



4th International Conference on Building Resilience, Building Resilience 2014, 8-10 September 2014, Salford Quays, United kingdom

The Impact of the Local Political and Socio-Economic Condition to the Capacity of the Local Governments in the Maintenance of Post-Disaster Road Infrastructure Reconstruction Assets

Ezri Hayat^a and Dilanthi Amaratunga^b

^aUniversity of Salford, The Crescent, Salford, M5 4WT, UK

^bGlobal Disaster Resilience Centre, University of Huddersfield, UK

The post-tsunami reconstruction in Aceh, Indonesia, resulted in more than 3600km of road section reconstructed. The ownerships of the reconstructed road assets were transferred back to the Local Governments for the operational and maintenance needs. Hence, the responsibility to maintain most of the road sections are now held by the Local Governments. This paper examines the impacts of the local political and socio-economic condition to the capacity of the Local Governments in the maintenance of post-disaster road reconstruction assets in Aceh, Indonesia. Twenty-eight semi-structured interviews were conducted with representatives of road infrastructure stakeholders at the local, provincial and national level. The analysis reveals the main political and socio-economic factors affecting the capacity of the Local Governments in road maintenance.

© 2014 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/3.0/>).

Selection and/or peer-reviewed under responsibility of the Centre for Disaster Resilience, School of the Built Environment, University of Salford.

Keywords: Post-disaster, reconstruction, road infrastructure, tsunami, developing country

*Corresponding author. *Email address:* e.hayat@edu.salford.ac.uk

1. Introduction

In the event of a major natural disaster, the road infrastructure sector often suffers from the greatest damage and losses. In the event of earthquake and tsunami on December 26th, 2004 in Aceh, Indonesia, the disaster destroyed more than 2700km of road networks. Within the four year of reconstruction activities, however, more than 3600km of road networks were rehabilitated and reconstructed (Sihombing, 2009). In the post-tsunami reconstruction in Aceh, most of the road reconstruction projects were funded and implemented either by the national government or

donor agencies. Upon completion, the reconstructed assets were transferred back to the respective governments. Since most of the reconstructed road networks were district roads, there are concerns over the maintenance of the reconstructed road assets at the district level. This paper, which is based on an ongoing PhD study, discusses issues identified in the maintenance of the district roads, particularly with regards to the impact of the local political and socio-economic condition to the capacity of the Local Government in the maintenance of the road infrastructure.

1. Methodology

The scope of study is focused on three districts in Aceh province included as the case studies; Aceh Besar, Aceh Jaya, and Aceh Barat Daya. Between January and April 2013, twenty-eight semi-structured interviews were conducted with road infrastructure stakeholders at the national, provincial and the local levels which were involved in the reconstruction of road infrastructure activities in the three case study districts. The basic profile of the interviewees is summarized in Table 1.

Table 1 – Basic profile of the interviewees

Agency	Local	Provincial	National	Total
Consultant	-	1	4	5
Contractors	-	3	-	3
Donor Agency	-	-	1	1
Transport	-	1	-	1
Planning Agency	3	2	1	6
Public Works	6	1	2	9
Disaster Management	-	-	3	3
Total	9	8	11	28

The interviewees were selected using a combination of purposive sampling and a snowballing method. The semi-structured interviews were conducted in a face-to-face approach. Prior to the interviews, the prospective interviewees were briefed about the purpose of the study and the topics of the interviews. Each of the interviewees was advised to subscribe the Participant Consent Form which allowed the interviews to be voice-recorded and that interview results, and respondent profiles would be kept with strict confidentiality. The locations and time of the interviews were selected and agreed by both the researcher and the interviewees. The interview result was transcribed into nVivo 10, and the content analysis was also conducted using the aid of the same software. The transcriptions were coded using multiple stages approach; open coding, axial coding and selective coding process. In the open coding process, information from the interviews was coded and named based on the main ideas of the emerging information. At the later phase, the axial coding, the nodes were then classified and grouped into relevant themes. Once the axial coding process is finished, the transcription codes were exported to Microsoft word for further elaboration and discussions. Information from the transcription was selected based on its appropriateness and relevance to the themes. Accordingly, this process is called selective coding. The analysis of data was then classified and presented in a series of matrices of themes and the case study locations.

2. Main findings

As shown in Table 2, from the local political and socio-economic perspective, the road maintenance affecting factors emerging from the interview analysis include the high preference on capital projects, parliament budgeting authority, political stability (political), as well as distribution of wealth, corruption, community lack of sense of ownership, and economic consideration (socio-economic). Moreover, the political preference on capital projects and the impact of parliament budgeting authority were perceived by most of the interviewees as the political factors affecting the Local Government capacity in the road maintenance. These issues were highlighted by nine and eight

interviewees respectively. The importance of political stability was also seen as the affecting factor in road maintenance and the issue was raised by two interviewees.

From the socio-economic perspective, the need to distribute wealth was perceived by 11 interviewees as the most affecting factors in the road maintenance efforts by the Local Governments. The issue of corruption, community's lack of sense of ownership towards the road infrastructure, and the economic consideration in the development planning and decision making were raised by four, three and two interviewees respectively.

Table 2 – Road maintenance affecting factors

Affecting factors	Number of Respondents
Parliament budgeting authority	8
Preference on capital projects	9
Political stability	2
Distribution of wealth	11
Corruption	4
Community's lack of sense of ownership	3
Economic consideration	2

3. Discussion

3.1. Political impact

The impacts of the political condition to the Local Governments' road maintenance capacity can be grouped into several categories. In general, the political impacts were perceived to be rooted to the parliament budgeting authority, the high preference on the capital projects, and the perceived importance of political stability. Each of these issues will be elaborated in the following sections.

3.1.1. The parliament budgeting authority

In the decentralised system of Indonesia, the parliament holds the budgeting authority. According to Law no 27/2009 article 343, (Law, 2009b), the local parliament has three main functions, namely legislation, budgeting and the monitoring of law implementation and use of budget allocation. Since the parliament holds the authority to approve the budget proposal, this eventually resulted in the parliament intervening the development projects and programs prepared by the Local Governments. The budgeting authority of the parliament, designed as a means to incorporate and convey the community's aspiration in the development program, ultimately affected the development planning. In practice, however, on the basis of delivering community aspiration, this resulted in the budget proposal prepared by the government being pushed to meet the parliament request, which could otherwise be rejected. Additionally, as explained by LG02, the budget proposal prepared by the Local Government need to be distributed and represent the various election zones of the parliament members, often disregarding the existing development plan and priorities.

Accordingly, ADB (2003) identifies that the decision-making process in the developing countries tend to be intentionally subjective and political, based on consensus and requiring discussion, committees and compromise. To a certain extent, this was in fact part of the purposes of the decentralised system in Indonesia, which is expected to be the instrument that encourage broader participations of citizens and ultimately lead to increased efficiency and improved governance (Jütting et al., 2005). The decentralised system was then expected to provide the community with "much more independent in electing their own leaders, promoting their own interests, developing their own institutions, initiating their own policies, managing their own financial resources, and mobilizing support from their own communities" (Rasyid, 2004). However, as highlighted by Ahmad and Mansoor (2002), the demand for decentralisation in Indonesia is not primarily driven by a perceived need to improve local service delivery, but more

by a desire to have control over resource and political and legal autonomy. Consequently, along with the decentralisation of authorities, the decentralisation process has been argued to be a process of ‘decentralisation of the corruption, collusion and nepotism practices to the local level (Darmawan, 2008), which affect the executive, legislative and judicial branches of the government (Mahfud cited in Daslani, 2012).

As with the case study districts, the political pressure is experienced widely with regards to the decision making process. In particular, the budgeting authority of the parliament resulted in political interference to the development program prepared by the Local Governments and, in particular, the road maintenance planning. Consequently, since the parliament holds the right to refuse the budget proposal, the Local Governments tend to accommodate the parliament requests to avoid political disputes and delays in the budget approval process. This was confirmed by LG03-AB as he described that the Planning Agency practically cannot enforce and implement what are in their development planning and program, unless they are approved by the parliament. Therefore, whilst, on the one hand road maintenance activities received limited budget allocation, the limited road maintenance allocation would also need to be distributed based on the political interest. As a consequence, such pressure resulted in the budget proposal unnecessarily reflect the development plan prepared by the planners and that the approved maintenance budget allocation may not reflect the actual road maintenance needs, but rather filled with a list of aspirations and demands from the politicians which may and may not be in accordance with the development plan.

In addition to the issues related to the budgeting authority of the parliament as discussed above, the political impact on the road maintenance was also experienced resulting from the high preference of the politician, as well as road authority, on the capital projects. More discussion will be presented in the following.

3.1.2. Preference on capital projects

As highlighted by ADB (2003) the value of the project, the relatively more sophisticated level of the work, and the immediate impact of a capital project is more politically and technically interesting for the politicians, as well as for the road engineers. As explained by PG01, the decision on the final budget allocation will be determined in the budget discussion session between the government and the parliament. Since maintenance needs frequently get low priority, the final budget allocation often resulted in the postponement of maintenance works to the following year, as an excuse to the limited budget availability in the running year and the competition with other sectors. Levik (2001) argues that in most countries, investing money in building new roads is more politically favourable. Road maintenance is less politically attractive when compared with new road construction, road rehabilitation or the social programmes, which provide more ‘visible’ impacts and therefore offer greater political benefits (UNESCAP, 2005, Donnges et al., 2007). This confirms the findings from the case study districts where political intervention did not only occur in form of shifting development plan towards certain development sectors, but also in determining the project types and location. Donnges et al. (2007) argue that such condition is particularly affected by the limited tenure of the politicians in their office.

Nevertheless, the poor maintenance budget allocation and distribution are not solely due to the political pressure. In the case study districts, the low political interest on the road maintenance is worsened by the fact that the road engineers and professional also perceived road maintenance works as being inferior to road construction. According to Robinson and Stiedl (2001) such condition is one of the consequences resulting from a decentralised system which erratically places responsibility for road maintenance to incompetent organisation. Additionally, as emphasised by Estache and Sinha (1994), decentralisation tends to increase government expenditure on infrastructure, possibly due to different preferences on quality and quantity of infrastructure between the national and the regional government.

In accordance with the above arguments, the importance of road maintenance did not seem to be well-perceived by the road authorities of the case study districts. The relatively small value of road maintenance projects was not seen as interesting works by the engineers in the road authorities. CO05 explained that due to the small value of maintenance works, the road authorities tended to wait until the damage level has escalated to a level where the value of the repair works are considered worth working for. Supporting the above argument, LG05 similarly suggested that the road authority appeared to have a little interest on the maintenance works as the project value was relatively small. As a representative of the public works agency, LG05-BD stated that the damages to the road infrastructure were too small to be included as a project. Regarding this issue, Donnges et al. (2007) identify the issue that road maintenance does not seem to offer an interesting career path for the engineers. Such a preference,

according to UNESCAP (2005), is one of the factors which complicates the efforts to raise sufficient maintenance funds and is considered as one of the main constraints in maintaining road assets.

3.1.3. *Political stability*

Another issue emerging from the interviews was that political stability was one of the main considerations in the decision-making process. This view was illustrated by DO01 and the NG02 as the following. Firstly, for the foreign-funded district road projects, MoU between BRR and the Local Governments were required prior to the project commencement. Accordingly, the respective Local Governments agreed and provided the required maintenance allocation as stipulated in the MoU. Secondly, however, the maintenance allocation was provided for the first year only. For the next following year, the Local Governments refused to provide the maintenance allocation and based their refusal on the legal requirement that budget allocation can only be used for assets listed in their asset inventory. Therefore, before the legal project documentation has been completed and that the road assets have been formally transferred back to the Local Governments, they would not provide maintenance allocation.

However, the two occasions were, in fact, contradictory. The Local Governments and the parliament were initially able to provide the maintenance allocation for the first year despite the transfer of assets had not been completed. For the second year, they refused to provide the maintenance allocation, referring to the legal requirement as the excuse. As DO01 described, "With regards to the funding (for the road maintenance needs) of the first year, I do not know how, but somehow they managed to provide it. But for the second year, the parliament immediately blocked it." The contradictory situation was further explained by NG02. He argued, "Formally, the Local Governments cannot allocate maintenance allocation if the formality (asset transfer) has not been done, even though actually (with) governor discretion it can be done, if they are brave. However, the nature of politic does not work that way." The discretion denoted by NG02 was that the head of government might actually issue an instruction to provide allocation for the maintenance of road assets accepted from the third party as grants, as stipulated in the Regulation of Ministry of Home Affairs no 17/2007 article 19 (Regulation of MoHA, 2007). However, since such an action might provoke political disputes, the authority was not exercised. The above situation indicates that the political willingness, and the consideration on the political stability plays a major role in determining budget allocation for road maintenance.

3.2. *Socio-Economic Impact*

Whilst the above sections have provided an in-depth discussion on the impact of the local political condition to the capacity of the Local Government in the maintenance of road infrastructure, this section will accordingly describe the impact of the socio-economic condition to the road maintenance.

3.2.1. *Distribution of wealth*

As a response to the road maintenance problems, Heggie (2003) suggests that road need to be managed professionally and treated as a business. Practically, this suggests that the Local Governments should only build roads that can be maintained, and to maintain what have been built. This argument leads to the recommendation to establish independent road authorities and the adoption of the road fund mechanism as a sustainable source of the maintenance fund (De Richecour and Heggie, 1995, Potter, 1997, Zietlow and Bull, 1999), and the involvement of private companies for the operational or the ownership of road infrastructure (Carpenter et al., 2003, Ozbek and Jesus, 2007, IndII, 2010). Nevertheless, the poor awareness on the road maintenance needs and the high political interest on the construction of new roads were also affected by the social condition of the areas. As highlighted by ADB (2003), in the developing countries, roads are regarded as an essential public service and therefore the rational economic decision-making rules may not be applied. Hence, adopting the rational approach of prioritising road maintenance over the equal distribution of access may not be well perceived in the case study districts.

Additionally, there seems to be an informal consensus between the road authorities that the development of road infrastructure had to be translated as expanding the road networks to the maximum level possible. The Local Governments were more focused on building new roads and upgrading gravel roads to asphalt pavement as a means to provide the equal right to access to the community. As expressed by NG04, in the development planning, the governments were often faced with the dilemma between distributing wealth (expanding road networks) and setting

up development priority principle (maintaining existing networks). PG03 argued that this was affected by the many unpaved roads at the district level. The pressure was particularly higher where some areas in the districts were still isolated. As justified by LG08, referring to the isolated community in the district, "How can we maintain, whilst here (in the isolated area) it is very contrast, they do not even have roads."

Explaining such a condition, Donnges et al. (2007) also add that the developments of rural networks are vital to the development of the agricultural sector which would lead to the economic improvement of the area. From the socio-economic perspective, the local road authority was also exposed to the pressure from the community to disperse road projects to different locations as a means of distribution of wealth. This is probably the view perceived by the Local Governments. Limiting the road networks to the maintainable scale may restrict the potential economic growth. Even though Donnges et al. (2007) recognise the importance of the impact of rural road development to the economy, however, they further argued that two basic measures need to be in place in a decentralised road management system, namely the provision of basic minimum of fund for the road maintenance, and the adequate capacity to spend the fund effectively.

3.2.2. Community's lack of sense of ownership

In addition to the issue of wealth distribution, the community was also argued to have lacked the sense of ownership to the road networks that have been built in their neighbourhoods. Being a contractor, CT02-PROV stated that the community frequently disturbed the projects in their area by proposing irrational requests. The irrational requests commonly took place in form of forceful demand to work as the project labour, or as the supplier of the construction materials, which often came with higher prices. LG02 further gave an example where farmers frequently dumped the waste from cleaning the rice paddy fields on the road shoulders, blocking the road drainage and increasing the road deterioration rate. He further explained that efforts had been done to educate the community regarding the importance of road maintenance. However, the practice seemed to remain.

Regarding the sense of ownership of individuals towards an organisation, Pierce et al. (2001) propose that psychological ownership emerges from three major routes; intimately know the target, controlling the target, and investing the self into the target. Supporting the above view, by observing the rural water infrastructure development in Kenya, Marks and Davis (2012) conclude that community members' sense of ownership could be stimulated by involving the community in the key decision making, contributing towards the capital cost of the construction, participation in the planning and construction activities. In the case studies, the aforementioned key components to stimulating the sense of ownership of the community appeared to be lacking. Being a disaster response, most reconstruction projects were funded by the government or donor agencies. Accordingly, creating the sense of ownership through the community contributions of the capital cost seem to be irrelevant. Furthermore, recruiting the community as labour for the project was not always rational or practical. This was mainly because the community may not have the required skills, and that road projects commonly run through a number of villages which makes recruiting different personnel for different sections of the road project may not be applicable.

On the other hand, as suggested by the interviewees, the lack of community sense of ownership also appeared to be a result of the exclusive road reconstruction process. CO04-NAT drew an example where the traditional farmers in the rural areas smashed the drainage channel along the roadside to make water inlets for their farms. The local farmers were used to get water for their farms from the irrigation and drainage channels along the road shoulders. When the road was rehabilitated, the drainage channel was upgraded from soil to concrete embankment. Apparently, the new drainage construction did not provide water inlets to the farming areas. Some spots were therefore destroyed for the water inlets by the local farmers. It appeared that there had been lacked of communication and stakeholders' involvement in the reconstruction process. The farmers' dependence on the drainage channel had not been accounted for or alternative sources of water were not introduced to the farmer in the planning and design phase. This flaw eventually led to farmers forcefully breaking the drainage wall as the solution for their farming needs.

3.2.3. Economic consideration

In addition to the social pressure, economic consideration also contributed to the road deterioration and road maintenance capacity. One of the main causes of the road rapid deterioration is related to the structural bearing capacity which is affected by the vehicle axle loading capacity. Road is structurally design to cope with a certain vehicle axle loading capacity. In Indonesia, the vehicle maximum axle loading capacity allowed for class III roads,

the lowest road class, is set to be at eight tons (Law, 2009a, article 19), even though in certain circumstance, the vehicle maximum axle loading capacity may be set to a lower limit. Eventually, this resulted in confusion between the public works agency as the agency which was responsible for the construction and the transportation agency which was responsible to control and enforce the traffic loading capacity limit. This condition frequently led to unsolved disputes between the two agencies (Bappeda Jatim, 2011, Dewi and Maris, 2014).

The West Coast area of Aceh province where Aceh Besar, Aceh Jaya, and Aceh Barat Daya are located, is mainly occupied by palm oil agricultural industry and the mining industry. As a result, trucks and other vehicles transporting the heavy loads accordingly need to transport the resources to the processing plants or ports through the district roads, before they get to the larger provincial or the national road. This activity consequently and greatly contribute to the rapid deterioration of the road networks, particularly when the roads are not structurally designed to cope with the heavy load. Furthermore, NG04's suggested that the Local Governments were facing a dilemmatic position. On the one hand, the agricultural and mining industry was necessary to help improve the economic condition of the areas. On the other hand, however, ignoring the heavy loaded vehicles will damage the infrastructure. NG04 also added that, in reality, the Local Governments tended to ignore this problem and was more focused on the direct income that the industry may provide to the district. As a solution to this issue, it was argued that the Local Governments should be in charge and lead the process of enforcing the maximum axle loading capacity regulation. This is particularly due to the involvement of several institutions in the road management. However, enforcing traffic regulation is not only a matter of a dilemma between business investment and the damage to road infrastructure.

3.2.4. *Corruption*

The report of the Transparency International on the global corruption perception lists Indonesia as the 114 out of the 117 countries surveyed in the 2013 report (Transparency International, 2013). Accordingly, as revealed by LG04-BA, the Local Governments acknowledged the corruption practice in their institution. Unfortunately, it appeared that the Local Governments' response to the corruption was rather to control than to diminish. Meanwhile, the transaction cost of the capital works can reach from 5 to 20 percent due to corruption (World Bank, 2009) and that every dollar's worth of stolen materials may lead to reduced returns to the project as much as \$3.41 (Kenny, 2007). The World Bank (2009) also adds that the corruptions in the capital works are most obviously detected in the process of selecting and awarding the contract in form of bribes and kickbacks, bid rigging, and fraud.

Moreover, not only did corruption occur in the construction phase, it was also experienced in the traffic loading control. The traffic loading control is particularly implemented by operating the weighing stations. However, the traffic loading control cannot be enforced due to the corrupted operators. As revealed by PG04, working as one of the weighing station operators has been one of the most favourite positions among the transportation agency's staff due to its corruptibility. Regarding this issue, Shleifer and Vishny (1993) suggest that the practice of corruption spreads as a result of competition between both officials and the consumers. They further conclude that competition between officials to get a job through 'auction' mechanism will assure that maximal bribes are collected.

In accordance with the above comments, a joint report of the World Bank and BRR (2006) indicates that there are four forms of illegal payment that truckers coming into and going out of Aceh province have to pay, namely, police and military post, weighing stations, convoy fees, and the 'Facilitation' agencies. The police and military post and convoy fees were less relevant to this study as they are mainly fees charged by police and military troops for truckers transporting goods without legal documents such as scrap metals and plastic. What are more relevant to this road maintenance issue are therefore the illegal extortion collected by the weigh station operators and the 'facilitation' agencies.

The report concludes that payments at the weigh stations have been the largest illegal charges for truck drivers. In the weigh station, truckers needed to pay around Rp 20,000 (£1) per overweight ton. This practice continues to occur regardless the national Law no 22/2009 article 307 which stipulates that overweight vehicles should be brought to court and may be imprisoned for a maximum period of 2 months or Rp 500,000 (\$25) in fine. As expected, it was argued that none of the charges' income went into the government treasury (World Bank and BRR, 2006). The 'facilitation' agencies fee, on the other hand, are fees collected by mafia-like freight transporter organizations which provide reduced overweight charges for its members when they pass the weighing stations. A collusion between the organizations with the transportation agencies' personnel in the weighing stations had been

arranged. While some agencies provide a fixed rate of Rp 50,000 – Rp 70,000 (£2.50 - £3.50) regardless the amount of overweight loads, some others offer a reduced rate of Rp 10,000 (£0.50) per overweight ton. Both models require monthly membership fees of around Rp 25,000 – Rp 50,000 (£1.25 - £2.50) and distribute the truckers with stickers to be attached in the front windscreen that the weighing station personnel can immediately recognize.

Interviewee NG01 further described how the issue of corruption affected the decision-making process with regard to the road maintenance and road management in general. Particularly addressed to the development of the road information management system, he argued that the idea to develop a proper GIS-based system for road maintenance have been proposed and initiated during the post-disaster reconstruction period. As argued by NG01, the system would allow the road authorities to provide a strong basis to justify the maintenance needs in their budget proposal. Regardless the benefit of adopting such a system, however, NG01 later explained that the proposal for development and utilization of the road information management system was rejected by the Local Governments, alleging that it was based on the reduced chances and opportunity for corruption.

4. Conclusion

The reconstruction of the Indian Ocean tsunami in Aceh resulted in more than 3600 km of roads rehabilitated and reconstructed. The responsibility to maintain most of the road infrastructure assets are currently under the Local Governments, since most of the reconstructed roads were district roads. Due to the massive investment in the road sector, there are concerns over the maintenance of the assets, particularly when the capacity of the Local Governments in the road maintenance had been renowned to be poor. Based on the semi-structured interviews with twenty-eight respondents representing the disaster management agency, public works, the regional development planning, donor agency, as well as the contractors and the consultants working in the road sectors, the impacts of the local political and socio-economic condition to the capacity of the Local Governments in the road maintenance have been identified. From the political aspect, the political pressure and intervention posed by the parliament as part of its budgeting authority has affected the effectiveness of the development planning. In another case, the high preference on the capital project has led to wasted investment and road maintenance neglect. The political stability appears to be the more important consideration than maximizing and optimising the value of the investment made in the road sector.

From the socio-economic aspect, the political and social pressure to distribute project locations despite the low priority and necessity have resulted in reduced effectiveness of the budget expenses. The lack of sense of ownership of the community towards the road infrastructure, and the exclusive road development plan, have contributed to the rapid deterioration of road infrastructure. Additionally, the need to improve the economic condition of the region and the immediate income provided by the industries obstruct the long-term goal of road infrastructure investment. These road maintenance capacity issues are eventually worsened by the corruption problems, which is experienced in the traffic loading control and the implementation of the road maintenance works.

References

- ADB 2003. *Road Funds and Road Maintenance: An Asian Perspective*, Manila, Asian Development Bank.
- AHMAD, E. & MANSOOR, A. M. 2002. *Indonesia: managing decentralization*, International Monetary Fund.
- BAPPEDA JATIM. 2011. *Memalukan, Dinas PU dan Dishub Saling Saling Tuding Penyebab Jalan Rusak* [Online]. Available: <http://bappeda.jatimprov.go.id/2011/05/31/memalukan-dinas-pu-dan-dishub-jatim-saling-tuding-penyebab-jalan-rusak/> [Accessed 17 May 2013].
- CARPENTER, B., FEKPE, E. & GOPALAKRISHNA, D. 2003. *Performance-Based Contracting for the Highway Construction Industry - An Evaluation of the Use of Innovative Contracting and Performance Specification in Highway Construction*. Battelle.
- DARMAWAN, R. E. D. 2008. The practices of decentralization in Indonesia and its implication on local competitiveness.
- DASLANI, P. 2012. *Regaining Control in a Decentralized Indonesia* [Online]. Jakarta: Jakarta Globe. [Accessed May 20 2012 February 18].

- DE RICHECOUR, A. B. & HEGGIE, I. G. 1995. *African Road Funds: What Works and Why?*, Environmentally Sustainable Development Division, Africa Technical Department, the World Bank.
- DEWI, S. N. & MARIS, S. 2014. Dishub DKI Klaim Jalan Rusak Bukan Karena Truk Berat. *Viva News*, 19 January 2014.
- DONNGES, C., EDMONDS, G. & JOHANNESSEN, B. 2007. *Rural Road Maintenance - Sustaining the Benefits of Improved Access*. ILO.
- ESTACHE, A. & SINHA, S. 1994. Does decentralization increase spending on public infrastructure? *The World Bank*.
- HEGGIE, I. G. 2003. Commercializing management and financing of roads in developing and transition countries. *Transport Reviews*, 23, 139-160.
- INDII. 2010. *Support For Implementation Of Performance Based Contract Pilot Projects For Directorate General Of Highways*. IndII.
- JÜTTING, J., CORSI, E., KAUFFMANN, C., MCDONNELL, I., OSTERRIEDER, H., PINAUD, N. & WEGNER, L. 2005. What Makes Decentralisation in Developing Countries Pro-poor? *European Journal of Development Research*, 17, 626-648.
- KENNY, C. 2007. *Infrastructure Governance And Corruption : Where Next ?*, The World Bank.
- LAW. 2009a. *Lalu Lintas dan Angkutan Jalan* [Road Traffic and Transportation]. 22/2009.
- LAW. 2009b. *Majelis Permusyawaratan Rakyat, Dewan Perwakilan Rakyat, Dewan Perwakilan Daerah, Dan Dewan Perwakilan Rakyat Daerah* 27/2009.
- LEVIK, K. How to sell the message “Road maintenance is necessary” to decision makers. First Road Transportation Technology Transfer Conference in Africa, 2001.
- MARKS, S. J. & DAVIS, J. 2012. Does User Participation Lead to Sense of Ownership for Rural Water Systems? Evidence from Kenya. *World Development*, 40, 1569-1576.
- OZBEK, M. E. & JESUS, M. Development of performance warranties for performance-based road maintenance contracts. Alternative Project Delivery Procurement, and Contracting Methods for Highways, 2007. 20-36.
- PIERCE, J. L. & JUSSILA, I. 2010. Collective psychological ownership within the work and organizational context: Construct introduction and elaboration. *Journal of Organizational Behavior*, 31, 810-834.
- PIERCE, J. L., KOSTOVA, T. & DIRKS, K. T. 2001. Toward A Theory of Psychological Ownership in Organizations. *Academy of Management Review*, 26, 298-310.
- POTTER, B. 1997. *Dedicated road Funds: A preliminary review by IMF*. PPAA/97/7, junio.
- RASYID, M. R. 2004. The policy of decentralization in Indonesia. *Reforming Intergovernmental Fiscal Relations and the Rebuilding of Indonesia*.
- REGULATION OF MOHA. 2007. *Pedoman Teknis Pengelolaan Barang Milik Daerah* [Technical Guidance on Regional Assets Management]. 17/2007. MINISTRY OF HOME AFFAIRS
- ROBINSON, R. & STIEDL, D. 2001. Decentralization of road administration: Case studies in Africa and Asia. *Public administration and development*, 21, 53-64.
- SHLEIFER, A. & VISHNY, R. W. 1993. Corruption. *Quarterly Journal of Economics*, 108, 599-617.
- SIHOMBING, B. S. 2009. *Infrastructure - Stimulating the Triggering Sector*, BRR NAD -NIAS.
- TRANSPARENCY INTERNATIONAL. 2013. *Corruption Perceptions Index 2013*. Transparency International.
- UNESCAP 2005. *Road Maintenance Funds*, Thailand, UNESCAP.
- WORLD BANK 2009. Detering Corruption and Improving Governance in Road Construction and Maintenance. *TRANSPORT PAPERS*, TP-27.
- WORLD BANK & BRR 2006. Trucking and Illegal Payments in Aceh. In: BANK, W. (ed.). World Bank.
- ZIETLOW, G. & BULL, A. 1999. Reform of Financing and Management of Road Maintenance - A New Generation of Road Funds in Latin America. *XXI World Road Congress*. Kuala Lumpur, Malaysia.