

Implementation of Risk Management in Infrastructure Development to Environmental Protection and Management

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Abstract: *Risk Management is an arrangement that aims to get more profit opportunities and also reduce losses on infrastructure development, which in infrastructure development can have a negative impact on the environment if risk management is not regulated. Therefore, this research will examine how to apply risk management in infrastructure development to the environment. The method that will be used in this research is the normative juridical method, in which this research is descriptive analysis. As well as data collection that will be carried out by examining documents and laws and regulations governing this research. The results of this study are the application of risk management in infrastructure development which will have an impact on the surrounding environment, therefore companies that are carrying out infrastructure development must be responsible for environmental damage or pollution to the environment caused by infrastructure development, then the risk The environment that arises due to infrastructure development will be more organized and financially measurable in order to be able to add benefits to infrastructure development.*

Keyword: Risk management, Infrastructure development, Environment

1. Introduction

The aim of the modern state is to realize the welfare of the people. In accordance with the initial agreement theory, the people gave up some of their rights to be regulated with the aim of prospering. Welfare of the people can be done through many things and ways, one of which is doing development. [1]

The rapid changes in technology, globalization, and the development of transactions have led to higher challenges faced by companies in managing the risks they must face. In the midst of an economic situation full of uncertainty in business competition and the complexity of business risks that must be faced by companies, the risk management system is one of the main tools to reduce and deal with any risks that may arise. Risk management (risk management) or risk management is an ongoing process in an effort to suppress the adverse effects of these risks. Therefore, in a company, accounting knowledge and risk management are needed by company organs in making prudent decisions by considering and paying attention to risks that have the potential to bring harm to the company.

Given the importance of risk management in a company, especially BUMN, the government issued a decree No. Kep-117/M. BU/2002 dated July 31, 2002 concerning the Implementation of Good Corporate Governance Practices in BUMN. In risk management (risk management), what is carried out is a risk assessment, which includes:

1. Risk Identification;
2. Risk Analysis, and;
3. Risk Evaluation.

For this reason, a risk management partnership is needed, namely cooperation between the parties concerned, and which includes the entire process flow, from risk

identification to allocating tasks and responsibilities. This collaboration is expected to be able to implement corporate governance within the company. This development must be in accordance with the national goals of the Indonesian nation which are affirmed in the preamble and body of the 1945 Constitution, which in essence is, "to create a just and prosperous society, materially and spiritually based on Pancasila within the citizens of the Unitary Republic of Indonesia who are independent, sovereign and unite in an atmosphere of national life that is safe, peaceful, orderly and dynamic as well as in an environment of social life that is free, friendly, orderly and peaceful. [2]

Changes in land use and designation in the Upper Semarang area indicate the development and exploitation of the area that does not pay attention to land conditions and spatial planning. Landslides and natural disasters in Semarang City, like other big cities, show the inconsistency of the Semarang City Government in the preparation and supervision of the Basic Plan and City Spatial Planning (RDTRK). Although in the Semarang City Government organizational system there is the City Planning and Settlement Service (DTKP), with its sub-supervision, the community cannot fully entrust, give power, and responsibility in the management and utilization of spatial and environmental planning to only one government institution., the community (public) who have a direct interest in environmental benefits for the survival of life must have the awareness to be involved as supervisors and assist in law enforcement for violations of provisions relating to environmental problems. [3]

The above phenomenon causes the current environmental conditions to become unbalanced. The impact of this is that there are various natural damages that ultimately lead to many natural disasters such as floods, droughts, forest fires, and landslides. Natural damage is caused by various

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irresponsible human actions such as illegal logging without reforestation, river silting, waste disposal indiscriminately into river flows, construction of waterways that do not meet the requirements, and poor embankment construction. This causes floods in the rainy season and droughts in the dry season. [4] This phenomenon is a contrast that always occurs every season due to environmental damage. Floods and landslides show that spatial management must put environmental protection seriously in the planning process. The reality on the ground is that the violation of the spatial plan that has occurred so far involves two parties, namely the private sector which gets a permit to change the designation and the local government that gives the permit, so that if a disaster occurs that causes suffering to the wider community, the responsibility is the private sector, beneficiaries and local government.

On the other hand, the reality is that the Indonesian legal system has been impartial and conducive to environmental law enforcement, as seen by the many cases involving violations of the environment and spatial planning that often lose in the trial process. It is common knowledge that often the rules based on the General Spatial Plan (RUTR) are violated continuously under the pretext of developing and advancing the community's economy, thus exceeding tolerances or exceptions that should be implemented consistently. An expert on hydrology and urban spatial planning stated that in the long term it is necessary not only to reform the planning of structural spaces, which is followed by supervision of the arrangement in its implementation, but also to manage the environment and spatial planning in an integrated manner.

Development activities, especially infrastructure development regarding the implementation of the Master Plan for the Acceleration and Expansion of Indonesian Economic Development (MP3EI) are still considered to ignore the concept of environmental sustainability by environmental institutions. Not only environmental agencies commenting on this environmental problem, but also the Minister of Public Works (2009-2014 period), Djoko Kirmanto stated that so far the anticipation of any environmental damage caused by infrastructure development has been carried out by the government. Not only that, in addition to economic growth, poverty reduction and employment growth, efforts to preserve the environment are one of the important things in development. Unmitigated, this problem is included in the list of pillars of Indonesia's development. [5]

In essence, the implementation of development affects and is influenced by the environment. Like a system, the two cannot be separated from each other. In general, development aims to improve the quality of life of the people and better meet the basic human needs of the people. In an effort to improve the quality of life of the people, as is the goal of development, the ability of the environment to support life at a higher level should be protected from damage. Environmental care is sought in order to avoid the extinction of life. In other words, if there is damage, a severe decline in the ecosystem in which humans live, then in the future human life will

experience many difficulties. Thus, it can be said that sustainable development does not occur.

There are several things that should be considered in the implementation of development and utilization of renewable natural resources, namely as follows:

- a. Generations to come must continue to inherit a nature that is still full of sources of prosperity to be able to give life to them
- b. There is a dynamic balance between the elements found in nature
- c. In extracting natural resources, natural conservation must be guaranteed, meaning that the harvest does not damage the auto regeneration of these natural resources.
- d. Planning for human life should remain with the environment and create satisfaction for both physical, economic, social, and spiritual needs.

In addition, the planning and implementation of development projects and the extraction of natural resources for life must be accompanied by:

1. A development strategy that is aware of environmental problems, with the smallest ecological impact.
2. An environmental policy throughout Indonesia that aims to realize the requirements of a better life for the Indonesian people for decades to come (if possible forever).
3. Exploitation of biological resources is based on the aim of sustainability or environmental sustainability with the principle that harvesting the produce will not destroy its autoregeneration power.
4. Development planning in order to meet livelihood needs should aim to achieve a dynamic balance with the environment so as to provide physical, economic, social and spiritual benefits.
5. Make sure that some of the results of development can be used to repair environmental damage caused by development projects, in order to preserve the environment
6. The use of natural resources cannot be replaced; it must be as economical and efficient as possible.

2. Research Problem

Based on the introduction, the research's problems are:

1. How is risk management applied in infrastructure development towards environmental management and protection?
2. How is Environmental Risk Management in Infrastructure Development?

3. Research Method

The type of research method used in this research is normative juridical research. So that this research can produce the nature and form of a descriptive normative report. This research will conceptualize law as norms or rules that include positive legal rules. The research will use primary, secondary, tertiary legal materials and other legal materials related to this research. [6]

4. Result and Discussion

1. Risk Management applied in infrastructure development towards environmental management and protection

Risk management is the human ability to avoid (avoided), overcome (mitigated) and manage (managed) all or part of the risks that occur and may occur in nature by providing a regional/spatial concept. The risk management model shows the relationship between risk, risk management, agencies and HR as the middle point. With data sharing, all agencies can access all the information needed from the planning period until if a risk occurs and repairs (infrastructure rehabilitation) must be carried out. Risk management is usually followed by disaster management, but we don't discuss it in this inter-agency coordination model. [7]

Building infrastructure refers to physical systems related to transportation, irrigation, drainage, buildings, and other public facilities needed to meet human needs in their environment. The infrastructure system is the main support in social life. Infrastructure systems can be said as basic facilities or structures, equipment, installations, which are built and needed for the system to run in society. [8]

In terms of infrastructure development, it is divided into 6 (six) major groups of infrastructure development, namely:

- 1) Road groups (roads, highways, bridges);
- 2) Transportation service group (transit, rail road, port, airport);
- 3) Water groups (clean water, dirty water, all water systems, including waterways);
- 4) Waste management group (solid waste management system);
- 5) Group of buildings and water sports facilities;
- 6) Energy production and distribution group (electricity and gas).

The infrastructure development that has been carried out by Indonesia at this time almost covers all of the above groups, and therefore it is very likely to cause environmental damage.

According to M. Craciun, the risks that may arise in infrastructure development are; [9]

1. Technical risks, such as those related to design and construction;
2. Construction risk due to wrong workmanship, poor quality of raw materials and execution delays;
3. Operational risk, because operating and maintenance costs exceed estimates;
4. Risks affecting earnings such as unregulated prices and demand volatility;
5. Financial risk from inadequate financing structure or hedging transactions;
6. Force majeure risks, including events such as war or natural disasters;

7. Regulatory risks, arising from changes in the institutional environment and adverse effects of regulatory agency regulations;
8. Environmental (living) risks, negative effects that may exist in the project environment on the environment;
9. The risk of failing to meet obligations that may arise from a combination of the above risks.

The risks mentioned above need to be managed properly, so that the investment climate can be maintained and development can proceed, including environmental risks. A well-managed environment can undoubtedly provide support for reducing the costs and risks of investing in infrastructure development.

The characteristics of the risk in the construction of the infrastructure itself are very diverse. As an example of financial risk, linking the risk and return characteristics of infrastructure investment with asset/liability management and portfolio theory will help to explain the specifics of the risks that may arise in other forms of investment, such as infrastructure development in capital markets that have already been established. Developing or traditional asset groups such as stocks and bonds. This is, in essence, an investment decision faced by investment institutions such as pension funds, pilgrimage funds, or insurance companies, and these decisions then feed into the process of asset allocation and investment selection.

Good steps have been taken by the Government by establishing a system of pension funds, hajj funds, and over time has created important financial resources. However, investment activities are often hampered by the limited scope for channeling a growing source of assets into infrastructure development. Therefore, within the regulatory framework, it is very necessary to facilitate investment activities caused by the obstacles mentioned above.

Drawing up a national infrastructure plan, providing risk mitigation tools, promoting investor education, and fundraising, will help overcome these barriers. Improving the investment environment and increasing local market liquidity through government bonds will also create important prerequisites (e.g. yield curve, market infrastructure, trading community) for the growth and development of the corporate bond market. This is because in the end it will help the growth and development of infrastructure, in addition to guarantees, and asset-backed financing.

Given the important role of private financing for infrastructure development on the one hand, and the desire to ensure effective and efficient policy support, it is necessary to instill in investors and infrastructure operators an understanding of the importance of understanding the risks of infrastructure investment and the strategies used to minimize risks and increase returns. on infrastructure investment, including an assessment of its usability (efficiency) and effectiveness (effectiveness). [10] This is important considering that investment activities or direct investment, both in the form of direct (Foreign Direct Investment) and domestic direct

investment (domestic investment) have a direct contribution to development. [11]

The nature of infrastructure investment is very distinctive and inflexible, involving complex risk analysis, including risk allocation and risk mitigation. Investors must carefully analyze all the risks that will be borne by the project during its economic life, while also determining the compensation that can be assumed to bear these risks. From the Government's point of view, the decision to provide infrastructure purely by the Government or in partnership with the private sector will be based on various factors, including looking at the nature of the infrastructure project and the type and magnitude of the associated risks. One way to deal with this problem is to examine the existence of compliance or legal risk, which in essence the problem is not due to operational failure, but for example caused by factors of people, processes, systems or assets. If both legal risk and compliance risk caused by operational risk are considered correct, then a new definition of risk related to regulation (regulation) will appear, namely: the risk of regulator's error in interpreting the results of operational failure. [12]

One method that can be used to manage (management) risk is through a risk management approach from an operational perspective, by looking at it from the opposite point of view from a classic risk management perspective that uses a 'top-down' approach. In other words, it begins by listing all the regulations regarding the company's operational processes, then assessing any legal issues that may arise. Given that this type of risk is difficult to measure and assess. In short, the challenge facing risk analysts is how to provide reasonable and reliable risk assessment inputs regarding legal and compliance risks. What are the main problems that might occur, what are the chances, how bad the impact will be, and what steps can be taken to reduce the risk.

2.Environmental Risk Management in Infrastructure Development

Infrastructure development in the era of President Joko Widodo's administration was emphasized on development activities for the public interest, although both in Presidential Decree no.3 of 2016 in conjunction with Presidential Decree No.58 of 2017 concerning Acceleration of Implementation of National Strategic Projects, as well as in Presidential Regulation No.75 of 2014 in conjunction with Presidential Decree No.122 of 2016 concerning the Acceleration of Priority Infrastructure Provision, does not explain the meaning of infrastructure development. These Presidential Regulations only regulate the scope of infrastructure development that is a national priority, namely infrastructure that has a significant impact on the economy (central and regional), so that its development must be prioritized.

Infrastructure development needs to pay close attention to the risks that may occur in the landscape, environmental and ecological balance. For example, the construction of the Bandung-Jakarta high-speed railway, whose

infrastructure is built to enter the water catchment area of the Jatiluhur reservoir. If the infrastructure development does not take into account the environmental risks that will occur, the water sources for Jakarta residents and agricultural land in the Karawang and Indramayu regencies will lack water supply from the Jatiluhur reservoir.

Basically, environmental risks in infrastructure development can refer to the provisions of Article 14 in conjunction with Article 47 of Law no.32 of 2009 concerning Environmental Protection and Management (UU PPLH), where environmental risk analysis is one of the 12 instruments for preventing pollution and/or environmental damage. Infrastructure development as an activity that has the potential to have an important impact on the environment, poses a threat to the sustainability of ecosystems and life, health and safety of human life and all living things, should implement environmental risk management. The risk analysis according to the provisions of Article 47 paragraph (2) UUPPLH includes risk assessment analysis, risk management analysis and/or risk communication analysis.

In terms of carrying out environmental risk analysis in infrastructure development, of course the risk analysis includes the three risk analyzes. Risk assessment analysis is carried out starting from the identification of hazards, assessment of consequences or consequences and assessment of the possible impacts of infrastructure development, both on humans and other living things, as well as on the environment itself. Meanwhile, risk management analysis in infrastructure development needs to be carried out by evaluating or selecting infrastructure development risks in terms of management, identifying risk management options, selecting actions for management and implementing the selected actions. Analysis of risk communication in infrastructure development includes an interactive process of exchanging information and opinions among individuals, groups and risks whose duties and authorities are related to risk. The role of experts/experts is very important in estimating the risks that will occur from the construction of an infrastructure. Given the understanding of risk is a subjective assessment made by someone about the nature and severity of a risk, the role of risk communication analysis becomes important. Risk communication analysis also plays a role in synergizing various scientific perspectives related to environmental risks on infrastructure development, such as psychology, economics, sociology, law, anthropology, and so on.

In Presidential Decree No.58 of 2017 as a replacement for Presidential Decree No.3 of 2016 concerning the Acceleration of the Implementation of National Strategic Projects, there are 248 national strategic infrastructure projects in various parts of Indonesia, ranging from toll roads, train stations, airports, ports, flats, oil refineries, LIG terminals, SPAM, dams and irrigation. Broadband, technopark, special economic zone, smelter and power plant. The number of infrastructure projects launched by the government, of course, requires a lot of land and affects the quality of the environment. Developments that

have an impact on the environment are required to have UKL-UPL and AMDAL documents which also involve community participation as referred to in Law no.32 of 2009 concerning Environmental Protection and Management. Sustainability in environmental conservation activities is a necessity that can support the development of various infrastructure projects. In dealing with risks related to sustainability, a number of companies face formidable challenges due to a lack of understanding about sustainability risks or how these risks can impact their business activities.

In general, risk is often assessed and understood based on a breakdown of past events. When new risks arise or are poorly understood, it will be difficult to find historical events or supporting tools to measure them. Moreover, environmental conservation sustainability managers generally do not understand well the scientific tools commonly used by risk experts. One company found that the indirect impacts of climate change, such as sea-level rise, were not as severe as they should be as a result of the challenges of investigating and measuring these issues. For other companies, although the impact may be measurable, they have difficulty assessing the likelihood of being burdened by a carbon tax or not. [13]

Sustainability of environmental preservation affects all procedures for company activities, for example: supply chain. In calculating environmental risk management that can be imposed on companies that build infrastructure, where the risks that arise will be calculated financially (valued in money), then the imposition of a certain amount can be applied. Available tools that can be used to translate risk into a measurable impact based on the value of money (financial) or with other measurable quantities, where the risks that arise will be calculated financially (valued in money).

Determination of the amount of risk that must be borne by companies polluting the environment as a comparison can be used the imposition of a carbon tax (carbon tax) or also called an emission tax which is usually imposed on pollution caused by carbon gas (CO₂). Carbon taxes can be used to levy a levy on the greenhouse gas emissions caused by these fuels. Carbon taxes can provide social and economic benefits, and are potentially a cost-effective way to reduce greenhouse gas emissions. From an economic theory point of view, the carbon tax is an example of the Pigou Tax (en). That is, these taxes seek to justify market failures where market participants do not pay the social costs of their greenhouse gas emissions. Carbon taxes can be regressive, that is, they can directly or indirectly harm small people or low-income groups. This regressive nature can be compensated for by using the new income from this tax for programs that benefit the poor. On the other hand, companies that can eliminate or reduce greenhouse gas emissions will receive a Carbon Credit, which is a generic term for any tradable certificate or permit that represents the right to emit one tonne of carbon dioxide or an equivalent amount of greenhouse gases. different glass (tCO₂e). [14]

Carbon credits and carbon markets are components of national and international efforts to reduce growth in greenhouse gas (GHG) concentrations. One carbon credit equals one tonne of carbon dioxide, or in some markets, the gas equivalent of carbon dioxide. Carbon trading is an application of the emissions trading approach. Greenhouse gas emissions are capped and then the market is used to allocate emissions among regulated source groups. The aim is to enable market mechanisms to push industrial and commercial processes toward lower emissions or less carbon-intensive approaches than those used when there was no cost to emitting carbon dioxide and other GHGs into the atmosphere. Since GHG mitigation projects generate credits, this approach can be used to finance carbon reduction schemes between trading partners around the world.

In addition, there are also companies that sell carbon credits to commercial customers and individuals who are interested in lowering their carbon footprint voluntarily. These carbon offsetters purchase credits from investment funds or carbon development companies that have collected credits from individual projects. Buyers and sellers can also use exchange platforms to trade, which is like stock exchange for carbon credits. Credit quality is based in part on the validation process and the sophistication of the fund or development company acting as sponsor for the carbon project. This is reflected in the price; Voluntary units typically have less value than units sold through the rigorously validated Clean Development Mechanism. The company leadership then needs to use the experience and background/condition of the company to determine the extent to which the impact of the risk will harm the company's performance and how likely it is that the risk will occur.

5. Conclusion

The application of risk management in infrastructure development tends to always affect the state of the surrounding environment, because risk management is a management to suppress poor profit figures and even cause losses; therefore it is needed in infrastructure development which always has an impact on the surrounding environment. In implementing corporate risk management in infrastructure development, it is necessary for the company to understand what risks will and can occur in the infrastructure development, and the extent to which these risks affect the company. For this reason, in risk management, these risks must be identified, analyzed and evaluated collaboratively by the company's organs/stakeholders which results in the recognition of a reduction or uncertainty in investment decisions, therefore the company must be responsible for providing compensation. for damage or pollution to the environment, the environmental risks are strived to be measurable and can be assessed financially, then the use of carbon tax instruments and carbon credits can be used as a reference.

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