Challenges and Implementation of Environmental Law in Sustainable Development in the Coal Mining Industry Area

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Abstract: The obligation to carry out post-mining land rehabilitation and waste water management are two important aspects because they have the potential to reduce the negative impact of mining on the environment (Joni, 2020). Post-mining land rehabilitation is the process of restoring ex-mining land so that it can function again or approach its natural condition, expressly stipulated in the Regulation of the Minister of Energy and Mineral Resources.Source One Minerals No. 7 of 2014 concerning the implementation of Reclamation and Post Mining in Mineral and Coal Mining Business Activities. Through this regulation, it is also recommended to do bSome common steps in post-mining land rehabilitation include: The initial phase involves the removal of mined material such as rock, disturbed soil and other debris. Then, the topsoil that is removed will be replaced with fertile soil

Key Words: Challenges, Implementation of Environmental Law, Sustainable Development

INTRODUCTION

Citizen participation in environmental management is closely related to the right to a good and healthy environment which is protected in the 1945 Constitution of the Republic of Indonesia. Article 28H paragraph 1 states that "everyone has the right to live in physical and spiritual prosperity having a and get a good and healthy living environment as well as the right to obtain health services human rights are a set of rights that are inherent in the nature and existence of humans as creatures of God the one and only and are God's gifts that must be respected and upheld by the state and government law and everyone for the sake of respect and protection of human dignity and worth, therefore what efforts can be made by the state to provide guarantees to the community in the context of fulfilling human rights (Alif, 2021; Fauzia & Suryaningsi, 2021; Khatimah & Suryaningsi, 2021).

The International Perspective of the 1992 Rio declaration also recognizes the role of citizens in making decisions related to the environment as a key principle of environmental governance. There are 10 principles of the Rio declaration which state that environmental issues are best addressed with the participation of all concerned citizens at the relevant level (Anugrah Anugrah, 2021). So that the state is given a role to ensure that every citizen has appropriate access to information regarding the environment that is owned by public authorities including information about the hazards of materials and activities and the opportunity to participate in decision making (Amin, 2021; Arpangi, 2022; Hidayatullah & Pranowo, 2018).

Furthermore, the state should also facilitate and encourage public awareness and participation by providing the best possible information. The right to the environment is referred to as third generation Ham (Atapattu, 2023; Djampou, 2023; Gao, 2023; Svitlana & Nataliia, 2021). This is intended because the right to the environment is not a stand-alone right but there are derivative rights which will determine the extent to which the quality of the right to the environment can be fulfilled. Therefore, there are two aspects that make up the right to the environment, namely the procedural aspect and the substantial aspect. The right to life is a substantial aspect, namely the right to obtain a decent standard of living and the right to be healthy, the right to obtain inter- and inter-generational justice.

Procedural is a supporting element in the context of fulfilling substantive rights, namely the right to information, the right to participate in decision making and the right to get access to justice. The coal mining industry is a sector that has significant challenges in the implementation of environmental law and sustainable development. Coal mining activities often cause extensive environmental damage, such as deforestation, soil erosion, land degradation, and water pollution. The main challenge is to minimize these negative impacts through the implementation of environmentally responsible mining practices, including post-mining land rehabilitation and waste water management, as regulated in Article 96 Law No 3 of 2020 concerning Mining. The mining law strictly regulates concession permits mining to carry out mining reclamation perfectly, which means that if the concessionaire does not comply with the regulations regarding mining will be subject to criminal sanctions (Agraria et al., 2021; Kadek & Suardianti, 2021; Maala, n.d.; Suryaningsi & Venna, 2021; Zanariyah et al., 2021).

Soil that has been disturbed by mining generally has poor structure and nutrient content. Therefore, fertilization and tillage is carried out to increase soil fertility and ability to support vegetation

growth. Vegetation reclamation: Plants and vegetation are selected and replanted to restore the ecological function of the land. Selection of plant species that are resistant to changing environmental conditions is an important factor in post-mining land rehabilitation (Aipassa et al., 2020; Daru et al., 2020; Munawaroh et al., 2020).

After rehabilitation, supervision and monitoring is carried out to ensure that the ex-mining land continues to function effectively and that ecological recovery is taking place properly. Wastewater management is a process to minimize the negative impact of wastewater generated by industrial or mining activities. Some of the steps taken in waste water management include: The first step in wastewater management is to reduce the formation of waste from the source. Source control efforts involve the application of clean technology, changes to production processes, and efficient use of chemicals (Rahmi et al., 2022).

Wastewater usually goes through a series of treatment steps to remove contaminants such as suspended solids, organic matter, heavy metals or other hazardous chemical substances. This process involves physical treatment such as filtering and chemical or biological treatment such as precipitation, filtration, oxidation, or the use of microorganisms to break down contaminants. A continuous monitoring system is needed to ensure that the wastewater produced meets hygiene standards and does not pollute the environment.

If possible, treated wastewater can be reused in the production process or for non-potable after fulfilling safety and quality requirements. It is important to involve environmentalists, engineers and other stakeholders in the planning and implementation of post-mining land rehabilitation and wastewater management. These efforts are important to ensure environmental sustainability and protect ecosystems and human health.

The mining industry, including coal mining, has great potential to cause environmental damage. Environmental impacts often occur as a result of the mining industry. Opening a mine site often requires extensive logging of forests. This results in deforestation and loss of habitat for the flora and fauna that live in it. Loss of this habitat can lead to decreased biodiversity and imbalanced ecosystems.

Coal mining with an open pit mining system, it is carried out by involving extensive excavation and dredging of land. These activities can cause land damage, severe soil erosion, and reduced productivity of land for agricultural or other uses (Fauzan et al., 2020; Sofian et al., 2022). Land damage can also cause landslides and floods. During the coal mining process, surface water and groundwater can be polluted by mining waste containing hazardous chemicals. This waste contains heavy metals and toxic compounds that can pollute water sources and threaten human health and aquatic ecosystems.

The coal mining industry also contributes to air pollution. The process of mining, transporting and burning coal produces emissions of greenhouse gasses and air pollutants such as sulfur dioxide, nitrogen dioxide, particulates and other toxic gasses. This can have a negative impact on air quality and human health. The process of burning coal produces emissions of greenhouse gasses such as carbon dioxide (CO_2), which is a major factor in global climate change. Greenhouse gas emissions contribute to global warming and climate change which can cause extreme weather changes, increase in global average temperature, and changes in rainfall patterns.

Coal burning also produces air pollutants such as sulfur dioxide (SO_2), nitrogen dioxide (NO_2), particulates (dust), and toxic gasses such ascarbon monoxide (CO) dan mercury (Hg). This air pollution can cause respiratory health problems, eye and respiratory tract irritation, increased risk of cardiovascular disease, and contributes to the formation of smog or severe air pollution.

Coal burning produces smoke and dust which contains hazardous substances such as fine particulate matter ($PM_{2.5}$) andparticulate rough (PM_{10}). These particulates can affect air quality, settle in human lungs, and cause respiratory problems, such as asthma, bronchitis and chronic obstructive pulmonary disease (COPD).

Increased air pollution from burning coal can also have a negative impact on biodiversity. Dust and particulates can cover plants, inhibit photosynthesis, and damage plants and local ecosystems. This can threaten the survival of flora and fauna that depend on these ecosystems.

It is important to reduce emissions of greenhouse gasses and air pollutants from the coal industry through the implementation of cleaner technologies, the use of more environmentally friendly alternative fuels, and the use of filtration and pollution control equipment. In addition, stringent environmental regulations and close monitoring of the coal mining industry are also required to ensure compliance with emission standards and protect air quality and human health.

The mining industry produces mining waste that needs to be managed properly. This waste includes tailings, toxic wastes, and waste materials that are no longer usable. If not managed properly, mining waste can contaminate soil, water and air and threaten ecosystems after mining is complete. It is important to remember that the damaging environmental effects of the mining industry can vary depending on management practices and compliance with environmental regulations. Implementation

of appropriate mitigation measures and technologies can help reduce negative impacts and increase the sustainability of the mining industry.

The process of mining, transporting and using coal can cause greenhouse gas emissions that contribute to climate change. The challenge is reducing emissions of CO2 and other pollutants by adopting more efficient technologies, using renewable energy, and implementing methods of carbon capture and storage.

Coal mining often creates conflicts with local communities who are directly affected. The challenge is ensuring fair public participation in decision-making, fair compensation for affected communities, and fulfillment of their rights, including the right to a healthy environment.

The coal mining industry produces solid waste (tailings) which has the potential to pollute the environment if not managed properly. The challenge is adopting safe and responsible waste management practices, including the selection of suitable landfill sites, effective waste treatment methods, and close monitoring of their impact on the environment.

Strict application of environmental laws and strict enforcement are important challenges in the coal mining industry. The challenge is ensuring effective monitoring and supervision, adequate sanctions for violations, and strengthening the capacity of institutions responsible for law enforcement. To overcome this challenge, the implementation of environmental law and sustainable development in the coal mining industry requires cooperation between the government, mining companies, communities and other stakeholders.

Discussion

Challenges and implementation of environmental law and sustainable development in the era of globalization involve several complex issues. Globalization often involves intense economic competition between countries and multinational corporations. This can lead to conflict between economic interests and environmental interests and sustainable development. Countries and companies may face pressure to ignore or relax environmental standards for economic gain.

The implications of globalization are not evenly distributed around the world. Countries with more limited resources may face difficulties in implementing environmental laws and sustainable development due to limited institutional, financial and technological capacities. This inequality can lead to environmental injustice and inequality in sustainable development efforts.

Actions that harm the environment often crossnational borders, this is the impact of Globalization. Air pollution, destruction of marine ecosystems, and climate change are examples of environmental problems that require cross-border cooperation in law enforcement. Examples of China, India and the United States, countries that have severe levels of air pollution.

The challenge is to create an effective international legal framework to address these issues. Legal disputes and different interpretations of environmental law between countries or industrial sectors can become obstacles in the implementation of environmental law and sustainable development in the era of globalization. Disharmony between national and international legal systems, as well as differences in law enforcement, can hinder the effectiveness of environmental protection.

Technological developments in the era of globalization can provide new challenges in the implementation of environmental law. For example, the use of new technologies such as information technology, robotics and artificial intelligence can have a positive impact but can also create new issues such as privacy concerns and environmental impacts from the production and recycling of these technological devices.

In the era of globalization, it is important to increase public awareness and participation in environmental issues and sustainable development. The challenge is to create effective mechanisms to engage communities in decision-making processes, support environmental advocacy, and promote social and environmental responsibility from companies and institutions. In facing this challenge, the implementation of environmental law and sustainable development in the era of globalization requires strong international cooperation, institutional and legal capacity building, as well as a balanced approach between economic growth, environmental protection and social welfare.

In the era of globalization, challenges to environmental law and sustainable development are becoming increasingly complex. Globalization has brought positive impacts such as increased international exchanges, economic growth and technology transfer, but it has also caused serious environmental problems such as climate change, loss of biodiversity and environmental pollution. To face this challenge, the implementation of environmental law and sustainable development is very important.

The following are some of the relevant implementation challenges and efforts:

Globalization involves many countries with different legal systems. The challenge is achieving harmonization of environmental law and sustainable development between countries to ensure effective environmental protection. Efforts such as international agreements and cooperation between countries are needed to equalize standards and apply environmental principles consistently.

Implementation of International Environmental Agreements: At a global level, environmental agreements such as the Kyoto Protocol and the Paris Agreement provide a framework for addressing climate change. The challenge is securing the participation and commitment of all countries to implement emission reduction measures and promote sustainable development.

Implementation of environmental law and sustainable development requires adequate legal and institutional capacities at the national and local levels. The challenge is strengthening relevant institutions, such as environmental departments, environmental courts, and environmental monitoring agencies, and providing the necessary training and resources to professionals and public officials.

Compliance with environmental laws and sustainable development needs to be improved. The challenge is ensuring effective monitoring, strong law enforcement, and adequate sanctions for environmental violations. Increasing public awareness and public participation is also important in encouraging legal compliance.

One of the main challenges is integrating environmental and sustainable development principles into economic development policies. A balanced approach is needed between economic growth, environmental protection and social welfare to achieve sustainable development.

The environment and challenges of sustainable development continue to evolve along with changes in social, economic and environmental conditions. To address these challenges, laws and policies must be continually updated and adapted to these changes. Laws and policies must continue to be implemented, the environment and sustainable development challenges continue to evolve along with technological advances, climate change, and the discovery of new issues. Laws and policies must be able to anticipate and address these new issues, such as e-waste management, renewable energy, biodiversity protection, and climate change adaptation.

Social and economic changes also affect the way we interact with the environment and affect sustainability. Laws and policies must be able to adapt to these changes, such as population growth, urbanization, changing consumption patterns, and the development of new technologies. Laws and policies backed by sanctions and incentives can encourage sustained action by individuals, companies and governments. Through the right regulations, laws and policies can direct economic and environmental activities in a more sustainable direction, such as promoting the use of renewable energy, reducing emissions, good waste management, and conserving natural resources.

Laws and policies play an important role in protecting environmental rights, both individual rights and the collective rights of communities to live in a healthy and sustainable environment. This involves protecting against environmental pollution, ecosystem damage, and the right of public participation in decision-making that impacts the environment.

Laws and policies provide a framework for compliance and accountability in protecting the environment and sustainable development. With clear laws and enforced regulations, economic actors and governments can be monitored, evaluated and held accountable for their actions on the environment. Therefore, through continuous legal and policy reform, we can create an adequate framework to address environmental challenges and promote sustainable development in a holistic manner.

Steps that can be taken to implement sustainable development in the mining industry are (Balakina & Kulikova, 2022; Nepsha et al., 2021):

Implement strict rules and regulations to control the environmental impact of coal mining activities. The environment and the challenges of sustainable development continue to evolve along with advances in technology, climate change and the discovery of new issues. Laws and policies must be able to anticipate and address these new issues, such as e-waste management, renewable energy, biodiversity protection, and climate change adaptation.

Regulation of the Minister of Environment and Forestry concerning the Coal Company Assessment Program (PROPER) Law no. 1 of 2021. PROPER provides an assessment of companies based on their environmental performance, using criteria such as waste management, use of water resources, air pollution control, land management, and implementation of sustainability efforts. The assessment is carried out based on the information provided by the company and also through a field review conducted by an independent team of auditors.

Companies will be given a rating based on the results of the assessment, namely gold, silver, green or blue ratings. The gold rating is the highest rating given to companies that have demonstrated excellent environmental performance. Silver, green and blue ratings are given to companies with declining performance levels.

The PROPER program has several main objectives, including (Johnson, n.d.):

a. Encouraging companies to implement good environmental management practices.
b. Give awards to companies that have achieved good environmental performance.
c. Encouraging the improvement of the company's environmental performance which is not good through coaching and supervision.

Through the PROPER program, it is hoped that companies can increase their awareness and responsibility for the environment, and implement more environmentally friendly practices in their operations. This program also provides information to the public about the company's environmental performance, so that the public can make a wiser decision in choosing environmentally friendly products or services.

Companies that get a good rating in PROPER can get benefits such as easy access to permits, a better reputation, and support from the government in terms of technology development or financial assistance. Conversely, companies with poor environmental performance may face consequences such as operational restrictions, fines or legal sanctions. following predicate PROPER (Saxena, 2021):

Table 01: PRAP Predicate Requirements:

NO.	Predicate	Criteria
	Gold	Companies that meet all of the PRAP criteria and have excellent performance in environmental management. They have implemented best practices in environmental management and achieved the set targets.
2	Green	Companies that meet most of the PRAP criteria and have a good performance in environmental management. They have implemented most of the best practices in environmental management and achieved most of the targets set.
3	Blue	Companies that meet several PRAP criteria and have adequate performance in environmental management. They have implemented several best practices in environmental management and achieved several targets set.
4	Red	Companies that mostly do not meet the PRAP criteria and have poor performance in environmental management. They have not or have not fully implemented best practices in environmental management and have not reached the set targets.
5	Black	Companies that barely meet all of the PRAP criteria and have very poor performance in environmental management. They do not apply best practice in environmental management and do not reach the set targets.

Source: East Kalimantan Province Environmental Service in 2022

With the PROPER program, it is hoped that there will be sustainable improvements in environmental management by companies in Indonesia, so that negative impacts on the environment can be minimized and sustainable development can be achieved.

Social and economic changes also affect the way we interact with the environment and affect sustainability. Acording (Bagri et al., 2022; Kolawole & Iyiola, 2023)Laws and policies must be able to

adapt to these changes, such as population growth, urbanization, changing consumption patterns, and the development of new technologies. Laws and policies backed by sanctions and incentives can encourage sustained action by individuals, companies and governments. Through the right regulations, laws and policies can direct economic and environmental activities in a more sustainable direction, such as promoting the use of renewable energy, reducing emissions, good waste management, and conserving natural resources.

Laws and policies play an important role in protecting environmental rights, both individual rights and the collective rights of communities to live in a healthy and sustainable environment. This involves protecting against environmental pollution, ecosystem damage, and the right of public participation in decision-making that impacts the environment. Laws and policies provide a framework for compliance and accountability in protecting the environment and sustainable development. With clear laws and enforced regulations, economic actors and governments can be monitored, evaluated and held accountable for their actions on the environment. Through continuous legal and policy reform, we can create an adequate framework to address environmental challenges and promote sustainable development in a holistic manner (Anthonio-Apedzi, 2021; Huck, 2021).

Encouraging the adoption of clean and efficient technology in the process of mining, processing and using coal. Examples of technologies that can be adopted are the use of the latest mining technologies such as more precise open pit mining, the use of mining methods without blasting, and the use of equipment that is more efficient and energy efficient can reduce environmental damage and greenhouse gas emissions.

Sophisticated coal refining and processing technologies can reduce the levels of sulfur, nitrogen and particulates in coal, thereby reducing air pollutant emissions when coal is burned. Processes such as coal washing, use of filters, and reduction of sulfur dioxide (SO_2) can improve the quality of the coal that is burned. The use of efficient coal combustion technologies such as high-speed boilers, fluidized bed boilers, or gasification technologies can improve combustion efficiency and reduce air pollutant emissions. Pollution control systems such as the use of electrofilters or flue gas desulfurization can also be used to reduce pollutant emissions.

Diversification of energy sources by utilizing renewable energy such as solar energy, wind energy, or hydro energy can reduce dependence on coal as the main energy source. This can reduce the overall use of coal and its environmental impact. Coal waste resulting from mining and processing processes can be utilized with the right technology, such as making coal briquettes or using coal waste as an alternative fuel in industry or power plants. In addition to adopting clean and efficient technologies, it is also important to carry out strict monitoring of the implementation of these technologies and ensure compliance with applicable environmental rules and regulations. Government support in the form of incentives, research and development, as well as cooperation between industry, government and society is very important to encourage the adoption of more environmentally friendly technologies in the coal industry.

Develop an effective environmental monitoring and monitoring system to ensure compliance with environmental standards. Steps that can be taken to develop an effective monitoring and monitoring system are First of all, it is necessary to establish clear and measurable monitoring standards for relevant environmental parameters, such as water quality, air quality, post-mining land sustainability, and other significant environmental parameters. This standard must reflect strict environmental protection requirements and comply with applicable rules and regulations (Abajue, 2023; Agaya, 2021; Kolawole & Iyiola, 2023).

Using advanced monitoring technologies, such as online monitoring systems, remote sensors, and automatic monitoring, to obtain accurate and real-time data on environmental conditions. This technology can enable continuous monitoring and detect changes or violations immediately. Involve independent third parties, such as research institutes, environmental consultants, or civil society, to conduct independent monitoring of coal mining activities. This can increase community trust and ensure independence and objectivity in monitoring.

Requires coal mining companies to report monitoring results openly and transparently to environmental monitoring agencies and the general public. This report must include complete and relevant data, as well as a summary that can be understood by the public. Ensure that there are strict and effective sanctions for violations of environmental standards. In addition, it provides incentives or rewards for companies that implement good environmental monitoring practices and achieve good results in managing environmental impacts.

Increase capacity and training for environmental supervision and monitoring officers. They must have sufficient knowledge and skills to carry out accurate monitoring, analyze data, and interpret monitoring results. Conduct regular environmental audits to evaluate compliance with environmental standards and effectiveness of monitoring systems. This audit should be carried out by an independent team with expertise and knowledge in the environment. By developing an effective environmental

monitoring and monitoring system, it can ensure compliance with stringent environmental standards, provide accurate information on environmental impacts, and enable prompt and appropriate action in addressing environmental violations or concerns.

Ensuring fair public participation and transparency in decision making related to the coal mining industry. Several aspects need to be considered in realizing fair public participation and transparency, namely ensuring that relevant, accurate and comprehensive information about coal mining activities is publicly available. This includes information on environmental impacts, permits, environmental management plans, and monitoring of results. Such information must be available in a language that the public can understand and can be accessed easily through various communication channels.

Encouraging active participation of the community in decision-making processes related to the coal mining industry. This can be done through mechanisms such as public meetings, consultations, discussion forums, or environmental monitoring committees involving community representatives and relevant stakeholders. This engagement process must be inclusive, open, and provide equal opportunities for all affected parties.

Ensuring that the decision-making process related to the coal mining industry is carried out in a transparent manner. This means publishing information about the decisions made, the considerations that underlie them, and the reasons behind those decisions. This transparency provides an opportunity for the public and stakeholders to understand and evaluate the decision-making process.

Encouraging community empowerment in understanding and managing the impact of the coal mining industry. This includes providing education and training on environmental and social issues related to coal mining, as well as providing access to communities to ask questions, provide input, and advocate for their interests.

Conduct a comprehensive environmental impact assessment prior to starting coal mining activities. This process must involve public participation in identifying and evaluating possible environmental impacts, as well as proposing appropriate mitigation measures.

Adopt rules and regulations that require public participation in decision-making related to the coal mining industry. These standards must be clear, follow democratic principles, and include mechanisms to listen to people's aspirations and concerns. By implementing fair public participation and transparency in decision-making related to the coal mining industry, constructive dialogue can be created between government, industry and society. This helps build trust, reduce conflict, and promote sustainable development that takes into account the interests of all parties involved.

Provide incentives and rewards to companies that implement environmentally responsible mining practices. Through providing incentives to coal mining companies that support a sustainable environment, it can encourage behavior change. Incentives and rewards can act as incentives for companies to adopt more environmentally responsible mining practices. By rewarding companies that have successfully met stringent environmental standards, other companies will be inspired and motivated to follow in their footsteps.

Companies that are given incentives and rewards for environmentally responsible mining practices can gain a good reputation in the eyes of society, stakeholders and investors. This can increase the company's trust and image, as well as open up better business opportunities in the future. Companies that successfully implement environmentally responsible mining practices can have a competitive advantage in the marketplace. Appropriate incentive policies can encourage the adoption of new technologies and practices that are more efficient and environmentally friendly, thereby increasing operational efficiency and reducing negative impacts on the environment.

Incentives and rewards can encourage companies to undertake new research and development in environmentally friendly mining technologies and practices. This drives innovation in the mining sector and accelerates the adoption of more sustainable solutions. By providing incentives and rewards to environmentally responsible companies, we strengthen the concepts of corporate social responsibility and sustainable development. This helps create a more economically, socially and environmentally sustainable mining industry.

However, it is important to ensure that the criteria for awarding these incentives and rewards are clearly defined and transparent. These criteria must be based on clear and measurable environmental standards, and involve relevant stakeholders. In addition, strict safeguards and monitoring must be put in place to ensure that companies that receive incentives and rewards comply with set environmental standards.

Develop effective post-mining land rehabilitation and restoration programs.Through the development of an effective post-mining land rehabilitation and restoration program is an important step in reducing the negative impacts of the coal mining industry and ensuring sustainable development. Some of the principles and steps that can be taken in developing the program are pre-mining planning. It is important to carry out careful planning before carrying out coal mining activities.

This involves identifying and assessing the land to be mined, as well as identifying rehabilitation measures to be undertaken once mining is complete.

Post-mining land rehabilitation objectives must be clearly defined. These goals should include restoring ecological function, biodiversity, soil and water quality, and taking into account the social and economic interests of local communities. Various rehabilitation methods can be used, such as revegetation, soil engineering, habitat restoration and erosion control. Selection of the appropriate method should be based on site conditions, rehabilitation objectives and suitable local plant species (Harris, 2021; Rosyadi et al., 2021).

Involving local communities in the planning and implementation of post-mining land rehabilitation programs is important to ensure their success. Community participation can involve planting crops, caring for land, and long-term management. The rehabilitation program must be supported by an effective monitoring and evaluation system to monitor the progress and success of land rehabilitation. The data obtained from monitoring must be used to make necessary repairs and adjustments.

It is important to forge close cooperation between the coal mining industry, the government, and NGOs in the development of post-mining land rehabilitation programs. This collaboration allows for better use of resources, exchange of knowledge, and more effective monitoring. It is important to develop an effective wastewater management system to reduce the pollution impact on post-mining land. This involves the proper monitoring and management of wastewater, including treatment and quality control of water before discharge into the environment.

Oversight and law enforcement: (Stones, 2019) The government must ensure strict supervision and enforcement of coal mining companies to ensure compliance with established post-mining land rehabilitation programs. Therefore, in developing post-mining land rehabilitation and restoration programs, it is important to pay attention to long-term sustainability, consult with environmental experts, and involve relevant stakeholders. An effective program will help reduce the negative impact of the coal mining industry and support the sustainable restoration of the ecosystem ("Improving Control And Oversight Activities: Social And Legal Meaning And Law Enforcement Practice (Interaction Between The Centre And Regions)," 2020).

Encouraging collaboration between the government, mining companies, communities and non-governmental organizations to achieve sustainable development goals in the coal mining industry. The priority of collaboration between the government, mining companies, communities and non-governmental organizations is very important in achieving sustainable development goals in the coal mining industry. Because collaboration involves combining diverse knowledge, expertise, and resources from various parties. Governments can provide policy and regulatory frameworks, mining companies can provide access to technology and financial resources, local communities can provide local insights and their needs, and non-governmental organizations can provide knowledge and independent oversight. With this collaboration, the potential for achieving better results in sustainable development increases.

Each party has a different perspective in the coal mining industry. Governments may have economic development and job creation goals, mining companies may focus on operational efficiency and profitability, local communities may be concerned about social and environmental impacts, and non-governmental organizations may seek to protect the environment and promote social justice. In collaboration, these perspectives can be integrated and considered in a balanced way to reach more holistic and sustainable decisions and solutions.

Acording (Dutu, 2016; Guo et al., 2019; Suryaningsi et al., 2015) Collaboration enables joint efforts to achieve sustainable development in the coal mining industry. By involving the government, mining companies, communities and non-governmental organizations, a framework that harmonizes the interests of all parties can be created. This allows for a balance between economic growth, environmental protection, and social welfare.

Collaboration also facilitates better monitoring and accountability. By involving various parties, including independent non-governmental organizations, the decision-making process and implementation can be monitored better. This helps ensure compliance with established environmental and social standards, as well as provides an opportunity for communities to become involved in the monitoring and evaluation of mining activities.

Collaboration can help manage and reduce conflicts that may arise in the coal mining industry. By involving all relevant parties, differences of opinion and problems can be identified and resolved constructively (Suryaningsi et al., 2015). Collaboration also creates a forum for open dialogue and builds trust between all parties involved. Through strong collaboration between the government, mining companies, communities and non-governmental organizations, we can achieve sustainable development in the coal mining industry that pays attention to economic, social and environmental aspects.

Conclusion

The coal mining industry is a sector that has major challenges in implementing environmental law and sustainable development. The process of mining, transporting and burning coal can produce greenhouse gas emissions and air pollutants that have a negative impact on air quality and human health. In addition, coal mining activities can also cause serious environmental damage, including land damage, ecosystem degradation, and water pollution. To overcome this challenge, it is necessary to implement strict environmental laws in the coal mining industry. Some steps that can be taken include:

Adoption of clean and efficient technology: It is important to encourage the use of clean and efficient technology in the process of coal mining, processing and use. This can reduce greenhouse gas emissions and air pollutants produced by the coal mining industry.

Effective post-mining land rehabilitation programs: Coal mining companies must develop effective rehabilitation programs to restore mined land. Selection of the right rehabilitation method and involvement of the local community are important factors in the success of this program.

Good wastewater management: It is important to implement an effective wastewater management system to reduce the impact of pollution on water. Wastewater treatment before being discharged into the environment must be done in an appropriate manner.

Rigorous environmental monitoring: An effective environmental monitoring and monitoring system is required to ensure compliance with environmental standards. The data obtained from this monitoring can be used to make necessary improvements and adjustments.

Public participation and transparency: It is important to involve the community fairly and transparently in decision making related to the coal mining industry. Public participation can increase accountability and support more sustainable decision-making.

Incentives and rewards: There needs to be incentives and rewards for companies that adopt environmentally responsible mining practices. This can encourage companies to improve their environmental performance and create a competitive advantage.

In an effort to overcome challenges and implement environmental law and sustainable development in the coal mining industry, collaboration between the government, mining companies, communities and non-governmental organizations is also very important. Only through joint efforts and strong commitment from all parties, can we achieve sustainable development in the coal mining industry that pays attention to economic, social and environmental aspects.

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Artikel dan Tulisan Ilmiah:
Beberapa artikel dan tulisan ilmiah yang diterbitkan dalam jurnal atau buku karangan orang lain Lokal, Nasional dan Internasional, mengenai pendidikan, politik hukum, politik dan pembangunan, masalah sosial, masalah gender, serta berbagai persoalan pembangunan hukum; serta penegakan hukum dan keadilan.