FACTUAL DEVELOPMENT OF CONSTRUCTED LAND IN REGIONAL SPATIAL PLAN

by Sukerta I Made

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FACTUAL DEVELOPMENT OF CONSTRUCTED LAND IN REGIONAL SPATIAL PLAN

Author

I Wayan Dharma Astika
University of Mahasaraswati Denpasar

I Ketut Arnawa
University of Mahasaraswati Denpasar

I Made Sukerta
University of Mahasaraswati Denpasar

I Gusti Ayu Putu Tuti Indrawati
University of Mahasaraswati Denpasar

ABSTRACT

The main purpose of this study is to analyze the factual built-up land deviation in the regional spatial plan. The research was conducted in the village of Denbantas Tabanan Regency. Field data was compiled to support the process *digitization* basic mapto become the land use map of *existing* Denbantas Village. The digitization process uses the application *ArcGIS 10.7* by combining and digitizing *the* existing 2015 Denbantas Village land use base map with satellite imagery *Google Earth* of Denbantas Village 2020. The results of the study found that the factual built-up land deviation area which is still in the corridor is allowed in the RTRW 0.42% of the area. The factual built-up land deviation that deviates from the direction of the RTRW land function is 0.34% of the total area.

Keywords: planning, spatial planning, area, deviation, land

I. INTRODUCTION

Increasing population growth raises the phenomenon of increasing demand for land to support the needs of population activities (Arsyad, 2010). Population growth in an area is often caused by population migration due to the economic growth of an area, causing the need for land to increase, especially land for residence, a place to do business, fulfillment of public access and other facilities which causes the available land use to narrow, while the availability and total land area is fixed. As a result of increasing land use, land conversion tends to occur or what is often called land conversion (Arsyad, 2010).

Land conversion is a serious threat to the sustainability of land use for agriculture and also has an impact on national food security because the impact of the change is permanent. One of the problems that often occurs is that the construction of settlements is sometimes located in green areas that have the function of using agricultural land and plantations, which causes agricultural activities to be increasingly threatened because agricultural activities are

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considered less profitable than other economic activities. The occurrence of land conversion in an area will make the area of land converted in the area bigger because agricultural land that has been converted to other uses outside the agricultural sector will have very little chance of turning back into agricultural land (Martanto, 2012).

Bali is one of the islands in Indonesia which is also experiencing the phenomenon of land conversion. Data from the Bali Provincial Agriculture Service (2020) shows that the average land use change that occurs is 700 hectares per year which tends to occur from agricultural land to non-agricultural land. Regional development in Bali is often associated with the growth of built-up land, especially in urban areas where one of the physical characteristics of urban development is the expansion and increase in built-up land (Mahi, 2016).

Tabanan Regency as one of the regencies in Bali Province with an area of 839.33 Km2 which is often referred to as Bali's rice barn is also slowly undergoing land conversion (BPS Bali Province, 2019). Data from the Department of Agriculture in 2019 shows that from 2011 to 2019 there was a reduction of 149.56 hectares of rice fields followed by an increase in non-rice fields of 119.89 hectares and 29.67 hectares of non-agricultural land. Tabanan Regency consists of 10 sub-districts, namely Tabanan, Kediri, Marga, Baturiti, Penebel, Kerambitan, Selemadeg Timur, Selemadeg, West Selemadeg and Pupuan sub-districts. One of the sub-districts that is a barometer of the economy of Tabanan Regency is Tabanan District which is the administrative center of Tabanan Regency.

Migration of residents to cities either to work or to carry out economic activities has resulted in an increasing need for land to support these activities. Tabanan District consists of 12 administrative villages and 4 (four) villages of which are included as administrative villages of the Tabanan Urban Area. The villages included in the Tabanan Urban Area include: Dauh Peken Village, Dajan Peken Village, Delod Peken Village and Denbantas Village (Bappeda, 2012). The population growth rate in the Tabanan Urban area in 2018 averaged 0.47% per year. The highest population growth rate is in Denbantas Village at a rate of 2.58% per year where the total population in Denbatan Village in 2018 is 6,917 people with a density of 1,343 people/Km^2 (BPS Tabanan, 2019).

Denbantas Village is located in Tabanan District which is a buffer line for the Tabanan urban area. The projected population of Denbantas Village in 2034 is 10,141 people (DPUPRPKP Tabanan, 2019). The growth of built-up land such as settlements to accommodate population growth resulted in the conversion of agricultural land. In 2015 Denbantas Village had the largest land area among villages in the Tabanan urban area, which was 400.62 hectares with details of agricultural land area of 195.92 hectares, plantations 99.06 hectares and settlements 105.64 (DPUPRPKP Tabanan, 2019). The land use continues to grow which tends to increase towards built-up land use for housing and settlements and automatically reduces the area of agricultural land. According to the Perbekel of Denbantas Village "this phenomenon has indeed occurred since 2015".

The growth of built-up land must comply with land use regulations, namely the Regional Spatial Plan (RTRW) of Tabanan Regency. The position of the built area, one of which is a settlement in the Regional Spatial Plan (RTRW) of Tabanan Regency, is in the Cultivation Area section**.** The RTRW that applies in Tabanan Regency is RTRW Number 11 of 2012 concerning the Regional Spatial Plan of Tabanan Regency for 2012 – 2032.

The deviation of the built up land can be described through a digital map of the built up land deviation. The built-up land deviation map is formed by comparing the existing land use map with the land use plan map in the RTRW. The area of the land use plan in Denbantas Village in the RTRW of Tabanan Regency No. 11 of 2012 namely 118.96 hectares of agricultural land, 15.23 hectares of plantations and horticulture and 266.43 hectares of settlements. Based on a preliminary study conducted by researchers by comparing the existing land use map of the 2015 Denbantas Village with the land use plan map of the Tabanan Regency RTRW No. 11 of 2012 by utilizing the ArcGIs 10.7 application, several distributions can be seen built-up land that is outside the land use plan for the RTRW of

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Tabanan Regency. The calculation results show that the total area of the entire distribution is 1.30 Ha. This land distribution is called the built-up land deviation in 2015.

Based on these conditions, it is necessary to conduct further research on the factual or existing built-up land deviation before causing a greater environmental impact in Denbantas Village. The study was conducted to ensure that the deviation of the built-up land that occurred was still within the RTRW corridor of Tabanan Regency or was a land use violation.

II. LITERATURE REVIEW

According to Arsyad (2010) the development of built-up land occurs due to the process of changing non-built land cover into built-up land. Furthermore, according to Arsyad (2010) the development of built-up land outside the direction of the land use plan in the RTRW is allegedly a built-up land deviation and if there has been a land deviation in an area, the large land deviation that occurs tends to be wider in the future and can result in environmental problems. The environmental impacts that have actually occurred in Denbantas Village are a decrease in irrigation water discharge, flooding in several residential areas and an increase in the volume of waste. This condition is increasingly difficult to overcome because of the reduced water catchment area that absorbs rainwater into the ground so that floods occur during the rainy season. This condition is also getting worse because of waste that is not managed properly and public awareness is still low to protect the environment.

III. METHODS

The study was conducted in the village of Denbantas in the Tabanan District, Tabanan Regency. Denbantas Village has administrative boundaries in the north by Wanasari Village, in the south by Dajan Peken Village, in the east by Kediri Village and in the west by Subamia Village (RKP Denbantas Village 2019).

Types And Sources Of Data

Primary data is in the form of field observations by making direct observations in the study area by taking into account the factual land functions. Primary data collection was done by using documentation recording, interviews made certain *shareholders* elected as village officials Denbantas including *pekaseh Subak* Denbantas village communities that have been converting land into smaller plots of non awakened and suffered deviation and undeveloped land.

The secondary data needed is a digital map of the existing spatial pattern of Denbantas Village in 2015 which was the beginning of land conversion, a digital map of the spatial pattern of the RTRW of Tabanan Regency No. 11 of 2012, Google Earth Satellite Imagery of Denbantas Village in 2020 and numerical data showing the area of land use in 2020 obtained from the Public Works Agency for Spatial Planning for Housing and Settlement Areas of Tabanan Regency, the Central Statistics Agency of Tabanan Regency and the Tabanan Regency Agriculture Service and the Village Government Denbantas

Data Analysis

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Primary and secondary data obtained in the field were compiled to support the process of *digitizing* the base map into a map of the land use of the existing Denbantas Village. The digitization process uses the application *ArcGIS 10.7* by combining and digitizing *the* existing 2015 Denbantas Village land use base map with satellite imagery *Google Earth* of Denbantas Village 2020. Data from observations on the appearance of land developments that occur are used to improve results *digitization*. The results of this process produce a map of the land use of *existing* Denbantas Village in 2020. To get an overview of the land deviations that occur, it is done by using the technique *overlay* with the application *ArcGIS 10.7* between the existing land use maps of Denbantas Village in 2020 obtained from the digitization process with the spatial plan map of the Regency RTRW. Tabanan No. 11 of 2012 so that a map of the distribution of built-up land deviations that occurred in Denbantas Village was obtained. Furthermore, each point of the distribution area is given a number and color code to make it easier to identify the location of factual built-up land deviations in the field at the time of identification observation. The Arcgis 10.7 application is also used to calculate the built-up land deviation area that occurs at each point of the built-up land deviation distribution area.

IV. RESULTS AND DISCUSSION

Identification of Existing Land Function Transfers

The factual or existing land function map of Denbantas Village in 2020 is processed using the digitization method by combining the existing 2015 map as a basis combined with Google Earth satellite imagery in 2020 and data on the area of land built from the results of the 2020 field survey so that obtained a digital map of the existing land of the 2020 Denbantas Village. The factual land function map shows that the existing or factual land functions in Denbantas Village in 2020 can be classified into 3 (three), namely: plantation and horticulture functions, agricultural land functions for food crops (PTP) and residential land functions according to Figure 1.

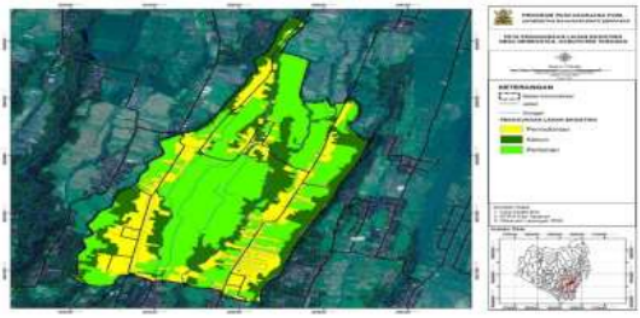

Figure 1.
Map of Functions 2020 Denbantas Village Factual Land

The area of land use in 2015 in the preliminary study and the area of land use in 2020 were calculated using the ArcGIS 10.7 application. Comparison of the actual area of land use in 2015 and 2020 in detail according to Table 1.

Table 1. Comparison of Factual Land Utilization Area of Denbantas Village in 2015 and 2020

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Spatial Utilization Plan	Area (Ha)		Area (%)		Change in Area (Ha)	Change in Area (%)
	2015	2020	2015	2020		
Plantation and Horticulture	99,06	96,91	24,73	24,19	-2,15	-2,17
Food Crops Agriculture (PTP)	195,92	195,77	48,90	48,87	- 0,15	-0,08
Settlement	105,64	107,94	26,37	26,94	2,30	2,13
JUMLAH	**400,62**	**400,62**	**100**	**100**		

Source: Data processed in 2021

Table 1 shows the area of plantation and horticultural land functions in 2020 has decreased from 2015 which was 2.15 Ha or 2.17%. Likewise, the area of agricultural land for food crops (PTP) was reduced by 0.15 Ha or 0.08%. The decrease in the area of plantation and horticulture (PTP) land was followed by an increase in the area of residential land by 2.13%. so that there has been a conversion of plantation and horticultural land as well as food crop agriculture (PTP) into settlements with a total area of 2.30 hectares from 2015 to 2020. The land conversion that occurred in Denbantas Village is the conversion of agricultural land for food crops and plantations and horticulture into residential land. Reinforcing Wijaya's findings (2015) that the increasing use of residential land causes the use of agricultural land to decrease.

Deviation of Built Land

Perda RTRW Tabanan Regency No. 11 of 2012 is a Regional Regulation which is a reference to spatial policies, one of which regulates activities that may and may not be carried out on land in the Tabanan Regency area. Violations of the use of land functions which are often called land function deviations can be subject to sanctions which have been stated in the RTRW of Tabanan Regency. Based on the identification of built-up land deviations that have been mapped in Figure 2, it is known that in Denbantas Village there are 19 polygon points which are allegedly built-up deviations.

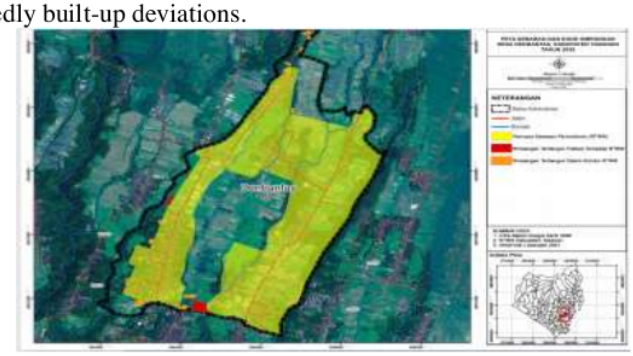

Figure 2
Map of the distribution of built-up land deviation in Denbantas Village, 2020

Based on the results of the identification of the map of the distribution of the built-up land in Figure 2 and satellite imagery and field surveys which are then reviewed with the RTRW of Tabanan Regency with reference to articles 91, 92 and 94 of the RTRW of Tabanan Regency No. 11 of 2012 which discusses activities that are allowed and not allowed.

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In the plan for the function of agricultural land for food crops, plantations and horticulture, the deviation of land is built at the points of polygons 2, 3, 4, 5, 6, 7, 8, 11, 12, 13, 14, 15, 16, 17, 18 and 19 with orange color is still allowed in the RTRW. This is because the type of activity at the polygon point is dominated by low-density rural settlements. In addition, mixed livestock settlements such as chicken and catfish farms that support agricultural, plantation and horticultural activities are also allowed in the RTRW of Tabanan Regency. One point also describes a place of worship (temple) which is a supporter of traditional and cultural activities. All classifications of these activities are still allowed to be carried out on the function of agricultural land for food crops (PTP), plantations and horticulture by maintaining at least 90% of the total land area for agriculture, plantation and horticulture functions.

The polygon points 1,9 and 10 in red are built-up land deviations that are not allowed in the RTRW of Tabanan district because the existing function of the land at the polygon point is urban housing which is an activity that is not allowed in the plan for the function of agricultural land for food crops, plantations and horticulture so that The polygon point is a factual built-up land deviation in the RTRW of Tabanan Regency. In detail, the deviation of undeveloped land in the village of Tabanan regency Denbantas on RTRW can be grouped according to Table 2.

Table 2. Size of Land awakened factual deviation in the village of Tabanan regency Denbantas on Spatial

Point	Size Built Factual deviation on Spatial Land (Ha)		Point	Size Built Factual deviation on Spatial Land (Ha)	
	Deviating outside the corridor	Deviating in the corridor		Deviating outside the corridor	Deviating in the corridor
1	1,100		11	-	0,060
2	-	0,250	12	-	0,030
3	-	0,160	13	-	0,080
4	-	0,300	14	-	0,005
5	-	0,040	15	-	0,060
6	-	0,050	16	-	0,060
7	-	0,130	17	-	0,180
8	-	0,040	18	-	0,150
9	0,210	-	19	-	0,070
10	0,040	-			
Total	1,350	0,970	Total		0,695
Total Displacement of Built-up Land					3,015
The total deviation of factual built-up land in the RTRW corridor					1,665
The total deviation of the factual built-up land to the RTRW					1,350

Source: Data processed in 2021

Hoirnisa (2019) stated that land use mismatches with the RTRW, especially settlements, are very common. Based on table 2, it can be seen that the total deviation of built-up land in Denbantas Village in 2020 is 3,015 Ha. Meanwhile, the area of factual built-up land that is still in the corridor allowed in the RTRW is 1.665 Ha or 55.22% of 3.015 Ha. The factual built-up land deviation that deviates from the direction of the RTRW land function is 1.350 Ha or 44.78% of the total built-up land deviation that occurs. The percentage deviation of existing built-up land that occurs when compared to the total land

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area in Denbantas Village is 0.75% of 400.62 Ha. When compared to the area of existing built-up land (settlements) in 2020, the deviation of the built-up land is 2.79% of 107.94 Ha. Meanwhile, when compared with the function of the residential land plan in the RTRW, the deviation of the built-up land is 1.13% of 266, 43 Ha.

Deviation of built-up land that is still in the corridor or allowed in the RTRW of 1,665 Ha. When compared with the total land area of Denbantas Village, which is 400.62 Ha, the percentage is 0.42%. When compared with the existing built-up land area in 2020, the percentage is 1.54% from 107.94 Ha. Meanwhile, when compared with the function of the residential land plan in the RTRW, the percentage is 0.62% from 266.43 Ha.

The deviation of built-up land that is not allowed in the RTRW which is a factual deviation of built-up land in the RTRW of Tabanan Regency is 1.35 Ha. The percentage of built-up land deviation is 0.34% when compared to the total land area in Denbantas Village. When compared with the existing built-up land area in 2020, the percentage is 1.25% from 107.94 Ha. Meanwhile, when compared with the function of the residential land plan in the RTRW, the percentage is 0.51% from 266.43 Ha.

CONCLUSIONS AND SUGGESTIONS

Based on the results and discussion, it can be concluded that the deviation of the built-up land is 3.015 Ha or 0.75% of the total area. The area of factual built-up land that is still in the corridor allowed in the RTRW is 1.665 Ha or 0.42% of the total area. The factual built-up land deviation that deviates from the direction of the RTRW land function is 1.35 Ha or 0.34% of the total area. The recommendations given to minimize the occurrence of factual built-up land deviations from the Tabanan Regency RTRW are as follows: The Tabanan Regency Government by involving the Denbantas Village Government must carry out regular monitoring and evaluation for enforcement and control of the RTRW related to the development of built up land, Built-up land that does not have a development permit and experiencing land use deviations from the RTRW need to be subject to sanctions according to the applicable RTRW rules with the aim of enforcing the RTRW rules.

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