Noise regulation of KRL commuterline in Indonesia: A critical review

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Abstract. KRL Commuterline is an electric commuter rail system serving the area of Greater Jakarta, Indonesia, and operated by a subsidiary of state-owned enterprise. However, there are known shortcomings in the current noise regulation of KRL Commuterline. This study hence attempts to address the problem in question “Does the noise regulation of KRL Commuterline signify a switch to prevent growth of settlements around railroad tracks? or is it yet another policy with no clear scientific justification?” The question is addressed by conducting literature reviews on scholarly literature and applicable regulations related to noises produced by KRL Commuterline. This study seeks to determine policy insufficiencies in the ministerial decision (Kepmen) of the State Minister of Environment, Indonesia, no. KEP-48/MENLH/11/1996 on Noise Level Standards, the Provincial Regulation (Perda) of West Java no. 11/2006 on Air Pollution Control, the Act 23/2007 on Railroad System, and the Presidential Regulation (Perpres) no. 54/2008 on Spatial Planning for Jakarta, Bogor, Tangerang, Bekasi, Puncak and Cianjur. This study discovers losses suffered by residents living around railroads. Then, this work identifies critical points for a successful implementation of the noise regulation of KRL Commuterline to reduce the impacts of produced noise on surrounding populations.

Keywords: noise, regulation, train, railroad

1. Introduction
This research focuses on noises produced by the operations of KRL Commuterline, which are probed as harming people living around the railways. In general, noises produced by transportation modes have been recognized to cause health-related effects, including subclinical hearing losses [1], sleep disturbances [2], reduced psychomotor performances [3], hypertension [4], reduced mental health [5], uncontrolled glucose levels [6], cardiovascular diseases [7], etc. Besides, the work of Lowicki and Piotrowska has discovered areas located within spatial zones with noises exceeding reasonable limits at night to have about 57% cheaper selling price than those located outside these zones [8].

Prior research on noises produced by the KRL Commuterline in Indonesia has been conducted by Faradiba [9]. In the work, a measurement at Public Senior High School (Sekolah Menengah Atas Negeri – SMAN) 37 Jakarta revealed an average noise level of 70.50 dB for 5 measurement points. The figure appeared to exceed applicable noise level standards declared in a ministerial decree of the State Minister for the Environment, Indonesia, no. KEP-48/MNLH/11/1996, which suggested a

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maximum noise of 55 dB for a school environment. The decree has also stated a noise level allotment of 55 dBA for residential areas. The nearest point of SMAN 37 Jakarta area is currently located as near as ±5 meters from KRL railways. A similar distance is also separating houses along the Jambu Raya street and Majapahit street (Kemirimuka village, Beji sub-district, Depok city, West Java) with the railways. During field observations, those houses are less sturdy than the building of SMAN 37 Jakarta, hence residents of the houses are more likely to also get exposed to noises exceeding the applicable threshold as measured at SMAN 37 Jakarta. Another study conducted by Munandar has revealed an average noise of 94.8 dBA measured within a radius of 10 meters from a train (kereta api) track, and 80.05 dBA outside the 10-meter radius [10]. Besides, it discovered train noises to cause changes in the blood pressure of people living around the location of Lemahabang Station, Bekasi, West Java [10]. Therefore, those two studies indicate a reflection of regions in Indonesia that are negatively affected by the active presence of train and KRL operations for years without any significant noise reduction effort. This study hence attempts to address the problem in question, whether the country’s current regulations and laws have effectively protected populations along the Jambu Raya and Majapahit streets from noises caused by KRL Commuterline, what are the shortcomings of KRL-related regulations, and what can be improved from the regulations.

These focuses are considerably critical because an exposure to excessive noises is expected to affect the quality of life of populations along the Jambu Raya and Majapahit streets, at Beji sub-district, Depok City, West Java. Indonesia as a country will not be able to develop its economic growth if the population as its social capital has not been living properly, comfortably, and satisfactorily. For a reason as such, a critical evaluation on the noise regulation of KRL Commuterline is urgently required.

2. Results and discussion

The above-mentioned ministerial decree has defined a noise level standard as the maximum limit of noise levels allowed to be discharged into the environment from businesses or activities so as not to cause health and environmental disturbances of people living in an area. However, the standard does not properly follow WHO (World Health Organisation) recommendations regarding tolerated noise exposures for humans. In terms of average noise exposure, WHO Environmental Noise Guidelines for the European Region strongly recommends reducing noise levels produced by railway traffics to reach below 54 dB Lden (day-evening-night sound level) [11]. In terms of night noise exposure, WHO strongly recommends reducing noise levels produced by railway traffics during nighttime to below 44 dB Lnight (night noise level) [11]. In addition to having noise level standards that do not follow WHO recommendations, another shortcoming of the ministerial decree includes no clear sanctions for those who do not properly carry out obligatory responsibilities. It is obvious in Article 6 of the decree, in which each business entity is responsible for several mandatory activities as follows.

- adhere to recommended noise levels;
- installing noise prevention devices;
- submit reports on the results of monitoring on noise levels at least 3 (three) months to the Governor, the Minister, the Agency responsible for environmental impact control and the Technical Agency in charge of an activity concerned and other Institutions deemed necessary.

The absence of sanctions has been resulting in a negligence of various parties responsible for the efforts and activities to control noises being produced. The negligence is also intensified because noise pollution has not been posited as a concerning issue for common people.

Administratively, the ministerial decree has been interpreted into the Provincial Regulation (Peraturan Daerah – Perda) of West Java no. 11/2006 on Air Pollution Control. Technically, it has explained the concerning issues quite well. In fact, it has distinguished recommended noise level standards for immovable and moving sources, which is written in Article 12, Paragraph 5 on Noise Threshold. The regulation has also listed sanctions for parties who violate applicable regulations,
which are written in Chapter XIII (Administrative Sanctions) and Chapter XIV (Criminal Provisions).

In general, coercive sanctions referred to in the regulation can be imposed in the forms of a suspended production or even a removal of production facilities.

Looking at the seemingly strict regulation, why does KRL Commuterline still produces excessive noise impacts to people living and moving around its rail tracks? The above-mentioned ministerial decree and provincial regulation have clearly implied an obligation for KRL owner (PT Kereta Api Indonesia) to install noise prevention devices. However, a rational business thinking would state it is not economically feasible to install noise suppression or noise prevention devices all along the 235 Km of KRL railway network. In that sense, a political willingness by the government is required to cooperatively find the most appropriate solution.

In general, the noise impacts of KRL Commuterline may technically be reduced by applying a proper spatial planning. Houses and other activity centers, including schools, must have a sufficient distance from railways and/or busy streets. Besides, areas around rail tracks shall only be used as green open spaces, which will certainly improve the quality of life of surrounding communities by using trees in the open space to reduce noises and CO₂. The solution seems to not currently be actualized by various parties because the Act no. 23/2007 on Railroad System appears to not clearly regulating any railway distance standard in conjunction with any space boundary railing of the railways. Currently installed space dividing fences are constructed for safety reasons only to prevent crash accidents and to prevent thefts of installed safety equipment. This is particularly true since Article 38 of the act has stated “the benefits of railroad lines are intended for railroad operations and are areas that are closed to the public.”

Furthermore, Presidential Regulation (Peraturan Presiden – Perpres) no. 54/2008 on Spatial Planning for Jakarta, Bogor, Depok, Tangerang, Bekasi, Puncak and Cianjur does not particularly discuss clear designations of areas surrounding rail tracks. Instead, it merely focuses on directing the development of railway infrastructure, network and system. The absence of clear designations of certain areas in spatial planning surrounding rail tracks has been resulting in an endless growth of settlements despite known and noticeable impacts of train noises. A concrete example occurs for houses along the Jambu Raya and Majapahit streets (Kelurahan Kemirimuka, Beji sub-district, Depok city, West Java) that have as near as ±5 meters distance from KRL rail. They are allowed to make permanent settlements and even get home ownership certificates. It means there is indeed no attempt to sterilize areas around the rail tracks from any potential noise-impacted problems, including the settlements.

3. Conclusions

Current regulations have not been effective enough in protecting residents along the Jambu Raya and Majapahit streets from KRL-produced noises. In general, shortcomings of current regulations related to the noises include standard noise levels that do not follow WHO recommendations and no clear rules on railroad distance standards in conjunction with guardrails installation. For short to medium terms, this study suggests a collaboration between the government and communities by strengthening spatial planning, public participation in urban planning, strengthening development control and urban green space management systems to eventually improve urban quality. It is much more possible to conduct by tightening construction permits to the private sector, applying more ecological approaches, holding active discussion and communications with communities on their needs and social inclusion, an making an open government, and enhancing social development to avoid illegal land conversion in open areas along the railways.

4. References

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