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A Proposed Strategies to Mitigate Negative Impacts of the Development of New Bus-Based Public Transportation System in Bandung

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Abstract: The development of Trans Metro Bandung (TMB) project as a new bus-based public transportation in Bandung created social conflict between local government and affected-communities. The decrease of daily income and loss of livelihood as a result of TMB operation become main concern that led to the refusal of the project. In addition, unclear information and lack of coordination between stakeholders increased anxiety and fear among affected-communities that changed their opinion towards TMB project. Based on this case study, this study tries to categorize and mitigate the social impact of TMB implementation in order to reduce the negative impact that can hamper the development process.

Key words: Social impact assessment, public transportation, Bandung, negative impact, development process, anxiety

INTRODUCTION

Transportation is an important aspect that cannot be separated from human activities (Hidalgo and Huizenga, 2013). Human has different activities in order to create spatial interactions that need to be facilitated through a reliable transportation system (Wegener and Furst, 1999). Meanwhile, there are several problems in the transportation system that can reduce its reliability-traffic congestion, lack quality of its infrastructure, lack ability of operational management, etc. Traffic congestion is a common problem of the road transportation system around the world (Han, 2010; Hidalgo and Huizenga, 2013). The congestion happens due to an unbalance condition between demands of people mobility with the supply of transport infrastructure (Han, 2010). It also creates longer travel time that leads to the inefficiency of people mobility and increases air and noise pollution (Hidalgo and Huizenga, 2013). Seeing that condition a shift of people mobility by using a public transport that has higher capacity than private vehicle are needed to reduce the number of vehicles on the road (Banister, 2008; Han, 2010).

In the last decade, the provision of public transport system that is comfortable, safe and affordable becomes popular in Indonesian planning practice. Since, 2005 the ministry of transportation as a central government has triggered the development of the public transport system by giving several buses as a grant to municipalities in Indonesia. The central government considered that the existing (informal) public transport system need to be replaced with the new concept of bus-based public transport due to the lack of its reliability (DJPD, 2015). However, the development process of the bus-based public transport as a new public transport to replace the informal system of public transport in Indonesia often vulnerable due to refusal from the operators of the informal public transport (DetikNews, 2015).

In 2006, Bandung Municipality is one of several municipalities that received grant from the central government (DJPD, 2015). The project called Trans Metro Bandung (TMB). At the beginning of the planning process, the Bandung municipality establish a team that involved several stakeholders from the local government. However, the owners of the existing informal public transport (angkot) were not involved. It caused the owners of angkot less informed about the TMB project and led to the increase of anxiety and afraid about the continuity of their business future. They argued that the operation of TMB as a competitor would decrease their daily income (DetikNews, 2015). Therefore, angkot owners refused TMB operation and caused the implementation delayed (DJPD, 2015). The anxiety and fear of the angkot owners that lead to this conflict becomes a significant social impact on the Bandung case. It is inevitable that the social aspect also needs to be considered to achieve an effective planning practice (Voort and Vanclay, 2015).

MATERIALS AND METHODS

In order to minimize and manage the negative impacts of TMB implementation from a social perspective an

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analysis will be performed using the Social Impact Assessment (SIA) literatures. Which is the SIA refers to consideration of qualitative indicators for example, social issues that change person's perception about a particular project (Vanclay, 2002).

The analysis of this study is based on a qualitative content analysis of all relevant sources which are from government documents, regulations, scientific journal related to the issue, online news, etc. Qualitative approach is often used to understand the social phenomena (Hancock *et al*., 1998). The case study is also effective to investigate a contemporary social phenomena (Yin, 1994).

The explanation of this study follows three from four phases of social impact assessment based on International Association for Impact Assessment (IAIA). The first phase is understand the issues by explaining the existing condition of public transportation system in Bandung including the development process of TMB. The second phase is predicts, analyze and assess the likely impact pathways. The last phase is develops strategies in order to mitigate the negative impact of the TMB project (IAIA, 2015).

Application of social impact analysis to mitigate the impact of TMB development

Understanding the issue of trans metro bandung development:

Public transportation system in bandung: Bandung is one of municipality in Indonesia that located on the western part of Java Island. The total area of the municipality is 166.70 km^2 and consisting of 30 districts with a total population 2,483,977 people (BPS KBBPS, 2013). The city located on a highway axis of west Java province West to East and North to South, therefore this condition make the city has a strategic in communication and economic way. As a strategic municipality in the Western part of Java, the city generated 3.55 million people per day with the growth of people movement approximately 2.44%. Therefore, this higher number of movement in the city needs to be facilitated by providing an efficient transportation system.

Bandung has an informal public transport system called angkot that operates in most of the road network in the city. Angkot is a small capacity vehicle that owned and operated by individuals (private operator). According to Bandung Municipal Decree number 16 of 2012, every individual can provide a transportation service after gets a permit certificate from the municipality based on several requirements. In terms of its service coverage, angkot has a benefit because the size of angkot fits with road characteristic of the city that has a narrow road in most of its network.

Fig. 1: Angkot in Bandung (Cervero and Golub, 2007)

As an informal public transport, angkot operators have to survive on low profit margins. It makes the individual operators has to compete more actively or often dangerously to get more passengers (Cervero and Golub, 2007). To reduce their operational cost, the operators hire low-skilled drivers with a low-level education background and often do not have a legal driving license. It makes most of the drivers has a bad driving habits while operating angkot to get passengers on the road.

During the peak hours, the angkot in Bandung often fight for getting passengers with their bad driving habit. The boarding and getting off passenger becomes more dangerous because they can stop everywhere and every time. Meanwhile, on the off peak hours most of angkot drivers have to wait until their vehicle filled, it adds additional time travel to their passengers that can reduce comfort and reliability aspect of the angkot service.

The lack control of government in term of permit issuance of angkot operation has created over supply angkot in the city. The total angkot vehicle in the city is 5,521 units that serving 38 routes in the city (Hancock, 1998). The public transport network in Bandung also supported by 7 routes of city bus operated by Damri (State Owned Enterprise in urban land public transport) and 1 route microbus operated by private enterprise. This condition leads to the increase of traffic congestion, air and noise pollution and traffic accidents (Vanclay, 2002; Voort and Vanclay, 2015). Therefore, the central government argues that the informal public transportation system in Bandung needs to be replaced with the new bus-based public transportation system (Hidalgo and Huizenga, 2013) (Fig. 1).

Planning process of new public transportation system in Bandung: In 2006, the ministry of transportation as a central government gave 10 buses as a grant to the Bandung Municipality to develop a new bus-based

public transportation system for 1 corridor without any additional funding to support its infrastructure development. The central government forced the municipality to develop a system of public transport as soon as possible. And there is an issue that the grant can be taken back by the central government if the municipality failed to provide a new bus-based public transportation system in a particular time frame. The municipality then develops a project called Trans Metro Bandung (TMB) a bus-based public transportation that will operate in 13 corridors.

At the beginning of TMB development, the Municipality formed a team to develop one corridor that has to be operated in 2007. The team consisted of government stakeholders that relate to the transportation system such as a local transport agency, public research agency, local police, etc. However, the owners of the angkot were not involved during this planning process. The angkot owners and public (citizen) are only involved on the socialization phase after the operation of TMB is ready to be operated. The angkot owner could not get clear information about the plan of TMB operation. However, they knew the rumor of TMB operation from the newspaper and also from the construction of the bus shelter.

The municipality decided to build the first corridor (Corridor 1) from cibeureum to cibiru. The route of Corridor 1 has 16 km long in total and will be planned to have 30 bus shelters. The operation of TMB in Corridor 1 intersected and overlapped with 16 routes that already served by angkot (Anonymous, 2015). This condition increased the anxiety and fear of the angkot owners. They argued that the operation of the TMB will affects their income because the TMB will be operated on some of their routes (Alamanda *et al*., 2010)

In order to manage the operation of TMB, the municipality formed a new organization as part of the local transportation agency (Dinas Perhubungan) named Unit Pelaksana Teknis Daerah (UPTD) TMB. The UPTD TMB responsible for the determination of the technical aspect of operation (e.g., headway, service frequency, timetable, ticket fare, etc). Due to lack of human resources and maintenance facility, the daily operation of TMB is tendered to the private operators based on several requirements for a year period.

The municipality informs the media that municipality will start to operate the TMB in corridor 1 at the end of 2008. This plan got negative responses from the angkot owners and they sent a letter of objection to delay the TMB operation until they received clear information about this project. The municipality ignored the objection of the angkot owners and operated the TMB on 22 December 2008. This condition created a massive protest from the angkot owners and the action getting more violent by attacking and damaging the TMB bus.

Fig. 2: The trans metro Bandung bus (Cervero and Golub, 2007)

This chaos condition forced the Municipality to suspend the operation of TMB for 3 months and started to accommodate the objections of the angkot owners by promising them to be involved in the TMB operation (Pikiran Rakyat, 2012).

The 3 months after the TMB operational was suspended, the Municipality attempted to operate TMB again without accomplishing the previous promise (19). Once again, the angkot owners sent an objection letter to delay the operation of TMB until the municipality accomplished to form a consortium of public transportation agency and re-evaluated the bus shelter locations. Finally, the Municipality suspended the operation of TMB and continued to make a negotiation with the angkot owners.

On August 2009, the angkot owners agreed and support the operation of TMB with the following requirements: angkot owners become part of consortium and the TMB shelters have to be relocated with minimum distance by 1 km. The relocation of TMB shelter perhaps makes passenger can still use angkot as a feeder to get the bus shelter.

The next development of TMB was the corridor 2 with route from cicaheum to cibeureum and will be planned to have 28 bus shelters (Anonymous, 2015). The municipality faced the similar problem with the development process of the corridor 1. The route of corridor 2 intersected and overlapped with 31 routes of angkot, moreover the Municipality also has to deal with 140 parking officers as the route went through several on-street parking areas. Finally, the corridor 2 was operated on December 2012 with the similar result of the previous corridor-gave promises to the angkot owners to involved them to the TMB operation and also to the parking officers. Recently, the municipality faced the same problem during the development of corridor 3. The angkot owners stated that they felt betrayed by the Municipality as the consortium still not formed until 2015 and they was not involved during the development process of every TMB operation (Fig. 2).

The social impact of TMB development: In order to conceptualize the possible impact pathways, the analysis required a categorization of the social impacts. According to Vanclay (2002), the impact of the social issue as a result of the planned intervention classified into seven categories. Based on the context of Bandung case, this study used four of the categories that mentioned by Vanclay. The following categories are health and social well-being; economic impacts and material well-being; the quality of the living environment and institutional, legal, political and equity Impacts.

Health and social well-being: The provision of public transportation system as a general has positive impact to the health and social issues. The public transport that comfortable, safe and affordable, encourage the mode shift from private vehicle to public transport (Banister, 2008). The shift can reduce the number of private vehicles. This condition improves the quality of life of the city and reduces the possibility of health problem from air and noise pollution. In addition, the reduction of angkot vehicle as a result of TMB provision of the TMB can reduce the possibility of car accidents. The mobility of people that facilitates by the provision of public transportation system can improve the social integration between people since, they will use the same vehicle without any social class differences.

During the development process of TMB, the municipality promised to form a consortium for the angkot owners that affected by operation of TMB and also will prioritize the angkot drivers to work as a driver or as TMB officer that support the operational (e.g., ticket service, security, etc). Due to the operation of TMB will be held by private operators through a tendering process, the private operators already have their own human resources. This condition made the municipality broke their promises to the angkot drivers. The angkot drivers felt betrayed and reduced their trust to the municipality. In this case, the angkot owners and angkot drivers become affected-communities. The second attempt to operate TMB before the consortium accomplished and without providing another solution of the prioritization issue influence the affected-communities opinion about the TMB operation, their opinion become negative towards the TMB. It happens because the previous negative experiences are mostly reducing the trustworthiness of a project, although, the project has several benefits (Voort and Vanclay, 2015).

Economic impacts and material well-being: The operation of TMB provides job opportunities from the construction process of bus shelter until the operation of the bus. The operation of public transport can reduce the number of unemployment rate of the city. The provision of new bus-based public transport that offers better quality of service with a relatively cheap ticket fare, caused the angkot owners that have the same route or intersected with the TMB route fell anxiety and afraid about the continuity of their business. It is very possible that the passengers will shift their choice to use the TMB and make the daily income of angkot owners reduced or even make them close their operations. In addition, there are several parking officers would lose their job as the route of TMB went through several on-street parking areas. The possibility of losing a job can increase the unemployment rate of the city that can hamper the economic growth of the city.

Quality of the living environment: The provision of good public transportation accommodates greater mobility in the same time reduce the air and noise pollution significantly and improve the quality of life of the city. In addition, the issue of exhaustion of finite fuel reserves can be avoided as a result of the efficiency of the transportation system (Han, 2010).

In contrast to the positive impact above, there is an indirect impact of the development process of TMB that can reduce the quality of the living environment. People who have possibility losing their job as mentioned on the economic impacts aspect also can increase the unemployment rate. Most of them are unskilled people with low-level educational background. It is also very possible about criminal rate increases as they need income to survive in the city without any educational background. This condition can lead to the unsafe environment that can reduce the quality of the living environment.

Institutional, legal, political and equity impacts: The grant of 10 buses to the Bandung municipality from the central government has changed the institutional condition of the transportation sector in Bandung. Instead of improving the existing quality of the informal public transport, the local transportation agency has additional tasks to develop and maintain the new public transport system. Therefore, the local transportation agency has to propose additional funding to support the operation of TMB such as to develop new bus shelter, the cost of the operation and maintenance of the bus, etc. The change of institutional condition generates extra workload as a result of the development activities. In addition, the development of bus shelter that needs huge funding creates a potential chance of corruption, meanwhile the tendering process of TMB operation to the private

company also creates a potential for offering bribes from the private company to get favors in return during the tendering process. The change of institutional condition also affected the informal public transportation system. It forces angkot owners to change their business strategy.

They have to improve their service to be more attractive than TMB or they have to participate as a private company to join the tendering process. The first choice seems to be more difficult than the second one. Regarding the second choice, the angkot owners can form a consortium as a legal body framework if they want to join the tendering process. However, they have to merge their businesses among owners and share risk as well as their responsibility. It will take time and need extra effort since they have different interest and point of view.

RESULTS AND DISCUSSION

The mitigation strategies of social impacts: Based on descriptions above, there are positive and negative impacts in each category that need to be considered during the development of TMB. It is very clear that the positive impact has to be maintained and improved to achieve the provision of TMB that comfortable, safe and affordable. However, the negative impacts that can hamper the implementation of TMB have to be mitigated with a possible and rational ways.

Regarding to the health and social well-being, economic impacts and material well-being and quality of the living environment, it seems that these three categories were overlapped into each other. There is a direct impact that created problems for the three categories the increase of anxiety and fear about the operation of the TMB. It is because the municipality did not involve the angkot owners from the beginning of the planning process. The municipality has to be more concern the opinion of affected communities towards the implementation of TMB operation. The municipality as a local government has a power to provide and regulate the transportation system cannot ignore the other stakeholder opinions.

The support of all stakeholders is needed to make the development successfully implemented since, the planning practice is not done within an isolated area but connected with the other actors in complex situations. The municipality can rebuild the trustworthiness by updating every process of the consortium development to the affected communities with clear and transparent information. If the preparation to form a consortium cannot be done in a short period of time, the municipality can do a re-routing of angkot route that overlapped with the TMB route. The service of angkot is still needed as a feeder of TMB due to the limitation of TMB service coverage as the result of narrow road issue. In addition, the local transportation agency has to stop issuing a permit for new angkot operators and try to maximize the existing or even reducing the number of angkot in the city. The municipality can provide a new job opportunity through the new consortium company to avoid problems from the angkot reduction.

The next impacts that need to be mitigated are related to the institutional, legal, political and equity impacts. The extra workload as a result of the development activities has to be overcome by adding more competent employees. The recruitment of more competent employees offers more benefits in order to prepare the next corridor developments.

Regarding to the corruption and a potential bribes issue, the municipality has to develop a clear and transparent mechanism. It might be done through an online tendering process and monitoring the use of funding construction. These attempts can increase the trustworthiness to the municipality due to the involvement of the public during the development process.

CONCLUSION

The development process in Bandung showed the presences of social issues could hamper the good goals of the public transport provision. Although, the new development has several benefits in term of economic, social and ecological aspects, there are several opinions from the community (angkot owners and parking officers) that have to be accommodated. The building of trust between stakeholders through intensive coordination and transparency information are essential in this case. Preparing the unforeseen impacts not only from the technical one but also from the social one can make a development of certain project effectively and efficiently implemented since the possible problems can be addressed much earlier.

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