

## THE USE OF COAL FOSSIL ENERGY OF MASHLAHAH PERSPECTIVE AND HIFDZ AL-NAFS AL-GHAZALI PRINCIPLES

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### Abstract

The need for energy for human life is a very natural thing. Energy is very closely related to human survival. However, the choice to use energy is in the hands of humans. This paper aims to examine the use of coal for fossil energy from the perspective of al-Ghazali's *mashlahab*. This research is a literature review that uses the Islamic legal philosophy approach to portray the use of coal. Data is gathered from various studies and surveys and analyzed through the lens of Mashallah al-Ghazali. The results of this study state that the maintenance of the right to life and the preservation of human life cannot be negotiated at any price. Coal and fossil fuel energy, although they have commercial value, boost economic growth, and promote people's welfare, have ecological impacts that pose threats to human survival. The use of coal as a fossil fuel is not in line with al-Ghazali's three levels of *mashlahab*, namely *dharuriyah*, *hajiyyah*, and *tahsiniyyah*. Renewable energy is seen as a viable alternative to fossil coal energy in reducing the impact of *mafsadat*, which endangers human life.

**Keywords:** Coal; *Hifdz al-Nafs*; *Mashlahab*; Islamic legal philosophy; al-Ghazali.

### Abstrak

Kebutuhan energi bagi kehidupan manusia merupakan hal yang sangat wajar. Energi sangat erat hubungannya dengan kelangsungan hidup manusia. Namun, pilihan untuk menggunakan energi ada di tangan manusia. Tulisan ini bertujuan untuk mengkaji penggunaan energi fosil batubara dari perspektif *mashlahab* al-Ghazali. Penelitian ini merupakan penelitian kepustakaan yang menggunakan pendekatan filsafat hukum Islam dalam memotret penggunaan batubara. Data dikumpulkan dari berbagai riset dan survei yang dianalisis dengan perspektif *mashlahab* al-Ghazali. Hasil penelitian ini menemukan bahwa pemeliharaan atas hak hidup dan penjagaan atas nyawa manusia tidak dapat ditawar oleh harga apapun. Energi fosil batubara, meskipun memiliki nilai komersial, mendorong pertumbuhan ekonomi dan mendorong kesejahteraan masyarakat. dalam penggunaannya memiliki dampak ekologis yang menyebabkan terancamnya keberlangsungan hidup manusia. Penggunaan energi fosil batubara tidak selaras dengan tiga level *mashlahab* al-Ghazali, yaitu *mashlahab dharuriyah*, *hajiyyah*, dan *tahsiniyyah*. Penggunaan energi terbarukan dianggap dapat menjadi alternatif untuk pengganti energi fosil batubara dalam mencegah dampak *mafsadat* yang mengancam keselamatan jiwa manusia.

**Kata Kunci:** Batubara; *Hifdz al-Nafs*; *Mashlahab*; Filsafat Hukum Islam; al-Ghazali.

## INTRODUCTION

The world community is experiencing a crisis like no other in history. This crisis threatens not only the survival of mankind but also the existence of the earth and everything on it. This crisis is a human-caused climate crisis. A survey conducted by change.org in 2020 with 8000 respondents explained that 99% were very worried about the adverse effects of the climate crisis. Meanwhile, 97% agreed that the impact of the climate crisis is as severe or even more severe than the impact of the Covid-19 pandemic.<sup>1</sup> The biggest ecological disaster in human history is a real threat.

This can be seen from the increase in the earth's temperature which is 1 degree Celsius above the average temperature before the industrial revolution. The IPCC (*Intergovernmental Panel on Climate Change*) mentions a special report related to the impact of global warming; humans have only 10 years left to prevent acute damage caused by the earth's temperature. Thus, global warming is a problem for living things on earth.

In line with the above paragraph, one of the causes of global warming, which Philip Kristanto suspects, is dependence on the use of fossil energy. It can lead to prolonged ecological disasters including (1) Climate change due to global warming due to the release of gases into the atmosphere, (2) Air pollution that occurs in cities due to the increasing number of vehicles that use fossil fuels, and (3) Environmental acidification. This tends to occur in mining areas that are very easily contaminated by mining products, and (4) The risk of a nuclear accident relates to the use of nuclear energy and its waste.

Additionally, fossil fuels have drawbacks that put the globe at risk of an energy catastrophe. Every nation in the world, notably the government of Indonesia, needs to

understand this. In Indonesia, the primary sources of energy are still fossil fuels like coal and petroleum. As stated in Government Regulation Number 79 of 2014 to 2050, Indonesia would use fossil fuels, particularly coal, to satisfy internal demand (for power generation and industry) as well as foreign demand (for exports). According to PP No. 79 of 2014 concerning the National Energy Policy, the new renewable energy (EBT) mix was 23%, oil 25%, natural gas 22%, and coal 30% in 2014. Whereas the EBT portion will increase by 31%, petroleum by 20%, natural gas by 24%, and coal by 25% in 2050. If such a condition continues, Indonesia will experience an energy crisis in 2046.

Based on data gotten from the Ministry of Energy and Mineral Resources (KESDM), Indonesia has enormous potential for renewable energy resources. These potential resources can be utilized to create equitable and clean access to energy. In fact, the use of clean and renewable energy in Indonesia only reaches around 6% of the national energy mix currently. The use of renewable energy is important to be campaigned continuously in order to reduce the use of fossil energy, create clean energy, and prevent ecological disasters that damage the earth.<sup>2</sup>

Islam as a mercy to all creation religion (*rahmatan lil 'alamin*) has implications for the awareness of the paradigm of ecological safety. Islam as a relevant religion for the present era is able to contextualize within the scope that surrounds it and provide solutions for any conflicts/problems that arise and occur at certain times and conditions. In Islam, there is the concept of *maqashid al-shari'ah* which emphasizes that everything ordained (by Allah) for mankind has goals and objectives leading to benefit. *Maqashid al-shari'ah* emphasizes that Islam exists to realize and maintain the benefit

<sup>1</sup>Change.org dan Yayasan Indonesia CeraH, "PRESS RELEASE – Survei : 89 Persen Responden Usia Muda Khawatir Dampak Krisis Iklim."

<sup>2</sup>Satya Widya Yudha, "Pemerintah Perlu Mengoptimalkan Pemanfaatan Energi Terbarukan," *UGM.ac.id*.

of mankind. This concept has been recognized by scholars and become a basic reference for drawing benefits and rejecting harm. Islam, through the concept of *mashlahab*, should have a holistic perspective in viewing the use of fossil energy.

The study of *maqashid al-shari'ah* is the first time related to God. *Maqashid al-shari'ah* contains both general and specific meanings. The general meaning refers to what is meant by legal verses or legal hadiths, both the linguistic meaning and the purpose contained therein. Meanwhile, specifically, it is meant as the substance or purpose to be achieved by a legal formulation. The core theory of *maqashid al-shari'ah* is to realize good and avoid evil or to gain benefits and reject harm. The term that is commensurate with the core of *maqashid al-shari'ah* is *mashlahab* because the determination of law in Islam must lead to *mashlahab* (benefits).<sup>3</sup>

Some *ushul* scholars (*ulama*) have collected several intentions from *maqashid al-shari'ah* into three groups namely: 1) Preserving everything that is *dharuri* for human life. Without it, the law of life will be broken, anarchy will reign, and corruption will grow. *Dharuri* affairs are returned to five points, namely religion, soul, mind, lineage and wealth. 2) Perfecting everything that is lived by humans to facilitate and bear the damages of *taklif* and the burdens of life. If the matter is not obtained, it will not cause chaos. 3) Realizing beauty for society; everything related to humanity, decency, and

uniformity of life. If it is not obtained, then it does not damage that it is not accepted by reason as human nature.<sup>4</sup>

The study of *maqashid al-syaria'h* is an old issue being concerned by contemporary Muslim thinkers. The figures who study *maqashid al-shari'ah* are scholars (*ulama*) such as al-Tirmidhi, al-Maturidi, al-Shashi, al-Abhari. The embryo of this study developed the categorization of *maqashid al-syaria'h* into *dharuriyah*, *hajiyah* and *tabshiniyah* by al-Haramain. Meanwhile, al-Ghazali elaborates again by dividing *dharuriyah* into *al-kulliyat al-khamsah* (*hifz al-din* (guarding of religion), *hifz al-nafs* (guarding of the soul), *hifz al-aql* (guarding of the mind), *hifz al-nasl* (guarding of offspring), and *hifz al-mal* (safeguarding of property)).<sup>5</sup> These five are called by al-Ghazali as the concept of *mashlahab* in *maqashid al-shari'ah*.<sup>6</sup> Al-Ghazali also argues that the nature of *al-mashlahab* is to maintain the goals of *al-syaria'h* in establishing law, namely maintaining: religion, soul, mind, lineage and human property.<sup>7</sup>

In addition, most of Imam Al-Ghazali's *mashlahab* research has been carried out. For example, the research conducted by Hidayatul Husna<sup>8</sup> examining the perspective of Al-Ghazali's thoughts on the case of Solar Power Plants (PLTS). Meanwhile, Ika Yunia Fauzia's<sup>9</sup> research examines *maqashid* sharia in terms of the *dharuriyah* approach perspective which focuses on the urgency of implementing a green economy. Meanwhile, Ismanto's<sup>10</sup> research analyzes the development of the *sharia maqashid*

<sup>3</sup>Ghofar Shidiq, "Teori Maqashid Al-Syari'ah Dalam Hukum Islam," *Majalah Ilmiah Sultan Agung* Vol. 44 No (2009).

<sup>4</sup>Khodijah, "Maqashid Syari'ah Dan Maslah Dalam Ekonomi Dan Bisnis Syari'ah," *Journal of Chemical Information and Modeling* 53, no. 9 (2008): 287.

<sup>5</sup>Ika Yunia Fauzia, "Urgensi Implementasi Green Economy Perspektif Pendekatan Dharuriyah Dalam Maqashid Al-Shariah," *JEBIS (Jurnal Ekonomi dan Bisnis Islam) | Journal of Islamic Economics And Business* 2, no. 1 (2016): 87–104.

<sup>6</sup>Al-Ghazali, *Al-Mustashfa Fi Ilmu Al-Ushul* (Beirut: Dar Al-Kutub Al-Ilmiyah, 2000).

<sup>7</sup>Musolli Musolli, "Maqasid Syariah: Kajian Teoritis Dan Aplikatif Pada Isu-Isu Kontemporer," *AT-TURAS: Jurnal Studi Keislaman* 5, no. 1 (2018): 60–81.

<sup>8</sup>Hidayatul Husna, "Al-Ghazali pada Kasus Pembangkit Listrik Tenaga Surya (PLTS) (Library Research)" (2019).

<sup>9</sup>Fauzia, "Urgensi Implementasi Green Economy Perspektif Pendekatan Dharuriyah Dalam Maqashid Al-Shariah."

<sup>10</sup>Kuat Ismanto, "The Concept of Maqā Ṣ Īd Al-Syarī' Ah Al-Ghazali As a Halal Industry Development" 197, no. 8 (2021): 180–197.

based halal industry, especially according to al-Ghazali. However, there has been no research related to the concept of *maqashid sharia* from the perspective of *mashlahab* al-ghazali in terms of the *hifdz al-nafs* principle regarding the use of coal fossil energy.

In addition, research related to the use of fossil energy has also been carried out by Kamia Handayani et.al<sup>11</sup> regarding the long-term analysis of fossil fuels to renewable energy by taking into account technological learning. Next, Ken Koyama<sup>12</sup> examines the role and future use of fossil fuels. Meanwhile, Ida N. Finahari et.al<sup>13</sup> discussed CO<sub>2</sub> gas emissions and radioactive pollutants from coal-fired power plants. However, there is no research related to the use of coal fossil energy from the perspective of *mashlahab* al-ghazali in terms of the principle of *hifdz al-nafs*.

Therefore, it is important to study the use of fossil energy from al-Ghazali's *mashlahab* review. This must be done considering the condition of Indonesia which is still intensively using fossil energy in its energy policy. Islam as a moral and jurisprudential concept for the majority of the Indonesian population is able to present a philosophical study of Islamic law on the use of fossil energy though.

The primary source used in this library research project is the book *al-Mustashfa fi 'Ulm al-Ushul* and other works by Imam al-Ghazali as secondary sources such as the book *al-Mankhul min Ta'liqat al-Ushul*,<sup>14</sup> Syifa' *al-Ghalil*<sup>15</sup> and *Asas*

*al-Qiyas*.<sup>16</sup> Meanwhile, in analyzing the data, the researcher used content analysis to capture the correct understanding and meaning of the messages received.

This paper discusses how the use of coal fossil energy from the perspective of *mashlahab* al-Ghazali is reviewed on the principle of *hifdz al-nafs* further.

## COAL FOSSIL ENERGY

Energy is the prime mover of the national economy. The availability of energy greatly influences human competence and strategy in various matters such as processing agricultural materials and products, cooking, providing educational facilities, health facilities, business facilities, telecommunications facilities, entertainment facilities, and so on. Energy is utilized as a "service". These energy services are in the form of benefits produced by energy carriers for the benefit of human life.<sup>17</sup>

The use of fossil fuels (a non-renewable energy source) is responsible for environmental problems such as global warming and air pollution which cause health problems and affect the quality of the population's life.<sup>18</sup> In this study, the focus is on energy sources in terms of their use. The use of fossil energy still dominates in Indonesia; namely coal—because as a source of fossil energy, it is the largest fossil energy in the world surpassing petroleum.<sup>19</sup> Coal mining and exploration is the largest allocation of land use classified as industrial (*net*

<sup>11</sup>Kamia Handayani, Yoram Krozer, and Tatiana Filatova, "From Fossil Fuels to Renewables: An Analysis of Long-Term Scenarios Considering Technological Learning," *Energy Policy* 127, no. January 2018 (2019): 134–146.

<sup>12</sup>Ken Koyama, "The Role and Future of Nitrogen Fixation," *IEEE Energy Journal*, no. October (2017): 80–84.

<sup>13</sup>Ida N Finahari, Djati H S, and Heni Susiati, "Gas CO<sub>2</sub> Dan Polutan Radioaktif Dari PLTU Batubara," *Jurnal Pengembangan Energi Nuklir* Vol.9, no. 1 (2011): 1–8.

<sup>14</sup>Al-Ghazali, *Al-Mankhul Min Ta'liqat Al-Ushul* (Dar al-Fikr, n.d.).

<sup>15</sup>Al-Ghazali, *Shifa' al-Ghalil Fi Bayan Al-Syabah Wa Al-Mukhil Wa Masalik Al-Ta'wil* (Bagdad: Mathba'ah al-Irsyad, 1971).

<sup>16</sup>Al-Ghazali, *Asas Al-Qiyas* (Riyadh: Maktabah al-'Abikan, 1993).

<sup>17</sup>J. Modi, V., McDade, S., Lallement, D., dan Saghir, *Energy and the Millennium Development Goals* (New York: Energy Sector Management Assistance Programme, UNDP, UN Millennium Project, and World Bank, 2005).

<sup>18</sup>Florinda Martins et al., "Analysis of Fossil Fuel Energy Consumption and Environmental Impacts in European Countries," *Energies* 12, no. 6 (2019): 1–11.

<sup>19</sup>Nibras Nada Nailufar, "Batu Bara Dan Dampak Buruknya," *Kompas*, May 2020.

*industrial land use*) in Indonesia which covers nearly 17.5 million hectares.<sup>20</sup>

In this context, energy has a strategic value in a country. The Ministry of Energy and Mineral Resources (ESDM) (2008) states that there are nine perspectives on the energy and mineral resources sector: [1] as a source of domestic energy, [2] as a source of state revenue, [3] as a supporter of regional development, [4] as an important factor in the trade balance, [5] as a source of investment targets, [6] as a subsidy burden, [7] as an important factor for the Jakarta Composite Index, [8] as industrial raw materials, and [9] as chain positive effect.

Coal is one of the world's energy sources which can be defined as a unit of sediment formed from the decomposition of plant piles for approximately 300 million years. This plant decomposition occurs due to biological processes with microbes that convert a lot of oxygen in cellulose into carbon dioxide (CO<sub>2</sub>) and water (H<sub>2</sub>O). The changes that occur in the material content are caused by pressure and heating which then forms a thick layer as a result of the influence of geothermal energy over a period of millions of years. Therefore, the layer eventually solidifies and hardens.<sup>21</sup>

Furthermore, the coal formation process consists of two stages namely the biochemical stage and the coalification stage. The biochemical stage is the stage when accumulated plant remains are stored in oxygen-free (anaerobic) conditions in swamp areas with a poor drainage system and are always stagnant with water several inches from the surface of the swamp water. The rotting plant material releases the elements H, N, O, and C in the form of CO<sub>2</sub>, H<sub>2</sub>O, and NH<sub>3</sub>

compounds to become humus. Furthermore, plant material is converted into peat by anaerobic bacteria and fungi. Meanwhile, the coalification stage is a process of diagenesis of the organic components of peat which causes an increase in temperature and pressure as a combination of biochemical, chemical, and physical processes that occur due to the influence of loading of sediments covering it in geological time. At that stage, the percentage of carbon is increased while the percentage of hydrogen and oxygen is decreased. Finally, it results in coal in various maturity levels of organic matter.

Based on the information provided by the Indonesian Ministry of Energy and Mineral Resources, if the current production rate continues, Indonesia's coal reserves will be estimated to be depleted in approximately the next 83 years.<sup>22</sup>

## THE CONCEPT OF MASHLAHAH AL-GHAZALI

Etymologically, *mashlahab* is the singular form (*mufrad*) of the word *al-mashalih*. The word *mashlahab* comes from the word *shalah* which means good. The word *shalah* also means benefits (*ghoiru mafsadat*).<sup>23</sup> In terms of language, *mashlahab* means usefulness or avoiding damage.

Besides, ontologically, Al-Ghazali defines *mashlahah* as an expression of the origin of attracting benefit and rejecting harm. Both are not intended as the goal and goodness of creatures but are intended to maintain the goals of the Shari'a. This goal includes five things, namely maintenance of religion (*hifdz al-din*), soul (*hifdz al-nafs*), offspring (*hifdz al-nasl*), reason (*hifdz al-'aql*) and property (*hifdz al-mal*). Then everything that contains these five things is

<sup>20</sup>JATAM and Waterkeeper Alliance, "Hungry Coal: Pertambangan Batu Bara Dan Dampaknya Terhadap Ketahanan Pangan Indonesia," *Jatam* (2017).

<sup>21</sup>Mutasim Billah, *Peningkatan Nilai Kalor Batubara PEringkat Rendah Dengan Menggunakan Minyak Tanah Dan Minyak Residu*, 2010.

<sup>22</sup>Afin & Berkah, "Potensi Energi Batubara Serta Pemanfaatan Dan Teknologinya Di Indonesia Tahun 2020 – 2050 : Gasifikasi Batubara," *Jurnal Energi Baru dan Terbarukan* 2, no. 2 (2021): 144–122.

<sup>23</sup>Moh. Mufid, *Ushul Fiqh Ekonomi Dan Keuangan Kontemporer: Dari Teori Ke Aplikasi* (Jakarta: Prenadamedia Group, 2018).

called *mashlahab*. On the other hand, if these five things are not found, it is called *mafsadab* and avoiding *mafsadab* is a *mashlahab*.<sup>24</sup> As described in the book *al-Mustashfa fi Ilmu al-Ushul* Al-Ghazali states:

و هو أن يحفظ عليهم دينهم، و أنفسهم، و عقلهم، و نسلهم،  
و مالهم، فكل ما يتضمن حفظ هذه الأصول الخمسة فهو  
مصلحة، و كل ما يفوت هذه الأصول فهو مفسدة.<sup>25</sup>

Meaning: "*maqashid al-shari'ah is guarding religion, soul, mind, lineage and property. Therefore, everything that upholds these five fundamentals are referred to as mahlabat, while everything that negates them is referred to as mafsadat (damage)*"

*Mashlahab* in al-Ghazali's view is divided into three levels namely *mashlahab dharuriyat*, *hajiyat*, and *tahsiniyat*. These three levels of *mashlahab* have a reciprocal relationship that supports each other. *Mashlahab dharuriyat* is benefit that must exist. It concerns the basic needs of mankind. The five principles previously mentioned as the highest level in *mashlahab* are included in this level. Al-Ghazali gave an example of the Shari'a order to fight infidels and heretics who lead astray in order to protect religion, *qishas* orders to protect life, drinking khomr rules to protect reason, adultery rules to protect offspring, and rules regarding thieves to protect wealth. All of these concerns are considered basic human needs.<sup>26</sup>

*Mashlahab hajiyah* is benefit that does not reach the urgent level (*dharuriyat*) but is needed to bring about problems. For example, the guardian's authority to marry young boys and girls is because of concerns about inequality and the acquisition of assets. Child marriage is not an urgent matter but in that context, it is following the benefit.<sup>27</sup>

Whereas, *mashlahab tahsiniyah* is *mashlahab* which does not refer to *mashlahab dharuriyah* or *mashlahab hajiyah* but beauty, goodness, and maintaining the best way in habit and *muamalah*. For example, the testimony of a slave was rejected because of his low and weak position as well as his condition. For these reasons, he is not fit to testify a *fatwa* or history.<sup>28</sup>

These three levels of *mashlahab* illustrate that Islamic law has noble goals and ways to make them happen. A benefit is not only seen partially but seen universally. In realizing it, creating benefits for the sake of maintaining universal values is very much considered. In this paper, *mashlahab dharuriyah* is used as the main perspective although the use of the other two types of *mashlahab* is inevitable.

## BENEFITS OF USING COAL FOSSIL ENERGY Human Welfare

The welfare of the people in the coal mining area in general appears to be increasing due to the presence of companies that are able to drive the community's economy. Community economic development carried out by companies through *Corporate Social Responsibility (CSR)* can provide direct benefits to improve the quality of communities life in many fields such as poverty alleviation, assisting in providing health facilities, education, scholarships, increasing skills, increasing the purchasing power of communities around the mine, providing training so that communities around the mine have competitiveness, and helping build infrastructure (including clean water facilities).<sup>29</sup>

The social structure in the community has also changed because many migrants have become employees at coal mining companies

<sup>24</sup>Umer Cepre, *The Future of Economics: An Islamic Perspective* (Jakarta: Gema Insani Press, 2001); Lihat, Al-Ghazali, *Al-Mustashfa Fi Ilmu Al-Ushul*, 328.

<sup>25</sup>Al-Ghazali, *Al-Mustashfa Fi Ilmu Al-Ushul*, 328.

<sup>26</sup>Ibid.

<sup>27</sup>Ibid., 329.

<sup>28</sup>Al-Ghazali, *Al-Mustashfa Fi Ilmu Al-Ushul* (Beirut: Dar Al-Kutub Al-Ilmiyah, 2000), 329–330.

<sup>29</sup>Fitriyanti, "Pertambangan Batubara: Dampak Lingkungan, Sosial Dan Ekonomi," *Jurnal Redoks* 1, no. 1 (2016): 34–40.

and local people who open businesses around coal companies.<sup>30</sup> In addition, the existence of the coal mining industry also causes changes in mindset and other ways of social life in an area.

In the light of previous lines, the results of Wahyudin's research (2020) show that the existence of a coal mining company PT Tamtama Perkasa in Lahei, North Barito, Central Kalimantan can help repair village roads, improve sports facilities, preserve local culture by supporting activities carried out by local customs, creating reading gardens communities in several villages, as well as routinely sending doctors or nurses to villages around the mine (free examination and treatment).<sup>31</sup>

The existence of coal mining companies is also very influential on the conditions of social change in society. Communities that used to be very dependent on nature in the form of self-sufficiency in food to fulfill their daily needs are shifting to dependency on coal mining companies that generate more money now. This is because the necessities of life and the fulfillment of people's living income are increasing.<sup>32</sup>

Suharto *et al.*, 2015, stated that for local residents who have lived for more than 15 years, the majority reveal that the level of income after mining activity has not changed (fixed). While the majority of residents who have just lived (less than 5 years) reveal that there is an increase in income. This shows that migrants have succeeded in taking economic opportunities from the impact of mining activities compared to local people who have lived for a long time.

## **The Existence of Job Opportunities**

The establishment of a coal mining company has a positive impact. One impact is increasing in terms of job opportunities for the community. Irawan (2015) states that coal mining companies can add new jobs in the informal sector, such as investing in basic food stalls, food stalls, service businesses, and others. This is due to the use of compensation money for land conversion for landowners.

Moreover, changes in employment can be seen from the activities of residents who were previously only farmers and are now entrepreneurs. Wahyudin (2020) explains that the existence of the coal mining company PT Tamtama Perkasa in Lahei, North Barito, Central Kalimantan, from a socio-economic perspective, has a positive impact on a small part of society namely the existence of job and business opportunities. However, this has not had a significant impact on the community's economic growth because the job opportunities available are only for a small number of people with certain qualifications such as manual labor and security guards. However, staff and strategic management are still brought from outside of Kalimantan island.<sup>33</sup>

Besides, the results of research by Rahmad *et al.*, 2015 reveal that the perceptions of respondents (public servants, private and self-employed) related to the level of income from coal mining activities according to work tended to be the same. Respondents who work as entrepreneurs can support mining activities and their workers, such as providing restaurant services, boarding houses, credit kiosks, food stalls, and other services. In addition, people who previously worked as farmers, gardeners, and fish farmers have switched to other jobs

<sup>30</sup>Ferdricka Nggeboe, "Dampak Sosial Ekonomi Penambangan Batubara," *Jurnal Lex Specialis*, no. 11 (2011): 43–51.

<sup>31</sup>Uyu Wahyudin, "Analisis Dampak Keberadaan Perusahaan Tambang Batu Bara terhadap Kondisi Sosial Ekonomi Masyarakat," *Jurnal Atsar Unisa* 1, no. 1 (2020): 35–45.

<sup>32</sup>Fitriyanti, "Pertambangan Batubara: Dampak Lingkungan, Sosial Dan Ekonomi."

<sup>33</sup>Wahyudin, "Analisis Dampak Keberadaan Perusahaan Tambang Batu Bara terhadap Kondisi Sosial Ekonomi Masyarakat."

such as food sellers, mining workers, and service providers (*ojek* drivers, boarding houses, and others).<sup>34</sup>

### State Income

Coal is one of the energy sources used in various countries which plays a role in economic growth. Research, conducted by Putra and Damanik (2017), explains that Indonesia has an engine of economic growth from oil and gas and non-oil exports. The non-oil and gas sector consists of the agricultural, industrial, mining, and other sectors. In the mining sector, the most dominant is coal.<sup>35</sup>

Recently, coal has played a fairly important role in the Indonesian economy namely providing a sizeable contribution to state revenues which are increasing every year. Meanwhile, its role as a generator energy source is also getting bigger. Currently, around 71% of domestic coal consumption is absorbed by power plants, 17% for the cement industry and 10.1% for the textile and paper industry.<sup>36</sup>

The Bureau of Budget Analysis and Implementation of the State Budget (2014) states that most of the domestic coal production, amounting to more than 80%, is for export purposes. Indonesia is one of the largest coal producers in the world with its production reaching 400 million tons per year so that it can increase state revenue.

## THE MASHLAHAH PERSPECTIVES OF COAL FOSSIL ENERGY USES

Based on what has been explained, the concept of al-Ghazali *mashlahab* is everything that contains the five basic principles of Islam in the form of maintenance of religion (*hifdz addin*), soul (*hifdz annafs*), offspring (*hifdz annasl*),

reason (*hifdz al'aql*), and property (*hifdz almal*). In looking at the use of fossil energy, researchers explain in a balanced way the benefits and harms. The benefits that have been described in the previous chapter are in line with the concept of al-Ghazali *mashlahab* which is used as a perspective to review the use of coal fossil energy. From the perspective of al-Ghazali *mashlahab*, maintenance of the soul occupies the second position after *hifdz al-din*.

### Threatened of Human Rights

*Hifdz al-nafs* strives to protect the right to life of every individual and society from anything that can threaten human life. Therefore, God forbids things that will damage the human soul.<sup>37</sup> In al-Ghazali's language, this is included in the level of *dharuriyah* benefit. Meanwhile, efforts that complicate human survival are also prohibited because it is contrary to *hajiyyah mashlahab*. Further, things that make the quality of human life worse are also not justified in Islam because it is contrary to *tabsiniyat mashlahab*.

The use of coal fossil energy is not in accordance with the concept of *mashlahab* al-Ghazali because the energy in Indonesia is dominated by fossil energy which reaches 95% of the total energy. Fossil energy is dominated by oil, followed by gas and coal, with oil accounting for 42%.<sup>38</sup> Coal is a fossil energy which is still a favorite as a national energy source. Indonesia's coal production is increasing rapidly. The large production (> 400 million tons/ year) is not balanced with Indonesia's relatively small coal reserves while policies to control production have not been developed.<sup>39</sup> This coal mine is one of the

<sup>34</sup>Rahmad Budi Suharto et al., "Sumber Daya Alam untuk Kesejahteraan Penduduk Lokal: Studi Analisis Dampak Pertambangan Batu Bara di Empat Kecamatan Area Kalimantan Timur, Indonesia" (n.d.).

<sup>35</sup>et al., "Analisis Pengaruh Ekspor dan Konsumsi Batubara terhadap Pertumbuhan Ekonomi Indonesia," *Jurnal Teknologi Mineral dan Batubara* 16, no. 2 (2020): 109–124.

<sup>36</sup>Fitriyanti, "Pertambangan Batubara: Dampak Lingkungan, Sosial dan Ekonomi."

<sup>37</sup>Alaidin Koto, *Ilmu Fiqh Dan Ushul Fiqh* (Jakarta: PT Rajagrafindo Persada, 2004).

<sup>38</sup>Indonesia, "Energi Berkelanjutan Untuk Transportasi Darat."

<sup>39</sup>Hanan Nugroho, "Coal as the National Energy Supplier Forward: What Are Policies to Be Prepared?,"

natural resources making a major contribution to economic development in Indonesia.

However, like other fossil energy sources, coal has a negative impact on the survival of mankind. Coal burning produces large amounts of greenhouse gas (CO<sub>2</sub>) and flies ash emissions which make the environment unhealthy. Mining business in a short time can change the shape of the topography of the land and land surface conditions (*land impact*) which can change the balance of the ecological system for the surrounding area.<sup>40</sup> One of the impacts of environmental damage around the mining area is in the form of ex-mining puddles that are not reclaimed.<sup>41</sup> This can be seen from the collaborative report by Komnas HAM, Jatam, and the Advocacy Coalition for the East Kalimantan Mining Pit Case in 2016 that stated a large number of coal mines had been excavated in densely populated areas in East Kalimantan. This former coal mining excavation has also claimed 25 human lives from 2011-2016. Out of the 25 victims who died, the majority were children.<sup>42</sup>

Supporting the above point of view, hence, social problems threatening human survival are also caused by the existence of coal mines. Greenpeace said there are 6 of these problems including child deaths in mining pits, land grabbing, farmers and fishermen losing their jobs, social conflict and prostitution, poor health and quality of life, and electricity for industry not for isolated people. These six problems threaten the survival of Indonesian citizens.<sup>43</sup>

Human life is a core element that must be preserved. Coal mining pits that have claimed dozens of human lives are very counterproductive to Islam's efforts to safeguard the safety of human souls. The commercial value generated from coal mining is less worth the price compared to the loss of dozens of human lives. An overview of al-Ghazali's *mashlahah* level explains in more detail the *mafsada* threat posed by coal mines.

At the *mashlahah dharuriyah* level, excessive use of fossil energy in the form of coal mining is contrary to Islamic efforts to preserve the soul (*hifdz al-nafs*). Whereas, anyone, who negates one of the five basic principles (*al-ushul al-kebomsah*), is same as doing damage (*mafsadat*) which is strictly prohibited in Islam. For al-Ghazali, damage (*mafsada*) causes the loss of some or even all of the five basic principles (*al-ushul al-kebomsah*).<sup>44</sup>

### Decreased Food Security

On the other hand, coal mines that cover nearly 4 million hectares in Indonesia have the potential to have great destructive power. In general, the impact of coal mining on the environment is a decrease in land productivity, increased soil density, erosion and sedimentation, soil movement or landslides, disruption of flora and fauna, and changes in microclimate.<sup>45</sup> Meanwhile, coal mining land clearing activities have an impact on reducing the ability of forests to absorb carbon, and carbon is released into the atmosphere due to

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*Jurnal Perencanaan Pembangunan: The Indonesian Journal of Development Planning* 1, no. 1 (2017): 1–13.

<sup>40</sup>Nurul Listiyani, "Dampak Pertambangan Terhadap Lingkungan Hidup di Kalimantan Selatan dan Implikasinya Bagi Hak-Hak Warga Negara (Impact of Mining on Life Environment in South Kalimantan And Implication for Rights of Citizens)" 1, no. April (2017): 67–86.

<sup>41</sup>Nugroho, "Coal as the National Energy Supplier Forward: What Are Policies to Be Prepared?"

<sup>42</sup>Komnas HAM, "Pelanggaran Hak Asasi Manusia Dalam Kasus Eks Lubang Tambang Batu Bara di Kalimantan Timur" (2016): 53.

<sup>43</sup>Greenpeace Indonesia, "Kita, Batubara & Polusi Udara," no. April (2015): 1–16.

<sup>44</sup>Al-Ghazali, *Al-Mustashfa Fi Ilmi Al-Ushul*.

<sup>45</sup>Listiyani, "Dampak Pertambangan Terhadap Lingkungan Hidup di Kalimantan Selatan dan Implikasinya Bagi Hak-Hak Warga Negara (Impact of Mining on Life Environment in South Kalimantan And Implication for Rights of Citizens)."

the loss of forest vegetation.<sup>46</sup> This can threaten food security in Indonesia. This can be identified from the former coal mining land which has become barren, the water catchment area is polluted, and the groundwater has run out. The data also shows that there has been a 50% decrease in rice yields and an 80% decrease in fish yields. Coal mining, which has highly destructive power causes nearly 18.5 million tons of potential annual rice production to be lost.<sup>47</sup>

According to JATAM and Waterkeeper Alliances (2017), the plans to increase the rice harvest area have always been hampered by excessive land allocation for export commodities such as palm oil and coal. As a result, it is estimated that around 1.7 million tons of rice per year are lost due to coal mining. In addition, 6 million tonnes of rice production per year on arable land is threatened with a loss per year. There will be an additional 11 million tonnes of rice per year lost if mining occurs in a coal concession located on land identified as capable of being used for rice cultivation. Efforts made to work on Indonesia's first rice megaproject, which aims to convert one million hectares of unproductive peatland in the lowlands of Central Kalimantan into rice fields ultimately lead to a socio-ecological disaster.

In addition, coal concessions cover 19% of Indonesia's mapped rice agricultural land, as well as 23% of the land identified as capable of being cultivated for rice farming. Most of the land identified as capable of being used for rice cultivation is occupied by industrial forestry and oil palm plantations. However, unlike coal mining, this land use does not exclude its future use for food production. In addition, coal

mining creates pit water which is forced to be used for daily needs (such as washing, bathing, irrigating the land, and fish farming). This is done because of the decreasing groundwater and surface water catchment due to mining. Therefore, farmers who use mine pit water report that rice production is reduced by 50% and fish production is reduced by 80%.<sup>48</sup>

The threat of food security as in the case above with the existence and use of coal fossil energy in al-Ghazali's review of *mashlahab* collides with *mashlahab hajiyah*. *Mashlahab hajiyah* is threatened in the form of a food crisis and ecocide against the Indonesian people. If this continues, *hifdz al-nafs* which is *mashlahab dharuriyah* is also in danger of disappearing. From this level, the existence and use of coal mines are not in harmony with the spirit of nurturing the soul in Islam. In addition, Al-Ghazali gave an example regarding the recommendation to eat food that is *halalan thayyiban* (halal and good). Substantially, *halalan thayyiban* food is a symbol of encouraging humans to take care of their bodies and souls<sup>49</sup> by building a good food security system.

### Air Pollution

In addition to the food crisis, according to Yusgiantoro (2000), coal mining activities cause air pollution which is a negative externality impacting the health and safety of human life. Pollutants caused by coal burning cause an estimated 6,500 premature deaths per year in Indonesia. Estimates made by Harvard University in the 2015 Greenpeace Indonesia report show that the main causes of premature death include stroke (2,700), ischemic heart disease (2,300), lung cancer (300), chronic obstructive pulmonary disease (400), and

<sup>46</sup>Restu Juniah et al., "Public Health Impact of Coal Mining Among Community Living in Coal Mining Area (Review on Environmental Benefits to Absorb Carbon) (Kajian Jasa Lingkungan Sebagai Penyerap Karbon) Public Health Impact of Coal Mining Among Community Living in Coal Mini," *Dampak Pertambangan Batubara terhadap Kesehatan Masyarakat Sekitar Pertambangan Batubara*, no. April (2015): 12.

<sup>47</sup>JATAM and Waterkeeper Alliance, "Hungry Coal: Pertambangan Batu Bara dan Dampaknya Terhadap Ketahanan Pangan Indonesia."

<sup>48</sup>Ibid.

<sup>49</sup>Outlook Energi Indonesia, "Energi Berkelanjutan Untuk Transportasi Darat" (Pusat Pengkajian Industri Proses & Energi, Badan Pengkajian & Penerapan Teknologi, 2018).

respiratory and other cardiovascular (800). This data shows that coal fossil energy triggers the threat of a higher number of fatalities.

Burning fossil energy sources in the form of coal can release gases including nitrogen oxides (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), and carbon dioxide (CO<sub>2</sub>). which causes air pollution. Nitrogen oxide (NO<sub>2</sub>) can turn into nitric acid (HNO<sub>3</sub>) and sulfur dioxide (SO<sub>2</sub>) which is emitted into the air to form sulfuric acid (H<sub>2</sub>SO<sub>4</sub>) which can cause acid rain. According to the Researcher for the Study of Ozone and Air Pollution, LAPAN (2010), acid rain can increase the acidity of soil and water which can harm biotic and abiotic components, making it dangerous for human survival. Meanwhile, (CO<sub>2</sub>) emissions cause the levels of greenhouse gases in the atmosphere to increase. As the concentration of greenhouse gases increases, more heat is retained on the surface of the earth and causes the temperature of the earth's surface to increase. The increase of air temperature results in climate change and sea level rises.<sup>50</sup>

Either coal to produce the highest gas pollution (SO<sub>2</sub>) because each burning of fossil fuels produce approximately 30 parts of sulfur dioxide for every part of sulfur trioxide<sup>51</sup>, it also produces the most carbon dioxide per unit of energy, i.e. burning 1 ton of coal produces around 2,5 tons of carbon dioxide.<sup>52</sup>

Research on the Impact of Coal Power Plants conducted by the Harvard University Research Team - Atmospheric Chemistry Modeling Group (ACMG) and Greenpeace Indonesia shows that the Emissions of the Jepara PLTU, Central Java are estimated to

cause 1,020 premature deaths per year. These included 450 deaths from stroke, 400 deaths from ischemic heart disease, 60 deaths from lung cancer, 90 deaths from chronic respiratory disease, and 20 childhood deaths from acute respiratory infections. Meanwhile, air pollutant emissions from PLTU Batang, Central Java are also projected to cause 780 premature deaths per year (95% confidence interval: 470-1090). These included 340 deaths from stroke, 300 deaths from ischemic heart disease, 40 deaths from lung cancer, 70 deaths from chronic respiratory disease and 10 deaths from small children due to acute respiratory disease.

The impacts of this Coal Power Plant have an impact on air quality. According to the Harvard University Research Team - Atmospheric Chemistry Modeling Group (ACMG) and Greenpeace Indonesia, the Jepara Coal Power Plant, Central Java have the most severe impact on air quality which occurs in Jepara City, Pecangaan, Kembang, and Karangsari while Semarang is in the south. Besides, Rembang and Lasem in the eastern area were also affected. This model shows that most of the premature deaths occur in Semarang because a large population is affected. Moreover, the Batang Coal PLTU, Central Java has the most severe air quality effects which occur in Batang and Pekalongan. The risk of threats to individual health due to the Coal PLTU is the highest.

Air pollution is caused by burning coal fossil energy as the case study above in al-Ghazali's review of *mashlahah*, collides with *mashlahah tahsiniyat*. *Mashlahah tahsiniyat* is threatened in the form of air pollution. If it

<sup>50</sup>Mira Tri Wulandari, Hermawan, and Purwanto, "Kajian Emisi Co 2 Berdasarkan Penggunaan Energi Rumah Tangga Sebagai Penyebab Pemanasan Global (Studi Kasus Perumahan Sebantengan, Gedang Asri, Susukan RW 07 Kab. Semarang)," *Prosiding Seminar Nasional Pengelolaan Sumberdaya Alam dan Lingkungan* (2013): 434-440.

<sup>51</sup>Galuh Sabhrina Nugrainy, Sudarno Sudarno, and Cahyadi Cahyadi, "Upaya Penurunan Emisi So2 Dari

Bahan Bakar Batubara Kualitas Rendah (Tipe: Subbituminous) Dengan Campuran Batu Kapur (Limestone) Pada Proses Pembakaran," *Jurnal Teknik Lingkungan* 4, no. 1 (2015): 1-12.

<sup>52</sup>Yoga Pratama, "Dampak Negatif Penggunaan Energi Fosil Dari Sektor Transportasi Dan Industri," *IEC*, October 2015.

continues, *biḍḍ al-naḥs* which includes *mashlahab tahsinīyat* are also in danger of disappearing because all the needs and protection needed for a better life become dangerous for human survival.

### Political Interests

In addition, the coal mining business is filled with the dirty and corrupt methods of the political elite. The involvement of national and local political elites is very strong in the coal mining business. A report released by the #BersihkanIndonesia movement alliance which includes Greenpeace, Jatam, ICW and Yauriga shows that coal mining is a source of political campaign funding. Coal mining also creates oligarchic circles and alliances of politicians as well as entrepreneurs in the coal sector. This is very prone to cause corruption.<sup>53</sup>

Several non-governmental organizations (NGOs) concerned with the environment and anti-corruption activists reveal that there is a political interest in the coal mining business sector. This is based on the report "*Coalruption: Political Elite in the Coal Business Swirl*" issued by Greenpeace, Auriga, JATAM, and ICW. Head of Greenpeace Southeast Asia Climate and Energy Campaign, Tata Mustasya says that the report reveals how political elites or politically exposed persons unite business and political interests in the coal mining sector.

Before 1999, mining regulations and permits were administered by the central government. However, after the implementation of decentralization, politicians in the regions gained power to manage natural resources in their respective areas. Political elites in the regions have full power to issue mining permits, especially as part of political funding. Due to this, it can be said that the coal mining business is an important part of Indonesia's political interests.

One of the centers of the coal industry in Indonesia is East Kalimantan. The coal industry has left many abandoned mine pits. Based on laws and regulations, mining pits must be restored and replanted to protect against environmental damage. However, many coal mining companies ignore this. Based on the report "*Coalruption: Political Elite in the Coal Business Vortex*" issued by Greenpeace, Auriga, JATAM, and ICW. The number of victims swallowed by coal mining pits in East Kalimantan reached 31 people until December 2018. Mining companies easily ignore this without any legal consequences because the owner has full power and political connections.

On the other hand, the revision of Law Number 4 of 2009 concerning Mineral and Coal Mining (RUU Minerba) which was passed into law by the Indonesian Parliament on May 12 2020 provides leeway for coal mining companies that have the potential to create more mining pits. Without being reclaimed, regulations that previously said that mine pits must be completely closed into mine pits can be closed based on a percentage according to laws.<sup>54</sup> This indicates that there is a relationship between coal mining and Indonesian political interests.

These dirty methods from the perspective of *mashlahab al-Ghazali* cannot be justified. In realizing its benefit, it must be accompanied by good and beautiful ways so that *mashlahab tahsinīyat* is created. The coal mining business which economically generates a large amount of value has a large potential for corruption. *Mashlahab tahsinīyat* as good and beautiful ways of realizing human benefits are not found in coal mining projects. Coal mining creates *mafsadat* through the emergence of oligarchs and the potential for corruption by political elites and coal mining business people.

<sup>53</sup>Jatam, "Elite Politik Dalam Pusaran Bisnis Batu Bara," *Jatam* (2018): 48.

<sup>54</sup>"Nasib Lubang Tambang Di Bawah Revisi UU Minerba," *Ekuatorial*, June 2020.

Therefore, the use of coal fossil energy in Indonesia from a review of the principles of *hifdz al-nafs* experiences many contradictions with the benefit of Islam. Islam, as a religion of *rahmatan li al-'alamin* highly, upholds the right to life of mankind. This basic right in contemporary terms is also known as Human Rights (HAM). The use of coal fossil energy that conflicts with the basic principles of *hifdz al-nafs* should be ended. The use of renewable energy can be an alternative for the impact of safety on humans.

## CONCLUSION

The need for energy for human life is a very natural thing. Energy is very closely related to human survival. However, the choice to use energy is in the hands of humans. The use of coal fossil energy as one of the dominating energy sources in Indonesia does have a significant economic impact. The use of coal fossil energy can provide commercial value, boost economic growth, and promote people's welfare.

In short, the safety impact on human life (*hifdz al-nafs*) from the use of coal fossil energy is also very dangerous. The three levels of *mashlahah* show that the use of coal fossil energy does not carry the spirit of preserving the soul. Thus, the transition from fossil energy to renewable energy sources is urgent. In brief, Islam which is represented in the five basic principles (*al-ushul al-khomsah*) sees the dangers of using coal fossil energy, especially from the point of view of *hifdz al-nafs* principle (preservation of the soul).

## REFERENCES

- Afin, Anugrah Pratama, and Berkah Fajar Tamtomo Kiono. "Potensi Energi Batubara Serta Pemanfaatan Dan Teknologinya Di Indonesia Tahun 2020 – 2050: Gasifikasi Batubara." *Jurnal Energi Baru dan Terbarukan* 2, no. 2 (2021): 144–122.
- Al-Ghazali. *Al-Mankhul Min Ta'liqat Al-Ushul*. Dar al-Fikr, n.d.
- . *Al-Mustashfa Fi Ilmi Al-Ushul*. Beirut: Dar Al-Kutub Al-Ilmiyah, 2000.
- . *Al-Mustashfa Fi Ilmu Al-Ushul*. Beirut: Dar Al-Kutub Al-Ilmiyah, 2000.
- . *Asas Al-Qiyas*. Riyadh: Maktabah al-'Abikan, 1993.
- . *Shifa'al-Ghalil Fi Bayan Al-Syabah Wa Al-Mukbil Wa Masalik Al-Ta'li*. Bagdad: Mathba'ah al-Irsyad, 1971.
- Billah, Mutasim. *Peningkatan Nilai Kalor Batubara PEringkat Rendah Dengan Menggunakan Minyak Tanah Dan Minyak Residu*, 2010.
- Budiarto, R. *Kebijakan Energi, Menuju Sistem Energi Yang Berkelanjutan*. 2nd ed. Yogyakarta: Samudera Biru, 2013.
- Ceptra, Umer. *The Future of Economics: An Islami Perspective*. Jakarta: Gema Insani Press, 2001.
- Cerah, Change.org dan Yayasan Indonesia. "PRESS RELEASE – Survei: 89 Persen Responden Usia Muda Khawatir Dampak Krisis Iklim."
- Fauzia, Ika Yunia. "Urgensi Implementasi Green Economy Perspektif Pendekatan Dharuriyah Dalam Maqashid Al-Shariah." *JEBIS (Jurnal Ekonomi dan Bisnis Islam) | Jorunal of Islamic Economics and Business* 2, no. 1 (2016): 87–104.
- Finahari, Ida N, Djati H S, and Heni Susiati. "Gas CO2 dan Polutan Radioaktif dari PLTU Batubara." *Jurnal Pengembangan Energi Nuklir* Vol.9, no. 1 (2011): 1–8.
- Fitriyanti, Reno. "Pertambangan Batubara: Dampak Lingkungan, Sosial Dan Ekonomi." *Jurnal Redoks* 1, no. 1 (2016): 34–40.
- Greenpeace Indonesia. "Kita, Batubara & Polusi Udara," no. April (2015): 1–16.
- Handayani, Kamia, Yoram Krozer, and Tatiana Filatova. "From Fossil Fuels to Renewables: An Analysis of Long-Term Scenarios Considering Technological Learning." *Energy Policy* 127, no. January

- 2018 (2019): 134–146.
- Husna, Hidayatul. “Al-Ghazali pada Kasus Pembangkit Listrik Tenaga Surya (PLTS) (Library Research)” (2019).
- Indonesia, Outlook Energi. “Energi Berkelanjutan Untuk Transportasi Darat.” Pusat Pengkajian Industri Proses dan Energi, Badan Pengkajian dan Penerapan Teknologi, 2018.
- IPCC. “Special Report; Global Warming of 1,5° C.”
- Ismanto, Kwat. “The Concept of Maqā Ṣ Īd Al-Syārī ’ Ah Al- Ghazali As a Halal Industry Development” 197, no. 8 (2021): 180–197.
- Jatam. “Elite Politik Dalam Pusaran Bisnis Batu Bara.” *Jatam* (2018): 48.
- JATAM and Waterkeeper Alliance. “Hungry Coal: Pertambangan Batu Bara Dan Dampaknya Terhadap Ketahanan Pangan Indonesia.” *Jatam* (2017).
- Juniah, Restu, Rinaldy Dalimi, M Suparmoko, and Setyo S Moersidik. “Public Health Impact of Coal Mining Among Community Living in Coal Mining Area (Review on Environmental Benefits to Absorb Carbon) (Kajian Jasa Lingkungan sebagai Penyerap Karbon) Public Health Impact of Coal Mining Among Community Living in Coal Mini.” *Dampak Pertambangan Batubara terhadap Kesehatan Masyarakat Sekitar Pertambangan Batubara*, no. April (2015): 12.
- Khodijah. “Maqashid Syari’ah dan Masalah Dalam Ekonomi Dan Bisnis Syari’ah.” *Journal of Chemical Information and Modeling* 53, no. 9 (2008): 287.
- Komnas HAM. “Pelanggaran Hak Asasi Manusia dalam Kasus Eks Lubang Tambang Batu Bara di Kalimantan Timur” (2016): 53.
- Koto, Alaidin. *Ilmu Fiqh Dan Ushul Fiqh*. Jakarta: PT Rajagrafindo Persada, 2004.
- Koyama, Ken. “The Role and Future of Nitrogen Fixation.” *IEEJ Energy Journal*, no. October (2017): 80–84.
- Kristanto, Philip. *Ekologi Industri*. Yogyakarta: Penerbit Andi, 2013.
- Listiyani, Nurul. “Dampak Pertambangan terhadap Lingkungan Hidup di Kalimantan Selatan dan Implikasinya Bagi Hak-Hak Warga Negara (Impact of Mining on Life Environment in South Kalimantan and Implication for Rights of Citizens)” 1, no. April (2017): 67–86.
- Martins, Florinda, Carlos Felgueiras, Miroslava Smitkova, and Nidia Caetano. “Analysis of Fossil Fuel Energy Consumption and Environmental Impacts in European Countries.” *Energies* 12, no. 6 (2019): 1–11.
- Modi, V., McDade, S., Lallement, D., dan Saghir, J. *Energy and the Millennium Development Goals*. New York: Energy Sector Management Assistance Programme, UNDP, UN Millennium Project, and World Bank, 2005.
- Mufid, Moh. *Ushul Fiqh Ekonomi Dan Keuangan Kontemporer: Dari Teori Ke Aplikasi*. Jakarta: Prenadamedia Group, 2018.
- Musolli, Musolli. “Maqashid Syariah: Kajian Teoritis Dan Aplikatif Pada Isu-Isu Kontemporer.” *At-Turas: Jurnal Studi Keislaman* 5, no. 1 (2018): 60–81.
- Nailufar, Nibras Nada. “Batu Bara dan Dampak Buruknya.” *Kompas*, May 2020.
- Nggeboe, Ferdricka. “Dampak Sosial Ekonomi Penambangan Batubara.” *Jurnal Lex Specialis*, no. 11 (2011): 43–51.
- Nugrainy, Galuh Sabhrina, Sudarno Sudarno, and Cahyadi Cahyadi. “Upaya Penurunan Emisi So2 dari Bahan Bakar Batubara Kualitas Rendah (Tipe: Subbituminous) dengan Campuran Batu Kapur (Limestone) Pada Proses Pembakaran.” *Jurnal Teknik Lingkungan* 4, no. 1 (2015): 1–12.
- Nugroho, Hanan. “Coal as the National Energy Supplier Forward: What Are Policies to Be Prepared?” *Jurnal Perencanaan Pembangunan: The Indonesian Journal of Development Planning* 1, no. 1 (2017): 1–13.

- Pratama, Yoga. "Dampak Negatif Penggunaan Energi Fosil dari Sektor Transportasi dan Industri." *IEC*, October 2015.
- Arif Setiawan, Aryo Wibowo, and Fadhila Rosyid. "Analisis Pengaruh Ekspor dan Konsumsi Batubara Terhadap Pertumbuhan Ekonomi Indonesia." *Jurnal Teknologi Mineral dan Batubara* 16, no. 2 (2020): 109–124.
- Shidiq, Ghofar. "Teori Maqashid Al-Syari'ah Dalam Hukum Islam." *Majalah Ilmiah Sultan Agung* Vol. 44 No (2009).
- Suganal, Suganal, and Gandhi K. Hudaya. "Bahan Bakar Co-Firing Dari Batubara Dan Biomassa Tertorefaksi Dalam Bentuk Briket (Skala Laboratorium)." *Jurnal Teknologi Mineral dan Batubara* 15, no. 1 (2019): 31–48.
- Suharto, Rahmad Budi, Rian Hilmawan, Rizky Yudaruddin, Fakultas Ekonomi, Universitas Mulawarman, and Kalimantan Timur. "Sumber Daya Alam untuk Kesejahteraan Penduduk Lokal: Studi Analisis Dampak Pertambangan Batu Bara Di Empat Kecamatan Area Kalimantan Timur, Indonesia" (n.d.).
- Wahyudin, Uyu. "Analisis Dampak Keberadaan Perusahaan Tambang Batu Bara terhadap Kondisi Sosial Ekonomi Masyarakat." *Jurnal Atsar Unisa* 1, no. 1 (2020): 35–45.
- Wiratmini, Ni Putu Eka. "Indonesia Masih Bergantung Pada Energi Fosil Untuk Jangka Panjang." *Bisnis.Com*, September 2019.
- Wulandari, Mira Tri, Hermawan, and Purwanto. "Kajian Emisi Co<sub>2</sub> Berdasarkan Penggunaan Energi Rumah Tangga Sebagai Penyebab Pemanasan Global (Studi Kasus Perumahan Sebantengan, Gedang Asri, Susukan RW 07 Kab. Semarang)." *Prosiding Seminar Nasional Pengelolaan Sumberdaya Alam dan Lingkungan* (2013): 434–440.
- Yudha, Satya Widya. "Pemerintah Perlu Mengoptimalkan Pemanfaatan Energi Terbarukan." *UGM.ac.id*.
- "Nasib Lubang Tambang Di Bawah Revisi UU Minerba." *Ekuatorial*, June 2020.