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Utilization of Underground Space for Efficiency of Urban Railway Infrastructure Development Activities

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Abstract.

I. INTRODUCTION

One of the factors to support urban development due to population growth in urban areas is the transportation system's structuring.[1][2] The lack of coverage and public transportation services often encourage people to use private vehicles; this can increase motorized vehicles, resulting in congestion, pollution, and an increase in energy consumption.

In carrying out the transportation system arrangement, building public facilities requires much time.[3] The timing of land acquisition is often the reason for the extended provision of transportation systems.[4] For this reason, in order to solve the problem of land acquisition in the context of developing a transportation system in urban areas, there is an alternative by utilizing underground space.

Technically, the law on railways has accommodated these needs, but there are indeed issues for other laws and regulations. One of the solutions for the transportation system is the development of railroad mode of transport considering that it has a larger carrying capacity in one trip, saves energy, saves space, has a low level of pollution, the trip control system can be centralized so that it will be more effective and efficient. The author raises the problem: What is the solution in carrying out mass transportation development in densely populated urban areas?

II. RESULT AND DISCUSS

1) Problem of Urbanization

Urbanization can promote economic prosperity because urbanization fosters a favorable concentration of power, creates an environment conducive to innovation, and increases productivity.[5] Almost all cities in the world experience an increasing flow of urbanization from time to time. This is because cities are generally the center of the economy, while rural areas are not. For this reason, people generally move to cities to seek a better fate.

According to the Asian Development Bank's report, the number of urban residents in the Asian region increased from 375 million in 1970 to 1.84 billion in 2017. The rate of urbanization is projected to increase from 46 percent in 2017 to 64 percent in 2050.[6] In Indonesia alone, 41 percent of the population is currently estimated to live in urban areas. In 2025 it is estimated that 65 percent of the population will live in urban areas, especially 16 big cities in Indonesia.[7] Meanwhile, the World Bank's written report states

that in 2045, when Indonesia celebrates a century of independence, approximately 220 million people, or more than 70 percent of the population, will live in cities.[5]

Many literature states state that urbanization in specific ways is good for regional economic growth, considering that there is very high economic activity. One of the facts that are widely known in the field of economic development is that urbanization is correlated with income, in which developed countries such as in the highly urbanized East Asia, Europe, and North America, while low-income countries generally have a portion of the population great living in the countryside.[6]

Nevertheless, on the other hand, it is also necessary to observe the various phenomena that show the close relationship between inequality and the quality of life of a nation. Even the damaged social conditions of society and the chaotic economic situation are one of the extended effects of economic inequality in society, and these impacts include the level of crime. Level of happiness, level of health, quality of social trust, and political stability level.[8]

Population growth occurs due to two things, namely the natural growth process and urbanization. Urbanization is mostly carried out by young people looking for work in industries or companies located far from their home locations. The problem of urbanization cannot be seen only from the urban area, which is the goal of urbanization, but it is also vital to develop rural areas that are the providers of the population for urban areas. Rural development is critical to reducing the rate of urbanization.[7]

The link between urbanization and economic dynamism is, however, uncertain. Most Asian cities are bound to grow in size. However, they fail to fulfill their potential as drivers of growth and job creation due to mismatched space and economic planning, shortages of adequate housing, significant air, and water pollution, and shortages—vital infrastructure in particular for transportation, water supply, and sanitation.

Density, land use, and distance are the three main factors in developing adequate public facilities. The more the population is crowded and dense, the costs incurred for public facilities are much cheaper when viewed by the capacity per unit. A compact, coherent, and orderly development pattern costs less than a linear or scattered development. More efficient costs occur for maintenance and procurement, which will further strengthen economic development in the region.

2) Railway Infrastructure Development Activities

According to Article 1 of Law Number 23 of 2007 concerning Railways, railway infrastructure is a railway line, train stations, and railway operating facilities to operate. A railway line consists of a series of railroad compartments covering the railroad benefit space, space belonging to the railroad tracks, and railroad monitoring space, including the upper and lower parts designated for rail traffic.

Railroad benefit space following Article 37 paragraph (1) Law Number 23 of 2007 consists of railroads and land parcels to the left and right of the railroad along with spaces on the left, right, above, and below, which are used for railroad construction and placement of railway operating facilities and other complementary buildings. Furthermore, in paragraph (2) of the same article, it is stated that the location of the railroad can be at ground level, below ground level, and above ground level.

In principle, the railroad benefit space is the space where the railroad and its accessories are located. Railroad at ground level is what it generally seems today. Thus, there is often an intersection of a level between the railway line and the road. This intersection point is an area that is prone to traffic accidents between trains and motorized vehicles that cause loss of material and life.

The railway lines above the ground in the form of elevated train lines, such as the commuter line Manggarai Station-Jayakarta Station, the Medan Station-Araskabu Station train line, several points of the Jakarta Integrated Moda Raya (MRT) line, and the train line. The Jabodebek Light Rapid Transit (LRT) fire visible on the side of the toll road towards Cibubur and Bekasi. Meanwhile, there are not many underground train

lines in Indonesia. There are currently only a few points of the Jakarta Integrated Moda Raya (MRT) line from the Hotel Indonesia-Senayan roundabout station area. Both above-ground and below-ground rail lines have minimal risks like those found on ground-level railways, namely accidents between trains and motorized vehicles and the emergence of road congestion points.

With the issuance of Law Number 23 of 2007 it opens opportunities for business entities other than PT Kereta Api Indonesia (Persero) to become infrastructure operators. With the issuance of Law Number 23 of 2007, it opens opportunities for business entities other than PT Kereta Api Indonesia (Persero) to become railway infrastructure operators. Since Indonesia's independence until the modern era, PT Kereta Api Indonesia (Persero) has been the only railway, infrastructure operator. Along with the development of the times, currently, PT Mass Rapid Transit Jakarta or PT Kereta Cepat Indonesia China has also been designated as the railway infrastructure operator.

With the increase in railway infrastructure operators, the concept of new railroad construction has become increasingly varied, both building railway lines at ground level, above ground level, and below ground level. Of course, this is related to the costs and benefits of development activities considering the availability of land, development costs, and completion time, requiring railway infrastructure operators to plan a faster and cheaper development concept.

The party administering the railway infrastructure, in this case, the public railway, is operated by a Business Entity, either individually or in cooperation. If no Business Entity is operating public railroad infrastructure, the Government or Regional Government may operate railway infrastructure. Referred to as "The Government or Regional Government can administer railway infrastructure" is the Government or Regional Government given the mandate to carry out railway infrastructure whose implementation is assigned to a business entity established for this purpose, as regulated in Article 23 of Law Number 23 the Year 2007.

The elaboration of the arrangement for railway infrastructure operation carried out by a business entity is regulated in Government Regulation Number 56 of 2007 concerning Railway Implementation as amended in Government Regulation Number 6 of 2017. Business entities that operate public railroad infrastructure must have business permits, development permits, and permits. Furthermore, in the Regulation of the Minister of Transportation Number PM.66 of 2013 concerning Public Railway Infrastructure Operation Licensing, it is regulated on the railway infrastructure operation licensing process stages or stages.

In fulfilling each of these stages, a business entity in the context of activities to build railway infrastructure requires a significant amount of time and tends not to have a particular time. This limited-time does not include other administrative processes, which may take a long and unpredictable time. Besides, factors in the field include resistance from affected communities in the form of disputes over location determination, the amount of compensation, or other non-technical issues that impact the timing of the infrastructure development process.

3) Relationship Between Land Rights and Underground Railway Infrastructure Development

Land rights are rights to the earth's surface, namely a particular part of the earth's surface, namely a particular part of the earth's surface, which is a unit with two boundaries and dimensions, namely with a certain length and width. In connection with the party entitled to compensation in land acquisition for development in the public interest, namely the holder of land rights, the entitled party only has the right to receive compensation limited to land on the earth's surface.

As explained above, land rights are rights that have two dimensions, namely length, and width. Meanwhile, underground railway infrastructure development is related to three dimensions: length, width, and depth. In this regard, problems arise for land acquisition to construct public railway infrastructure that is underground.

Law Number 2 of 2012 accommodates the need for land acquisition for basements. Problems arise regarding whether or not the relinquishment of rights under the land is given considering the land rights as referred to in Law Number 5 of 1960. Based on Article 4 paragraph (1) of Law Number 5 of 1960, in essence, it states that - kinds of rights to the surface of the earth, which are called land, which can be given to and owned by people, either alone or together with other people and legal entities. The description of the various land rights in question on the surface of the earth (land surface) is regulated in Article 16 of Law Number 5 of 1960.

As stated in Article 16 of Law Number 5 of 1960, the rights give the authority to use the land in question. Likewise, the earth's body is only needed for interests directly related to the use of that land, within limits according to the laws and regulations higher. The use of the land in question is only needed for purposes directly related to land use. It is not stated in detail what is the purpose of the direct interest related to the land.

It is different from the interests that need to be accommodated in land acquisition to develop railway infrastructure below the surface of the land. There need to be other forms not as compensation but as compensation for the loss of land rights holders merely using the land for interests directly related to the use of the land. It includes building foundations and access to groundwater.

III. CONCLUSION

The development of underground railway infrastructure does not require a land acquisition process, providing an advantage for railway infrastructure, administering enterprises to precisely predict the need for funds and completion time.

In principle, Law Number 23 of 2007 concerning Railways accommodates the need for railway infrastructure development below ground level. However, for the sake of legal certainty, it is necessary to support other laws and regulations in utilizing underground space.

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