

# ANALYSIS OF GROWTH CENTER SYSTEM USING THE WEIGHT CENTRALITY INDEX METHOD (CASE STUDY OF KARAWANG DISTRICT)

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## ABSTRACT

The development of Karawang Regency in general puts pressure on aspects of the environment, social life, economy and culture of the community, which originated from spatial locations that have a central and supporting role in it. This phenomenon is called spatial interaction which provides an overview of how to manage spaces based on their potential and problems and their relation to the surrounding space. This spatial interaction will form a certain hierarchical structure in an area based on indicators that describe the characteristics of each hierarchy. Karawang Regency consists of 309 villages spread across 31 subdistricts. The growth centers in Karawang regency basically will always be centered on locations with good public services. This will provide an attraction for the community in other locations which is one of the factors in the development of a location and has an influence on the location around it. In addition, the existence of transportation facilities in the form of toll roads and new railway lines makes it easier to access from and to Karawang Regency. Some of the problems in the Karawang regency have led to the growth of new centers. Based on these strategic issues, this study aims to determine the growth centers and their hierarchies in Karawang Regency by using an approach in the form of the Weighted Centrality Index method. And to find out how fast the development is happening in Karawang Regency, the data to be analyzed is the data in 2011 and 2014. In this study, the determination of the growth centers is at the smallest level of the village, while in the Karawang Regency Spatial Plan for the year period 2010-2030, determining growth centers based on urban centers at the sub-district level. Based on the results of the study, there is a difference between determining the hierarchy in this study with the urban spatial structure of Karawang Regency because this study uses the smallest area of the village, while the Regional Spatial Plan (RTRW) uses the smallest area of the district. Whereas in this study, the hierarchy of each village in one district varied.

**Keywords:** Center of growth, Hierarchy, Weighted Centrality Index

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## PRELIMINARY

The rapid development in metropolitan cities such as DKI Jakarta is also followed by the development of areas around DKI Jakarta, for example in Karawang Regency, which is geographically very strategic because it is located close to the Capital. This position is supported along with the existence of resources which makes the Karawang Regency also develop rapidly. The development of the Karawang regency also began with spatial locations that have both central and central roles in it. This phenomenon is a phenomenon called spatial interaction which will eventually form a certain hierarchical structure in an area based on indicators that describe the characteristics of each hierarchy. Spatial interaction provides an overview of how to manage spaces based on their potential and problems and their relation to the surrounding space. This connection is the main focus in developing a location through a spatial interaction approach. Linkages between locations or spaces can basically be seen physically or non-physically. Physically, each room will have the characteristics of physical development in accordance with its role in the hierarchy of an area, for example the role as an office center or health center.

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The more the role of a location to the surrounding area in terms of service, then the relationship with other locations should be higher, because the location around it will always have a relationship of mobility of people who use the services available at the central location. Meanwhile, non-physical, interaction between spaces can be seen from the existence of social and economic gaps. The center of economic growth and social activities basically will always be centered on locations with good public services. This will provide attraction for people in other locations. This attraction is a factor in the development of a location and has an influence on the location around it. One indicator of an area that can be categorized as an activity / growth center is to have the advantage of urban concentration which includes commercial facilities, transportation, communication, availability of social facilities, and scale advantage in public services by the government. Therefore, the more functions or facilities a region has, reflecting the actual hierarchy of the region or the higher the hierarchy of the region the wider the area of influence so that it can be said to be the center of growth. Weighted Centrality Index is a method that is widely used to determine the structure / hierarchy of growth centers that exist in an area by calculating how many functions are there, how many types of functions and how much frequency the existence of a function in one unit area (Riyadi, 2003: 118). The Weighted Centrality Index can show that a region that is a high hierarchy can be categorized as a growth center, that is, a village that has a high number of types of functions / facilities and a high value of centrality weight, while regions that are the lowest hierarchy are determined by the decreasing number of types of functions / facilities and the value of the centrality index is also low. From this description, a research is needed to find out which areas have developed into new growth centers in the Karawang Regency by using the Weighted Centrality Index method. The researcher took the research title "Analysis of the Center for Growth Systems with the Weighted Centrality Index Method (Case Study of Karawang Regency)."

## **LITERATURE REVIEW**

### **Theory of Growth Center**

In principle, the concept of growth center is based on the concept put forward by Francois Perroux. Perroux theory, known as the growth of pole, is the theory that forms the basis of regional industrial development policy strategies that are widely applied in various countries today. Perroux states that, growth does not appear in various regions at the same time, growth will appear at the poles of growth with different intensities and with different effects (Perroux in Muta'ali, 1999: 2).

The growth center must have four characteristics (Tarigan, 2004: 151), namely:

1. There is an internal relationship between various activities.
2. The existence of a multiplier effect (multiplier element).
3. The existence of geographical concentration.
4. Are encouraging the growth of the area behind it.

Thus, the concentration of an area can be considered a center of growth if that concentration can accelerate economic growth both inside (among various sectors within the city) and outside (to the backside).

### **Growth Point Concepts**

The basic idea of this concept is that economic activity in an area tends to agglomerate at several main points (focal points) even though the flow density (the strength of interaction will decrease with increasing distance. These main points are then referred to as growth points, whereas the area within its boundary of influence is referred to as the zone of influence or growth area (Richardson, 1970).

In this context, it can also be interpreted that spatial population distribution can be considered organized in a hierarchy of centers (nodes) and related in a functional relationship, assuming that agglomeration resulting from market forces will also produce social benefits (Richardson, 1970).

### **The Centrality Index is Weighted**

Weighted Centrality Index is a method that is widely used to determine the structure / hierarchy of growth centers that exist in an area by calculating how many functions are there, how many types of functions and how much frequency the existence of a function in one unit area (Riyadi, 2003: 118). The Weighted Centrality Index can show that a region that is a high hierarchy can be

categorized as a growth center, that is, a village that has a high number of types of functions / facilities and a high centrality weight value, while regions that are the lowest hierarchy are determined by the fewer number of types of functions / facilities and centrality index values are also low (Tarigan, 2005: 163-164). One of the advantages of using this method is that this method produces a more accurate hierarchy of service centers compared to the scalogram method, although the required data is not too much and is easily obtained, and the analysis process is relatively easier to do.

The stages of weighted centrality index calculation are as follows:

- a. Copy the previously made scalogram, replace the "X" with the number "1"
- b. Calculate the total amount by row and column
- c. Calculate the weight of each function based on the formula:

$$C = \frac{t}{T}$$

Where:

C = function weight

t = total centrality value, taken equal to 100

T = total number of functions in the region under review.

This weight value indicates that the higher the frequency of the existence of a function, the smaller the weight value, conversely the lower the frequency of the existence of a function, the higher the weight value.

## DISTRICT REGION PLANNING

The district spatial structure plan is a district spatial planning framework composed of a constellation of activity centers that are hierarchical with each other connected by the district area infrastructure network system, especially the transportation network (PERMEN PU Number 16 / PRT / M / 2009).

The activity center in the regency is a node of social, cultural, economic, and / or community administration services in the regency consisting of Regional Activity Centers (PKW) located in the regency area, Local Activity Centers (PKL) located in the regency and Central areas other centers within the regency whose authority is determined by the regency government, namely the Service Area (PPK) is an urban area that functions to serve sub-district scale activities or several villages and the Environmental Service Center (PPL) is an urban area that functions to serve scale activities village.

Based on Karawang Regency Regulation Number 2 of 2013 concerning Karawang Regency Spatial Planning in 2011-2031, there are no PKW in Karawang Regency, only PKL, PPK and PPL.

## RESEARCH METHODS

The research method is a method used to achieve research objectives. The research method used in this thesis is the Weighted Centrality Index method, which is the development of the Scalogram method. Data serves as input for analysis so that it can be output to answer research questions. The data needed in this study is secondary. Secondary data is primary data that has been further processed.

### Data Collection Technique

Data collection techniques are intended to obtain the data needed as input for each subsequent analysis phase. There are 2 (two) types of data, namely primary data and secondary data, while the methods for collecting them are as follows:

1. Primary Data Collection

Primary data needed in this study relates to existing conditions in Karawang Regency. Data collection techniques are carried out by means of observation, namely direct observation to the location to prove the real situation with secondary data obtained.

As for what was observed was the existing conditions in Karawang Regency.

## 2. Secondary Data Collection

Secondary data is primary data that has been further processed and presented by primary data collectors or by other parties in the form of tables or diagrams. This data was obtained from the results of research, articles both from print and electronic media, library research and official documents from relevant agencies.

## RESEARCH VARIABLE

There are 3 research variables used in the analysis of growth center system research, namely:

1. Number and population density
2. Number of public service facilities
3. Number of types of public service facilities

## RESULTS AND DISCUSSION

### Analysis of Growth Center in Karawang District

#### A. Population Analysis

The population development that occurs in Karawang Regency always increases every year. However, the increase in population is not evenly distributed in all villages. The strategic location of an area or village can influence the demographic social character of the region so that it can be a pull for people in other regions to carry out activities so that the demographic conditions in the region are more dynamic.

Table 1.1 Total Population of Karawang Regency in 2011 and 2014

District	Total Population in 2011	Total Population in 2014
Pangkalan	35.997	54.445
Tegalwaru	33.301	32.642
Ciampel	38.146	35.165
Telukjambe Timur	126.301	112.399
Telukjambe Barat	47.309	54.445
Klari	131.005	144.969
Cikampek	95.550	94.052
Purwasari	55.773	54.445
Tirtamulya	45.709	54.445
Jatisari	72.417	73.643
Banyusari	53.624	50.096
Kotabaru	118.405	113.885
Cilamaya Wetan	79.948	80.884
Cilamaya Kulon	64.411	59.285
Lemahabang	64.006	49.247
Telagasari	64.527	63.862
Majalaya	39.486	40.832
Karawang Timur	95.677	104.244
Karawang Barat	155.137	135.606
Rawamerta	50.417	50.494
Kutawaluya	59.708	58.123

<b>Rengasdengklok</b>	103.488	109.716
<b>Jayakarta</b>	60.677	65.444
<b>Pedes</b>	72.940	67.534
<b>Cilebar</b>	42.764	43.606
<b>Cibuaya</b>	48.655	46.539
<b>Tirtajaya</b>	69.610	71.927
<b>Batujaya</b>	76.754	75.459
<b>Pakisjaya</b>	39.111	54.445
<b>JUMLAH</b>	<b>2.103.385</b>	<b>2.250.120</b>

Source: BPS Karawang Regency

Potential factors (pull factors) that can affect population density in the future are as follows:

1. There is a tendency of population growth rate to an uncertain extent as determined in the population development policy, where in 2014 there was an increase in population of 146,735 residents from 2011.
2. The occurrence of various development orientation changes in the Karawang Regency area due to the addition of new functions, both within the sub-district and village areas, such as areas of development of new settlements, industry, plantations, forestry, mining and others. another, which is based on the reference to the Karawang Regency Spatial Planning Map Year 2010-2030, in 2014 there were many new service centers, both existing and which will soon be built.

## B. Settlement Pattern Analysis

Analysis of settlement patterns is very useful to see the distribution patterns of land use types that are influenced by the dynamics of community life and the process of interaction that runs between various environmental elements. The development of an area starts from a residential center, where settlements cover a variety of activities at the local, regional and national scale. The things that need to be considered and prepared in the construction of a settlement are:

1. The location is designated specifically for the center of settlements
2. Provision of facilities, infrastructure and utilities to support settlements
3. Provision of government services, social services and strategic economic activities.

## ANALYSIS OF SERVICE CENTER SYSTEM

Each Regency has centers that are arranged hierarchically. The application of this hierarchy is done in the hope that it can reduce development disparities and differences in prosperity between districts. Factors that determine this hierarchy are the number of residents who live in the center, the number of public service facilities available and the number of types of public service facilities available.

Determination of hierarchy in an area serves to assist in determining the public facilities that need to be built in each district, the determination of public facilities that not only concern the type, but also the capacity and quality of services and direct the location of public facilities to be more precise and more efficient.

The existing service system in Karawang Regency consists of economic, educational, health service, and worship service services.

### a. Economic Facilities Services

Economic facilities are one of the factors that influence the growth of economic activity in a region (Saudi, 2018). The existing economic facilities are mostly facilities arising as a result of trading activities and services. Economic facility services in Karawang Regency consist of markets, minimarkets, grocery stores, restaurants, food stalls, hotels, accommodation and industries.

Until 2014, the total number of hospitals in Karawang Regency was 123 units spread across 309 villages. And within a period of 3 years, namely from 2011 to 2014, there was an increase in the building market without as many as 67 units, where the largest increase was in the Village of Mekarsari, Jatisari District which was 11 units. For minimarkets, within 231 years there has been an increase of 231 units to 489 units. In Karawang Regency, the grocery store business increased by 475 units to 18482 units in 2014.

Within 3 years, starting from 2011 to 2014, the food stall business also experienced an increase of 3,191 units to 11,994 units. For hotels, in 2014 there was an increase of 1 unit to 19 units. And for cooperatives, based on data from 2011 to 2014, there were an increase of 38 units to 177 units.

Table 1.2 Results of Scalogram Analysis of Economic Facility Services in Karawang Regency in 2011 and 2014

<b>Types of Economic Facilities Services</b>	<b>Number of Facilities in 2011</b>	<b>Number of Facilities in 2014</b>
<b>Industries</b>	6.991	5.021
<b>Market without building</b>	56	54
<b>Semi Permanent Building Market</b>	-	24
<b>Permanent Building Market</b>	-	123
<b>Mini Market</b>	258	489
<b>Grocery store</b>	18.007	18.482
<b>Food / Beverage Shop</b>	8.803	11.994
<b>Restaurant</b>	351	182
<b>Hotel</b>	18	19
<b>Lodging</b>	28	8
<b>Cooperative</b>	139	177

Source: BPS Karawang Regency

**b. Educational Facilities Services**

Existing educational facilities in Karawang Regency are kindergartens, elementary schools / madrasas, and special schools. The distribution of these educational facilities is almost evenly distributed in each village and adjusted to the size of the population and the size of the area / village.

As of 2014, a total of 703 nursery schools in Karawang Regency were spread across 309 villages. And within a period of 3 years, namely from 2011 to 2014, there were an increase in kindergarten schools as many as 108 units, with the most being in Sukaluyu Village, East Telukjambe District, which was as many as 14 units.

Table 1.3 Results of Scalogram Analysis of Educational Facility Services in Karawang District in 2011 and 2014

<b>Types of Education Facilities Services</b>	<b>Number of Facilities in 2011</b>	<b>Number of Facilities in 2014</b>
<b>Kindergarten</b>	595	703
<b>Elementary school</b>	1.065	1.091
<b>Middle School</b>	184	203
<b>High school</b>	66	76
<b>Vocational School</b>	73	79

<b>College</b>	13	14
<b>SLB</b>	2	3
<b>Course Institutions</b>	227	100

Source: BPS Karawang Regency

Total elementary schools up to 2014 in Karawang Regency were 1,091 units spread across 309 villages. Within a period of 3 years, namely from 2011 to 2014, there were an increase of 26 units of elementary schools, with the most being in the village of Mekarmulya, Kecamatan Telukjambe Barat which was as many as 7 units. As of 2014, the total junior high schools in Karawang Regency were 203 units spread across 309 villages. And within a period of 3 years, namely from 2011 to 2014, there were an increase in 19 junior high schools, with the most being in Sukaharja Village, Telukjambe Timur District, Cikampek Barat Village in Cikampek District, Karawang Kulon Village in West Karawang District, Sukamerta Village in Rawamerta Subdistrict and Kutakarya Village in Kutawaluya Subdistrict, as many as 2 units.

In Karawang Regency, from 2011 to 2014 there was an increase in the number of senior high schools by 10 units to 76 units. The highest increase is in Karawang Kulon Village, which is 3 units. For the level of vocational high school education, in Karawang Regency there was an increase of 6 units to 79 units within a period of 3 years, namely from 2011 to 2014, where the most additions were found in Desa Kutakarya in Kutawaluya District. In Karawang Regency, for the tertiary education and special school level, there was an increase of 1 unit each in 2014, to 14 units and 3 units.

### c. Health Facilities Services

Existing health service facilities in Karawang Regency consist of hospitals, maternity hospitals, puskesmas, auxiliary puskesmas, polyclinics, doctor's offices, midwife practices, poskesdes, polindes, posyandu and pharmacies. Distribution of health facility services in Karawang Regency, especially puskesmas, doctor's practice, and posyandu covering all villages, but not all service facilities in each village serve the district scale. While other health facility services are spread throughout the districts and serve services in each existing district.

As of 2014, a total of 20 units of hospitals in Karawang Regency were spread out in 309 villages. And within a period of 3 years, namely from 2011 to 2014, there were an increase in the number of hospitals as many as 7 units, which are spread in Wadas Village and Sukaharja Village in East Telukjambe District, East Cikampek Village in Cikampek District, Cikalongsari Village in Jatisari District, Sarimulya and West Jomin villages in Kotabaru District and Nagasari Village in West Karawang District. In Karawang Regency, from 2011 to 2014 the number of Puskesmas increased by 16 units to 64 units in Cintelaksana Village, Anggadita Village, Duren Village, Mekarsari Village, Pacing Village, North Cicinde Village, East Jomin Village, Cilamaya Village, Sukatani Village, Talagasari Village, Karawang Wetan Village, Lemahduhur Village, Makmurjaya Village, Payungsari Village, Sungaibuntu Village, Cibuaya Village and Sabajaya Village. Whereas for auxiliary health centers in Karawang regency experienced an increase of 14 units to 78 units in 2014 in Talagajaya Village, Karyabakti Village, Telukambulu Village, Cibuaya Village, South Pusakajaya Village, Kutamukti Village, Tanjungmekar Village, Talagasari Village, Muara Village, Rawagempol Kulon, Sukatani Village, Cikarang Village, West and East Jomin Village, Kalijati Village, Balonggandu Village, Sukasari Village, Karangligar Village, Kutanegara Village, Kutapohaci Village, Kutamekar Village, Kutalanggeng Village, Parungmulya Village, and Tamanmekar Village. For the doctor's and midwife's practice in Karawang Regency, within 3 years from 2011 to 2016, there were an increase of 3 and 74 units to 234 and 637 units. The most number of midwives practice places are in Karawang Kulon sub-district, which is 13 units. From 2011 to 2014, the number of Poskesdes and Polindes increased by 55 and 42 units to 67 and 81 units. For posyandu units, within a period of 3 years since 2011, an increase of 255 units has been spread across almost evenly in 309 villages in Karawang Regency. For pharmacies, in 2014 there were 75 additional units from 2011 to 225 units, with the largest increase being in Nagasari Village.

Table 1.4  
 Results of Scalogram Analysis of Health Facilities Services in Karawang District in 2011 and 2014

<b>Types of Health Facilities Services</b>	<b>Number of Facilities in 2011</b>	<b>Number of Facilities in 2014</b>
<b>Hospital</b>	13	20
<b>Maternity Hospital</b>	112	31
<b>Polyclinic</b>	236	215
<b>Public health center</b>	48	64
<b>Supporting Health Center</b>	64	78
<b>Clinic</b>	231	234
<b>Midwife practice</b>	563	637
<b>Poskesdes</b>	12	67
<b>Polindes</b>	39	81
<b>Integrated Healthcare Center</b>	2.427	2172
<b>Pharmacy</b>	150	225

Sumber : BPS Kabupaten Karawang

**d. Services for Worship Facilities**

Worship facilities in the Karawang regency are dominated by mosques and surau / langgar because the majority of the majority of the population of Karawang regency is Muslim. Almost all villages have surau / langgar and mosques which are evenly distributed.

Until 2014, the total number of mosques in Karawang Regency was 1815 units spread across 309 villages. And within a period of 3 years, namely from 2011 to 2014, there were an increase of 51 units, where the largest increase was in Sukamerta Village.

Table 1.5  
 Results of Scalogram Analysis of Health Facilities Services in Karawang District in 2011 and 2014

<b>Types of Services Facilities for Worship</b>	<b>Number of Facilities in 2011</b>	<b>Number of Facilities in 2014</b>
<b>Mosque</b>	1.764	1.815
<b>Surau/ Langgar</b>	4.953	4.861

Sumber : BPS Kabupaten Karawang

### **ANALYSIS RESULTS USED THE WEIGHT CENTRALITY INDEX METHOD**

Determination of the growth center hierarchy with a weighted centrality index is not only based on the number of functions or service facilities available in an area, but also based on the frequency of the existence of the function or facility in the area under review.

In knowing the service function hierarchy, it is necessary to compare 2011 data and 2014 data using a scalogram method and a weighted centrality index with the smallest area of the village. This scalogram analysis and centrality index can show that a region that is a high hierarchy is a village that has a number of types of functions / facilities and a high centrality index value or the sub-district can be categorized as a growth center, while the regions that are the lowest hierarchy are determined by increasingly the least number of types of functions / facilities and low centrality index values as well. In this study divided into four classes / categories with the following division:

- a. Hierarchy I with the availability of the number of functions / facilities and the value of the centrality index is very high
- b. Hierarchy II with the availability of the number of functions / facilities and a high centrality index value
- c. Hierarchy III with the availability of the number of functions / facilities and the value of the centrality index is medium
- d. Hierarchy IV with the availability of the number of functions / facilities and a low centrality index value.

To determine growth centers, first of all, it is necessary to determine the number and diversity of service facilities (in this case the type of service taken is economic services, and social services in the form of education, worship and health services) in each village in each sub-district. in Karawang Regency through scalogram analysis. The data used for scalogram analysis in this study includes data on social and economic facilities. This analysis is used to identify regional growth centers based on the facilities they have.

Furthermore, in the Weighted Centrality Index analysis, the centrality index between service centers in Karawang District was given a weighting ranging from hierarchy I to hierarchy IV in 309 villages. Thus, the hierarchy of growth centers and the service activities of a region can be determined. Areas with more complete facilities are service centers, while areas with less facilities will be hinterlands. And based on the results of the analysis it can be concluded, villages belonging to hierarchy I have a high number of public facilities. On the other hand, the regions or villages that belong to hierarchy IV have the fewest number of public facilities.

Based on the results of the analysis of existing data using the Weighted Centrality Index method, in 2014 there were several villages that experienced faster development than the surrounding villages so that they experienced an increase in hierarchy such as Mekarbuana Village in Tegalwaru District, Sukaluyu Village, Sukaharja Village, Wadas Village and Sukamakmur Village in Telukjambe Timur Subdistrict, Anggadita Village, Cibalongsari Village and Duren Village in Klari Subdistrict, Cengkong Village in Purwasari Subdistrict, Mekarsari Village in Jatisari Subdistrict, Telarsari Village in Jatisari Subdistrict, West Jomin Village and Jomin Timur Subdistrict in Kotabaru Subdistrict, Kotasari Subdistrict Talagasari in Talagasari District and Cibuaya Village in Cibuaya District.

In addition to progressing, there are also some villages whose development is much slower compared to the surrounding villages, so that the hierarchy is decreasing as happened in Dawuan Tengah Village in Cikampek District, Kiara Village in Cilamaya Kulon District, Kondangjaya Village in East Karawang District, Tanjungpura Village and Karangparawitan Village in West Karawang District, Sukaratu Village and Mekarpoahaci Village in Cilebar District.

In 2011, Karangparawitan Village in West Karawang District was the village with the highest structure or hierarchy compared to other villages in Karawang Regency. However, because of its slow development, in 2014 it experienced a decline in hierarchy, and the highest structure or hierarchy was in Anggadita Village in Klari Subdistrict. This is triggered because Desa Anggadita has higher accessibility compared to other regions because it is passed by toll roads, provincial roads and railways so that the region's rapid development occurs. Moreover, Klari Subdistrict itself is a place of concentration of the population with the largest population among other sub-districts. The large number of residents in this sub-district has resulted in an increasing need for social facilities for the community, so that in this sub-district many economic, educational, health and religious facilities are built. Therefore, this sub-district can function as an important growth center in the context of providing services to the community and also the development of other regions in Karawang Regency.

Table 1.6 Results of Analysis of Hierarchy Changes in Karawang District in 2011 and 2014 Based on the Weighted Centrality

Index Method			
District	Village	Hierarc hy in 2011	Hierar chy in 2014
<b>Tegalwaru</b>	Mekarbuana	IV	III
<b>Telukjambe Timur</b>	Sukaluyu	IV	III
<b>Telukjambe Timur</b>	Sukaharja	IV	III
<b>Telukjambe Timur</b>	Wadas	IV	III
<b>Telukjambe Timur</b>	Sukamakmur	IV	III
<b>Klari</b>	Anggadita	IV	I
<b>Klari</b>	Cibalongsari	IV	III
<b>Klari</b>	Duren	IV	II
<b>Cikampek</b>	Dawuan Tengah	III	IV
<b>Purwasari</b>	Cengkong	IV	III
<b>Jatisari</b>	Mekarsari	IV	III
<b>Jatisari</b>	Telarsari	IV	III
<b>Kotabaru</b>	Jomin Barat	IV	III
<b>Kotabaru</b>	Jomin Timur	IV	III
<b>Cilamaya Kulon</b>	Kiara	III	IV
<b>Talagasari</b>	Talagasari	IV	III
<b>Karawang Timur</b>	Kondangjaya	III	IV
<b>Karawang Barat</b>	Tanjungpura	II	III
<b>Karawang Barat</b>	Karangparawitan	I	II
<b>Cilebar</b>	Sukaratu	III	IV
<b>Cilebar</b>	Mekarpohaci	III	IV
<b>Cibuaya</b>	Cibuaya	IV	III

Source: Analysis Results, 2016

Based on the analysis of the data in 2011 and 2014 mentioned above, the results obtained that within a period of three years, namely from 2011 to 2014, there was a significant shift in the hierarchy. The decline in the hierarchy occurred, not because of the population and the number of facilities being reduced, but it tends to be caused by a delay in development. And regions that experience an increase in hierarchy tend to experience faster regional development. Subdistricts that are intended as urban centers and settlements in the Karawang regency are included in the upper hierarchy or hierarchy that has complete facilities, for example are Klari District and West Karawang District. Klari Subdistrict and West Karawang Subdistrict are included in the urban center and residential areas in the Karawang Regency RTRW in 2010-2030.

There is a difference between the results of the analysis and RTRW policy, considering that in this study the determination of growth centers at the smallest level of the village, whereas in the Karawang Regency Spatial Planning (RTRW) for the period

2010-2030, the determination of growth centers is based on urban centers at the sub-district level. Then, it can be identified that the Karawang Regency Environmental Activity Center (PKL) is in the City of Karawang which includes the District of West Karawang District, East Karawang District, Cikampek District, Rengasdengklok District and Cilamaya Wetan District. Whereas based on the results of the analysis using the Weighted Centrality Index method, the coverage of villages included in the Karawang urban area which occupies Hierarchy I or the main activity center is in Anggadita Village, Klari District. Hierarchy II is in Nagasari Village, Karangpawitan Village and Karawang Kulon Village in West Karawang District, and Duren Village in Klari District. Based on the District RTRW, the Regional Service Center (PPK) is located in Klari Subdistrict, Purwasari Subdistrict, Jatisari Subdistrict, Telukjambe Barat Subdistrict, Telukjambe Timur Subdistrict, Kotabaru Subdistrict, Tirtamulya Subdistrict, Telagasari Subdistrict, Lemahabang Subdistrict, Majalaya Subdistrict, Batujaya Subdistrict, Pedjambe Subdistrict, Kotabaru Subdistrict, Kotabaru Subdistrict, Tirtamulya Subdistrict, Telagasari Subdistrict, Lemahabang Subdistrict, Majalaya Subdistrict, Batujaya Subdistrict, Pedes Subdistrict, District of Kotjaru Cilamaya Kulon District, Pangkalan District, Tegalwaru District.

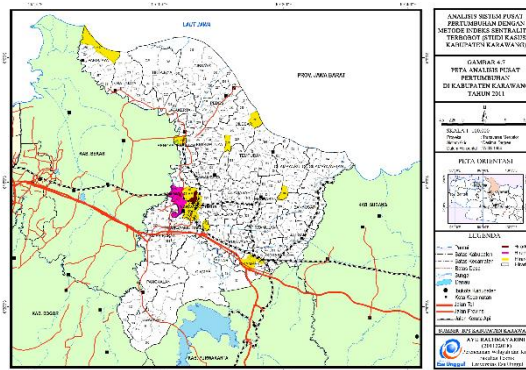


Figure 1 Map of Growth Center Analysis in Karawang District in 2011



Figure 2 Map of Analysis of Growth Centers in Karawang District in 2014

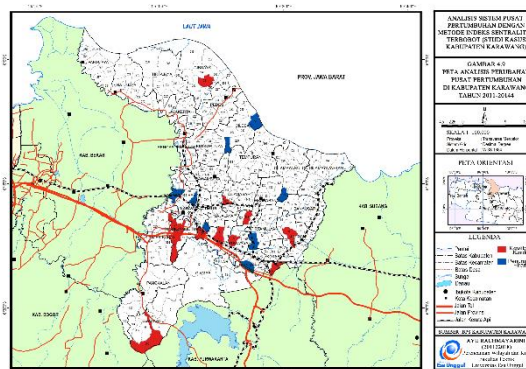


Figure 3 Map of Analysis of Changes in Growth Centers in Karawang Regency 2011-2014

While based on the results of the analysis, Hierarchy III is in Mekarbuana Village in Tegalwaru District, Sukaluyu Village, Sukaharja Village, Wadas Village and Sukamakmur Village in Telukjambe Timur District, Cibalongsari Village in Klari District,

Cikampek City and Cikampek Village in Cikampek District, Cengkong Village in Purwasari District, Mekarsari Village and Telarsari Village in Jatisari District, East Jomin Village and West Jomin Village in Kotabaru District, Cilamaya Village in Cilamaya Wetan District, Talagasari Village in Talagasari District, Adiarsa East Village, Karawang Wetan Village and Palumbonsari Village in Karawang District East, South Rengasdengklok Village in Rengasdengklok District, Cibuaya Village in Cibuaya District and Tanjungpakis Village in Pakisjaya District and West Adiarsa Village and Tanjungpura Village in West Karawang District.

Local Activity Center (PKL) is an urban area that functions to serve district or several district scale activities. Street vendors in Karawang Regency include West Karawang District, East Karawang District, Cikampek District, Rengasdengklok District and Cilamaya Wetan District. West Karawang PKL and East Karawang PKL form the Karawang urban area which includes the District of West Karawang, East Karawang, West Telukjambe, East Telukjambe and Klari. Cikampek PKL forms the Cikampek Urban Area which consists of Cikampek, Kotabaru and Purwasari Districts. Rengasdengklok street vendors form Rengasdengklok urban area which includes Rengasdengklok District. The Cilamaya Wetan street vendors form the Cilamaya Wetan Urban Area which covers the Cilamaya Wetan District.

Regional Service Centers (PPK) are urban areas that function to serve sub-district or several village scale activities. PPK in Karawang Regency covers Klari Subdistrict, Purwasari Subdistrict, Jatisari Subdistrict, Telukjambe Barat Subdistrict, Telukjambe Timur Subdistrict, Kotabaru Subdistrict, Tirtamulya Subdistrict, Telagasari Subdistrict, Telagasari Subdistrict, Lemahabang Subdistrict, Majalaya Subdistrict, Batujaya Subdistrict, Pedes Subdistrict, Cilamaya Subdistrict, Pangkalan Subdistrict and Tegalwaru District

The Center for Environmental Services (PPL) is a settlement center that serves to serve inter-village scale activities. PPL in Karawang Regency covers Tempuran Subdistrict, Banyusari Subdistrict, Pakisjaya Subdistrict, Ciampel Subdistrict, Tirtajaya Subdistrict, Cibuaya Subdistrict, Cilebar Subdistrict, Rawamerta Subdistrict, Jayakarta Subdistrict, and Kutawaluya Subdistrict.

West Karawang PKL as a center of activity with service coverage throughout the Regency area and directed to the development of the Karawang Regency government center, urban settlements and the entrance or interchange of the primary road network system or toll roads. East Karawang PKL as a center of activity with the scope of services of several surrounding districts and is directed to the development of industrial designation areas, as well as urban settlements. Rengasdengklok street vendors as a developing area with a role as a center for the collection and distribution of agricultural products, especially wetland agriculture and limited scale settlements and industries related to wetland agricultural products. PKL Cilamaya Wetan as a supporter of the plan for an international port in the District of Tempuran, while maintaining the rural characteristics and the existence of a wetland farming area.

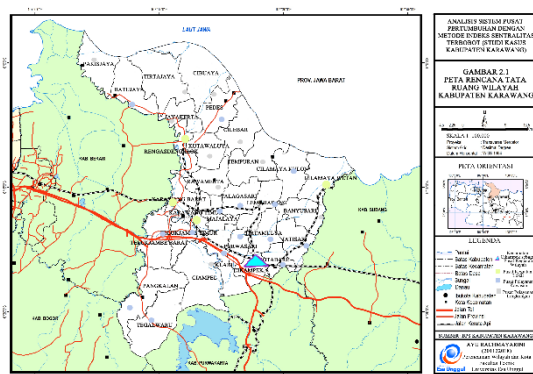


Figure 4 Map of Spatial Planning for Karawang Regency in 2010-2030

## CONCLUSION

Based on the results of research on the Center Growth Analysis System With the Weighted Centrality Index Method (Case Study of Karawang Regency, the conclusions drawn from this study are as follows:

1. In this study, according to a comparison of the results of the analysis based on existing data using the Weighted Centrality Index method, it shows that in 2014 there were several villages that experienced more rapid development than the surrounding villages so that they experienced an increase in hierarchy such as Mekarbuana Village in Tegalwaru District , Sukaluyu Village, Sukaharja

Village, Wadas Village and Sukamakmur Village in Telukjambe Timur District, Anggadita Village, Cibalongsari Village and Duren Village in Klari District, Cengkong Village in Purwasari District, Mekarsari Village in Jatisari District, Telarsari Village in Jatisari District, Jomin Barat Village and East Jomin Village in Kotabaru District, Talagasari Village in Talagasari District and Cibuaya Village in Cibuaya District.

2. In this study according to a comparison of the results of the analysis based on existing data using the Weighted Centrality Index method shows that others are progressing, there are also some villages whose development is much slower than the surrounding villages, so that it has decreased in the hierarchy as happened in Dawuan Tengah Village in Cikampek District, Kiara Village in Cilamaya Kulon District, Kondangjaya Village in East Karawang District, Tanjungpura Village and Karangparawitan Village in West Karawang District, Sukaratu Village and Mekarpoehaci Village in Cilebar District
3. In this study, a significant hierarchical change occurred because the Karawang Regency Spatial Plan was prepared in 2010, so the data used as a reference for compilation is the 2009 RTRW data. While in this study using 2014 data so that there have been many changes

### SUGGESTION

Based on the conclusions, the research compiled the following recommendations:

1. Based on the results of the study found that the center of growth in the Karawang regency is concentrated in the West. This is because the sub-districts in the Karawang regency located in the western part are located close to the capital and its territory is crossed by the toll road so that access to services also tends to be centralized in the western part with rapid growth of activities. In order for development to be evenly distributed in all sub-districts in the Karawang regency, the local government of the Karawang regency needs to make efforts to increase the availability of government social and economic facilities with a priority on growth centers, especially in regions with low hierarchy such as the northern and southern regions.
2. To drive growth especially in areas that are in a low classification / hierarchy, a Karawang Regency Government is required to be able to encourage development in the area. These activities can be through efforts to improve services such as the provision and development of facilities and infrastructure, both existing and needed.

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