



Agropolitan and Regional Development in Indonesia: A Case Study of Langkaplancar District, West Java

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Abstract

Minimising the inequality of development among regions is a goal continuously pursued by developing countries. Indonesia is no exception. For this purpose, the creation of an Agropolitan region has been conceived as a doable way of reducing the regional development gaps in West Java Province. The idea is to turn the agricultural sector of Pangandaran Regency into an Agropolitan Area in which the Langkaplancar District is to play a vital role. This study examines the position and role of Langkaplancar District in the agropolitan concept of Pangandaran Regency. Primary data were gathered from the analysis of the rice commodity productivity, the analysis of the availability of facilities and infrastructure, land suitability analysis, and population analysis. The results of the analyses reveal that Langkaplancar District plays a role as a raw material producer area due to the suitability of agricultural land there, and the presence of superior commodities in the form of lowland rice which has the highest productivity value in Pangandaran Regency. Langkaplancar District also has supporting facilities and infrastructure to serve as a raw material producing area. Thus, the development strategy that can be used by Langkaplancar District as a raw material producer in the Agropolitan Area of Pangandaran Regency is a progressive growth-oriented strategy which is designed to achieve growth in either sales, assets, profitability or a combination of the three.

Keywords: agropolitan; superior commodities; agricultural land; SWOT analysis

Introduction

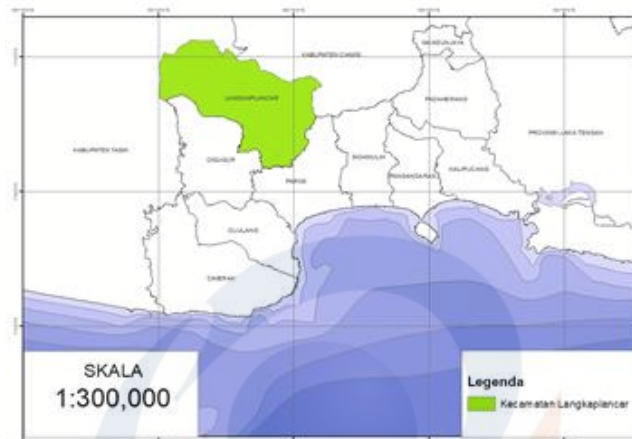
Currently agriculture is one of the most important sectors in Indonesia. Based on data from BPS 2019, the agricultural sector ranks third in Gross Domestic Product with a value of 1,307,025 billion Rupiah under the wholesale and retail trade sector with a value of 1,376,937 billion Rupiah and under the manufacturing sector with the largest value of 2,193,266 billion Rupiah. With the amount of Agricultural GRDP which is in the third place, it proves that the agricultural sector is one of the sectors that has a big share in the economy in Indonesia, this is also supported by the total area of rice fields in Indonesia. Based on land area, the total area of rice fields in Indonesia is 71,051.45 km² of the total

area of Indonesia of 1,916,862.20 km², paddy fields account for 3.71 percent of the total area in Indonesia. The distribution of rice fields is divided in all provinces in Indonesia. One of the largest rice fields in Indonesia is West Java Province, with a total area of 9,303.34 km² of rice fields with a percentage of 26.30 of the total area. The area of rice fields in West Java Province occupies the third largest position after Central Java Province and East Java Province.

Based on the Government Regulation of the Republic of Indonesia Number 13 of 2017 concerning Amendments to Government Regulation Number 26 of 2008 concerning the National Spatial Plan, West Java Province is a national mainstay in several sectors, one of which is the agricultural sector. The establishment of West Java Province as a mainstay of agriculture, supported by high rice and rice production. Rice and rice production in West Java Province is in second place with total rice production of 5,480,415 tons. In West Java Province GRDP, the agricultural sector is the fourth highest after the manufacturing sector with a total income of Rp. 101,777.20 billion. Agricultural potential in West Java Province is spread across almost all districts/cities, both the northern and southern parts of West Java Province. However, the fact that West Java Province has agricultural potential in all districts/cities in the development of its area, there is a gap between the northern and southern parts of West Java Province. This can be seen from the HDI (Human Development Index) figure. West Java Province has an HDI figure of 71.30 below the standard Indonesian HDI figure of 71.39. The gap that occurs between the northern and southern parts of West Java Province can be seen based on HDI figures. The HDI figures for all districts in West Java Province except Bandung and Bekasi districts have HDI figures far below the HDI figures for West Java Province. With the agricultural potential of West Java Province and regional development gaps, West Java Province has carried out regional development between the southern and northern parts. The development of this area is referred to as the direction for the development area listed in the West Java Province of Regional Medium Term Development Plan (*Rencana Pembangunan Jangka Menengah Daerah - RPJMD*) 2018-2023. One of the districts that has an HDI that is below the average and is also in the southern part of West Java Province is Pangandaran Regency.

Pangandaran Regency is one of the districts in West Java Province. Pangandaran Regency is the district resulting from the division of Ciamis Regency in 2012. In the Spatial Plan (*Rencana Tata Ruang Wilayah - RTRW*) of West Java Province in 2008 Pangandaran Regency has not been listed, but in the RPJMD of West Java Province in 2018-2023 it has listed Pangandaran Regency. In the West Java Province RPJMD 2018-2023 Pangandaran Regency is included in the Development Area (*Wilayah Pengembangan - WP*) of East Priangan and Pangandaran. This region has development potential in various sectors, one of which is the agricultural sector. The East Priangan and Pangandaran development areas are focused on 10 things, one of which is increasing rice production and distribution. In the RTRW Pangandaran Regency there is a development area divided into 5 WP (development areas). One of the taxpayers is WP 4 with the main function of being an agropolitan and agro-tourism area. WP 4 is located in Langkaplancar and Cigugur Districts. Based on Law No.26 of 2007 concerning Spatial Planning, an agropolitan area is an area consisting of one or more activity centers in rural areas as a system of agricultural production and management of certain natural resources, which is indicated by the existence of functional linkages and spatial hierarchy of settlement system units and systems agribusiness.

Based on the RTRW of West Java Province in 2008, the agricultural area is determined with 3 provisions, one of which is to have land suitability for development as an agricultural area. Based on the agropolitan area guidebook published by the Ministry of Public Works, one of the main requirements for the development of an agropolitan area is the suitability of agricultural land. Based on reviews of journals in previous studies, there are no journals that identify the suitability of agricultural land in the agropolitan area studied. With the stipulation of Langkaplancar District as an agropolitan area, it is also necessary to know the role of Langkaplancar District in the Agropolitan Area in Pangandaran Regency.



Source: BAPPEDA of Pangandaran Regency, 2019

Figure 1. Map of Study Area

Research Method

1. Analysis of Rice Productivity

In identifying the position of Langkaplancar district in the concept of an agropolitan area in Pangandaran Regency compared to other districts in Pangandaran Regency, the rice productivity was calculated.

$$\text{Rice Productivity} = (\text{Total Rice Production}) / (\text{Rice Harvested Area})$$

2. Analysis of Prime Commodities

In identifying the position of Langkaplancar district in the concept of an agropolitan area in Pangandaran Regency compared to other districts in Pangandaran Regency, a superior commodity was calculated using the LQ analysis technique. The purpose of this analysis is to determine the superior commodities in Langkaplancar District which will later become raw materials in the Agropolitan Area.

$$LQ = (Li / Ni) / (L / N)$$

Information:

- LQ = Location Quotient for commodity i in the district
 Li = amount of food crop commodity production x in the district
 L = total production in the food crop sector in the district
 Ni = amount of food crop commodity production x in the regency
 N = total production in the food crop sector in the regency

3. Suitability Analysis of Agricultural Land

Spatial gap analysis with the overlay method used in this study aims to analyze the suitability of the existing agricultural land use with the spatial pattern plan in the RTRW (*Rencana Tata Ruang Wilayah*) Pangandaran Regency.

4. Analysis of the Availability of Facilities and Infrastructure

In this study, an analysis of the availability of facilities and infrastructure was used by comparing the standard provision of facilities and infrastructure to support agropolitan areas with existing conditions in Langkaplancar District, and scoring was carried out using the Gutman method.

The availability of facilities and infrastructure can be divided into 3 classifications, namely;

- a. Facilities and infrastructure for raw material producing areas (hinterland)
- b. Facilities and infrastructure for raw material processing areas
- c. Regional facilities and infrastructure for raw material production centers

5. Population Analysis

In this population analysis, a projection of the population based on livelihoods will be carried out for 2 periods, namely 5 years and 10 years.

$$P_n = P_0 (1 + r / 100)^n$$

Information:

- P_n = number of population in n years
 P₀ = number of residents at the beginning of the year
 r = population growth rate
 n = period (time)

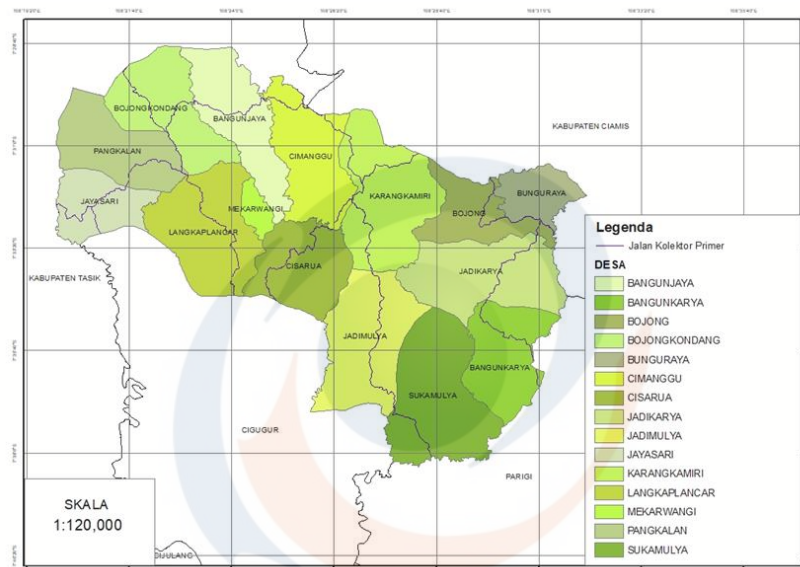
6. Quantitative SWOT Analysis

A basic assumption of this model is a paired condition between S, W, O, and T. This paired condition occurs because it is assumed that in every strength there are always hidden weaknesses and from every opportunity or opportunity there is always a threat that must be watched out for. This means that every 1 formula S, must have one W pair and every O formula must have one T pair. Then after each component is formulated and paired, the next step is to carry out the assessment process. The assessment is done by giving a score for each factor, where one factor is compared to another factor in the same component or following a vertical line. The more decisive factor, the greater the score. Blind assessment standards based on mutual agreement to reduce the subjective level of the assessment.

Result and Discussion

Description of the Study Area

Geographically, Langkaplancar District is an area that is mostly mountainous, with an altitude of 500m to 700m above sea level. Langkaplancar District has an area of 22,101 Ha which is divided into 10 Districts. Langkaplancar District in the north is bordered by Tasikmalaya District and Pamarican District, to the west by Tasikmalaya District, to the East by Banjarsari District and Cigugur District in the South.



Source: BAPPEDA of Pangandaran Regency, 2019

Figure 2. Administrative Boundary Map of Langkaplancar District

Analysis of the Role Langkaplancar District

To determine the role of Langkaplancar district in agropolitan areas in Pangandaran district, 5 analyzes were carried out, namely rice productivity analysis, superior commodity analysis, availability of facilities and infrastructure, land suitability analysis, population analysis, and quantitative SWOT analysis.

1. Rice Productivity

This lowland rice productivity analysis will later measure Langkaplancar District against other districts in the Regency with indicators of lowland rice production in one harvest. To analyze the productivity of lowland rice plants, rice production data and data on the area of harvested rice fields are needed.

Table 1. Rice Paddy Productivity by District in Pangandaran Regency

District	Harvest Area (Hectare)	Rice Production (Quintal)	Rice Plant Productivity (Quintal/Hectare)
Langkaplancar	12,633	2,571,330	204
Cijulang	6,339	199,640	31
Cimerak	6,330	164,050	26
Kalipucang	4,245	86,240	20
Mangunjaya	8,365	169,900	20
Padaherang	16,888	445,400	26
Parigi	9,958	269,820	27
Pangandaran	4,680	51,710	11
Cigugur	4,154	120,660	29
Sidamulih	4,872	140,070	29

Source: Research analysis, 2020

Based on the results of the calculation of lowland rice plant productivity, it can be identified that Langkaplancar District has the highest productivity level among other districts with a productivity value of 204 quintal/hectare or 204 quintals per harvest on a land area of 1 hectare. With the results of this analysis it can be concluded that Langkaplancar District has the potential as a raw material producing area in the Agropolitan Area in Pangandaran Regency compared to other districts.

2. Superior Commodity of Rice Paddy

The results of this LQ analysis will show which districts have the highest LQ value for lowland rice commodity in Pangandaran Regency.

Table 2. Main Commodities of Rice Paddy Plants according to Districts in Pangandaran Regency

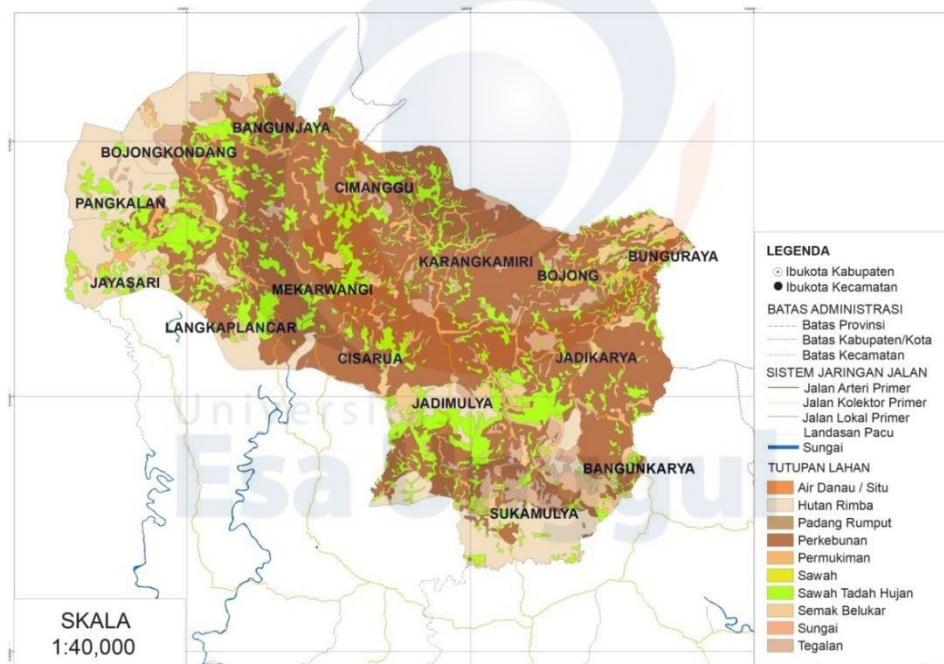
No.	Paddy Rice Commodities	LQ Calculation Results
1	Langkaplancar	1.23
2	Cijulang	1.21
3	Cimerak	0.80
4	Kalipucang	1.04
5	Mangunjaya	1.08
6	Padaherang	1.23
7	Parigi	1.05
8	Pangandaran	1.09
9	Cigugur	1.11
10	Sidamulih	1.20

Source: Research analysis, 2020

Based on the results of the analysis of superior commodities, the districts that have the highest LQ value are in 2 districts, namely Langkaplancar District and Padaherang District. Langkaplancar District obtained an LQ of 1.23. By obtaining the results of this LQ calculation, it will further strengthen the potential of Langkaplancar District as a raw material producing area in the Agropolitan Area in Pangandaran Regency because it has met the requirements regarding raw materials for production of the Agropolitan Zone.

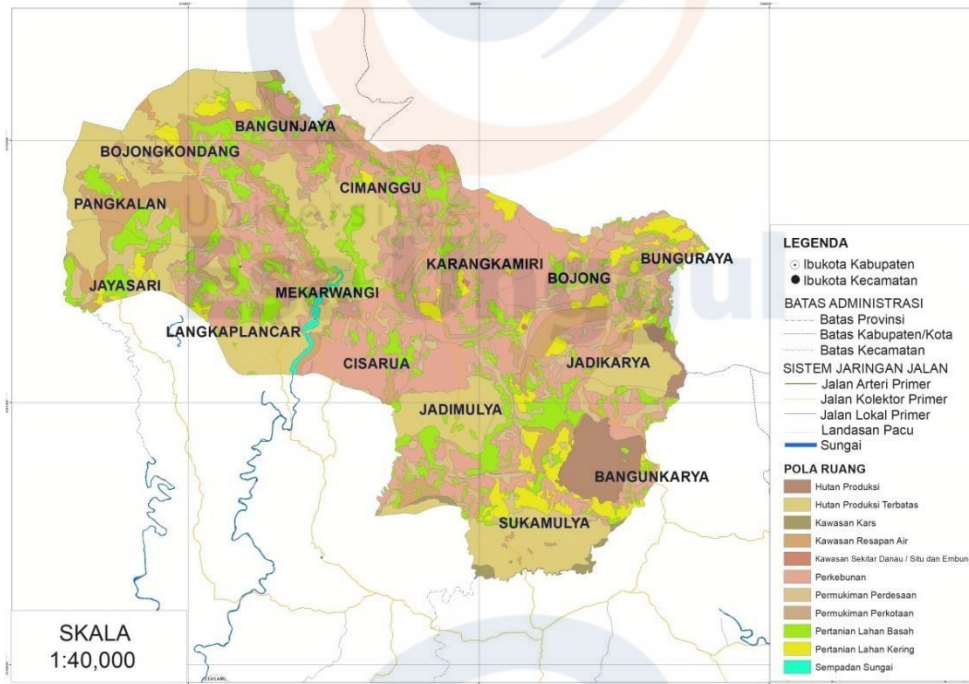
3. Suitability of Agricultural Land

In this study, the suitability of agricultural land is the suitability of agricultural land obtained after overlaying the existing land use map with the spatial pattern map of the Regency RTRW. The data used to analyze the suitability of agricultural land are the existing land use map and the spatial pattern map of the Regency RTRW. The output produced from this analysis is to obtain a map of the suitability of agricultural land in Langkaplancar District which will be used to support the development of Agropolitan Areas in Langkaplancar District.



Source: BAPPEDA of Pangandaran Regency, 2019

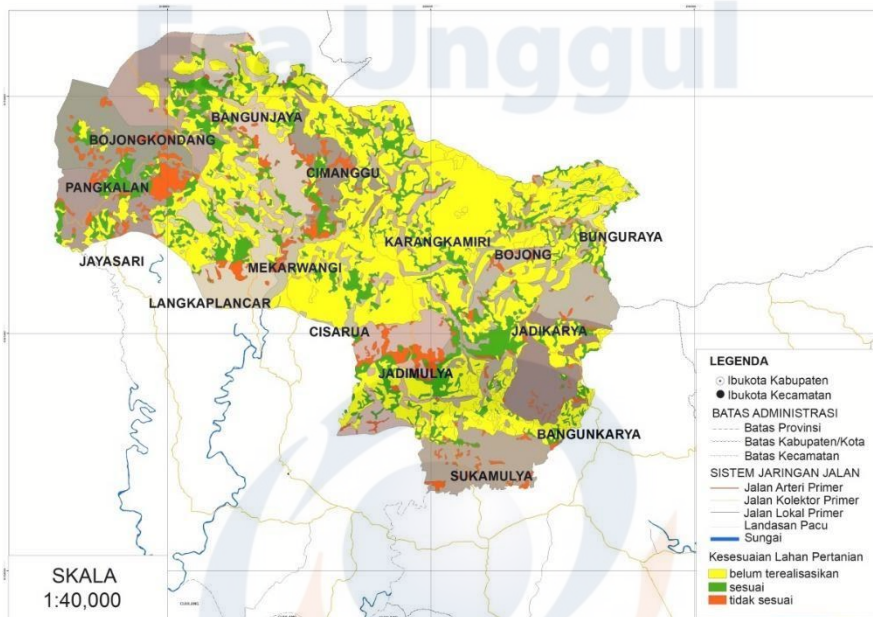
Figure 3. Land Use of Langkaplancar District



Source: BAPPEDA of Pangandaran Regency, 2019

Figure 4. Pangandaran Regency Spatial Plan

Based on the results of the spatial gap analysis used with the overlay method, 2 results were obtained, namely the appropriate area between the existing land cover and the spatial pattern plan of the Pangandaran Regency RTRW and the area that did not match the existing land cover with the spatial pattern plan of the Pangandaran Regency RTRW. The appropriate area is 8,284 hectares, 4,192 hectares are not suitable, and 9,625 hectares have not been realized.



Source: Research analysis, 2020

Figure 5. Suitability of Agricultural Land in Langkaplancar District

Analysis of the Availability of Facilities and Infrastructure

One of the requirements or criteria for an agropolitan area, namely the analysis that must be met, is an analysis of supporting facilities and infrastructure. This research used an analysis of the availability of facilities and infrastructure by comparing the standard provision of facilities and infrastructure to support agropolitan areas with existing conditions in Langkaplancar District.

The availability of facilities and infrastructure can be divided into 3 classifications, namely;

- a. Facilities and infrastructure for raw material producing areas (hinterland)
- b. Facilities and infrastructure for raw material processing areas
- c. Regional facilities and infrastructure for raw material production centers

In the discussion of the analysis of the availability of facilities and infrastructure, it will be carried out by presenting a list of data on the availability of facilities and infrastructure in accordance with the 3 classifications previously mentioned. In analyzing the availability of facilities and infrastructure, the guidelines for the Regulation of the State Minister for Public Housing No.22 of 2008, PP No.34 of 2006 concerning Roads and SNI-03-1733-2004 on Environmental Planning Procedures are used which will later be summed using the Guttman Scale scoring method.

Table 3. Matrix of Summary Analysis of the Availability of Facilities and Infrastructure Supporting Agropolitan Areas

No.	Classification of Agropolitan Areas	Total Suitability of Availability of Facilities and Infrastructure	Score of Conformity of Facilities and Infrastructure	Interpretation of Suitability of Facilities and Infrastructure
1	Raw Material Producing Regions	5 of the total 5 availability of facilities and infrastructure	100%	Match
2	Raw Material Processing Area	7 out of a total of 9 facilities and infrastructure availability	77%	Come near to match
3	Raw Material Production Center Areas	6 of the total 11 facilities and infrastructure availability	54%	Come near to match

Source: Research analysis, 2020

Based on the results of the summary presentation of the analysis of the availability of supporting facilities and infrastructure for the Agropolitan Area in the form of a matrix, the classification of Langkaplancar District which acts as a raw material producing area has a score of 100% with appropriate interpretation, which means that Langkaplancar District is suitable if it is used as a raw material producing area in the Agopolitan District of the Regency Pangandaran.

Population Analysis

In this population analysis, a projection of the population based on livelihoods will be carried out for 2 periods, namely 5 years and 10 years. This analysis aims to determine the number of people who make a living as farmers and their growth rate. Another objective of this analysis is to know that lowland rice processing in Langkaplancar District is carried out by farmers directly or not.

Table 4. Population Growth Rate and Population Projections

District	Total Population by Livelihoods in 2015	Total Population by Livelihoods in 2016	Population Growth Rate	Population Projections	
	Agriculture	Agriculture	2015-2016	2021	2031
Langkaplancar	26698	26681	-0.06	26596	26512

Source: Research analysis, 2020

After analyzing the growth rate of the farmer population, the results show that the growth rate of the farmer population has a number of -0.06%, which means that every year the number of farmer population decreases by 0.06%. Based on the population projection analysis carried out in 2 time periods of 5 and 10 years, it is found that the number of farmer population in 2021 is 26596, reduced by 85 people from 2016 and in 2031 the number of farmer population is 26512, decreasing 84 people.

Quantitative SWOT Analysis

After conducting 5 previous analyzes in determining the position and role of Langkaplancar District in the Agropolitan Area in Pangandaran Regency, the results showed that Langkaplancar District has a role as a raw material producer area in the Agropolitan Area in Pangandaran Regency. In developing Langkaplancar District as a raw material producer area in an Agropolitan Area in Pangandaran Regency, a Quantitative SWOT analysis was carried out to obtain the right strategy. The following is the result of the Quantitative SWOT matrix.

Table 5. SWOT Score and Weight Matrix for Internal Factors

No	Internal Strategy Factors	Score	Weight	Total Weight
		(Si)	(Bi)	(Si x Bi)
	Strength (S)			
1	High productivity of agricultural land	5	4/4	5
2	Rice as a leading commodity	5	4/4	5
3	Extensive agricultural land	3	2/4	1.5
4	The use of the widest existing moor land	4	3/4	3

No	Internal Strategy Factors	Score	Weight	Total Weight
		(Si)	(Bi)	(Si x Bi)
5	Supporting facilities and infrastructure for the regions producing sufficient raw materials	4	3/4	3
6	The majority of the population are farmers	3	2/4	1.5
	Total Strength			19
	Weakness (W)			
1	Low accessibility	4	3/4	3
2	Inadequate environmental public facilities and infrastructure	3	2/4	1.5
3	Marketing limitations	3	2/4	1.5
4	Inadequate transportation	4	3/4	3
5	The growth rate of farmers is -0.06 per year	2	2/4	1
6	Low quality of human resources	4	3/4	3
	Total Weakness			13
	Difference in total strengths - weaknesses (S-W), as the x-axis			19-13 = 6

Source: Research analysis, 2020

Table 6. SWOT Score and Weight Matrix for External Factors

No	External Strategy Factors	Score	Weight	Total Weight
		(Si)	(Bi)	(Si x Bi)
	Opportunity (O)			
1	Populist economic policies and balance between rural and urban areas	3	2/4	1.5
2	Designated as an agricultural development area in the West Java Province RPJMD	4	3/4	3
3	The stipulation of regulations regarding KP2B	3	2/4	1.5
4	Decentralization gave greater powers to the regions	3	2/4	1.5
5	Technology development for increased productivity	4	3/4	3
6	The function of upland land is converted into upland rice farming	5	4/4	5
	Total Opportunities			15.5
	Threats (T)			
1	Landslide hazard	3	2/4	1.5
2	Drought due to global warming	2	1/4	0.5
3	The function of agricultural land is converted into a built-up area	5	4/4	5
4	The function of dry land becomes developed land	5	4/4	5
5	Water availability is uncertain because it only relies on rainwater	3	2/4	1.5

No	External Strategy Factors	Score	Weight	Total Weight
		(Si)	(Bi)	(Si x Bi)
6	Less exposed to agricultural potential than other areas in West Java Province	3	2/4	1.5
	Total Threats			15
	Difference in total opportunity - threat (O-T), as the y-axis			15.5 - 15 = 0.5

Source: Research analysis, 2020

Based on the quantitative SWOT analysis matrix that has been carried out, the strategy quadrant points (X, Y) are obtained with the values: (6 - 0.5). Based on the strategy quadrant reference, it is known that the position of the strategy is in quadrant I, which means that the strategy that can be applied is a progressive strategy (growth oriented strategy). The position in quadrant I illustrates that Langkaplancar District has considerable internal strength and has a high chance of being used as a raw material producer area. A progressive strategy is designed to achieve growth in either sales, assets, profitability or a combination of the three.

Closing

Conclusion

The results obtained from the five analyzes above, Langkaplancar District plays a role as a raw material producer area supported by the suitability of agricultural land, there is a superior commodity in the form of lowland rice which has the highest productivity value in Pangandaran Regency, namely 204 quintal/hectare has an LQ value of 1.23 or above 1 which indicates that the lowland rice plants in Langkaplancar District have the potential to be used as a food source in the Langkaplancar District, Pangandaran District, as well as for export outside the Langkaplancar District and Pangandaran District areas. Langkaplancar District also has supporting facilities and infrastructure to serve as a raw material producing area by adding 1 type of facility, namely a post office and telecommunications infrastructure which will facilitate activities taking place in the Agropolitan Area itself. The available facilities and infrastructure must also continue to be developed so that Langkaplancar District can play a maximum role in activities in the Agropolitan Area of Pangandaran Regency. Every year the number of farmer population decreases by 0.06%. Based on the population projection analysis carried out in 2 time periods of 5 and 10 years, it is found that the number of farmer population in 2021 is 26596, reduced by 85 people from 2016 and in 2031 the number of farmer population is 26512, decreasing 84 people. The right strategy to use to develop Langkaplancar District as a raw material producing area is a progressive strategy (growth oriented strategy). A progressive strategy is designed to achieve growth in either sales, assets, profitability or a combination of the three.

Recommendation

Based on the quantitative SWOT analysis matrix that has been carried out, the strategy quadrant points (X, Y) are obtained with the values: (6 - 0.5). Based on the strategy quadrant reference, it is known that the position of the strategy is in quadrant I, which means that the strategy that can be applied is a progressive strategy (growth oriented strategy). The position in quadrant I illustrates that Langkaplancar District has considerable internal strength and has a high chance of being used as a raw material producer area. A progressive strategy is designed to achieve growth in either sales, assets, profitability or a combination of the three. Then the progressive strategy in the form of growth needed by Langkaplancar District as a raw material producing area in an Agropolitan Area is:

1. Natural resource optimization strategy in the form of maintaining existing lowland rice farming land based on the policy of Sustainable Agri-food Area - *Kawasan Pertanian Pangan Berkelanjutan* (KP2B) and converting upland land to upland rice or dryland rice farming, given the high potential of upland land owned by Langkaplancar District so that it can minimize the threat of land conversion. into built-up land such as settlements or industry.
2. Strategies to increase human resources, considering the number of farmers in the Langkaplancar District has the greatest value but always decreases by 0.06% each year, the existing farmers must have the ability to process the natural resources that they have with the provision of qualified agricultural knowledge.
3. Infrastructure and transportation development strategies, supporting infrastructure for agropolitan areas as existing raw material producing areas must then continue to be developed as well as transportation development in the form of transportation procurement that is not currently available such as terminals and an increase in the number of transportation accommodation to facilitate activities in the Agropolitan Area.

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