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The Science of Transportation and Legal Aspect of Coal *(Bituminus -Antrasit)* Haulage System in Batanghari District

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Abstract: Bituminous and Anthracite are coal mined in Indonesia. The use of this energy becomes very elementary for various purposes or energy needs. Therefore, its distribution is a problem in itself because it crosses various mediums, be it river flows and also road sections in Batanghari district. Problems that arise in connection with the transport system studied in this study are those that pass through the highway, so that aspects of the road class and the load of the transport fleet need to pay attention to the regulations set by the government, both central and regional. This research is an empirical study with a qualitative approach that aims to obtain actual answers regarding the coal transportation system with land transport modes, namely trucks with various carrying capacities. Data was obtained by observation along the road route passed by coal trucks. In addition, data was also obtained from sources of legislation regarding the public transport system issued by the central and regional governments. The data was analysed by looking for highlights of reality, then elaborated with juridical guidelines and other legal facts. The results of the study found that the Implementation of Jambi Province Regional Regulation Number 13 of 2012 concerning Coal Transportation Regulations in Batanghari has not been running properly, there are still many rules that are violated by Coal entrepreneurs this is because the government seems to relax existing regulations. Problems experienced by the government are obstacles in making special Coal transport routes.

Keywords: Batanghari; Coal; Haulage; Legal; Science; Transportation.

Introduction

Development and energy demand are two closely related aspects, especially in the context of economic, social and environmental development. In every stage of development from infrastructure, industry, to transport-energy needs increase to support economic growth and community welfare (Woodcock et al., 2007). Whenever a country increases economic activity, whether in the industrial, agricultural or service sectors, there is an increase in energy consumption (Hu et al., 2021; Raihan & Tuspekova, 2022). Developing countries, such as Indonesia, have a growing need for energy to support industrialization and urbanization.

Many countries still rely on fossil energy sources such as oil, natural gas and coal to fulfil their energy needs (Wang & Azam, 2024). Although efficient, these energy sources cause negative environmental impacts, such as greenhouse gas emissions that lead to climate change. As a result, sustainable development increasingly demands a transition to renewable energy (Potrč et al., 2021; Strielkowski et al., 2021).

Sustainable development requires the use of environmentally friendly energy sources, such as solar, wind, hydro and bioenergy (Haldorai, 2022). Many countries are shifting their focus to renewable energy to reduce emissions and dependence on fossil fuels (Holechek et al., 2022). While initial installation costs are

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high, in the long run renewable energy is a more cost-effective and sustainable option.

One of the major challenges in meeting energy needs is ensuring equitable access across the region. Inadequate energy infrastructure can hamper development in remote areas. Therefore, infrastructure development such as power grids and distribution pipe is prioritized. Based on Jambi Provincial Regulation Number 13 of 2012 concerning the Regulation of Coal Transportation in Jambi Province, it explains that 'The implementation of roads is based on the principles of expediency, security and safety, harmony, harmony and balance, justice, transparency and accountability, empowerment and success, togetherness, partnership, integration, awareness and sustainability (Afolabi et al., 2024).

The existence of special roads for Coal transport trucks is also followed up by the formation of a regional regulation policy, namely Jambi Province Regional Regulation Number 1 of 2015 concerning the Implementation of Special Roads. One of the articles contained in the regional regulation is contained in Article 4 which states that 'every transport of Coal in the territory of Jambi province must be transported through special roads. In addition, the use of special roads is required for certain other transportations stipulated by gubernatorial regulation.

Figure 1. Ilustration of coal mining (Source: https://www.ruangenergi.com)

Jambi Province is one of the provinces that has the potential for mineral resources. mineral resources. Coal resources are a significant contributor to Jambi Province's foreign exchange earnings (Beriansyah et al., 2024). The problem that occurs at this time is in the process of transporting coal from mine sites located in the west of Jambi Province to ports located in the eastern area of Jambi Province. The overloading of coal trucks has caused damage along the roads travelled. From field observations in 2021, the average total load of coal transport vehicles was 16 tonnes, which was not in accordance with the carrying capacity of the road at that time, which was 8 tones. Since 2009, there have been several impacts that have occurred due to overloading trucks, namely the roads travelled by coal transportation are damaged due to overloading and do not match the existing road classification, the local government bears a large loss for road repairs, traffic accidents often occur, and there are house foundations around the road section that have fallen due to overloading coal truck transportation. In addition, the operation of coal trucks during peak hours can cause congestion on several roads in Jambi City (Nariendra & Juanita, 2023).

Figure 2. Ilustration of coal distribution (Source: https://www.google.com)

The provincial government's policy is inseparable from regency/city governments because the regulation stipulates that regents and mayors must make Regent Regulations (Perbup) and Mayor Regulations (Perwal) on the roads that are allowed to be travelled by coal. In other words, the provincial government's policy also requires supporting policies in regencies/cities, so this policy also involves intergovernmental relations (Subhan, 2015).

This policy is important to analyse in more depth with Second, this phenomenon does not only occur in Jambi Province but also has the potential to occur in several other coal-producing areas, such as South Sumatra, West Sumatra, Riau, Bengkulu, East Kalimantan, South Kalimantan, and Central Kalimantan. Third, the study of local government policy dynamics will be more complete and adequate with the existence of policy studies from a network approach given the demands of good governance and democratisation in the regions (Subhan, 2015).

Jambi Province has the potential for abundant mineral resources, one of which is significant coal reserves (Ternando, 2023). Data from the Jambi Province ESDM Office (2023) shows that coal production increased by 73% from 2020 to 2022, from 4.6 million MT to 17.3 million MT. This increase in production requires coal transport arrangements to be distributed to

stockpiles in the Jambi Province area. Road infrastructure is an important factor in this distribution process. According to Jambilink.com, the condition of road infrastructure in Jambi Province is around 46.32% in good condition, 31.04% moderate, 18.46% damaged, and 4.18% severely damaged. The use of public roads by coal companies in the distribution process for the sake of company effectiveness and efficiency does not match the expectations of the community. Communities and local governments want coal to be transported through special routes to avoid disruption to public activities and accidents. The process of coal distribution through public roads causes adverse impacts, such as damaged roads, traffic accidents, and financial losses to the government for repairs. According to data from the Jambi Police's Ditlantas from 2019 to 2022, there were 3,653 cases of traffic accidents in Jambi Province (Nauli & Zulaika, 2023).

Based on this background, researchers are interested in raising this issue because The problem caused by coal trucks is an old problem that has not been resolved. Therefore, researchers want to know the location of the problem that causes the policies that have been made not to run properly.

Method

The type of research used is Normative Juridical. Normative juridical research is research on legal principles carried out with legal norms which are a benchmark for behavior (Sekarwati et al., 2020). Every research always departs from a problem to be studied (Wijaya, 2018). This research used a qualitative approach with descriptive methods to collect data. According to Sugiyono data collection techniques are the most strategic phase in observation, because the fundamental purpose of observation is to obtain data (Nauli & Zulaika, 2023). Qualitative approaches are used to investigate and understand the meaning given by individuals or groups to social or humanitarian problems (Cresswell, 2012).

Normative juridical research is a type of legal research that focuses on the study of written legal norms or rules, such as laws, government regulations, court decisions, and other legal documents. This method focuses on the normative aspects of law, namely how these rules are structured, interpreted and applied. Normative juridical research often uses a statute approach, conceptual approach, case approach, and historical approach. The statutory approach studies the applicable legal rules to identify relevant provisions. The conceptual approach examines relevant legal concepts or theories. The case approach focuses on court decisions, while the historical approach examines the development of law over time.

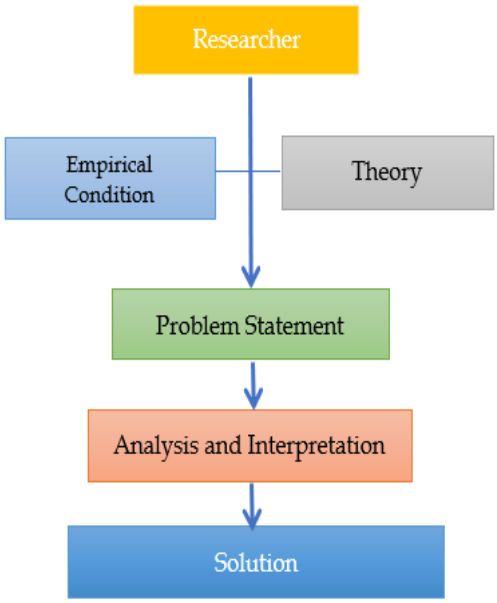

Figure 3. Research Logic Flow

This research uses qualitative methods by reading previous research, by exploring journals that conduct similar research and reading many books that discuss research like this, qualitative methods by also conducting discussions with various parties who understand this research. And then the author will be design the models as follow flow of thinking above.

Normative juridical methods are generally qualitative in nature, as they emphasise the analysis of legal texts and the interpretation of the meaning contained in those texts. Researchers will conduct in-depth analyses without using statistical or quantitative methods. The purpose of qualitative methods is to find the meaning of participants' experiences (Raco, 2018). In normative juridical research, descriptive analysis is conducted to explain how existing legal provisions are applied and understood. Prescriptive analysis, on the other hand, aims to provide recommendations on how the law should be regulated to be in accordance with the objectives of justice.

In this study, the researcher is essentially studying a case. Design types in case studies include single case and multi-case. The selection of single cases usually occurs in the critical testing of significant theories, extreme or unique cases, and the revelation of the case itself. Whereas multi-cases are used in more stimulating and stronger findings, multiple sources to research, and require extra time (Nur'aini, 2020).

Result and Discussion

Implementation of Jambi Province Regional Regulation Number 13 of 2012

In Batanghari District, Jambi, regulations related to coal transport are mainly focused on restricting the use of public roads and developing dedicated lanes to reduce negative impacts on communities and infrastructure. The Jambi Provincial Government issued a Governor's Instruction in 2024 that prohibits coal transport from travelling on public roads on a number of routes. This rule is intended to prevent congestion and road damage that is often caused by passing coal trucks, as well as prevent environmental impacts along these routes.

In addition to the land route, there is also a plan to use the Batanghari River as an alternative route for transporting coal. However, this river route has drawn criticism from environmental organizations such as WALHI Jambi, which highlighted the potential for river pollution due to these activities. The use of the Batanghari River would also require costly dredging and risk the river's ecosystem. The local government is still considering long-term solutions for coal transport by balancing economic needs and environmental impacts in this area.

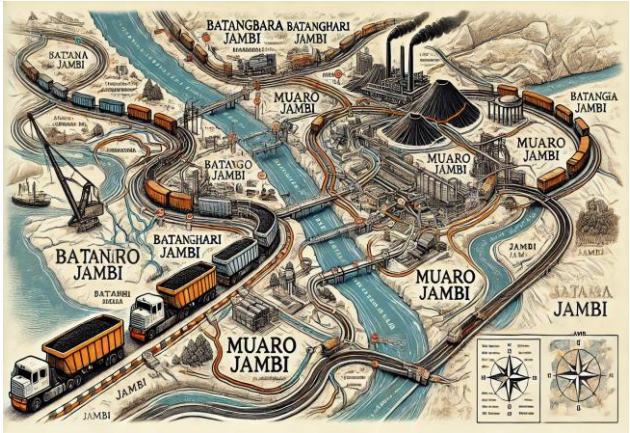

Figure 4. Land route for coal transport (Source: Google.com)

The following map illustrates the land route for coal transport in Jambi Province. The map shows the main routes used by coal trucks, as well as affected cities such as Batanghari, Muaro Jambi, and Jambi City. These routes also include areas with potential congestion and infrastructure impacts. The main routes to export points or storage facilities are also highlighted, and the map shows the Batanghari River as one of the alternative route options for coal transport (Prakoso et al., 2024).

The coal transport policy in Jambi Province can be seen as a policy process that involves many actors with their respective interests. They have resources and strategies in interacting (resources) and strategies (strategies) in interacting. Therefore, policy network analysis can be carried out by mapping the resources, interests and strategies of each actor involved in the policy. The pattern of relationships that occur during policy interaction also needs to be done so that policy analysis with a network approach is clearer and more comprehensive (Subhan, 2015).

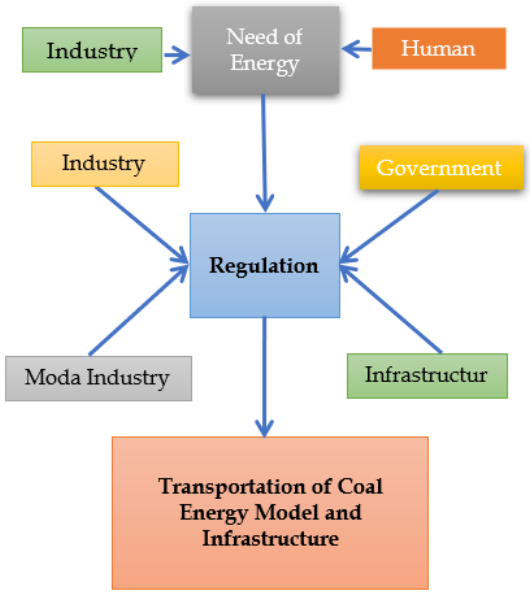

Figure 5. Transportation of Coal Energy Model and Infrastructur

The implementation of Jambi Province's Regional Regulation (Perda) No. 13/2012 on coal transport in the Jambi region aims to regulate coal transport activities with the aim of maintaining the safety, order and security of road users. This regulation requires companies to use special roads, but its implementation faces serious challenges, mainly because the expected special road infrastructure has not yet been built. As a result, coal transport vehicles continue to use public roads, causing road damage, traffic congestion and increasing the risk of accidents in the region.

According to recent research, supervision and enforcement of this regulation by the Transportation Agency is still suboptimal. While there are provisions regarding operating schedules and sanctions for violations, implementation is often inconsistent, resulting in negative impacts for local communities. The coaching approach through socialization and control also remains limited in its effectiveness, especially in the field, where conflicts of interest between coal entrepreneurs and public interests often arise. There is an urgent need to tighten supervision and accelerate the development of special road infrastructure to minimize the negative impacts of coal transportation on Jambi communities.

Problem of implementation of Jambi Province Regional Regulation Number 13 of 2012

The implementation of Jambi Province Regional Regulation Number 13 of 2012, which regulates coal transportation in the region, faces several challenges, primarily due to infrastructure limitations, environmental concerns, and enforcement difficulties. A key issue is the absence of designated special roads for coal transport. This has led coal trucks to use public roads, contributing to severe wear and tear, frequent accidents, and traffic congestion. The regulation aimed to minimize these impacts by mandating a dedicated route, but without the infrastructure in place, coal transportation continues to disrupt local communities and degrade road quality

Environmental Impact: Coal transportation through public roads raises environmental concerns, as dust and debris from coal trucks pollute nearby communities (Wishart & Greenberg, 2023). The regulation was intended to mitigate these effects, but its incomplete implementation has meant that the environmental impact remains unaddressed. There are ongoing discussions on utilizing the Batanghari River as an alternative coal transportation route, although this option poses additional environmental risks, including potential river contamination (Deonarine et al., 2023; Habib & Khan, 2021; Jahandari et al., 2023; Rouhani et al., 2023).

Lack of Consistent Enforcement: Enforcement of the regulation has been inconsistent, partly due to logistical challenges and limited resources. While penalties are outlined for violations, enforcement agencies often struggle with monitoring and controlling coal truck movements effectively. This lack of consistent enforcement allows non-compliant activities to continue, diminishing the regulation's intended protective measures for both the infrastructure and the public.

Community Resistance and Socioeconomic Impacts: Local communities, particularly in affected areas like Batanghari and Muaro Jambi, have expressed frustration due to the impact on daily life and safety concerns. The socioeconomic dependency on coal also complicates enforcement, as coal transport contributes to the local economy. Striking a balance between economic benefits and minimizing disruption has proven challenging, underscoring the need for a sustainable, comprehensive solution. The main findings of this study show that the implementation of the coal transport regulatory policy in Jambi City, Jambi Province experiences various significant obstacles.

Coal transport in Jambi City, Jambi Province, experienced various significant obstacles. One of the main obstacles is the limited number and quality of personnel who are inadequate to cover all areas affected by coal transport traffic. In addition, the insufficient budget is also a major obstacle, resulting in the frequency of monitoring and traffic regulation that is not optimal (Nauli & Zulaika, 2023).

Lack of consistency in policy implementation, caused by limited resources and low compliance on the part of coal companies, further exacerbates the situation. To overcome these obstacles, efforts such as improving the quality of personnel through Traffic Orientation Training and evaluating budget priorities have been planned by the Jambi City Transportation Agency. This finding underscores the importance of adequate resource allocation and personnel capacity building to ensure effective implementation of coal transport regulation policies in the region (Nauli & Zulaika, 2023).

Conclusion

There Jambi Province Regional Regulation Number 13 Year 2012 in Coal Transportation Activities Occurring in Batanghari has not been running properly. There are still many regulations that are violated by Coal entrepreneurs as a result of the government's lax attitude in overseeing the implementation of regional regulations. This results in coal entrepreneurs acting as they wish. There are regulations that do not work at all, namely the provisions of Article 5 relating to the construction of special roads. Problematics of the Implementation of Jambi Regional Regulation Number 13 Year 2012 in Batanghari Regency In real terms, there are still many violations committed by Coal entrepreneurs. Coal transport truck vehicles still commit many violations, including overloading, exceeding speed limits, and operating hours that are not in accordance with the provisions for using public roads. Therefore, one of the problems faced by the Government in the near future is to realize a special road how it is regulated in Jambi Regional Regulation Number 13 Year 2012 concerning Coal Transportation in Batanghari Regency.

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Conflicts of Interest
In this research, there is no interest and or hidden interests among the researchers

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