Evaluation of Infrastructure, Facilities and Public Utilities (IFP) in Urban Infrastructure Development (Case Study: Urban Area of Lut Tawar District, Central Aceh, Aceh, Indonesia)

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Abstract. In Central Aceh District Head Regulation Number 47 of 2021 Concerning Detailed Spatial Plans for the Takengon Urban Area in Central Aceh District for 2020-2040, the Takengon Urban Area consists of 3 (three) District areas and 47 (Forty Seven) Village areas. In Central Aceh District Qanun Number 2 of 2016 concerning the Central Aceh District Spatial Plan for 2016-2036 that Takengon Urban is designated as a District Strategic Area based on the point of view of economic growth. In the Central Aceh District, the Planning Area Section of Takengon Urban Area aims to realize Takengon Urban as a competitive environment-based agribusiness and tourism development area supported by good urban infrastructure and facilities by demonstrating local wisdom. This study aims to identify the condition of Public Infrastructure, Facilities and Utilities and identify public perceptions of the availability and need for the provision of IFP in the Urban Area of Lut Tawar District. The research results from observations show that for the existing conditions of the IFP, almost all of them comply with regulations and there is still a small part that needs to be procured and repaired. The public's perception of the condition of the availability of roads, drainage, waste water, solid waste, drinking water, street lighting, health facilities, educational facilities and trade/trade facilities is mostly adequate. For procurement and repair, most of the respondents also hoped that there would be a supply of IFP because it was still needed.

Keywords: Infrastructure, Public, Facilities, Utilities, Urban .

INTRODUCTION

Takengon City is the capital of Central Aceh District, Aceh Province. In Central Aceh District Head Regulation Number 47 of 2021 Concerning Detailed Spatial Plans for the Takengon Urban Area in Central Aceh District for 2020-2040, the Takengon Urban Area consists of 3 (three) District areas and 47 (Forty Seven) Village areas. In Central Aceh District Qanun Number 2 of 2016 concerning the Central Aceh District Spatial Plan for 2016-2036 that Takengon Urban is designated as a District Strategic Area based on the point of view of economic growth. In the Central Aceh District, the Planning Area Section of the Takengon Urban Area aims to realize Takengon Urban as an environmentally competitive agribusiness and tourism development area supported by good urban infrastructure and facilities by demonstrating local wisdom. The area in this study is part of the urban area in the Lut Tawar sub-district.

The need for the Availability of Public Infrastructure, Facilities and Utilities (IFP) in the Development of Urban Infrastructure in a city involves several factors that influence it, namely, population growth, economic development, security and political conditions, which have an influence on the development of the number of public facilities, where these elements are basic factors of development and physical changes that occur in a city.

In terms of Availability of IFP in Urban Infrastructure Development is the duty and responsibility of both the Central Government and the Local Government. In addition to this development is part of the government's duties and responsibilities, but the participation of the local community is needed. This is useful for the sustainability of the urban area itself, maintaining and maintaining the IFP.

Based on the background above, this research was conducted to evaluate the IFP to support Urban Infrastructure Development (case study: Urban Area of Lut Tawar District, Central Aceh, Aceh, Indonesia).

METHODOLOGY

Sugiyono (2015) argues that the population is a generalized area consisting of objects/subjects that have certain qualities and characteristics determined by the researcher to be studied and then drawn conclusions. The sample is part of the number and characteristics possessed by the population. Noor (2012) argues that determining the number of samples can be determined using the Slovin formula, which is as follows:

$$n = \frac{N}{1 + (N(e)^2)} \quad . \tag{1.1}$$

Where:
n = Total of samples
N = Total of Population
E = *Error level* 10% (0,1)

In this study the samples obtained were people living in the research area. The selected sample is by using a proportional sampling technique, namely proportional sampling. Meanwhile, in determining the amount, the calculation will use the Slovin formula with an error rate of 10%. Based on the population data obtained in Table 1

Table 1 Total of Population in Research Locations

No	Urban Area of Lut Tawar District	Total Population (Person)
1	East Takengon	4.888
2	West Takengon	842
3	Bale Atu	1.815
4	Merah Mersa	513
5	Kuteni Reje	815
Total		8.873

Source: (Central Bureau of Statistics, 2022)

Where the total population is 8,873 inhabitants. Next, the Total of samples will be determined which can be seen in the following calculations:

$$n = \frac{N}{1 + (N(e)^2)}$$

$$n = \frac{8.873}{1+(8.873(0,1)^2)} = 98,88 \approx 99 responden$$

In this study, the results obtained were 99 respondents consisting of the East Takengon 55 respondents, West Takengon 9 respondents, Bale Atu 20 respondents, Merah Mersa 6 respondents and Kuteni Reje 9 respondents. Can be seen in Table 2

Table 2 Distribution of Population and Sample Proportionally

No	Urban Area of Lut Tawar District	Total Population (Person)	Sample
1	East Takengon	4.888	(4.888/8873) x 99 = 55
2	West Takengon	842	(842/8873) x 99 = 9
3	Bale Atu	1.815	(1.815/8873) x 99 = 20
4	Merah Mersa	513	(513/8873) x 99 = 6
5	Kuteni Reje	815	(815/8873) x 99 = 9
Total		8.873	99

Source: (Research Results, 2023)

The measurement scale used in this study is the Likert scale, which is a scale that indicates the level of agreement of the respondents. The use of a Likert scale according to Sugiyono (2013) is used to measure attitudes, opinions and perceptions of a person or group of people about social phenomena. Sekaran (2006) revealed that responses to a number of items related to certain concepts or variables were then presented to each respondent. The Likert scale is designed to examine how strongly the subject agrees or disagrees with the statement on a 5 (five) point scale with the following arrangement:

Table 3 Likert scale instrument

No	Statement (Optional statement)	Score
1	Strongly disagree	1
2	Disagree	2
3	Neutral	3
4	Agree	4
5	Strongly Agree	5

The criteria for evaluating this validity test are if Rcount > Rtable then the questionnaire question items are valid, and vice versa if Rcount < Rtable then the questionnaire question items are invalid.
Ferdinand (2006) argues that an instrument is said to be reliable (reliable) if the instrument can consistently produce the same results every time a measurement is taken. < 0.6 then the variables in the questionnaire are not reliable.
According to Arikunto (2013) reliability shows in one sense that an instrument can be trusted enough to be used as a data collection tool because the instrument is good. The commonly used reliability is Cronbach Alpha analysis. The steps for this reliability test are as follows:

1. The variable of the existing condition of Public Infrastructure, Facilities and Utilities (IFP) on public perception is then carried out a reliability test with the help of SPSS software, the output of the software is a Cronbach Alpha value.
2. If a factor has a Cronbach Alpha value≥ 0.60 then the factor is reliable, conversely if a factor has a Cronbach Alpha value <0.60 then the factor is not reliable. If there are unreliable factors, then repair the indicators on these factors, then redistribute the questionnaire to the respondents to be answered again and the reliable factors are continued to the data analysis stage.

Jaya (2019) argues that descriptive analysis is a statistic that functions to describe or give an overview of the object under study through sample or population data as it is without conducting analysis and making general conclusions. In descriptive statistics there is no term hypothesis testing. The main task of descriptive statistics is trying to explore the data. Descriptive statistics seek to present all possible information about research data.
Descriptive analysis is used to determine the characteristics of the respondents. The steps of this descriptive analysis can be described as follows.

1. The questions on the questionnaire are analyzed descriptively with the help of SPSS software
2. The output generated from the software is the frequency and percentage of the characteristics of the respondents.

Riduwan and Sunarto (2014) argue that descriptive analysis is an analysis that is used to describe a data that will be made either alone or in groups. Central symptom measurement can be the mean, mode and median. Sudjana (2005) argues that the percentage descriptive analysis method can be formulated as follows.

$$P = \frac{F}{N} x100\% \quad (1.2)$$

Where:
P = Percentage answers
F = The frequency of values obtained from all items; And
N = Total Respondents

Arikunto (2006) argues that for the percentage data from each table to be easily analyzed, guidelines for interpreting data can be used as shown in Table 4

Table 4 Data Interpretation Intervals

No	Value Intervals	Data Interpretation
1	0%	None of the respondents
2	1-26%	A small number of respondent
3	27-49%	Nearly half of the respondents
4	50%	Hafl
5	51-75%	Most of the
6	76-99%	Almost completely
7	100%	Whole

Overlay analysis is a method of overlapping maps using the ArcGIS version 10.5 application. The overlay analysis technique is carried out by placing a map and all the attributes in it on top of another map to then display the results. The results to be obtained from this analysis are the existing location of Public Infrastructure, Facilities and Utilities (IFP) in the urban area of Lut Tawar District.

RESULT AND DISCUSSION

For the Existing Conditions of Public Infrastructure, Facilities and Utilities (IFP) as a whole of the 28 indicators in the urban area of the Lut Tawar District that were evaluated, almost all of them matched as many as 23 indicators (82.21%) and a small number of 5 indicators did not match (17, 85%).
The perception of the community that was represented from the results of the perceptions of respondents as many as 99 (ninety nine) respondents to the provision of IFP in the urban area of Lut Tawar District, Central Aceh Regency was that:

- Public perception of the availability of roads, most of the respondents considered that the road conditions were sufficient to reach markets, schools and other public places. However, most also agree that there should be road procurement and repair even though the existing roads are adequate because there are still roads that have never been improved.
- Perceptions of the availability of drainage, almost half of the respondents considered that the drainage conditions were adequate and functioning properly, but almost half also agreed that drainage should be procured and repaired because it is still needed. well and the availability of sewerage channels is adequate and functioning properly, but half also agree that there must be procurement and repair of sewerage channels because to meet the needs.
- Perceptions of Waste Management, most of the respondents considered that the condition of the temporary landfills was adequate and the waste management system was running well and adequately, but most also agreed that there should be procurement and improvement of waste management because it is to meet needs.
- Perceptions of the availability of drinking water, almost half of the respondents considered the condition of the quality of PDAM drinking water to be good and almost half of the respondents considered the quality of other drinking water to be good, usable and consumed, but almost half agreed that there should be procurement and improvement of the availability of drinking water, especially PDAMs because the quality of the water is still not fixed yet.

- Perceptions of the availability of public street lighting, most of the respondents assessed that the condition of public street lighting is available along the road in a complete and functioning manner, but most also agree that there should be procurement and repair of public street lighting because it is to meet the needs

CONCLUSION

Based on the results of calculations and discussion regarding the Evaluation of Infrastructure, Facilities and Public Utilities (IFP) in Urban Infrastructure Development (Case Study: Urban Area of Lut Tawar District, Central Aceh, Aceh, Indonesia), the following conclusions can be given

1. Existing Conditions of IFPs in the urban area of Lut Tawar Sub-District, Central Aceh District, from observations, shows that almost all of the existing conditions of IFPs comply with the regulations and there is still a small part that needs to be procured and repaired. Furthermore, the existing conditions of the IFPs are mapped in the ArcGIS application.
2. The public's perception of the condition of the availability of roads, drainage, waste water, solid waste, drinking water, street lighting, health facilities, educational facilities and trade/trade facilities is mostly sufficient. For procurement and repair, most of the respondents also hoped that there would be a supply of IFP because it was still needed

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