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## ANALYSIS OF DETERMINING THE PRIORITY SCALE OF NATIONAL ROAD HANDLING IN THE SOREANG AREA OF BANDUNG REGENCY WITH THE AHP APPROACH

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### ABSTRACT:

Roads are one of the most vital public infrastructures that is needed to support the smooth flow of traffic and the economy of a region. The Soreang District area is one of the areas for the division of tasks for handling road facilities and infrastructure in Bandung Regency which is located in the West Java province where the traffic frequency is quite dense. Reporting from the Infrastructure Info news page (2022), the condition of the Bandung - Soreang Road section is now damaged by many potholes. The potholed road does not appear to be repaired or handled by the service provider. This road hole is very dangerous for the safety of road users, especially motorcycles. The research method used to determine the priority scale is the AHP (Analytical Hierarchy Process) method which is a decision support model developed by Thomas L. Saaty. Based on the results of the study, it is known that the criteria for access to the area are the most important criteria to improve.

**Keywords:** Infrastructure, AHP Approach

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### INTRODUCTION

Roads are one of the most vital public infrastructures that are needed to support the smooth flow of traffic and the wheels of the economy of a region. The Soreang District area is one of the areas where the task of handling road facilities and infrastructure is divided in Bandung

Regency, which is located in the province of West Java, where the traffic frequency is quite dense. The Soreang Regency area consists of 10 (ten) villages including: Soreang village, Pamekaran village, Sadu village, Karamatmulya village, Panyirapan village, Sukanagara village, Sukajadi village, Parungserab village, Sekarwangi village, and

Cingcin village which is directly adjacent to Bandung City and Ciwidey Regency makes its strategic position as a gateway route between Bandung City, Bandung Regency and Ciwidey Regency, so that many large and small vehicles pass to Bandung City or vice versa.

Soreang is located 18 km south of the city of Bandung. This area is a link between the cities of Bandung and Ciwidey. During the Dutch colonial era, the Bandung–Ciwidey railway line was built which crossed the city to transport tea and quinine plantation products from Ciwidey.

Reporting from the Infrastructure Info news page (2022), the condition of Jalan Bandung - Soreang is now damaged with many holes. The road with potholes does not appear to have been repaired or handled by the service provider. This road hole is very dangerous for the safety of road users, especially motorbikes.

The damage was caused by several factors, including road construction, poor road drainage, road load factors that exceed capacity and road construction financing factors. Road maintenance is needed to strengthen the carrying capacity and feasibility of the road, this is in accordance with the mandate of Government Regulation No. 34 of 2006 concerning roads, as well as Law no. 22 of 2009 concerning LLAJ. Based on the conditions or problems mentioned above, it is necessary to conduct research to create an assessment system that can assist in determining priorities for handling road

maintenance in the Soreang Region of the Regency.

The research method used to determine priorities is the AHP (Analytical Hierarchy Process) method, which is a decision support model developed by (Ghosh & Gope, 2021) Some of the criteria that influence the priority in determining the handling of road segments in this study are road conditions, level of service, level of road damage, daily traffic, government policies, budget capabilities and economic benefits. So that it can determine the priority of which road first gets handling in its maintenance.

This research is in line with research from (Ginanjari & Prajanti, 2021). Where this research also determines the priority of road segments in Klungkung Regency with the Analytical Hierarchy Process (AHP) Method. Based on the results of this study it is known that the criteria for access to the Area are the most important criteria to be repaired. Research by (Irawan et al., 2016) also conducted research to determine priority scales for handling roads in Kudus District with the Analytical Hierarchy Process Method. The results showed that the criteria for road damage received the highest weight, namely 45.06%, then mobility criteria 20.62%, traffic volume criteria 14.53%, accessibility level criteria 12.78%, and regional development criteria 7.01%. This research is also in line with (Sibero et al., 2020) where this study wanted to find out the determination of the priority scale for handling district roads using the corridor approach. The results showed that road

technical criteria received the highest weight (65.41%), followed by socio-economic criteria (23.73%) and network services (10.86%).

Research by (Azis & Iskandar, 2017) entitled "Analytical Hierarchy Process (AHP) To Determine Location Priority Scale for Bridge Widening At Lawang-Malang Road, Indonesia". The results of this study indicate that the order of aspects as priority considerations for bridge widening is the area development aspect (A), the Development Outcome aspect (C), the Cost aspect (D), the Technical Execution aspect (E). While research by (Radam, n.d.) entitled "The Determination of Priority Scale for City Road Management in Banjarmasin". The results of this study indicate that the most important factor is deliberation on development plans.

The similarity of this research with previous research is that this research also wants to know the Road Handling Priority Scale using the Analytical Hierarchy Process (AHP) Method. The main renewal of the research and the difference with previous research lies in the research location and road status. The location in this study is the National Road Section in the Soreang Region, Bandung Regency. In addition, the criteria that will be determined to be prioritized for road management are Accessibility, Mobility, Traffic Flow, and Road Conditions. In addition, in this study, researchers wanted to know the priority of road handling based on the sub-criteria for each road handling criteria. The accessibility criteria consist of

sub-criteria Connectivity between regions, Topography, Availability of inter-regional road networks, Quantity and quality of roads, Effectiveness of network systems that can be accessed by local residents. Mobility consists of sub-criteria for non-freeway access, has pedestrian access. Traffic flow consists of sub-criteria Trucks, Cars, Motorcycles, Buses. In addition, the condition of the road consists of potholes, collapsed, cracked, grooved wheels, different shoulders, repair of road slope (elevation) based on these sub-criteria research will also be carried out to determine priority road handling.

Based on the background stated above, the researcher is interested in conducting further research by taking the title "Implementation of the Analytical Hierarchy Process (AHP) Method in Determining National Road Handling Priorities in the Soreang Region, Bandung Regency" whose results will be presented in a scientific paper.

## **RESEARCH METHODS**

The method applied in this research is descriptive evaluative method and analyzed using AHP (Analytical Hierarchy Processes) method. The evaluative descriptive method is a research method that aims to describe and evaluate an existing object. The object of this research is the national road in the Soreang area of Bandung Regency. The purpose of this research is to analyze and obtain the order

of priority for the maintenance of the national road network in the Soreang district. Methodological steps to be implemented in this study are as follows.

The research object studied is a non-environmental road with the category of national road under the authority of the Work Unit for Implementation of National Roads, the DKI-West Java National Road Implementation Center, Ministry of Public Works and Public Housing. The research was conducted in the Soreang area of Bandung district. The location was chosen in the Soreang area, Bandung regency, because the Soreang area, Bandung regency, has a large

and quite dense road network, requiring a faster and more integrated road maintenance management system.

**RESULTS AND DISCUSSION**

**A. The criteria and sub-criteria that form the basis for priority handling of national roads in the Soreang area, Bandung regency**

There are several factors that have a direct influence on the system for determining the priority scale. The indicators are as follows:

**Table 1**

**Criteria and Sub Criteria Weight Values Used for Priority Scale Determination**

No	Criteria	Sub Criteria	
1	Accessibility (0.42)	Connectivity between regions	0.358
		Topography	0.203
		Availability of inter-regional road network	0.214
		Road quantity and quality	0.134
		The effectiveness of the network system is accessible to local residents	0.092
2	Mobility (0.24)	Non-freeway road	0.704
		Has pedestrian access	0.296
3	traffic flow (0.15)	trucks	0.365
		Car	0.271
		Motorcycle	0.140
		buses	0.223
4	Road condition (0.19)	perforated	0.247
		subsidence	0.229
		Cracks	0.170
		Grooved Wheel	0.158
		Road Shoulder Height Difference	0.100
		The slope of the road body	0.096

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## **B. Determination of the Weight of Handling Criteria for National Roads in the Soreang Region, Bandung Regency**

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The prioritization process is carried out using a number of criteria, namely accessibility aspects, mobility aspects, traffic flow aspects and road condition aspects.

According to respondents, the aspect of accessibility criteria has the highest level of importance, with a weight of 0.42 (42%), followed by the mobility aspect with a weight of 0.24 (24%), then the aspect of road conditions with a weight of 0.19 (19%) and finally the aspect of traffic flow with a weight of 0.19 (19%).

### **4.5.3 Determination of the Weight of the Sub-Criteria for Handling the National National Road in the Soreang Region, Bandung Regency**

The following is a priority from the aspect of handling national road maintenance based on sub-criteria. Respondents' assessment of the sub-criteria of Accessibility, namely inter-regional connectivity has the highest level of importance, namely with a weight of 0.358 (35.8%) followed by the availability of inter-regional networks with a weight of 0.214 (21.4%), then topography, quantity and quality roads with a weight of 0.203 (20.3%) and 0.134 (13.4%) and finally the effectiveness of the network system that can be accessed by local residents with a weight of 0.092 (9.2%).

While the respondent's assessment of the sub-criteria of Mobility, namely non-freeway roads, has the highest level of importance with a weight of 0.704 (70.4%) followed by Having pedestrian access with a weight of 0.296 (29.6%).

In addition, the respondent's assessment of the sub-criteria for the traffic flow aspect shows that the truck indicator has the highest level of importance, with a weight of 0.365 (36.5%), followed by a car with a weight of 0.271 (27.1%), then a bus with a weight of 0.223 (22.3%) and lastly motorcycles with a weight of 0.223 (22.3%).

Respondents' assessment of the sub-criteria Aspects of the condition of the road shows that the road shows that the most important indicator is potholes with a weight of 0.247 (24.7%) then followed by subsidence, Cracks, Grooves and Road Shoulder Height Differences with a weight of 0.229 each (22.9%), 0.170 (17%), 0.158 (15.8%) and 0.100 (10%) and finally the slope of the road body with a weight of 0.096 (9.6%).

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## **C. Assessment of Each Criteria Weight for Alternative National National Roads in the Soreang Region, Bandung Regency**

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The road sections that are prioritized for maintenance in order based on the criteria of accessibility, mobility, traffic flow and road condition are as follows:

first Rancabali - Bts. Bandung/Cianjur

the second is Jln. Soreang South Rim – Ciwidey

the third, namely Jln. Raya Ciwidey

the fourth is Batujajar – Soreang and Cimareme – Batujajar

the fifth, namely Jln. Bhayangkara and Ciwidey – Rancabali.

## CONCLUSION

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Based on the results of data processing and discussion regarding the priority aspects of handling national road maintenance in the Soreang Region of Bandung Regency, the following conclusions can be obtained. The criteria that form the basis of the priority aspects of handling national road maintenance in the Soreang Region of Bandung Regency are aspects of accessibility, aspects of mobility, aspects of traffic flow and aspects of road conditions. Based on the respondent's assessment, the accessibility aspect criteria had the highest level of importance, namely with a weight of 0.42 (42%), followed by the mobility aspect with a weight of 0.24 (24%), then the road condition aspect with a weight of 0.19 (19%) and finally the aspect of traffic flow with a weight of 0.19 (19%). The ranking of the aspects of national road management based on the sub-criteria on the Accessibility aspect of inter-regional connectivity indicators has the highest level of importance, namely with a weight of 0.358 (35.8%). In the aspect of Mobility, the freeway sub-criteria has the highest level of importance with a weight of 0.704 (70.4%). The aspect of traffic flow shows that the

truck sub-criteria has the highest level of importance with a weight of 0.365 (36.5%). In the aspect of road conditions, it shows that the most important sub-criteria is pothole repair with a weight of 0.247 (24.7%).

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