems. According to the United Nations, the proportion of people living on less than \$1 a day in mineral-exporting countries rose from 61% in 1981 to 82% in 1999 (Whitmore, 2006). Meanwhile, a study from Britain's Lancaster University concluded that mineral-driven, resource-rich countries were among the poorest economic performers between 1960-1993 (Whitmore, 2006).

Of these three main dimensions of problematic-potential conditions (environment, economic, social), economics and technical efficiency are the common grounds to premature mining closures. Figure 2 illustrates the reasons that force mining companies to close their operations.

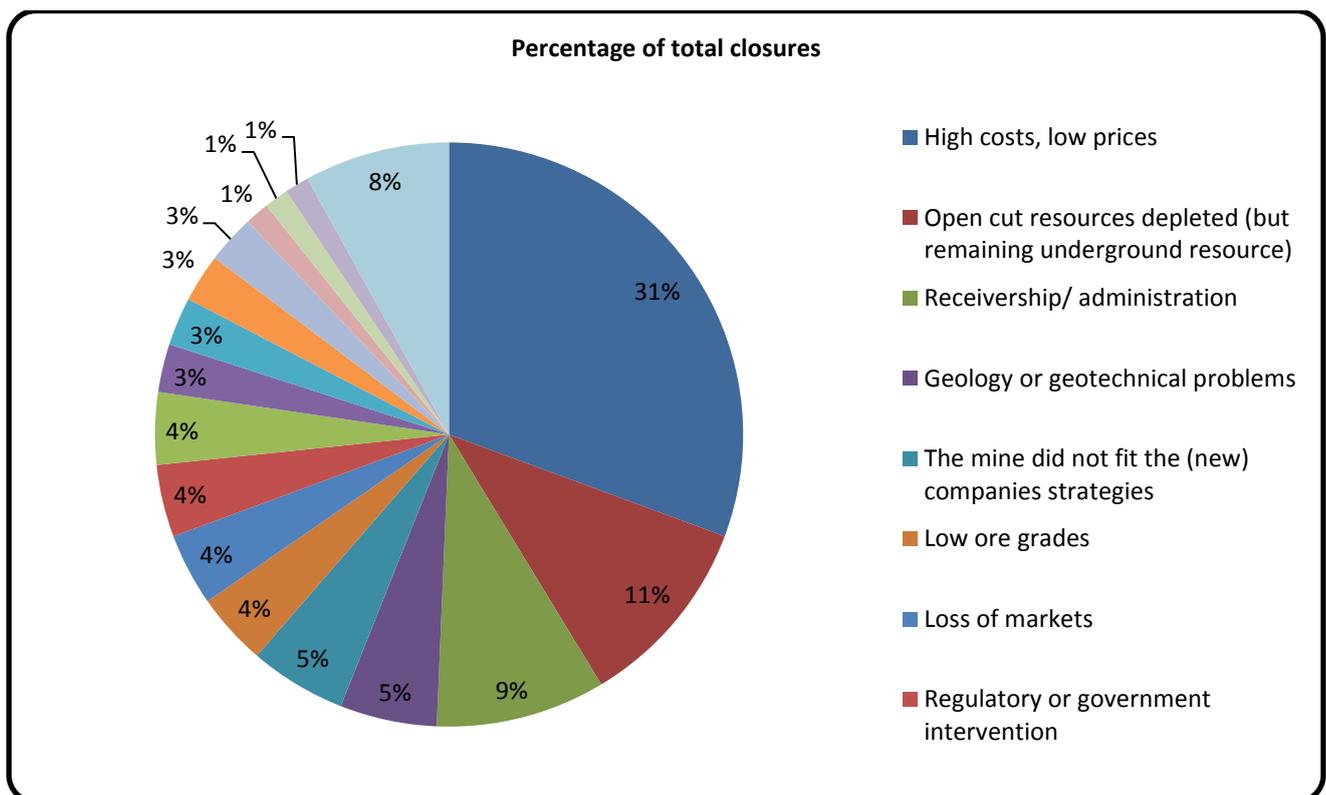


Figure 2. Premature mine closures by reasons (aggregated from data 1981-2005), (Laurence, 2006).

Sustainability initiatives

The Brundt Commission report in 1987 was the first defining sustainable development as a system of development that meets the basic needs of all people without compromising the ability of future generations to meet their own life-sustaining needs. General parties commonly suggest that a mining operation be non-sustainable activities simply since it exploits non-renewable resources. Moreover, with such all problems that should be dealt with mining companies, then can they meet the sustainability? Humphreys, 2001, stated that the affordability of mining companies in sustainability is a demand; consequently operators should have to meet it in such a way in order to be accepted by the stakeholders and shareholders as well.

There are several initiatives and projects to achieve the sustainable mining goals. In 1998, CEO's nine of the largest mining and metal companies launched the Global Mining Initiative (GMI) which goaled creating an industry association that would focus on sustainable development in the mining, metal and mineral sectors. This initiative would go on to spawn the Mining, Minerals and Sustainable Development (MMSD) project in 2000, the International Council on Mining and Metals

(ICMM) in 2001, and a global conference in May 2002. The cooperation between ICMM and Global Reporting Initiative (GRI) has set up the Sustainability Reporting Guidelines, a model for sustainability reporting used across sectors in 2002, (Lins and Horwitz, 2007).

Key sustainability

MMSD considered four sustainability drivers during the process of developing a mining project and during the operation of a mine in which any decision is made to take into account a number of considerations. These considerations are currently behind the decision-making process, namely on environment, socio-economic, corporate, and regulatory matters. Table 2 shows the sustainable drivers and each of them has sub-drivers, and their concerns (Van Zyl et.al., 2002).

Table 2. Sustainable development drivers proposed by MMSD, (Van Zyl et.al., 2002).

Driver	Sub driver	Concern
Environment: Physical and chemical characteristics of the waste and the method of disposal.	Land	Site selection should follow a number of basic steps that aim to ensure the optimal location of mining facilities, and take into account climate, topography, hydrology and geology.
	Water	A risk management plan includes design and management of waste facilities in order to minimize the production and migration of acid drainage and its impacts.
	Riverine disposal	The disposal of large volume of disposal into a river system has the potential to cause serious environmental and social impacts downstream.
	Marine disposal	Deep sea marine or submarine disposal of tailings involves deposition at depth so they remain on the sea floor below the most biologically active zone.
Socio-economic	End use	Rehabilitation of waste disposal sites to a stable and productive post- mining landform, which is suitable and/or acceptable to the community, at optimum environmental, social and economic values.
	Public opinion and expectations	Transparency in impact and analysis waste disposal decision-making, as well as communication to overcoming mistrust for all actors involved.
	Benefits and compensation	Royalty payments, taxes, land rent, job creation and infrastructure development (e.g. roads, power production, water distribution, construction of schools, hospitals), as well as compensation payments for the local community for a loss of resources.
Corporate	Costs	Providing adequate funds for closure and post closure monitoring and maintenance, which are designed based on realistic assumptions about technologies and implementation, including time it would take to complete.
	Policy/ culture	Publishing annual report on environmental, social and sustainable development progress for assessing the performance of the company.
Regulatory	Legislation and policy	Synergizing various government policies, environmental legislation and other laws and regulations related.
	Regulatory authority	Cooperation between national, regional and local governments and governance of a mining activity.

Another sustainable structure proposed by the international mining association is the Global Reporting Initiative (GRI) framework which contains indicators for reporting on an organization's economic, environmental, and social performances. Table 3 summarizes an overview of the guidance for the mining and metal sectors report.

Table 3. Mining and metal sectors indicator categories (Azapagic, 2004).

Aspect	GRI indicator categories
Economic	Customers Suppliers Employees Investors Public sector
Environmental	Materials Energy Water Biodiversity Emission Effluents Wastes Suppliers Products and services Compliance Transport
Social	<ul style="list-style-type: none"> • Labor practice and decent work: employment, labor/ management relations, health and safety, training and education, diversity and opportunity. • Human rights: strategy and management, non-discrimination, freedom of association, child labor, forced labor, disciplinary practices, indigenous rights. • Society: community, bribery and corruption, political contributions, competition and pricing. • Product responsibility: customer health and safety, advertising, respect for privacy.

The Islamic practical directives in a mining industry

Islamic believes are directions of a variety of implications for everyday lives, covering individual aspects such as worship and morality, as well as public sectors including social, economic, and political issues. One of the public issues which are addressed by Islam is natural resource management.

In accordance to the sustainability initiative which is driven in the mining industry sectors, Islam has its specific practical directives, that are derived from the Glorious Al-Qur'an and As-sunnah (the practices of Prophet Muhammad *Sallallahu 'alayhi wa sallam*) as the sources of Islamic laws and regulations. The Islamic practical directives which are proposed in this paper highlight three mining industrial dimensions, concerning the main issues that commonly pose problems in this sector, counting economy, environment and governance (authority). Although, the intention of sharia regulates mining operations, it is not akin to those initiated by the international mining forums, which are oriented to sustain the mining company operation while compensating the exploitation by paying royalties, taxes and other payments for the local government and the communities, and rehabilitating the natures after all exploitative operations. Sharia, as it is practical, is conducted by the people in order to meet Allah *Subhanahu wata'ala's* directions, and by doing obedience it is believed that all creatures will get His grace and mercy, what in Islam is said *Islam rahmatan lil'alamiin* (Islam is graceful for the universe).

Economics (including efficiency)

It is understood that almost all the large-scale mining companies operated in developing countries belong to the capitalist corporates with permission from the governments through laws and regulations. The capitalist exploitation has neglected the government and community ownership by accentuating the possession of all materials merely in the private sector without any limits. The corporate-based exploitation of minerals has led society to poverty, deficiency, social disparities, which are prone to conflicts. This is the main cause of mining's failures in the world, though it is not

the major ground for closure. Sharia regulates the ownership on commodities into three categories, namely state, public, and private ownerships, according to the amount of the commodities and how significant they control people's lives, and meet their basic needs.

Regarding natural resources, Rasulullah *Sallallahu 'alayhi wa sallam* has said, "**the Muslims are partners in three substances, water, pastures and fire**", [Sunan Abu Dawud]. According to the Imam Shafi, Imam Maliki and Imam Hambali, what is intended by water that the people share and therefore cannot buy and sell is the rain water, river water and the like, and not water from private sources such as a private well. The pastures are the open areas of land which are not owned by anyone, or land which is not being used for agriculture and has the normal vegetation for grazing cattle. Fire indicates any natural resources which are used to produce heat and energy, such as wood, coal, minerals and oil. Other narrations also indicate that people can possess and sell water as long as the community was not in dire need of it. It can be derived from these narrations that whatever the community is in need of must be provided and cannot be withheld privately to the disadvantage of the people. So the state is responsible to provide the people with access to water and energy as required to fulfill their needs, and all public utilities as necessitated by the time and place. It is therefore not permissible to adopt the model of liberal privatization whereby even the essential public utilities are sold to private companies and are therefore not available except to those who pay for them, leading to a society where only those with material wealth can access vital services.¹²⁸

In another sunnah, Rasulullah *Sallallahu 'alayhi wa sallam* has taken back a salt mine from a shahabah, *Abyad bin Hamal*, due to its abundance amount, that so called by sharia "*ma'u al-'iddu*" (like the flowing water), (Imam At-Tirmidzi).

Thus, the abundant natural resources which flow like water (*ma'u al-'iddu*) should be managed by the state with the ownership is for the local communities (*al-milkiyah al-aammah*) that since the beginning live in areas which are rich in natural resources. The income obtained from the management of natural resources becomes the wealth of the state (*baitul mal*) to be spent in accordance with the people's needs including the one to support the mining operations such as exploration, excavation, dredging, as well as maintenance and monitoring environmental rehabilitation. Instead of getting royalties, taxes or compensation payments the amount of which is very small compared to that of the private-sector obtained from the exploitation, people will receive their right in basic needs such as housings, education and health insurances, security services, and other public constructions like roads, bridges, communication and irrigation facilities.

In exploiting minerals and other natural resources, Allah *Subhanahu wata'ala* has said, "Indeed, those who are wasteful are brothers of the devils, and ever has Satan been to his Lord ungrateful", [Al-Isra' (17):2]. This verse commands people to manage and use sources of life in accordance with their needs and not for wasting and redundancy in collecting wealth. This attitude is expected to preserve mineral resources owned by a generation in an area to be bequeathed in an equal amount to the next generation. In addition, being economical in using mineral resources would lead people to avoid hedonism which is potential to create social gaps.

Allah *Subhanahu wata'ala* has said, "And the earth - We have spread it and cast therein firmly set mountains and caused to grow therein [something] of every well-balanced thing. And We have made for you therein means of living and [for] those for whom you are not providers. And there is not a thing but that with Us are its depositories, and We do not send it down except according to a known measure", [QT. Al-Hijr (15):19]. This clause and the one before lead mining operators to count the amount of deposit and the amount of mineral volumes which can be exploited in accordance with the people's needs so as not to forget the rights of the next generation in enjoying natural resources.

Environment

The ban to do wasteful deeds in using natural resources is in line with Allah *Subhanahu wata'ala*'s order to maintain the environmental balance. Allah *Subhanahu wata'ala* has said, "And cause not corruption upon the earth after its reformation. And invoke Him in fear and aspiration. Indeed, the mercy of Allah is near to the doers of good", [QT. Al-A'raf (7):56]. Mining operations should as minimum as possible disturb natural environment. Even, an option of "no mining" may be taken if the exploitation can cause damage to the environments, although giving a large amount of material

¹²⁸ <http://www.khilafah.com/index.php/component/content/article/76-daily-hadith/7648-daily-hadith>

benefits to the people. Within this problem, Allah *Subhanahu wata'ala* has said, "Corruption has appeared throughout the land and sea by (reason of) what the hands of people have earned so He may let them taste part of (the consequence of) what they have done that perhaps they will return (to righteousness)", [QT. Ar-Rum (30):41]. An alternative way of mining technology, such as bio-mining and bio-leaching can be considered in order to keep exploiting, while preserving environments.

Government

Sharia directs the Ummah to reject secularism, as it can dissociate Muslims from Islam which is forbidden in Islam believes. Sharia implies a mode of organizing society and its institutions, as well as serving as a guide for the conduct of individuals within the institutional and social context (Tinker, 2004 in Kamla et.al., 2006). Obviously, sharia mining directives are not applicable within the condition in which secularism which allows capitalism is still practiced.

In order to apply and obtain its benefits to the people, the Ummah must have an Islamic government which governs all the people's issues with Islamic practical ways, covering mineral exploitation management. This government, which is the so called Khilafah Islamiyah, is the only Islamic government legitimated by Allah *Subhanahu wata'ala* and Rasulullah *Sallallahu 'alayhi wa sallam*. Allah *Subhanahu wata'ala* has said, "O you who have believed, obey Allah and obey the Messenger and those in authority among you. And if you disagree over anything, refer it to Allah and the Messenger, if you should believe in Allah and the Last Day. That is the best (way) and best in result", [QT. An-Nisa' (4):59]. The Khilafah Islamiyah will guarantee all the Islamic laws and regulations to be implemented by the Ummah under one leadership of the Khalifah who holds the bai'at (the agreement of obedience from the Ummah).

Conclusion

"And We did not create the heaven and the earth and that between them aimlessly. That is the assumption of those who disbelieve, so woe to those who disbelieve from the Fire." [QT. Sad (38):27]. Allah *Subhanahu wata'ala* creates the universe to be managed by mankind as they have advantages for life. Mineral resources have been created to meet peoples' needs. The exploitation is inevitable nor the damages caused by the activity.

A lot of mining management initiatives encompassing economics, environment and social views have been driven to achieve the sustainability in this sector. However, they are unsuccessful to sustain mining operations since failure on economics are still occurring regarding the poverty and social disparities in rich-mineral countries, besides the mineral resources depletions in a very rapid period. In addition, the local communities who live in mineral-rich lands are susceptible to experience violence from the security apparatus, diseases due to the mining substance, and uncertainties because of the potentials of man-made hazards such as landslide, drought and loss of biodiversity. This is because the mineral management is applied based on corporate-capitalist control which merely focuses on material benefits for the corporates, regardless of the environmental damages and social failures.

As a practical way of life, sharia through Al-Qurán and sunnah, directs minerals as a natural resource to remain owned by the local communities, and are managed by the government so that the operations will always be oriented to the people welfare. Environmental aspects are also the main consideration to preserve the natures to be always in its balance and measure. To ensure the sharia mining is completely applied, the Khilafah Islamiyah must be established as it is the only legitimate and authorized institution in Islamic governmental framework to accomplish Allah *Subhanahu wata'ala's* commands.

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