

# Study of Planning and Management of Good Transport in Rural Areas

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**Abstract:** The current condition of rural public transport is not planned well, which causes the decreases of the effectiveness and efficiency of the rural area transport system as a whole. Rural area transportation is one of the important public transportation means to support the rural communities' activities and mobility, and to accelerate the distribution of development results in rural areas. Rural transportation in the National Transportation System plays an important role as the connector from the production center (agriculture, plantations, fisheries, livestock) to the collection center, and/or to the activity center in the capital of regencies. Currently there are 17,504 villages in Indonesia, spreading across 34 provinces, which all have extraordinary potencies if they all can be developed, like in Lombok Tengah Regency, there are 124 villages/urban-villages and Sintang has 173 villages/urban villages. The study to plan and manage rural goods transport has the purpose to measure the production and consumption of current goods and to estimate the future condition of rural areas, to identify the distribution and collection of goods in rural areas, to plan the patterns of distribution and collection of goods in rural areas, to identify the current conditions of area rural goods transportation infrastructure and facilities and to estimate future needs, and to optimize rural area goods transport service networks. The result shows that the goods transport services shall be planned and managed immediately taking into account that economic and spatial developments in the region will generate the potency of cargo transport in the future and shall be anticipated as early as possible to create an effective and efficient transportation system. The implementation of policies to regulate goods transportation services shall be carried out in a coordinated and simultaneous manner between all the related parties involved, in which the Transportation Agency as a Leading Sector shall be able to make public-oriented policies extensively.

**Keywords:** policy; rural; transportation

## 1 Introduction

The current condition of rural public transport is not planned well, which causes the decreases of the effectiveness and efficiency of the rural area transport system as a whole. Rural area transportation is one of the important public transportation means to support the rural communities activities and mobility, and to accelerate the distribution of development results in rural areas.

Rural transportation in the National Transportation System plays an important role as the connector from the production center (agriculture, plantations, fisheries, livestock) to the collection center, and/or to the activity center in the capital of regencies.

Under the Law Number 22 of 2009 on Road Traffic and Road Transportation, the article 138 mandates that: (1) public transportation is implemented as the effort to meet the safe, secure, comfortable and affordable transportation needs; (2) the government is responsible to implement the public transport; and (3) human and goods transportation is implemented by motorized vehicles. In accordance with the mandate in the law, the government has the obligation to realize the implementation of good public transport including rural area transport (Pemerintah Republik Indonesia, 2009). The roles of rural area transport are: (1) as an interaction benchmark among regions, which may facilitate the interaction between local community and other developed regions; (2) to improve the mobility service of the community and other resources that may support economic growth; (3) to let people easily access the service facilities and to bring the service facilities to be closer to rural communities; (4) to realize development sectors without considering to the transportation sector means unsuccessful region transferability; and (5) to eliminate barrier and provide stimulants towards developments in all sectors of rural community life.

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The potencies of Lombok Tengah Regency based on sub-district data area as follows: (1) the paddy fields area in 12 sub-districts is 40,713 hectares; (2) the total area of dry-field (tegal)/plantation is 23,089 hectares; (3) The harvested areas of paddy rice and paddy fields are 84,065 hectares; (4) the harvested area of corn is 2,211 hectares, soybean 27,491 hectares, peanut 3,078 hectares, green bean 600 hectares, cassava 260 hectares and sweet potatoes 104 hectares; (5) the harvested area of vegetables namely onion is two hectares, chili 563 hectares, green bean 183 hectares, cabbage 58 hectares, chinese cabbage 19 hectares, tomatoes 96 hectares, eggplant 39 hectares, cucumber 12 hectares, cauliflower 34 hectares and kangkung 12 hectares; (6) the vegetable production namely onion is 140, chili 56,910, long beans 20,395, cabbage 4,020, bitter bean (petai) 290, tomatoes 30,015, eggplant 9,900, cucumber 1,980, cauliflower 3,080 and kangkung 15,000; (7) the fruit production namely orange is 1,676, avocado 9,534, mango 235,136, banana 96,364, rambutan 66,254, duku 1,473, durian 41,930, papaya 25,020, cashew 18,957, jackfruit 141,251, starfruit 1,221, mangosteen 39,640, watermelon 222,010 and melon 12,670; (8) plantation areas according to types of plant based on sub-district are coconut 7830.10, coffee 631.95, clove 1,942, cotton plant 329.99, pinang 277.07, tamarind 33.67, pepper 6.58, cocoa 396.00, guava 1828, 70, jatropha 329.80, Virginia tobacco, sugar palm 101.22, cotton 50.00 and candlenut 5.23 hectares; (9) plantation according to the types of the plants, such as coconut 9,982.88, coffee 398.90, clove 1.50, cotton 143.96, pinang 190.48, tamarind 19.66, pepper 1.71, cocoa 131.23, guava 908.09, Jatropha 159.80, Tamarind 22.75, Cotton 50.80 and Candlenut 3.41; (10) the plantation areas according to the type of plant, non-productive plant 316.90 hectares, productive plants 20.188.20 hectares, old/damage plants 5877.85 hectares, totally they are 29,229.95 hectares; (11) the average of plantation production per hectare is coconut 848.21 kg, coffee 603.94 kg, cacao 377.44 kg, clove 73.13 kg, candlenut 648.75 kg, pinang 638.42 kg, cashew 506.25 kg, cotton 431.92 kg, pepper 257.50 kg, sugar palm 216.47 kg, tamarind 562.01 kg, Jatropha 480.00 kg; (12) the population of cattle are as follows beef cattle 164,921, buffaloes 19,770, horses 1,751 horses, goat 109,589, 316 sheep and 1,863 pigs; (13) poultry population according to types of poultry are free-ranged chicken 2,879,956, laying hen 71,728, broiler 3423669, duck / manila duck 712,852; (14) the number of cattle slaughtered according to the type of cattle in 2016 is beef cattle 6,508, buffaloes 818, horses 70 and goats 2,849; (15) numbers of caught fisheries in 2016 are marine fisheries 1,658, public fisheries 902, in 12 sub-districts totally there are 2,560; (16) fisheries production according to sub-districts, there are 2,363.80 fisheries productions in 12 sub-districts in 2016 totally there are 2,363.80 and there are still many other potencies such as aquaculture production; (17) non-formal, small scaled industrial production companies namely agricultural industries and forestry products are 26,246 units and the production 324,314,970,000 and electrical machine metal industries 7,899 and miscellaneous production units 23,736,190,000; (18) formal small-scale industrial companies, are chemical industry, forestry products and metal and electro-metal industries and miscellaneous 34,145 units with the production of 348,051,160,000; (19) there are so many tobacco oven buildings in 12 districts totally 468.33 units; (20) energy production and installed electricity distribution of 2016 in 12 sub-districts is 88,905 KvA; (21) the number of water household customer are 42,470 and water distributed to household customers is 8,628,477 m<sup>3</sup>, the customers of hotel and tourist objects are seven, water channeled is 13,868 m<sup>3</sup>, the customers of social agencies, hospitals, worship are 1,032, the water channeled is 566,76 m<sup>3</sup>, customers of industry and shops are 1,082, the water channeled is 352,272 m<sup>3</sup>, community/public are 245 customers, the water distributed is 219,479 m<sup>3</sup>, government agencies are 307, the water distributed is 192,846 m<sup>3</sup>, the customers served through tanks are 516, the water distributed is 2,064 m<sup>3</sup>; (22) The number of customers and water distributed according to the sub-district in 12 sub-districts totally 45,143 customers and 9,973,703 m<sup>3</sup> water channeled; (23) locations of rocks according to the types of excavation in 8 sub-districts, gravel sand in seven sub-districts, pumice in three sub-districts, sandstone in three sub-districts, ilite clay in 6 sub-districts. (24) Distribution of non-metal mineral locations according to the types of excavation and sub-district consists of phosphate in one sub-district, zeolite in one sub-district, sulfur in one sub-district, oken in one sub-district, gypsum in one sub-district, kaolin in one sub-district. And the average location in the village (hamlet) then silica (semi-gem) is in two sub-districts and mountains, lead and iron sand are in 3 sub-districts.

The potencies of Sintang Regency include: (1) Agriculture and plantations are: (a) Agriculture of food crops and vegetables and fruits, namely rice, covering an area of 362,162 hectares, which has been cultivated by 40,012 hectares with the production of 91,677 tons and the area to be developed is 322,150 hectares. (b) Palawija (second crop) covers an area of 205,837 hectares, area to be cultivated is 112,239 hectares with the production of 18,541 tons and the area to be developed is 93,598 hectares. (2) Plantations, are: (a) Rubber trees cover the area of 31,000 hectares, the area of land to be cultivated is 7,857 hectares, with production of 5,107 tons and the area of land to be developed is 15,500 hectares. (b) The area of oil palm is 568,840 hectares, the area of land to be cultivated is 56,313 with the production of 560,677 tons and the area of land to be developed is 312,862 hectares. (3) Forestry are: (a) The total area of wood is 815,784.90 hectares, the area of land that has been cultivated is 494,745.00 hectares. The production target is 744,124.00 tons, and the area to be developed is 321,039.90 hectares. (b) Gharuwood, the number of collectors of 5 persons with 100 tons production managed by a operation under the cooperation with CV. Inti Warna Lestari. (4) Fisheries are: Local fish, namely freshwater fish, such as, jelawat, bawal, gouramy, mug, nila (nile tilapia) etc. The area of the land is around 15 hectares, the number of fish to be developed is 75,000 tons located in the Kapuas river, located in the waters of the 72 hectare lake of Ketungau, 10 hectares of Ketungau River, 50 hectares of the Kayan River and 20 hectares of ponds. (5) Livestock consisting of 2,450 cattle, 3,000 goats, 3,000 pigs, 1,300,000 ducks 1,300,000 tails, 200,000 boilers and

free-ranged chicken. (6) Mining potency consists of metal minerals, industrial minerals, construction minerals, energy materials, alternative energy.

However, due to the lack of good planning and development of rural transport at present, the condition has obstructed the mobility of human and goods transport from the village to the center of activities and other regions. Therefore research to plan and manage goods transportation in rural areas is highly required to realize the increase of accessibility of rural transportation that will have impacts on the smoothness of the mobility of goods and improvement of the rural economy.

The study to plan and manage rural goods transport has the purpose to measure the production and consumption of current goods and to estimate the future condition of rural areas, to identify the distribution and collection of goods in rural areas, to plan the patterns of distribution and collection of goods in rural areas, to identify the current conditions of area rural goods transportation infrastructure and facilities and to estimate future needs, and to optimize rural area goods transport service networks.

## 2 Research Methodology

The research approach used in this study is a qualitative and quantitative approaches, started by identifying the conditions of facilities and infrastructure and the distribution of goods transport as the effort to answer the stipulated problem set.

The analytical method used is some transportation planning concepts that at present have been developed, one the most tolerable is the 4-stage transportation planning that is a combination of several models, each of which is carried out separately and the sub-model determined by its accessibility, trip generation and attraction, movement distribution, choice of modes, route selection and dynamic traffic flow. Then the analysis instrument used is simple linear regression and multiple linear regression (Abdurahman, 2008; Nawari, 2010).

## 3 Results and Discussion

The results of this study are the number of generation and attraction of goods transportation, the determination of types of vehicle on the goods transport route and determination of the goods transportation node.

All research phases that have been carried out is started from the stage of confirming the literatures, collecting secondary and primary data and data analysis produces, some conclusions that can be identified as follows: (a) The movement of goods transport in Lombok Tengah Regency is currently quite high, it can be identified where the highest generation and attraction, it is in 17th zone, a zone situated in the area external zone. While in Sintang Regency, the highest generation and attraction zone is Zone II, one in area's outer zone. This data indicates that it has to do with the surplus / excess commodity goods produced that some of the excess is distributed to the surrounding regional areas through a network of roads into to the Regency boundaries. (b) The goods transport route is planned under the concept of connecting production centers as the generation of goods transport to trade centers / transportation nodes as the attraction of goods transport. There are 13 proposals of goods transport route in Lombok Tengah Regency, they area 31 (thirty one) segment of road consisting of 8 (eight) National roads of class I, 15 (fifteen) Provincial segment roads of Class II and 8 (eight) Regency segment of road of class III. While the goods transport routes proposed in Sintang Regency are 93 (nine pluh three) segment of roads consisting of 63 (sixty three) Non-status roads, 9 (nine) Provincial segment of roads of class II and 7 (seven) Regency segment of road of class III. (c) The transport facilities is managed according to the characteristics of the road class for the proposed goods transport route either in Lombok Tengah Regency and in Sintang Regency, namely in the class I transportation facilities that can be passed through by pickups truck, small to large trucks, in class II transportation facilities that can be passed through by pickups, small to medium trucks, while in the road class III transportation facilities that can be passed through by pickups trucks and small trucks. (d) The proposal of transportation nodes in the form of goods transport terminal in Lombok Tengah Regency consists of 2 (two) sub terminals, they are Renteng trucks station and Kopang truck station, which at present are available and they will be re-functioned for goods transport services. In addition, 2 (two) main terminals are proposed, they can be located in the Kediri-praya road that are the main access to the transport goods from the internal area of Lombok Tengah Regency to the external area of West Lombok Regency and vice versa and on the Praya-Kruak road that is the main access to transport goods from the internal areas of Lombok Tengah Regency to the external area of East Lombok Regency and vice versa. While the proposed transportation node in Sintang Regency consists of 3 (three) cargo transport terminals, they are a terminal in Sepauk Sub-district, SeiTebelian sub-district and Tempunak Sub-district.

## 4 Conclusion

The results of the study produce several scientific findings that certainly become elements to prove the hypothesis raised in the study. The phases of research carried out are limited by the scope, research methods and resources used so that there are some suggestions to be identified that can be taken into consideration to prepare work programs and further research processes in the future, they are as follows: (a) The goods transport services shall be planned and managed immediately taking into account that economic and spatial developments in the region will generate the potency of cargo transport in the future and shall be anticipated as early as possible to create an effective and efficient transportation system. (b) The implementation of policies to regulate goods transportation services shall be carried out in a coordinated and simultaneous manner between all the related parties involved, in which the Transportation Agency as a Leading Sector shall be able to make public-oriented

policies extensively. (c) The main and supporting infrastructures in relation to the regulation of cargo transport such as weighbridge and other means shall be provided and used optimally according to with the technical provisions prevailing. (d) It is requires a legal basis in the form of a regional regulation consisting of provisions to regulating goods transportation services. (e) Considering the limitation of time and cost to improve the functions of the road, the construction of goods transport nodes can be done gradually. (f) To support the smooth distribution of regional goods to the area of lack of goods production, in the future there shall be a pioneer transportation plan, to monitor goods inventory equitably. (g) It is possible to modify agricultural machinery / equipment according to applicable regulations to be able to transport goods without prejudicing the transport safety aspects. (h) It is required specific support regulations on goods as a policy to regulate goods transport, including the speed limitation of goods transport, route management etc. (i) It is still possible to use pickup truck for goods transport in rural areas, some others are .used for human transport and some are for goods.

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