DEVELOPMENT OF AGROPOLIS REGION BASED ON INTEGRATED PLANTATIONS AND LIVESTOCK THROUGH CONCEPT OF KARSSA (Rubber – Palm Oil – Beef Cattle) IN KUANTAN HILIR DISTRICT

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Abstract—One of the Districts that became the new growth center candidate in Kuantan Singingi Regency is Kuantan Hilir District which has great potential in the plantation and livestock sector, where the main commodities of each sector are rubber, oil palm, and beef cattle. This research is basically aimed to develop strategy and program of Agropolis area development in Kuantan Hilir District. The analytical method used is descriptive quantitative - qualitative, by using analysis of regional development that is comprehensive that is population analysis with geometric method, economic analysis with LQ and Shift Share method, social analysis with descriptive qualitative method, infrastructure analysis with projection needs method, and analysis physical environment with land suitability method, as well as analysis of plantation and livestock adapted to the concept of planning. The results of this study indicate that the area of Kuantan Hilir District has the potential to be developed as an Agropolis center in Kuantan Singingi Regency by applying the concept of integrating the plantation sector as the main sector with the livestock sector as the supporting sector and combining the village centers with the concept of KARSSA (Rubber – Palm Oil – Beef Cattle) Or optimize the functional hierarchies of each village and its major commodities. Based on the analysis that the appropriateness of Kuantan Hilir District as the new Agropolis center reaches 84.6% percentage based on the average of the analysis result, it is necessary to add 3,398 cattle at the end of the year of planning in 2025. Balanced by the construction of 1 unit of fertilizer processing center Compost, 16 units of agribusiness and agribusiness centers in each village. Plantation and animal husbandry sectors have a competitiveness of 18,427 million rupiahs, with donations to kecamatan income reaching 62.55%, and LQ worth 1.3 or greater than 1 so it is among the top seeding sectors.

Keywords : Agropolis, Farm, Karssa, Plantation, Region.

I. INTRODUCTION

According to Law Number 26 Year 2007 on Spatial Planning, Territory is defined as a space that is a geographical entity along with all related elements whose limits and systems are determined based on administrative aspects and / or functional aspects. The regional system consists of spatial structure and spatial pattern that has service coverage at the regional level such as village area, District area, district area, and others. Each region will have a regional growth center, where the region will experience the fastest growth compared to other regions. Community needs in a region will also increase, so it can cause various problems that must be resolved in the region in accordance with the existing conditions and needs of the local community. Problems in a region are not only one dimension but multidimensional in the economic, social, political, cultural, physical and environmental sectors. If problems in a region are not immediately resolved will certainly cause a greater negative impact for the region itself. Therefore, regional planning becomes very necessary and indispensable to create a resilient, competitive, and sustainable territory, and direct the development and growth of the region towards a more orderly and orderly in accordance with the plans made by the planner. Planning in a region should be done by integrating all aspects of development that are tailored to the potential and needs of local communities and exploit the opportunities available to resolve regional issues and meet the needs of local communities.

Kuantan Hilir District is one of 15 (fifteen) Districts in Kuantan Singingi Regency which continues to experience rapid growth and development. Kuantan Hilir District belongs to the old District of Kuantan Singingi Regency and has existed since the district was first expanded from Indragiri Hulu Regency in 199 in accordance with Law No. 53 of 1999, and belonged to the advanced District category in Kuantan Singingi Regency. The location of this District is quite strategic, where the district is passed by the cross road of Kuantan Bay - Rengat which becomes the main road connecting Kuantan Singingi Regency with Indragiri Hulu and Pelalawan districts, so the location is very supportive of growth and development in Kuantan Hilir Subdistrict. This district

is located at coordinates 00º 23 '00 "- 00º 45' 00" South Latitude 101º 41 '00 "- 101º 51' 00" East Longitude, with the population in 2014 reached 14,739 people with an area of 163.66 km2 and Consists of 16 (sixteen) villages. This subdistrict is capitalized in Baserah. Kuantan Hilir District has considerable potential in the plantation and livestock sectors, where the main commodities of each sector are rubber and palm in the plantation and cattle sector in the livestock sector causing Kuantan Hilir District to be quite advanced and developed as the center of economic activity for the region Surrounding Districts. This condition is supported by the rubber and palm oil processing industry which causes the economic growth rate to be quite high.

However, the development of the region is not only seen from the aspect of the economy alone, so it is necessary to integrate the planning in the economic sector with other sectors so that the development of the area in the District of Kuantan Hilir become more focused and become sustainable in order to projected the advanced, resilient and sustainable areas as regional service centers Which is strategic based on agro-industry and agribusiness activities. In addition to this potential, various regional problems are also found in the District of Kuantan Hilir that occurred due to lack of arrangement and regulation of land use and development in the district so that the region develops without direction and tidka regular, still low quality of human resources in general, Meet the needs and provide optimal services to the community, and less optimal use of local potential and appropriate technology to be a problem factor that hampers the development of the region in the District of Kuantan Hilir.

Therefore, an integrated and integrated local area-based plan is developed to minimize the negative impacts of existing problems by improving and strengthening the economic structure of the community and declaring regional development through the concept of a regional plan to be developed that is the concept of "Karssa" or " Rubber – Palm Oil – Beef Cattle "that is by integrating rubber and oil palm plantation aspect with cattle breeding aspect in Kuantan Hilir District. The results of rubber and oil palm plantations can be transported by cattle, oil palm leaves or leaves can be a source of food for cattle, and cow dung can be a source of fertilizer for rubber and oil palm plants to improve soil organic composition.

II. THEORY REVIEW

2.1. Definition of Agropolis

Agropolis is an area consisting of one or more centers of activity in a region as a system of agricultural production and plantation as well as management of certain natural resources indicated by the existence of functional linkages and hierarchy of space units of settlement system and agro-industry or agribusiness system (Law Number 26 Year 2007 About Spatial Planning). According to the Department of Agriculture and Estate Crops (2002), Agropolis is made up of the word agro and politan (polis). Agro means agriculture and plantation whereas politan means territory. Thus Agropolis can be defined as agriculture or plantation area or broadly defined as agriculture or plantation-based areas that can be supported by plantation or agricultural support sector farming sector.

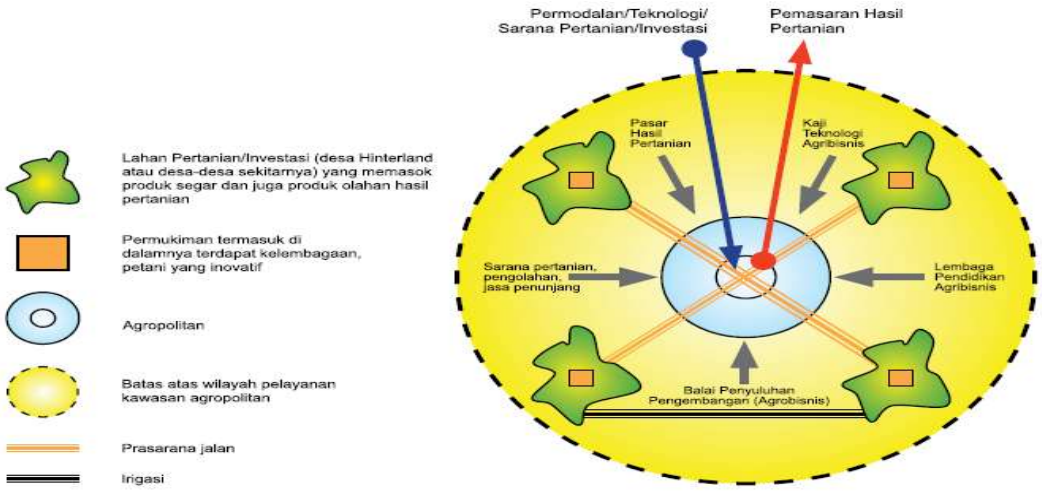


Figure 1. Agropolis Region Spatial Concept (Source : Development Stategy of Agropolis Area, Kimpraswil, 2000.)

Agropolis can also be interpreted as a central agricultural or plantation area that grows and develops due to the running of agribusiness system and usage and is able to serve, encourage, attract, and advance agricultural development activities or plantations in the surrounding area. Agropolis can be a medium area, small area, district area, and nagari region that serves as a center of economic growth that encourages the growth of regional development and hinterland area in the vicinity.

2.2. Typology of Agropolis Region

The Agropolis area is an integrated area with its hinterland area which is functionally a region with main activities is the agricultural and plantation sectors. Determination of typology of Agropolis area should pay attention to several aspects, namely:

a. Activities in the Agropolis area include activities in the agricultural or plantation sectors covering a variety of commodities such as crops, plantations, livestock, fisheries, and forestry.
b. Agropolis areas can also be seen from the requirements of agro-climates and land types, so they can also be grouped into upland farming, middle-lowland agriculture, lowland agriculture, coastal and annual crop plantations.
c. The condition of human resources, institutional, and population which also become consideration of determination of typology of Agropolis area.
d. Aspects of the geographical position of the Agropolis area.
e. Availability of Agropolis area infrastructure.

Based on the above aspects it can be arranged many typologies of Agropolis areas, where the determination of this typology requires a comprehensive study of a planned unit area. The Agropolis area has the typology of the area after classification of the agricultural sector or its plantation and its agribusiness respectively.

Table 1. Agropolis Region Typology Tabel

No.	Business Sector of Agropolis Region	Typology Region	Agroclimate Requirements
1.	Food Plants	Lowland and upland plains, with a flatland texture, have adequate irrigation facilities	It should be suitable with the developed commodities such as altitude, soil type, soil texture, climate, and soil acidity.
2.	Horticulture	Lowland and upland plains, with a flat and hilly terrain texture, sufficient water resources	
3.	Plantations	Highlandwith hilly terrain textures, close to nature conservation areas.	Must be appropriate with the type of commodities developed such as height of land, soil type, texture of land.
4.	Livestock	Close to agricultural and plantation areas, with adequate sanitation system	Locations should not be in the settlement and pay attention to aspects of environmental adaptation.
5.	Fisehries	Located in fishery ponds, fish ponds, natural lakes, artificial lakes, river flows, seas.	Paying attention to aspects of ecological balance and not damage the existing ecosystem.
6.	Agro Tourism	The development of agricultural and plantation business besides still producing and developed also as tourist area.	It should be suitable with the developed commodities such as altitude, soil type, soil texture, climate, and soil acidity.

Source : Development Stategy of Agropolis Area, Kimpraswil, 2000

2.3. Characterize of Agropolis Region

According to the Ministry of Agriculture and Estate Crops (2002) the Agropolis area or territory that has grown has the following characteristics or characteristics, the majority of the people earn income from

agribusiness activities, the increase of agricultural or plantation value through agroindustry activities, dominated by agriculture and plantation activities, Including agriculture or plantation industry, agriculture and plantation trade, upstream agribusiness trade (agriculture, plantation and capital facilities), agro-tourism, and services, the relation between the center of activity and the hinterland area is harmonious interdependent and mutual need. The agricultural area develops the cultivation and processed products of the household scale and the area provides the provision of plantation and livestock facilities

2.4. Concept of Agropolis Development

In the development of Agropolis area there are three important things that become the requirement that the concept of Agropolis area development can be realized as follows:

a. Investment in Agroindustry: The so-called gropolitan area based on the leading commodities is an area that is based on agricultural products or plantation products and has excellent commodities. The area is not only a supplier of superior commodities.
b. Promotion of Featured Products: Promotion of superior products from a region will determine the success of the Agropolis area development concerned. Because the product will be one form of promotion for the region, which will run by itself when the product is entering the market. After the commodity is processed and manufactured into finished goods then by itself the industry will promote its products to the national and international market.

Sustainable Agriculture and Industry Management: Sustainable agriculture and industry management will result in prosperity for the farming community. This is one example that needs to be raised and at the same time can be a common concern that is the management of agriculture and idnustri sustainable will result more prosperity for society in general.

III.METHOD

3.1. Approach of Research

The purpose of this study is to develop a reference, pdomena, and direction in the development of Agropolis areas in Kuantan Hilir District based on integrated plantations and livestock through the concept of KARSSA (Rubber – Palm Oil – Beef Cattle) in 2016 - 2025. To find out the purpose, On a deductive approach with quantitative and qualitative descriptive analysis methods. Deductive approach is an approach in research that aims to test the hypothesis through validation theory or testing the application of theory in certain circumstances (Sangadji, 2010).

Tabel 2. Framework of Methodology

No.	Aspect	Description
1.	Aim	Develop guidelines, guidance and direction in the development of Agropolis areas in Kuantan Hilir District based on integrated plantations and livestock through the concept of KARSSA (Rubber – Palm Oil – Beef Cattle) in 2016 - 2025.
2.	Target	Identified startegy and plan of regional development plans and plans in the form of spatial structures and spatial patterns of Agropolis areas.
3.	Variable	Characteristics and needs of Agropolis area
4.	Indicator	Demography, Physical, Social, Policy, and Economy
5.	Analysis	Population analysis, spatial, infrastructure, policy synchronization, superior sector, location analysis, Agropolis analysis, socio-cultural analysis.
6.	Output	The development plan of agropolita area based on integrated plantation and livestock through the concept of KARSSA in Kuantan Hilir District

Source : Writer Identification, 2017.

3.2. Object of Research

The object of this study is the Agropolis area in Kuantan Hilir District consisting of 16 villages, namely Teratak Baru, Gunung Melintang, Dusun Tuo, Kepala Pulau, Kampung Tengah, Kampung Medan, Pulau Madinah, Pasar Baru Baserah, Pasar Usang Baserah, Simpang Tanah Lapang, Rawang Bonto, Pulau Kijang, Koto Tuo, Kampung Madura, Simpang Pulau Beralo, Banuaran. The capital and Agropolis area development center in Kuantan Hilir District is Baserah City.

3.3. Data of Research

Data is divided into two, namely primary and secondary data. Primary data is data obtained directly in the field through field survey activities, while secondary data is development documents and statistical books of Kuantan Hilir District.

Table 3. Data of Research Needs

No.	Objek of Observations	Source
1.	Landuse Condition	Observation, Documentation, Kuantan Hilir District Office, and Development and Planning Office of Kuantan Singingi Regency
2.	Plantation and Livestock Infrastructure Condition	
3.	Plantation and Livestock Condition	
6.	Population Condition	
7.	General Region Infrastructure Condition	
8.	Economic – Social Condition	
9.	Development Rule and Document of Kuansing Regency	

Sumber : Writer Identification, 2016.

The sampling technique used is random sampling, where the research population is the whole community that is reached in Kuantan Hilir District, while the determination of the sample is determined by using the formula as follows:

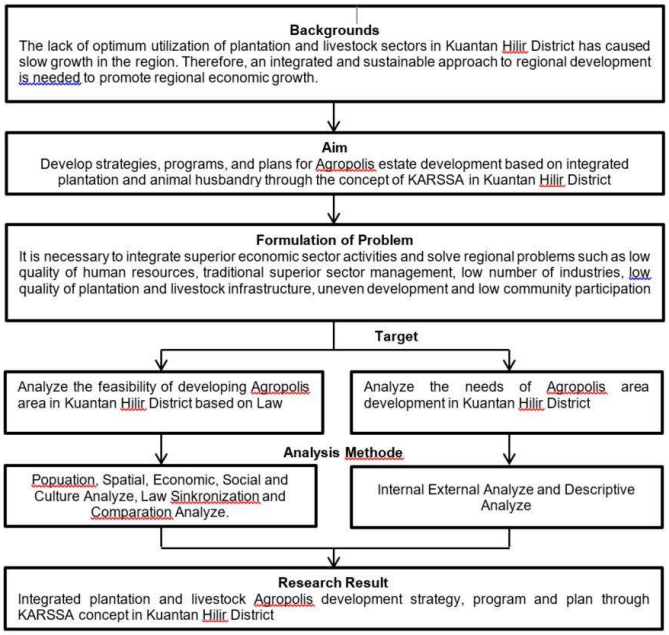
$$n = \frac{N}{(1 + N.e^2)}$$

Information :
n : Sample size
N : Total population
E : Trust level

The level of confidence or error rate of data used is 9% ata 0.09. The questionnaire consists of open questions and closed questions. Based on data from the Central Bureau of Statistics Kuantan Singigi Regency in 2015 the population in Kuantan Hilir District is 14,843 inhabitants, then the number of samples is 123 (one hundred and twenty three) people.

3.4. Framework of Research

All data obtained from the survey will then be analyzed using the Agropolis area development analysis method. Based on the results of the analysis, the results will be obtained in the form of strategies, program indications, and plans for the development of Agropolis areas based on integrated plantations and livestock through the concept of KARSSA (Rubber – Palm Oil – Beef Cattle) in Kuantan Hilir District as well as the needs of the Agropolis area development consisting of production facilities and needs cow.



Source : Identification Writter, 2017

Figure 2. Framework of Research

IV. RESULT

4.1. Population Analysis

Based on Data from Kuantan Hilir District in Figures Year 2015, population growth ratio in Kuantan Hilir District is 0.99%, so the projection of population in Kuantan Hilir District can be done in 2016 - 2025 with the following results.

Berdasarkan Data dari Kecamatan Kuantan Hilir dalam Angka Tahun 2015, rasio pertumbuhan penduduk

Table 4. Population Projection in Kuantan Hilir District, 2016 - 2025

Period	Years	Ratio	Sex Type (Inhabitants)		Population (Inhabitants)
			Male	Female	
Initial Year	2015	0,99%	7.472	7.371	14.843
I	2016		7.554	7.444	14.998
	2017		7.623	7.518	15.141
	2018		7.694	7.592	15.286
	2019		7.765	7.667	15.432
	2020		7.836	7.743	15.579
II	2021	0,99%	7.905	7.820	15.725
	2022		7.980	7.897	15.877
	2023		8.054	7.975	16.029
	2024		8.131	8.054	16.185
	2025		8.201	8.134	16.335

Source : Analyze Result, 2016.

The increase in population in Kuantan Hilir District indicates that the number of human resources to support development and development in Kuantan Hilir District has also increased. From the table above can be seen if the number of male population is still higher than the total population of women, so the rex ratio in this district is 102. Most of the population in the District of Kuantan Hilir work as a cultivator of plantation land and ranchers. The dependency ratio in Kuantan Hilir District is quite high at 68.82%. This shows that the burden to be borne by productive population in Kuantan Hilir District to finance the life of unproductive or unproductive population is still high.

4.2. Settelement Analysis

Data on the number of homes by 2015 in Kuantan Hilir District based on data from the Kuantan Hilir District office is 3,754 housing units, while households in 2015 are 3,711 households. So the Backlog of homes by 2015

is the number of households reduced by the number of houses available and yielded by -43, thus it can be said that the number of homes in 2015 has been fulfilled in accordance with the number of existing households or by 2015 is not required housing construction activities And new settlements. Housing and settlement development in Kuantan Hilir District should also pay attention to the availability of land and the distribution of housing development so that it will no longer be concentrated in Pasar Baru Baserah, Pasar Usang Baserah, and Simpang Tanah Lapang Village. New and improved housing and settlement development in District areas, especially in Teratak Baru Village, Gunung Melintang Village, Dusun Tuo Village, Banuaran Village and Kampung Tengah Village are required.

Figure 3. Linear Settlement Pattern in Kuantan Hilir District (Source : Survey and Ilustation, 2016)

4.3. Regional Infrastructure Analysis

This analysis is based on the Indonesian National Standard (SNI) 03 - 6981 - 2004 on the Procedures for Planning of Public Facilities and Regional Infrastructure. Based on the results of calculations that have been done, it is found that in the District of Kuantan Hilir from 2016 to 2025 it is necessary to add regional facilities to support the development of Agropolis area with the following description:

Table 5. Result of Analysis of Regional Facility in Kuantan Hilir Year 2025

No.	Facilities	Type	Facility Needs (Unit)
1.	Education	Kindergarten	2
		Primary School	1
2.	Health	Posyandu	12
3.	Worship	Musholla	33
		Church / Vihara	1
4.	Economic	Store	44
		Market	1
5.	Security	Babinsa	7
		Post of Security	66
6.	Sport and Recreation	Sport Facilities	8
		Recreation Facilities	6
7.	Green Space	Public Green Space	33,47 Km^2

Source : Result of Analysis, 2016.

Analysis of regional infrastructure can also be done by using the standard of facilities and public infrastructure of the area contained in the Indonesian National Standard (SNI) 03 - 6981 - 2004 on the Procedures of Planning Facilities and Regional Infrastructure, with the following results:

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Tabel 6. Regional Infrastructure Analysis Result in Kuantan Hilir District Year 2025

No.	Type	Addtional Needs
1.	Road	Addition of asphalt road along the 9.82 km and road improvements along the 24.90 km
2.	Drainage	Addition of drainage network construction along the 178.64 km on the left and right side of the road.
3.	Sanitation	Additional 2 units of fecal trucks and 1 unit of WWTP
4.	Waste Management	Projection of waste generation reaches 37.244 Kg / year, it takes 36 TPS.
5.	Water Management	Need for clean water is 939,320 liters / day, the addition of 2 units of water and drinking water treatment plant
6.	Electicity	Electricity requirement is 10.291.050 VA, and addition of 51 units of electrical substation.
7.	Telecommunication	Addition of 65 units of new public telephone network.

Source : Analysis Result, 2016.

Based on the questionnaire, it was found that the level of infrastructure service in Kuantan Hilir District was quite good, but the service of this infrastructure has not been optimal, in some villages, the clean water infrastructure that has been provided is not operated or damaged.

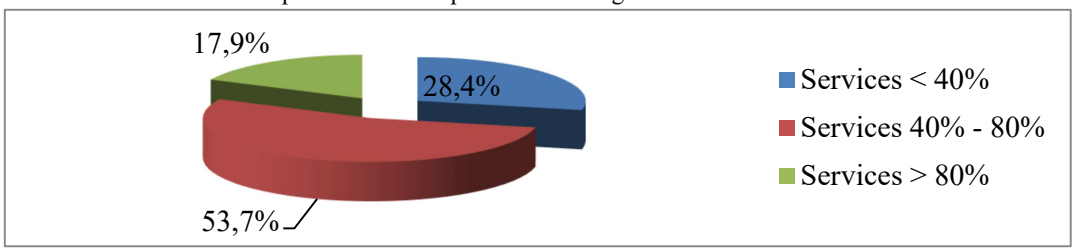

Figure 4. Percentae of Regional Infrastructure Conditions in Kuanta Hilir District (Source : Analysis Result, 2016)

4.4. Industry Location Analysis

The location of the industrial estate in Kuantan Hilir District is established between the District's economic activities center as a place to sell the produce and the place of the providers of raw materials, in other words produksen menacri place that has a fairly cheap price of land that is at the border of the kecamatan, with the best accessibilias, Which is strategically located between the place of selling the production with providers of raw materials. So it can be said that the location of the industry in the District of Kuantan Hilir is quite good and appropriate. The selection of industrial sites in Kampung Madura Village and Simpang Village of Beralo Island is the right thing considering the relatively small population density with wide availability of land, and strategic location.

The development of the area in Kuantan Hilir District can be analized to form the ring of activities such as those of Von Thunen, in which each ring has its own activities. Because the area of the edge or periphery of Districts is still available a relatively empty land area, coupled with homogeneous soil conditions. So the plantation area in Kuantan Hilir District is more oriented to the suburb of Kuantan Hilir District which is classified as wide, whereas in order to market the production, if the location of plantation and livestock farm is very far from the economic activity of the District, the farmers of farms and livestock more selling the plantation products and the farm Directly at the collectors or toke. Access in the Kuantan Hilir subdistrict is also not so difficult that the results of plantations and livestock farms are sold out even though they are not sold in District economic centers. So it can be concluded that the location of plantations in the District of Kuantan Hilir is sufficient in accordance with the theory of Von Thunen location and deserve to be developed as a leading plantation area in the District of Kuantan Hilir.

4.5. Economic Structure Analysis

Further economic analysis is an analysis of economic structure, where the type of analysis used to view growth and shifting economic activities in the District of Kuantan Hilir is a method or analysis of shift and share. With the following results.

Table 7. Economic Structure Analysis Result Using Shift and Share Method

No.	*Sector*	*Kabupaten Kuantan Singingi Growth Component (Million Rupiah)*	*Industrial Mix Component (Million Rupiah)*	*Competetive Share Component (Million Rupiah)*
1.	Agriculture, Livestock, Plantation	5.648,71	-4.324,81	18.427,00
2.	Mining and Quarriying	280,34	-460,40	587,90
3.	Industrial Processing	2.924,95	18.789,90	-20.606,35
4.	Electrical and Water	7,59	-19,61	32,18
5.	Buildings	791,13	-309,26	1.317,55
6.	Trade and Restaurant	209,87	-402,41	322,11
7.	Transportation and Communication	181,67	-181,97	205,42
8.	Finance and Coorporate Services	302,15	-155,55	-22,80
9.	Other Services	544,13	-588,19	1.124,11
Total (Million Rupiah)		10.890,54	12.347,70	26,741.387,11

Source : Analysis Result, 2016.

The result of this analysis is also correlated with the results of the analysis of the sector of the economy eklan by using the LQ method, where the results of these two analysis is the leading sector with the level of competitiveness and rapid growth in the District of Kuantan Hilir is the plantation and animal husbandry sector with the main commodities are rubber, Palm oil, and cattle. So based on the analysis by using the shift and Share method above obtained the result that the economic structure in the District of Kuantan Hilir is dominated by the plantation and animal husbandry sectors, with high growth rate and high competitiveness compared with the same sector at Kuantan Singingi regency level. The plantation and livestock sectors are also a profitable sector to be developed as a key economic structure.

4.6. Basic Economic Sector Analysis

Based on the formula and data that have been obtained previously from the Central Agency Stastistik Kuantan Singingi District and District Office Kuantan Hilir it can be calculated on every sector of the economy in Kuatan Hilir Subdistrict to know the economic sector base in the District of Kuantan Hilir

Table 8. Result of Location Quotients Analysis (Kuantan Hilir District – Kuantan Singingi Regency)

No.	Bussiness Field	V^R_1 / V^R	V_1 / V	LQ
1.	Agriculture, Livestock, Plantation	0,625459	0,481829	1,298092
2.	Mining and Quarriying	0,022283	0,056459	0,294665
3.	Industrial Processing	0,184337	0,296013	0,622733
4.	Electrical and Water	0,000743	0,000563	1,320187
5.	Buildings	0,072805	0,067015	1,086403
6.	Trade and Restaurant	0,013992	0,037456	0,373561
7.	Transportation and Communication	0,013534	0,008448	1,602175
8.	Finance and Coorporate Services	0,019184	0,013037	1,471563
9.	Other Services	0,047663	0,039181	1,216489

Source : Analysis Result, 2016.

Based on calculations that have been done above can be seen if some of the 9 (nine) economic sectors or business fields contained in the District of Kuantan Hilir, there are 6 (six) economic sectors included into the basic economic sector or major economic sectors namely: Plantation, livestock and agriculture sectors,

Electricity and drinking water sector, Building sector, Transport and communications sector, Finance, leasing and business services sector, and Service sector

4.7. *Commodity* Flow Chart Analysis

The plantation sector, especially rubber and oil palm, will be developed in all villages or Districts in Kuantan Hilir District, where palm oil and rubber leaf can be a source of livestock feed. The crop will be transported by the cattle to the center of warehousing so that it can save the transportation cost. Centers of rubber seeds and superior oil palm will be developed in villages that have the best agroclimate conditions such as Desa Banuran and Desa Kijang Island. Crops that have been transported by cattle to the center of warehousing will then be transported to industrial or production centers to process rubber and oil palm. Processing is done only between the nature of the processing of raw materials into semi-finished materials. Because the hierarchy perinudstrian, in this district has not been feasible developed a large industry, but more suitable to be developed as a medium industrial estate. Agribusiness and agro-industrial activities developed are upstream and downstream by their nature is between. Agropolis development is not only related to crops and livestock yields, but also develops and produces production facilities that support both sectors.

4.8. Priority Commodity Infrastructure Needs Analysis

Leading commodity infrastructure is also known as production facilities, where production facilities play an important role in increasing the productivity of plantation and livestock products in Kuantan Hilir District. This analysis is basically aimed at knowing the much-needed priority infrastructure immediately to develop the flagship commodity or base in Kuantan Hilir District.

Table 9. Plantation and Livestock Infrastructure Needs in Kuantan Hilir District

No.	Sector	Alat	Standar	Eksising	Kebutuhan
1.	Plantation	Harvest Equipment	1 unit / 5 Ha	6.518 Ha	1.304 Unit
		Power Treser	1 unit / 5 Ha	6.518 Ha	1.304 Unit
		Tractor	1 unit / 10 Ha	6.518 Ha	652 Unit
		Fertilizer	0,2 kg/plant/month	6.518 Ha	182.504 Kg/plant/ month
		Pengolah	1 unit / 100 ha	6.518 Ha	7 unit
		Drainage	Irigation as needed Drainage	-	178,64 Km
2.	Livestock	Farm Cage	1 cage = 9 tail	2.331 tail	259 cage
		Animal Feeds	8,75 Kg/ tail / day	2.331 tail	20.396,25 Kg/day
		Beef Cattle	1 unit = 1.000 tail	2.331 tail	2 Unit
		Animal Drugs	1 cage = 1 unit	-	259 Unit

Source : Result Analysis, 2016.

4.9. Socio – Culture Analysis

The Human Development Index (HDI) in Kuantan HIlir District is 69.4, which is classified into lower and middle-class IPM. Based on data from the Kuantan Hilir District office, it is known that the life expectancy in this District is 70 years, the literacy rate is 90.5%, the average length of the school population is 12 (twelve) years, and the purchasing power of the community is Rp 480,170 . The condition of poverty in Kuantan Hilir District is generally alarming because the number of poor educators in the kecamatan continues to increase every year. Therefore it must be resolved so as not to cause further problems in the area of settlement and social territory. Based on the analysis done by using exponential formula projected in Kuatan Hilir Subdistrict, the number of poor people will increase to 1,487 households if there is no preventive action. The majority of the population or people in Kuantan Hilir District represent the Malay tribe with the percentage reaching 89.97%.

4.10. Physical Environmental Analysis

The physical environmental analysis consists of several analyzes, namely topography analysis, geological analysis, climatology analysis, and hydrological analysis. Based on the results of the analysis, it is found that all Agropolis area development requirements in the physical aspect are met in Kuantan Hilir District with the following details.

Table 10. Result of Physical Environmental Analysis

No.	Aspect	Standart	Conditions	Appropriate
1.	Topography	Tilt 2% - 25%	Tilt 2% - 5%	**Appropriate**
2.	Geology	Alluvium Soil, pH 4,0 – 5,5	Alluvium dan Topoqueps Soil (pH 4,5 – 5,5)	**Appropriate**
3.	Climate	Tropical	Tropical	**Appropriate**
4.	Railfall Range	Range 80 – 450 ml	Range 97 – 395 ml	**Appropriate**
5.	Akifer Type	Medium and Large Debit	Medium and Large Debit	**Appropriate**

Source : Analysis Result, 2016.

4.11. Landuse Analysis

The widespread use of plantation and livestock crops causes the productivity of plantation and livestock products in Kuantan Hilir District to become quite large. In addition, in this subdistrict there is also an allotment of industrial land that forms to support the development of Agropolis area in Kuantan Hilir District. The results of land-use analysis in Kuantan Hilir District 2016 can be seen on the next page.

Table 11. Landuse Analysis in Kuantan Hilir District Years 2016

No.	Type of Landuse	Area (Km^2)	Percentage (%)
Protected Area			
1.	River Crossing	1,50	0,92
2.	Green Open Space (Garden)	0,32	0,20
Using Area			
1.	Settelement	4,49	2,74
2.	Industry	3,30	2,02
3.	Smallholdings	106,67	65,18
4.	Private Plantations	7,90	4,83
5.	Animal Husbandry	14,89	9,09
6.	Wetland Agriculture	6,95	4,25
7.	Dryland Agriculture	2,00	1,22
8.	Horticulture	1,62	0,99
9.	Office	2,82	1,72
10.	Trade and Services	4,40	2,69
11.	Permanent Prouction Forest	6,80	4,15
Total		**163,66**	**100,00**

Source : Analysis Result, 2016.

From the above table it can be seen that the percentage of plantation area in Kuantan Hilir District reaches 65.18% for smallholder plantation area and 4.83% for private plantation area and 9.09% for livestock area. This indicates that land use in Kuantan Hilir District has strongly supported the development of Agropolis areas based on integrated plantations and farms, due to the wide availability of land for the activities of both sectors.

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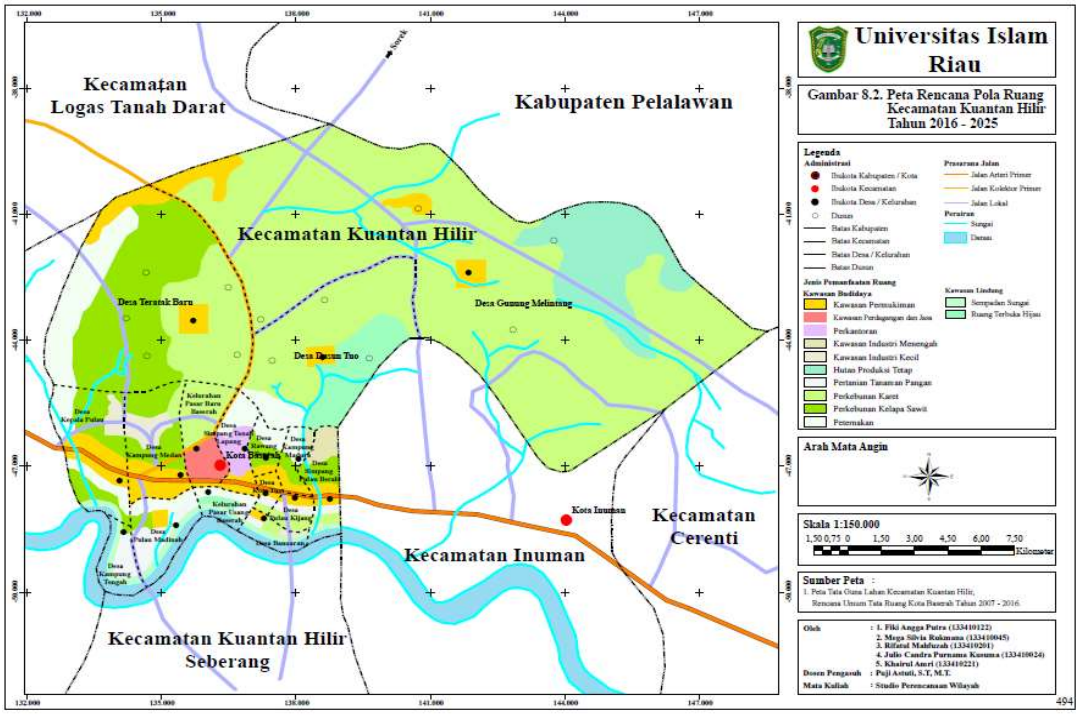

Figure 5. Spatial Pattern of Agropolis Region in Kuantan Hilir District (Source : Arcgis 10, 2016)

4.12. LandCapability Units Analysis

Whether or not the above areas become residential areas, plantations, and farms will be done with overlay techniques. Range of land capability value based on PU Regulation no. 20 / PRT / M / 2007 is a minimum value of 21, and the maximum value is 105. So the unit of land capability becomes:

a. Class A with a score of 21 - 38, means that the ability of the land development is very low.
b. Class B with a value of 39 - 55, means the ability of low land development.
c. Class C with a value of 56 - 72, means the ability of the development of medium land.
d. Class D with a value of 73 - 90, means the ability of developing land is rather high.
e. Class E with a value of 91 - 105, means the ability of high land development.

Table 12. Result of Land Capability Unit (LCU) Analysis in Kuantan Hilir District

LCU	LCU Morfology	LCU Stability Slope	LCU Water Availability	LCU Disposal	LCU Natural Disaster	Total
Value	5	5	5	1	5	
Total	**20**	**20**	**20**	**4**	**20**	**84**

Source Analysis Result, 2016.

From the table above it can be seen that the value of land in the district of Kuantan ability Hilir is 84. Thus, based on the range of the unit value of land has ditetapka ability, showed that the ability of the land in the district of Kuantan Hilir to be developed is to be in a class "D" which means the ability The development of the land is worth a bit high. This condition indicates if the land in the district of Kuantan Hilir can be developed easily, especially as the region Agropolis because land conditions support plantations, farms and settlements.

4.13. Function Center Acitivy Analysis (Schalogram Analysis)

Analysis of the function of the center of activities is an analysis conducted to determine the hierarchy of each center of activity or village centers or Districts in Kuantan Hilir District. The method used is a method schalogram, which will be obtained hierarchy of regions whose function is to plan the structure of space in the District of Kuantan downstream towards the preparation of regional development plans in the district of Kuantan Agropolis Hilir. Through this analysis will be known to the function of each - each village or villages within the framework of agribusiness and agro-based plantations and farms in accordance with the concept of regional development plan agroplitan.

Table 13. Function Center Acitivy Analisis Result

No.	Class	Village	Fuction
1.	I	Pasar Baru Baserah	As the main center of Agropolis area development
2.	II	-	-
3.	III	-	-
4.	IV	Simpang Tanah Lapang, Pasar Usang Baserah, Kampung Medan, Teratak Baru, Gunung Melintang	As a supplier area of plantation and livestock production, cultivation area and superior cow calves, Sapro cattle breeding center and livestock technology, rubber products collection and production area And palm oil and production centers
5.	V	Kepala Pulau, Pulau Kijang, Dusun Tuo, Pulau Madinah, Kampung Tengah, Kampung Madura, Rawang Bonto, Koto Tuo, Simpang Pulua Beralo, dan Banuaran	As a supplier of superior rubber and palm seeds, as a technical center and a provider of production facilities Special plantations and livestock, and As a central area or center of warehousing and center cultivation of adult cattle

Source : Analysis Result, 2016.

4.14. Feasibility Analysis of Agropolis Regional Development

Based on the Regulation of the Minister of Public Works No. 20 / PRT / M / 2007 Regarding Technical Guidance of Physical and Environmental Aspect Analysis, Economics, and Socio-Culture in Spatial Planning and Regulation of the Minister of Agriculture No. 32 / Permentan / OT.140 / 7/2008 And the Agribusiness Infrastructure Verification Procedures and Agropolis Requirements in the Agropolis and Minapolitan Books published by the Ministry of Public Works and the Ministry of Agriculture, there are several requirements that must be met.

Table 14. Result of Feasibility Analysis of Agropolis Regional Devlopment in Kuantan Hilir District

No.	Requirements	Analysis	Description
1.	Have superior commodities in plantation and livestock sector	**Appropriate**	Based on LQ analysis of plantation and livestock sector has a value of 1.3 so it can be said as a leading sector, as well as 62.55% of commodities derived from the sector
2.	Over 40% of the land is designated as a plantation or livestock area	**Appropriate**	Based on the analysis of land use, 79.10% of the land in this subdistrict is designated as plantation and livestock areas. This condition has exceeded the standard set, so the land in this district potential to be developed as an Agropolis area.
3.	The majority of the population earn income from the agribusiness or agro-industry sector	**Appropriate**	Populated 4.570 residents in Kuantan Hilir District as a livestock farmer and cattle farmer and 65% of families get income from the agro-industry and agribusiness sectors.
4.	Having land and agro-climate resources (topography, climatology, geology and hydrology) suitable for developing superior commodities	**Appropriate**	Based on the analysis conducted on agro-climates in Kuantan Hilir District, overall supports and meets the development and cultivation of rubber, palm oil, And cattle farms. In addition, the analysis of Land Capability (LCU) and land suitability shows that land in this kecamatan is potential to be developed (class D) for annual crops such as rubber, palm oil, areca nut, cocoa, and pineapple.
5.	Has adequate infrastructure and	**Appropriate**	Based on the analysis of the Production Facility conducted, most of the villages or kelurahan already have plantation and

No.	Requirements	Analysis	Description
	facilities to support the development of Agropolis systems and businesses		livestock sarpo to support agribusiness and agro-industry activities such as 217 units of crops, 36 Km of irrigation, 60 units Small truck.
6.	There is a market as an agribusiness center	**Appropriate**	There is a Baserah Market in New Village Baserah Market which became the center of the community's economy.
7.	Have farmer groups (plantations) and livestock groups.	**Appropriate**	Based on data from Plantation and Livestock Unit UPTD there are 32 groups of plantation farmers and 9 groups of farmers.
8.	Has a plantation extension center	**Appropriate**	There is a complex of extension centers of plantations and farms in the village of Kampung Medan
9.	Having a Fully Irrigated Network	**Appropriate**	Based on data from the Department of Estate Cultivation of Kuantan Singingi Regency, in Kuantan Hilir District, there are 36 Km of semi-engineering Irrigation.
11	The regions have a relational hermitage with hinterland and have good accessibility.	**Appropriate**	Based on observations made there is a harmony between the subdistrict relation center with suburban kecamatan associated with plantation and livestock activities. In addition, access to the periphery is readily available.

Source : Analysis Result, 2016.

From the above analysis it can be seen that all the criteria or requirements of Agropolis area have been occupied in Kuantan Hilir Subdistrict, so it can be said that this district is feasible to be developed as the center of Agropolis area in Kuantan Singingi Regency. In addition, based on the Agropolis and Minapolitan Development Book published by the Ministry of Public Works of 2012, it is explained that the integration of plantations and livestock is one of the most appropriate strategies to develop Agropolis estate-based areas. Where it is stipulated that in order to provide optimal integration results, then within 2 (two) Ha of plantation area there should be 1 (one) cow.

Table 15. Analysis of Cattle Availability in Plantation Kuantan Hilir District Years 2025

Standart	Area Plantation (Ha)	Cattle Requirements (Tail) / Hectare	Cattle Availability (Tail)	Addtion of Cow (Tail)
There is 1 cow in 2 Ha Plantation Area	11.457	5.729	2.331	3.398

Source : Analysis Result, 2016.

Based on the above analysis can be seen that the target of addition of cows at the end of the year planning is 2025 is as many as 3398 cows, so the plan of development of Agropolis area with the integration of plantations and farms to be successful and in accordance with the target to be achieved.

4.15. Strategy and Program of Agropolis Region Development in Kuantan Hilir District

Based on internal and external analysis, the main strategy and activity program will be implemented to achieve the objective of developing Agropolis area based on integrated plantation and animal husbandry through the concept of KARSSA (Rubber – Palm Oil – Beef Cattle) in Kuantan Hilir District.

Table 16. Strategy and Program of Agropolis Region Development in Kuantan Hilir District

Main Strategy	Integration of Plantation and Livestock Activities and Sectors Through the Concept of Rubber - Palm - Cattle or Livestock in Perkebunananan, Improving the Quality of Sapro Plantation and Livestock, Utilization of Appropriate Technology and Superior Seeds to Support Agribusiness and Agroindustry Activities
Target	a. Developing farms in plantations to support the activities of both sectors. b. Increased yields of rubber, palm, and cattle c. Increasing the number and quality of plantation and livestock facilities and infrastructure. d. The creation of an integrated agribusiness and agro-industrial flow through upstream and downstream activities. e. To develop spatial pattern, space structure, and Agropolis strategic area in Kuantan Hilir.

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	f. Provision of integrated information, extension agencies, superior seeds, and appropriate technology to the plantation and livestock sectors
Program	a. Establish farming centers in plantations scattered throughout the village / kelurahan b. Provision of 3 Cows in 1 Ha Rubber Plantation and Oil Palm c. Maintenance of Plantation and Household Crop Collection Sites d. Establishing Agribusiness and Agro-industry Center for Plantation and Livestock e. Establishment Center for Collection and Warehousing of Garden and Livestock Products f. Building Additional Cow Sheds and Cow Slaughterhouses g. Management of Livestock Feed Made of Rubber Leaf and Palm Oil Leaf and Plantation h. Management of Compost Fertilizer from Livestock Dung i. Provision and Equalization of Number of Livestock and Plantation Area in 16 village j. Enhancement and Training of Farmers and Livestock Groups k. Provision of Superior Rubber Seeds - Oil Palm and Cattle Peranakan Development

Source : Internal External Analysis Result, 2016.

4.16. Agropolis Region Development Planning in Kuantan Hilir District

Basically, the Agropolis area development plan in Kuantan Hilir District attempts to integrate the subdistrict center with suburban areas so that each village or kelurahan can develop evenly. Some of the general plans are as follows:

a. Livestock will be developed at each plantation center and directed to 2 ha of rubber and oil palm plantation land there is 1 cow, in order to eat grass or weeds of rubber and oil palm plantation.
b. The results of rubber and oil palm plantations will then be transported using cows from trees to collection points for subsequent transport to the agribusiness and agro-industry center using trucking transportation of plantations.
c. Development plan of animal feed processing center and compost fertilizer in each village or kelurahan. Leaf of rubber and palm stem can be processed at feed processing place to become healthy and quality animal feed, while cow dung can be accommodated and processed into organic fertilizer in rubber and oil palm plant and improve soil composition for more sebur.
d. The range of Agropolis center services in Kuantan Hilir District covers Kuantan Singingi Regency with priority service area is Pangean Subdistrict, Logas Tanah Darat Subdistrict, Kuantan Hilir Seberang District and Inuman District.
e. Agribusiness and agroindustry activities are upstream and downstream with intermediate products, so rubber and palm oil will be processed at the agro-industry center into rubber and palm oil, while the beef cattle will be cut directly at the slaughterhouses to be processed into meat High quality beef and beef-based foods

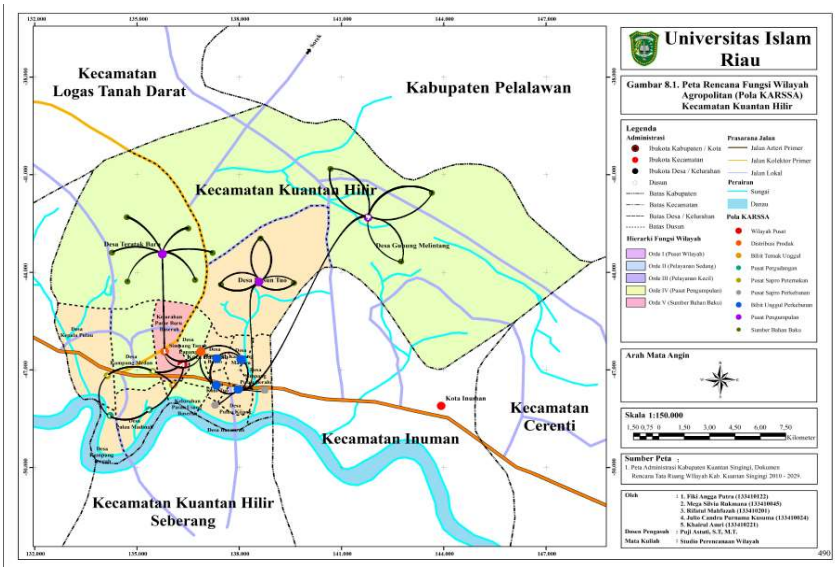

Figure 6. KARRSA Concept in Agropolis Region of Kuantan Hilir (Source : Arcgis, 2016)

CONCLUTION

Based on the identification and analysis that has been done before in the study area that is Kuantan Hilir Subdistrict, it can be concluded that Kuantan Hilir District can be developed and potentially as the center of Agropolis area in Kuantan Singingi Regency by integrating plantation and livestock sector through KARSSA (Rubber – Palm Oil – Beef Cattle) Which is the leading commodity of the District, where the agribusiness and agro-industry based development plan will be implemented for 10 (ten) years of planning from 2016 to 2025, divided into two stages of planning, namely the first phase of the year 2016 - 2020 which is more focused On the provision of production facilities and infrastructure as well as regional infrastructure while the second stage of 2021 - 2025 is more focused on increasing and strengthening the socio-economic structure to support and state the development and development of the region in Kuantan Hilir District.

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