

Risk Analysis and Potential Benefits of Infrastructure Development

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Abstract. This research is motivated by infrastructure development which tends to be problematic. The purpose of this paper is to explore the development of research related to the risks and potential benefits of infrastructure development, especially toll road construction. The research method used is Systematic Literature Review (SLR) from various reference sources of reputable scientific articles and also relevant books. Reference sources come from various years of publication and also various countries. The results of the study explain that the risks of infrastructure development (especially toll roads) consist of economic risks; environment; construction, social, political. Apart from risks, potential benefits were also found that could be explored in the implementation of the development. In the future, research that can be developed is related to the analysis of social and political risks of infrastructure development, especially by involving community participation in policy decision-making in developing countries.

Keywords: development, infrastructure, toll

Introduction

This paper is a literature review on the analysis of the potential risks and benefits of infrastructure development. Infrastructure is an important aspect of development. Infrastructure as one of the parameters in development consists of physical infrastructure and social infrastructure. Examples of physical infrastructure are the transportation sector; health, education, others (Harris, Riley, Dawson, Friel, & Lawson, 2020; Kumari & Sharma, 2017; Melo, Graham, & Brage-ardao, 2013). Infrastructure development aims to serve the interests of the community and later can improve economic welfare, social life, and maintain environmental sustainability (Kumari & Sharma, 2017). One of the examples of infrastructure development in the transportation sector is the construction of toll roads.

Road infrastructure development (including toll roads) is known to make a positive contribution to sustainable development. Economically, road infrastructure development can improve economic functions ranging from production, distribution, and consumption (Mubarak & Suparman, 2019). Then it can also reduce the costs needed to carry out economic activities (Kumari & Sharma, 2017; Se-il Mun, 2019; Rabello Quadros & Nassi, 2015; Suseno, Wibowo, & Setiadji, 2015). Furthermore, from the technical aspect, infrastructure development can provide benefits for the surrounding community by building the concept of a frontage road (Xiaoming Chen, Yi Qi, Da Li Wang, 2012). From the environmental aspect, to avoid environmental problems, reforestation is carried out (Hidayat, 2010). Furthermore, the sustainability of road infrastructure development from the social aspect has

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also been carried out by providing benefits to the community through Corporate Social Responsibility (CSR) funds for communities affected by road construction (Anatan, 2009).

On the other hand, toll road infrastructure also has several risks. Risks from the economic aspect include high maintenance costs that are not positively correlated with an increase in people's income (Kumari & Sharma, 2017; Se-il Mun, 2019; Rabello Quadros & Nassi, 2015; Suseno et al., 2015). Then another risk is that the community is economically harmed by forcible displacement of the location of the compensation land because it will change the pattern of community livelihoods as in the initial location before infrastructure development was carried out (Cernea, 2000; Vanclay, 2017b). Furthermore, problems in environmental aspects, including the occurrence of environmental pollution, the potential for air pollution, water pollution, and natural disasters are also one of the negative effects that must be faced in infrastructure development projects (Palomino & Parvania, 2019; Sun, Zeng, Lin, Meng, & Yu, 2019).

Social risks that arise due to infrastructure development are, among others, related to the risk of poverty (impoverishment) due to forced displacement (Cernea, 2000, 2004; Cernea & Schmidt-Soltau, 2006; Eguavoen & Tesfai, 2012; Vanclay, 2017b); changes in the social structure of society (Cernea, 2000; Sapkota, 2000); and problems implementing land acquisition policies that have a negative impact on the community (Ekasetya, 2015; Marlijanto, 2010; Rachmawati, 2014). The problems above arise, among others, due to the limited participation of the community provided by the government at each stage of toll road construction.

Toll roads are paid highways that also utilize technology, communication, and information (Joewono, Effendi, Gultom, & Ranto P Rajagukguk, 2017). Toll road construction is infrastructure development that requires land availability. So far, the government or the private sector has been relatively limited in actively involving the community, especially those affected by the land acquisition activity. So that it is the beginning of the emergence of toll road development problems in various countries, ranging from problems in the economic, environmental, legal, social, and even

political fields.

From the studies that have been conducted by previous researchers, the tendency of the research carried out is to reveal the risks and potential benefits of infrastructure development from the perspective of technical science, economy, and environment. However, there have not been many studies on the analysis of the risks and benefits of infrastructure development from the perspective of social science and political science (policy). Therefore, based on 67 of 150 articles and books that are closely related to the theme of this paper, this paper will fill in the gaps in the literature on analyzing the risks and potential benefits of infrastructure development (especially toll roads) from a political science perspective (participatory policy politics).

To reveal the novelty of this research, it will explain: first, what are the best practices and bad practices for toll road infrastructure development from various countries?; Second, how to analyze the risk of toll road infrastructure development?; Third, how to analyze the potential benefits of toll road infrastructure development?

Research Methodology

The research method used in this paper is Systematic Literature Review (SLR). This SLR is done by collecting articles and books that are relevant to the research theme from leading electronic databases (Yudiatmaja, Prastya, Meilinda, & Samnuzulsari, 2021), such as Google Scholar, Elsevier (sciencedirect.com), Scopus, JSTOR, Orcid.org, z-lib.org, and so on through the "Publish or Perish 7" application. "

Searching of the database is by typing search keywords: road infrastructure development, risk of road infrastructure development; benefits of road infrastructure development; toll roads by limiting the year of publication from 2000-2020. From the search results, there were 800 articles which were further reduced to 67 articles due to duplication and content of articles that were not relevant to the theme of this article.

The steps in the SLR method are divided into several stages. The first stage is data sources and document selection. At this initial stage, data search is carried out using the "Publish or Perish 7" application. The use of this application was chosen because it has

easy access to a website or website database of scientific articles and relevant books with a good reputation. Through the use of this application, you can find articles related to research themes sourced from various electronic publishers, such as science direct, scopus.com, JSTOR, z-lib, scholar.google.co.id, and others.

The second stage is research requirements, inclusion, and exclusion process. At this stage, an article search is carried out using the keyword "road infrastructure development". The results obtained were 800 articles and books related to these keywords in the 2000-2020 period of publication. Furthermore, after filtering by theme, abstract, and article content, obtained 150 articles. Furthermore, after being narrowed down specifically to

analyze the risks and benefits of toll road construction, 67 relevant articles and books were obtained.

The third stage is analysis and presentation of results. At this stage, an analysis of the articles that have been obtained is carried out and grouped based on research topics; year of publication, and country of origin of the published article.

Results and Discussions

Systematic Literature Review (SLR) Findings

From the results of the data search, it is known that there are four major topics related to this writing, including road infrastructure, risk analysis, potential

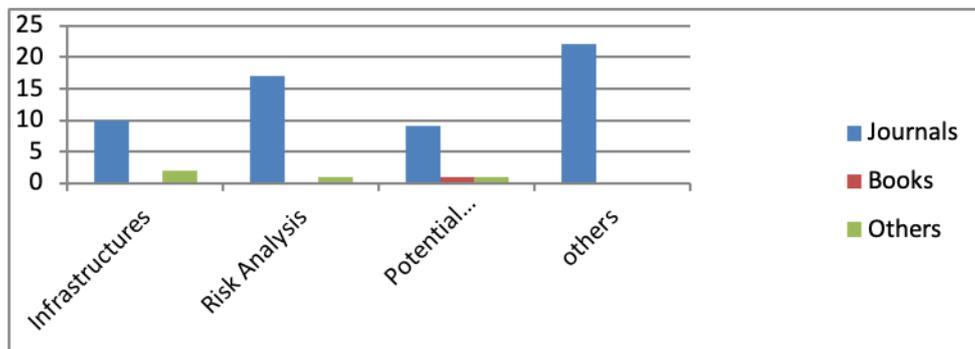


Figure 1. Sources of Literature Review Based on Research Focus

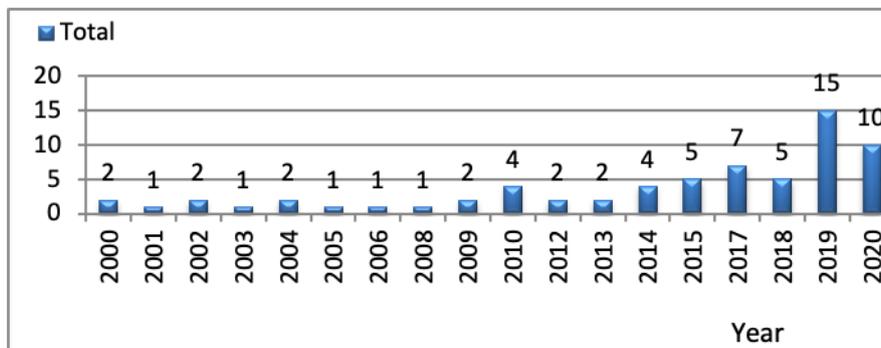


Figure 2. Literature Sources by Year of Publication

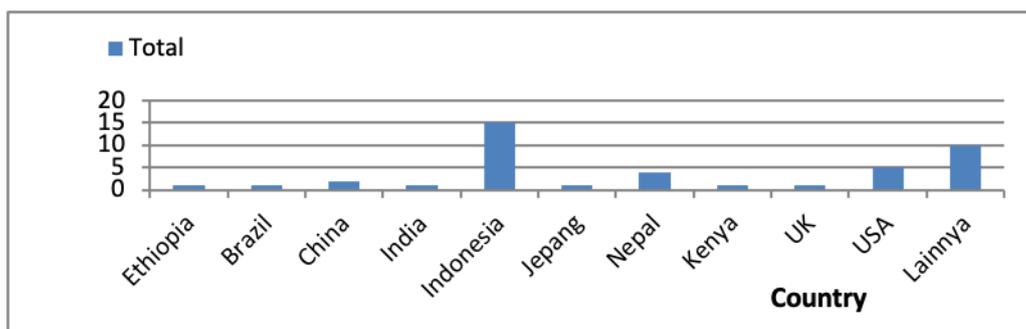


Figure 3. Sources of Literature Review by Country Distribution

benefits, and topics about development, as can be seen in figure 1.

Furthermore, figure 2 presents the number of articles by year of publication. It indicates that most of the articles were published in 2015-2020.

The countries that are the sources of literature are Ethiopia, Brazil, China, India, Indonesia, Japan, Nepal, Kenya, USA, UK, and others (figure 3).

Regarding the four main topics (infrastructure, risk analysis, potential benefits, and construction of toll roads), it is known that 80 percent of them are sourced from scientific articles published in reputable scientific journals (table 1). Then the topic that is most often discussed is related to the risk analysis of road construction carried out in various countries in the world.

This will later explain explicitly the best practices and bad practices of toll road infrastructure development from various countries.

Best Practices and Bad Practices for Toll Road Development in Various Countries

In several cases in various countries based on certain factors, it can be seen that the construction of toll roads is considered successful and vice versa has not been successful. The following will discuss further examples of successful toll road construction (best practice) and examples of unsuccessful toll road construction (bad practice).

The construction of a toll road is considered successful if: first, it involves the private sector in its construction with a Public-Private Partnership (PPP) system so that within a certain time the ownership of the toll road becomes the property of the government and also with the PPP system it will pay attention to social benefits for the community through social and environmental activities (Feng, Zhang, & Gao, 2015;

Quiggin & Wang, 2019; Rohman, Doloi, & Heywood, 2017; Susantono & Berawi, 2012). Second, the construction of toll roads is considered successful if the construction is technically good; toll road construction has good quality so that toll road services can be optimized, for example, driving safety, comfort, and adequate physical facilities for toll road users (Zuna, Hadiwardoyo, & Rahadian, 2015). Third, making changes to the toll road system taking into account the distance and availability of fuel and managing toll taxes will provide social benefits for the community as was done in Tokyo, Japan (Otaki, Imanishi, Miyatake, Nemoto, & Uchiyama, 2017). Fourth, by implementing a certain vehicle traffic restriction system and minimizing toll road costs so that the use of toll roads becomes as efficient as that of Spain (Wang & Ehrgott, 2013), and also in Oslo by changing the toll road management model from a "toll fee" scheme to a "congestion charging" scheme in such a way that if heavy traffic jams higher toll fees will be charged, and if traffic is not congested the toll is also relatively low; it also reduce congestion, air pollution, and environmental damage (Aasness, 2014).

On the other hand, there are also examples of the implementation of toll road construction that has not been successful based on various indicators. First, the construction of the Semarang-Ungaran toll road and the Middle East Ring Road (MERR) toll road in Surabaya, Indonesia, caused a polemic in their construction (Aminah, 2016; Aziz & Wisnu, 2014). Second, the construction of the Cinere-Jagorawi toll road which is running slowly due to the land acquisition process and the damage provided by the government is considered too low by the community, then the construction of the SUMO Toll Road in Sidoarjo has experienced problems due to conflicts triggered by residents' disputes over the value of land

Table 1.
Literature Sources by Main Topic

No	Category	Source	Total
1	Road infrastructure	journal	11
2	Risk analysis	journal	18
3	Potential Benefits	journal	15
4	Toll road	Journal	15
5	Others related to the topic	Books, reports	8
Total			67

prices and compensation land for highway construction (Rachmawati, 2014; Wirabrata & Surya, 2011). Third, the construction of toll roads has damaged the environment. The people around the toll road feel the impact of environmental pollution caused by air pollution, noise pollution, and congestion such as the construction of the Becakayu Toll Road and the Jagorawi Toll Road (Hidayat, 2010; Laras & May, 2017).

From this explanation, it is known that the success of toll roads in several countries is assessed based on indicators of physical development, social benefits for the community, as well as a good environment.

Toll Road Development Risk Analysis

Risk analysis is primarily concerned with measuring the many uncertainties that may arise during various procedures (Ganoulis, 2009). Financing risks, poverty risks, environmental, social, and political risks are all risks associated with toll road construction.

Financing Risk

Since this risk is related to community benefits, financing risk is the most significant infrastructure development risk (table 2) (Kumari & Sharma, 2017; Se il Mun, 2019; Rabello Quadros & Nassi, 2015; Suseno et al., 2015). Investments in infrastructure development should be considered because infrastructure investments do not recoup finances quickly and are significantly more difficult to recover (Berawi, Zagloel, Miraj, & Mulyanto, 2017; Melo et al., 2013; Musso et al., 2013; Rabello Quadros & Nassi, 2015; Short & Kopp, 2005). Other risks in infrastructure projects are risks that arise during construction, such as natural disasters, complex taxation, and so on. Whereas the return on investment from infrastructure development, especially in the transportation sector, is relatively long after completion (Fisch-Romito & Guivarch, 2019).

Poverty Risk

This poverty risk is a negative impact and potential injustice that may be faced by the community due to infrastructure projects being built, especially for the public interest (Eguavoen & Tesfai, 2012). Based on table 3, there are several poverty risks of toll road development. First, creating a displacement (coercion) effort for the community to move from the property intended for infrastructure development to another location based on government rules and policies that allow the State to manage and even compensate for losses on community land for the public interest (Cernea, 2000; Vanclay, 2017a). In addition, the construction of toll roads has only a small impact on the economy of people living close to toll road access, especially those in the agricultural industry, because the existence of toll roads reduces agricultural output due to changes in soil structure (Oliveira et al., 2019).

Environmental Risk

Infrastructure growth, such as the construction of physical infrastructure in the transportation sector, also poses environmental hazards (table 4). One of the dangerous things that must be addressed in infrastructure development projects is the possibility of air pollution, water pollution, and natural disasters (Palomino & Parvania, 2019; Sun et al., 2019). Then there is the damage to the soil structure, which makes the use of toll roads less than ideal in the end (Chehlafi, Kchikach, Derradji, & Mequedade, 2019).

Social Risk

Table 5 describes that the social risk focuses on community social interactions (social disarticulation occurs, which can damage the socio-cultural structure of the community) that is disrupted by infrastructure development, including people’s lifestyles and the risk of losing their jobs and livelihoods (Cernea, 2004;

**Table 2.
Financing Risk**

Aspect	Reference
Big cost	Kumari, Anita; sharma, 2017; Seil Mun, 2019; Rabello Quadros & Nassi, 2015; Suseno et al., 2015
Investment is not balanced with profit	Berawi, Zagloel, Miraj, & Mulyanto, 2017; Melo et al., 2013; Musso et al., 2013; Rabello Quadros & Nassi, 2015; Short & Kopp, 2005; Grimsey & Lewis, 2002; Tumimomor, Manalip, & Mandagi, 2014
Big tax	Fisch-Romito & Guivarch, 2019; Tumimomor, Manalip, & Mandagi, 2014

**Table 3.
Poverty Risk**

Aspect	Reference
Communities lose assets (land, buildings)	Eguavoen & Tesfai, 2012
Job loss, economic access	Cernea, 2004; Eguavoen & Tesfai, 2012
Have no income	Kompova, 2010; Rusim et al., 2019

**Table 4.
Environmental Risk**

Aspect	Reference
Pollution (air, water), natural disasters	Palomino & Parvania, 2019; Sun et al., 2019
Damage to soil structure	Chehlafi et al., 2019
Deforestation	Palomino & Parvania, 2019; Sun et al., 2019
Damage to the ecosystem at the location of infrastructure development	Chehlafi et al., 2019; Rusim et al., 2019

**Table 5.
Social Risk**

Aspect	Reference
Changing the social pattern of society	Cernea, 2004; Eguavoen & Tesfai, 2012
Social and cultural values □public	Cernea, 2004; Eguavoen & Tesfai, 2012
Loss of insurance for health and education services	(Cernea, 2004); Kampova, 2010
Changing the social pattern of society	Cernea, 2004; Eguavoen & Tesfai, 2012

Eguavoen & Tesfai, 2012; Kampová, 2010).

Political Risk

The last is the political risk (Lance H Gunderson, 2005; Putri, Helmi, Noer, & Yossyafra, 2020; Ramady, 2014), Based on table 6, we can find that government stability is the development that must support by the legislature and society as a whole; problems of government regulations or policies that are deemed not sufficient to realize the interests of the community; also the issue of corruption in the management of public development funds, as well as the quality of the bureaucracy in carrying out its duties and providing services to the community (Kellett & Nunnington, 2019; S Tesfamariam, 2013; Turner, 2018).

Potential Benefits of Toll Road Infrastructure Development

The main objective of infrastructure development is to maximize the possible profit from the project. Public infrastructure development aims to improve the standard of living of people in a country in terms of

economic, social, political, and environmental sustainability. Consequently, after assessing the risks that hinder infrastructure development, it is important to map out the potential benefits of public infrastructure development (especially toll roads) (Putri et al., 2020). The possible advantages can be divided into the following categories (table 7).

Physical Benefits

Physical benefits, such as the advantages of toll road development by changing the distance-based toll system, which will boost benefits in the social sector (social surplus), both in terms of user benefits, availability of fuel, utilization of taxes, and based on congestion regulations. on vehicle volume (Otaki et al., 2017). The presence of the front road brings economic benefits to the city when the toll road is built (Xiaoming Chen, Yi Qi, Da Li Wang, 2012), economic benefits for regional development (Zhang, Hu, & Lin, 2020). Communities around the toll road infrastructure development sites are then given access to and from toll road

Table 6.
Political Risk

Aspect	Reference
Government stability, community support for development	Ramadi, 2014
Rules or policies that are not yet pro-society	CV Jones, 1991; Lance H Gunderson, 2005; Turners & Turners, 2018
Bureaucratic quality	Ramadi, 2014
corruption of state finances in the implementation of development	Ramadi, 2014

with different technical arrangements from toll road users (Reyes-García, Fernández-Llamazares, Bauchet, & Godoy, 2020; Zhang et al., 2020). Another physical benefit is the planting of land near toll roads, which helps preserve the natural environment and contributes to its beauty (aesthetics). (Hidayat, 2010).

Non-physical Benefits

Non-physical benefits include the development of fair policies or procedures by the federal government or municipal governments in land acquisition procedures (Putri et al., 2020), especially for infrastructure development for the benefit of the people (Gross, LeRoy, & Janis-aparicio, 2002; H. Jones, Moura, & Domingos, 2014). Furthermore, as a toll road operator partner, the central government or local government signed a Community Benefits Agreement (CBA). It is a commitment to the benefits of infrastructure development for local communities (between local communities and investors and the government) (Glasson, 2017; Gross et al., 2002) to obtain benefits from development (including toll road construction) which are usually owned by investors or developers, to be distributed to affected communities in the hope of earning income (or managing share ownership), or to provide employment opportunities for communities in project development by other ways to contribute to local activities, and education for local communities (Glasson, 2017; Gross et al., 2002).

CSR Implementation

Corporate social responsibility (CSR) is a business commitment to act ethically, operate according to law, and contribute to improving the quality of life of employees and their families, local communities, and society at large (Putri et al., 2020). CSR refers to the active and flexible relationship that exists between the state, business, and society

(Anatan, 2009). Since the development of advanced toll roads causes ecological damage to the area around the toll road construction, the company’s commitment to the community and the environment is very important (Lance H Gunderson, 2005). As a result, one of the potential benefits that must be built is ecological management. Companies (private) involved in infrastructure development projects must fulfill their social duties, such as through social action, humanitarian assistance, and empowerment (Anatan, 2009; Ratnasari, 2012; Werasturi, 2017).

From the aspect of the potential benefits of toll road construction mentioned before, it can be concluded that the potential physical benefits, potential non-physical benefits, and potential benefits of CSR from companies involved in the construction and operation of toll roads are the potential benefits of toll road construction. that can be maximized (table 7).

Discussions

Based on findings, it is known that studies on the risks and potential benefits of infrastructure development (especially toll road) have been investigated from various scientific perspectives and various types of risk (for example, risk analysis of Build Operate Transfer or BOT, technical risk (engineering), business, and environment) (Suseno et al., 2015)). However, research related to the potential risks and benefits of toll road infrastructure development is still relevant to be studied and developed from other scientific perspectives such as political science (policy), especially those related to social risk analysis involving community participation in public policy decisions making.

Table 7.
Potential Benefits of Toll Road Infrastructure Development

Physical	Non-physical	CSR
Toll Road Based System (Otaki et al., 2017)	Making fair regulations, both at the central and regional levels (Gross et al., 2002; H. Jones et al., 2014)	Social action for the community for the benefit of the company (Anatan, 2009)
<i>Front Street</i> (Xiaoming Chen, Yi Qi, Da Li Wang, 2012)	Concept of Community Benefits Agreement (PKB) (Glasson, 2017; Gross et al., 2002)	Humanitarian aid (Anatan, 2009; Ratnasari, 2012; Werasturi, 2017).
Greening (Hidayat, 2010).	Toll road benefits are shared with local communities (co-ownership, job opportunities) (Glasson, 2017; Gross et al., 2002)	community development (Anatan, 2009; Ratnasari, 2012; Werasturi, 2017)
Beautiful environment (Hidayat, 2010).		Environmental (ecological) management around the transportation Infrastructure Development Project (Lance H Gunderson, 2005)
The advantages of toll roads for the development of the surrounding area (Reyes-García et al., 2020; Zhang et al., 2020)		

Social Risk

Risk is the chance of an unfavorable event that can be taken into account by the decision-maker (Roeser, Hillerbrand, Sandin, & Peterson, 2012). Individually and in a broader context, the social risk is a threat to human security (Cernea, 2004; Mares, 2003).

The followings are some of the social risks associated with the construction of toll road infrastructure (Putri et al., 2020): *first*, the community initially felt that the development of transportation infrastructure had changed the structure of people’s lives; individuals who previously lived in an agrarian order and relied on farming activities have switched to a different way of life, such as moving to the industrial sector. *Second*, since the affected land must be handed over for the construction of toll roads, this also results in changes in social interaction, where the communities around the toll road construction initially interact and live side by side with fellow residents and families, but as the result of the toll road construction, they become separated and relatively isolated.

Third, roads as one of the physical infrastructures play an important role in providing people’s access to a wider and

diverse life. However, it turns out that road construction has an impact on social values that exist in the community around road construction, eroding the value of the social and cultural order of the community.

Fourth, people who used to live in a healthy environment with water and air that are relatively free of pollution have changed due to road construction, which causes air, water, and soil pollution to interfere with public health, especially medical facilities which are relatively inaccessible due to changes in traffic and construction of toll road.

Fifth, due to changes in the lifestyle and livelihood of parents who experience changes and even lose economic access due to the construction of toll roads, guaranteeing the possibility of getting a good education is also relatively difficult for the community to achieve, especially if the parents do not have jobs and money.

Individual risk, institutional risk, and cultural risk are three types of social risk that can be used to assess social risk in infrastructure development (Cernea, 2004; Eguavoen & Tesfai, 2012; Kampová, 2010). Analysis of the social risk of infrastructure

development cannot be separated from the involvement of affected communities in every public policy carried out by the government. This is due to the feeling of insecurity and comfort experienced by the affected community. If from the beginning the planning of infrastructure development has been discussed with the affected community, then social risks can be minimized.

Political Risk

In terms of political risks associated with toll road construction (Putri et al., 2020): the *first* political risk has developed since road construction planning because road construction planning undoubtedly begins with a political process by the government and legislature, followed by community participation. However, if the road construction plan is unpopular (like does not receive broad support), it will cause long-term problems, such as the condition of the community who perceives government regulations as unfair, resulting in social and economic conflicts in various regions during the road construction process.

Second, government regulations related to land acquisition and infrastructure development for the general welfare have been dominated by the interests of the state and developers, and the community is always the last group to be seen so that the community becomes the object of development, which is then forced to follow government policies.

Third, the problems arise between the government and the community in land acquisition due to lack of coordination and information to the community, the effectiveness of bureaucratic services to the community at the planning and land acquisition stages, as well as compensation for the community for assets lost due to road construction for the public interest, must also be addressed and well looked after.

Fourth, corruption is an act that is not commendable and is detrimental to the state. Activities or actions that intentionally take money or state facilities for personal interests and are outside the norm are not commendable and are destructive to the state. However, corruption still occurs in the implementation of development in various countries. This happens because some gaps or opportunities are used by government officials and unscrupulous investors to embezzle state funds, as evidenced by

the many cases of violations of the law on infrastructure development.

Infrastructure development is the result of public policies made by the government through a political process, so political risk analysis is also considered as an alternative solution to difficulties in infrastructure development (Wahab, 2014), especially in terms of decision making. So far, the government has controlled the infrastructure development decision-making process (top-down) (Visser, Binsbergen, & Nemoto, 1999). As a result, every decision making for infrastructure development (including toll roads) is dominated by the authorities, therefore there must be activities to involve the community (especially affected communities) so that community aspirations are accommodated and social risks can be avoided (Hutagalung, Sulistio, & Mulyana, 2020).

Potential Benefits of Toll Road Infrastructure Development

Physical potential, non-physical potential, and potential use of CSR are three types of potential benefits of toll road development. Several countries, especially developed countries, have implemented these three potentials, although their implementation has not been perfect. This is because the profit prospect is based on risk analysis, which generally departs from technical risk analysis and has not touched the substance desired by the public (economic, social, and political risk analysis). Regarding this non-physical potential, it has not been widely studied by previous researchers so that research related to this non-physical potential benefit can be analyzed further.

The first non-physical benefit is the potential development of pro-people land acquisition legislation and infrastructure development for the public benefit. This means that regulations are made by taking into account the interests of the people, both in the short and long term.

In addition, although infrastructure development is in the public interest, it affects the majority of people disproportionately, so it is necessary to make development agreements that involve the community directly, such as the Community Benefits Agreement (CBA) between the government and developers and the community. CBA is a contract that provides incentives for infrastructure development to local

communities. Agreements can be made at the economic level (for example, revenue sharing from toll road management), social level (for example, providing access to better job opportunities, health care, and educational services), and the environmental level (for example, ensuring ecological sustainability and solutions to pollution caused by road construction).

This step must be taken by the government because the community is actively involved, especially those directly affected, and the community can express their ambitions and desires in the development process. It will also involve local or local governments by enforcing rules based on the CBA that have been achieved. The government or developer will be careful and pay attention to the interests of the community in the process of road infrastructure development based on this CBA.

It will also involve local governments by enforcing rules based on the agreements that have been reached. The government or developer will be diligent and pay attention to the interests of the community in the process of road infrastructure development based on this CBA. This research contributes to the development of the concept of potential risks and benefits in infrastructure development and then provides specific thoughts on the importance of involving community participation in public policy decision-making to assess the risks and potential benefits of toll road infrastructure development (especially aspects of social risks and benefits).

The suggestions for research on the same topic in the future are to examine aspects of the research methodology used in analyzing the potential risks and benefits (social and political) of infrastructure development and develop an index to measure the analysis of potential risks and benefits (social and political) infrastructure development.

Conclusions

Based on the findings of the literature review, previous researchers have studied the dangers and potential benefits of toll road infrastructure development. Financial risk, poverty, environmental risk, social risk, and political risk are part of the risk analysis. However, the subject of toll

road infrastructure development is not discussed in this study. Most of the toll road infrastructure development issues are related to the affected communities. As a result, analysis of future social and political risks is still possible. The ability to involve the whole community, especially in participatory decision-making processes, is an aspect that can be developed (in social and political risk analysis).

In addition, previous studies have also examined the possible benefits of toll road infrastructure development, both physical and non-physical benefits, as well as the use of CSR. However, this has not proven to be a viable solution to the problem of toll road infrastructure development. Non-physical aspects such as the involvement of the general public (participatory) in the formulation of toll road construction regulations and the provision of space for conducting CBA between the government, investors, and affected communities can be developed as a contribution to new knowledge.

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