

Extend Urbanization in Smaller-Sized Cities and Small Town Development in Java: The Case of The Tegal Region

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Extended urbanization in smaller-sized cities and small town development in Java: The case of the Tegal Region

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Abstract. Urbanization processes in Java are characterized by the extended urbanization of its cities, that also create and develop small towns in surrounding areas of large and much smaller cities. This paper aims to bring greater attention to processes unfolding in smaller Javanese cities, and elaborates these processes through Tegal case study. To do this, long-term development is studied in the Tegal region through a time-series comparison by examining the development of urban villages within the administrative area of the region, based on statistical data collected from the Village Monographs (*potensi desa*) over a period from 1990 to 2017. Urban development in the Tegal Region is described in urban spatial development and urban population concentration to identify and analyse the small towns developed in the region. The study reveals that Tegal has undergone a similar process of core-periphery spatial development patterns that are experienced among larger urban agglomerations. The scattered towns surrounding the core city developed in a variety of sizes. The development of the city and towns in the surrounding areas in Tegal Region converging into an urban agglomeration that could already be considered its own metropolitan region with the city of Tegal as the core.

1. Introduction

Urbanization processes in Asia after the second world war highlights a distinct spatial process from the previous processes that have taken place in Western Europe and North America [1,2]. Extended urban formation becomes spatial characteristic of urban development in many Asian cities [2]. The formation shows an urban spatial system that extends beyond intended city administrative areas, which creates integrated regional systems among the city and its surrounding areas. Meanwhile, the peri-urbanization in the process blurs the boundaries between the urban and the rural creating more connectivity and giving rise to new spatial paradigms of urban-rural integration [2,1]. Technological advances, especially in terms of transportation along road and rail transportation networks, as well as telecommunication technologies, has improved connectivity among and within cities, which significantly facilitates the circulation of commodities, people, ideas and capital in the regions [1,2]. These trends also make families living in the periphery possible to conduct non-agricultural activities in towns and cities as other income generating activities, improving links between village production systems and larger production complexes in towns and cities. Ginsburg describes this process as the “urbanization of the countryside” [2], while McGee describes it as “continuous urbanization” in the “space-economy transition” [1].

The extended urban formation of Asian cities is described by McGee as a new spatial pattern as the “*desakota*” model [1]. *Desakota* regions are densely populated regions adjacent to peri-urban areas that



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usually surround urban cores. They reflect the pace and characteristics of socioeconomic changes and features of the urbanization process in areas that offer a particular form of mega-urban regions to emerge[1]. Therefore the existence of these particular regions is important to the urban spatial processes, as they will be the place in which urban growth takes place. At the same time, these sites will be the place where rural-urban interactions intensively occur.

Ginsburg and McGee has referred to this process originating in primary cities, such as in New Delhi, Bangkok, Jakarta, and Kuala Lumpur. They elaborate their arguments based on observations and research in the 1960s and 1970s, when many Asian countries were just beginning to urbanize after independence from colonial rule. In this context, the distinct urban phenomena in Asian cities spread from the nodes of primary cities of that time period. The tendency of extended formation in the dynamic of Asian cities led Jones to argue that administrative boundaries have become increasingly irrelevant in analyzing the dynamics of growth among Asian cities [3]. In the case of Indonesia, Jones argued that cities like Jakarta, Surabaya, Bandung, Semarang, Medan and Makasar in the 1990s experienced growth in ways that should incorporate peripheries outside city administrative boundaries [3]. Even though there is some variation among cities, Jones also describes that the growth of the cities disregards administrative boundaries [3]. The common pattern is that growth in the peripheries, especially among areas that he defined as inner zones of the peripheral zones, which are adjacent to cities that also began to function as the cores area of the urban region[3]. This research showed that extended urban formations were unfolding in many secondary cities in Indonesia, and that the formation was not simply a phenomenon particular to Jakarta, the primary city, alone.

Analyzing such phenomenon during the 1990s and 2000s in Cirebon – a small size city in Java – Fahmi et al. suggested that extended urban formations were also characterized by urban development processes in smaller cities in Java [4]. After the 1980s, urban growth beyond the large cities like Jakarta, Surabaya, Bandung and Semarang, smaller cities in Java also experienced dynamic growth and their own urbanization processes[5]. Some smaller cities like Cirebon, Sukabumi and Cilegon in the western part of Java as well as Blitar, Probolinggo, Pasuruan and Kediri in the eastern part, have experienced urban population growth on a scale much higher than that of the big cities [5]. Moreover, similar phenomena were observed by Jones among Asian cities, in which urban population growth in the peripheries was occurring at a rate much higher than that of the cores [3]. These phenomena show that the extended urban formation is also characterized by dynamic spatial formation and urban growth in Java's smaller cities.

Java is considered the most densely populated large island in the world. It is the 13th largest in the world with an area of 138,793.6 km², but has a population of 145 million inhabitants, averaging at a density of more than 1,000 inhabitants/km². This level of density is much higher than that of Honshu in Japan, which has the second highest density of large islands in the world, and which is still less than 500 inhabitants/km². Java is thus distinct from other islands in Indonesia and around the world in terms of urbanization processes. The distinction is sharpened by the fact that the population of Java is more concentrated on the north coast of the island than the more moderately populated landscapes of the southern coast.

Java also has an important role in the urbanization context of Indonesia. Even though the population proportion of Java to the national figures have decreased from 64.95% in 1971 to 57.5% in 2010, and today is less than 56% of the national population, the country's urban population is still concentrated on this island. The proportion of the urban population of Java to the national average has slightly increased from 66.1% in 1971 to 67.6% in 2010, with a number that is continuing to increase sharply from 13.7 million urban dwellers in 1971 to 79.9 million in 2010. Java has received more than two thirds of new urban dwellers in Indonesia since the 1970s, with a number that increases from "only" about one million new urban dwellers annually in the 1970s to about two million per year in the 2000s. These figures point to the primacy and importance of the role that Java plays in accommodating urban population growth for the country. The island is also the home of most Indonesian cities with more than one million populations. Eight out of the twelve million-plus cities in Indonesia, including Jakarta, are located in Java. About five out of the eight million population cities

are located in and around Jakarta, while the other three are scattered in West Java, Central Java and East Java. In addition, Java also has six cities with a population between 500,000 to one million people. One of them is also located in the surrounding areas of Jakarta, as well as sixteen other cities in smaller sizes of similar relative populations.

The high concentration of urban populations in Java has led the island to have two intertwined main characteristics in its urbanization process [5]. The first characteristic is the that urbanization is growing in scale, and development patterns are taking place among existing urban concentrations, especially those of the big cities. Furthermore, the formation of small and new urban concentrations, especially in the surrounding areas of existing cities, are taking place among both the large ones and smaller cities. In many cases, developments are located adjacent to one another, and spatially, the developments show the intensification of existing urban areas beyond their administrative boundaries merging with its peripheries. The phenomena in Java occurred in many types of urban sizes, from the largest urban concentrations to the much smaller ones [5].

This paper aims to analyze the extended urban formation in small cities in Java, using the case of the Tegal Region in order to develop a deeper understanding about extended urbanization processes and the formation of small towns in the process. It is important to understand that the extended urbanization process of small cities in Java, as there are not many studies and research that have been carried out on extended urbanization processes in the smaller cities. Similar studies that analyze large cities like Jakarta [6,7,8,9] and Bandung [9,10,11] have been conducted, but the kind of study that focuses on smaller cities are still limited. Fahmi et.al have contributed to the discussion on smaller cities by using the case of Cirebon [4], Pradoto et.al., Mardiansjah et.al and Rahayu and Mardiansjah have contributed to the list by using the case of Surakarta [12,13,14], and this paper will give the contribution by using the case of Tegal.

2. Extended Urbanization as a Process of Small Towns' Development in the Peripheries

The phenomena of extended urban development was recognized and observed in the 1960s, when distinct urbanization processes took shape in the post-independence era. The phenomena were significantly different to previous urban spatial formation that formed in more urbanized countries, i.e., in the USA and North America, Western Europe, and Japan [2]. This phenomena occurred in high density regions in South, Southeast and East Asia, especially in wet-rice cultivation areas, which stimulated more intensive interactions among the countryside and the city center. This made possible the strengthening role of rural centers in the peripheries, which then lead to stronger integration between city center and peripheries [1,2]. Ginsburg mentions this process as "urbanization of the countryside", and this process tends to change the conventional rural areas, with agricultural activities predominantly within some distance from the city center in the peripheral zone that develops into unique parts of urban areas where urban features and agricultural activities are more mixed with the blurred distinction between urban and rural areas [2].

Using the Indonesian word "*kota*" (city), "*desa*" (village), and a suffix "*si*" meaning process, McGee introduces the term of "*kotadesasi*" to the process that he defines as "a process involving the growth of distinct regions of agricultural and non-agricultural activity characterized by intense interaction of commodities and people" [1]. He mentions that the availability of road links from city centers to the peripheral zones were supported by relatively cheap transportation that facilitated rapid and intensive movement between the city center to the peripheries. This created extreme fluidity and mobility of the population through the movement of people and goods, as well as commuting activities from the peripheries to the larger urban centers in the region [1]. McGee also argues that the whole island of Java is becoming a vast region of kotadesasi, as Java was a region intensively developing, especially in the northwestern region and between the urban cores of Jakarta, Bandung, and Semarang [15]. Firman [16] later argued that, as a result of the in-situ urbanization process that increased urban villages or localities in Java, the urbanization process in Java will lead the island into the island transforming into a mega-urban region.

The process should not only be seen as a spatial extension of urban form only, but should also be seen as a process of the strengthening roles of peripheries relative to the cities in the urbanization process. The strengthened role comes from the increasing density of the population in peripheries, from both natural and migration factors, that was followed by intensification and strengthening of the existing market towns, including the formation and establishment of new similar markets, which then stimulated towns in peripheries to play a role as countermagnets to the city center, as well as other centers in the city. These processes changed towns in peripheries from rural centers into small urban centers even though they still provide services for rural or agricultural activities in the region. In the subsequent phases, some of the small urban centers developed into much larger ones.

In Java, the strengthening roles of peripheries are shown by the experience of extended urbanization processes taking place around the city of Jakarta. Even though the urban population in the city was always growing, the annual population growth of Jakarta as the city center tends to decrease from 6.9% in 1950s to 4.46% in 1960s, 3.93% in 1970s and 3.85% 1980s [15]. Meanwhile, concentrations in the peripheries of Jakarta, like Depok, Bekasi, Bogor and some smaller urban concentrations, grew in annual rate much faster than that of the city center in 1970s and 1980s [15]. Depok, a small town in the south of Jakarta, grew at an annual rate of 12.3%, which increased its population from about 45,000 in 1971 to 127,000 inhabitants in 1980, while Bekasi, another town in the east of Jakarta has grown in an annual rate nearly 10% per year, increasing its population from 32,000 in 1961 to 61,000 in 1971 and 145,000 inhabitants in 1980 [15]. Meanwhile Bogor, a municipal city located 60 km from Jakarta to the south, has also experienced rapid growth of urban populations, albeit less drastic than those of Depok and Bekasi, which are much closer in proximity to Jakarta. Bogor grew at an average rate of 5.7% per year in the same period and increased its population from 330,000 in 1971 to about 545,000 in 1980 [15]. This situation illustrates that urban regions in the peripheries of Jakarta grew at a much higher rate than that of Jakarta, which later brought the possibility of the peripheries to become countermagnets and took over the roles of the city center as the main place of urbanization processes.

The strengthening roles of the peripheries in Jakarta then, was reinforced by the role of the private sector by their small and large scale real estate developments, including new town developments that began since the early 1980s, as well as industrial estate developments that emerged during the same time period. Firman [17] recorded that there were about 23 new town projects, ranging from 500 to 600 hectares in size in western, southern and the eastern peripheries of Jakarta, while Hudalah et al., [18] recorded more than 35 private industrial estates developed in the extended megacity region of Jakarta with a total industrial land that reached 18,000 hectares. Most of the major industrial estates are located in Botabek (Bogor, Tangerang and Bekasi) areas, the inner peripheries of the megacity region, especially in Cikarang (Bekasi areas) and Cikupa-Balaraja (Tangerang areas) cover about 6,000 hectares of industrial land, and the rest are located in the outer peripheries like in Serang and Karawang Districts.

At the end of 1990s, some of the small towns surrounding Jakarta, like Depok, Bekasi and Tangerang, were split from their previous districts to create new municipalities. Moreover, a new municipality was created in the inner peripheries of Jakarta, as Tangerang Selatan split from Tangerang District in 2008. Today the three previous cities form part of the five largest cities in Indonesia according to their population size. The populations are between two to three million inhabitants respectively, while Tangerang Selatan has grown to two million inhabitants in the metropolitan area, making it one of the largest cities in Indonesia.

3. Data and Methods

This research utilizes the case of urban growth in Tegal region that are formed by three localities, i.e. Kota Tegal, Kabupaten Tegal and Kabupaten Brebes. Kota is the term for urban districts or localities, while kabupaten is the term for the non-urban districts or localities. The city of Tegal is a municipality located on the northwestern coast of Central Java Province, about 300 kilometers from Jakarta to the east. The city is traversed by the Pantura (Pantai Utara or north coast) regional road, the most

important national road that connects major cities in northern Java, including Jakarta and Surabaya. The road is approximately 800 kilometers in distance, and Tegal was connected in this way to the major cities of Java, which now since 2018 connects the region to Jakarta, Bandung, Semarang, Surakarta and Surabaya, by a toll road that is called the Trans-Java Toll Road. The presence of the toll road reduces travel time from Jakarta to Tegal from 8-10 hours through Pantura to 5-6 hours via the toll road. The latest population of the city count is about 250,000 inhabitants. At that scale, it could be said that it forms a small city in the context of Java. The city borders on the Java Sea in the north, on Kabupaten Tegal in the south and east, and on Kabupaten Brebes in the west. In the context of extended urban region formation, the City of Tegal features as the core of the region, while the two kabupaten become the peripheries.

This study utilizes secondary data compiled by BPS (*Biro Pusat Statistik*) and the national census bureau to analyze the process of population growth in the area, as well as analyzing the formation of small towns in the growing peripheries. In order to identify and enumerate the number of urban populations in the country, BPS classifies all villages into two groups, i.e., urban villages and non-urban villages. This study utilized the results of the classification in analyzing the urban growth in the areas. Therefore, data used in this research are the population data and village classification, assembled from Podes (*Potensi Desa*, or village's monographs), compiled by BPS during the census periods 1990, 2000 and 2010). The period 2017 was also applied as a comparison by using the latest available data. Analysis of the growth of small towns in the peripheries was performed by grouping the neighboring urban villages in the same *kecamatan*, the administrative territorial subdivision in the localities. In order to perform spatial-temporal comparisons, this research also performed analysis in a time series analysis.

4. Result and Discussion

4.1. Urban Population Growth in Tegal Areas

Urban development patterns in Tegal region has shown an extensive development pattern that extends from the municipality to its outer kabupaten, i.e., *Kabupaten* Tegal in the south and west, and *Kabupaten* Brebes in the west of the city. Although the urban population in these areas has reached to more than 1.8 million according to the 2010 census, however, there is no policy that recognizes Tegal as an urban metropolitan region. This is different from the situation of the Cirebon Urban Region that has been recognized as a new metropolitan region by a provincial policy since 2010 [4].

In terms of economic activities, Tegal is well known as a port city, especially as a fishing port. It is also a regional city that supports agricultural activities conducted in the surrounding areas, including in the two adjacent kabupaten. Most of the industrial activities that grow and develop in this city are related to agricultural activities as well as the presence of fishing port in the city. The three largest types of industries in Tegal are the food and beverage industry that processes agricultural products, the metal industry that provides parts for ships and fishing vessels, and shipyard docking industry. Tegal is also developed as a regional business and activities center, which is evident from the presence of a branch of Bank Indonesia, the national central bank.

Urban development patterns can be examined with demographic and urban population changes in the three localities in Tegal areas. According to demographic and urban population data shown in Table 1, the total population growth in the Tegal region are relatively similar between the core and peripheries. The core area appears to have higher growth than in the peripheries. The population in Tegal City (the core area) in 2015 was nearly three times than in 1961, while that of the peripheries in 2015 was only nearly two times that of 1961.

However, the patterns for urban population growth in the areas were very different. Urban population growth in the peripheries has been much higher than that of the core area. Between 1980 and 2010, urban population in the peripheries has exploded to more than four times of its number in 1980, while in the core less than two times the population growth. The explosion of urban population in the peripheries was influenced by reclassification of administrative areas in terms of villages that are reclassified as urban villages. In *Kabupaten* Tegal, the number of urban villages increased from 83

villages in 1990 to 96 villages in 2000, then 142 villages in 2010 and 143 villages in 2017, while in *Kabupaten* Brebes the number increased from 32 villages in 1990 to 41 villages in 2000, then 104 villages in 2010 that was still 104 villages in 2017. These figures also indicate that the urbanization process in the peripheries also occurred in different ways in every part of the region, whereas the process in *Kabupaten* Tegal was faster than that of *Kabupaten* Brebes.

Table 1. The growth of total and urban populations in Tegal Areas, 1961-2015. Sources: Extracted from census data, except for the year of 2015 that was extracted from 2015 SUPAS data.

Region	Area (km ²)	1961	1971	1980	1990	2000	2010	2015
Total Population								
Tegal City (Core)	34.49	89,016	105,752	131,440	229,713	236,900	239,599	246,119
Peripheries	2,537.43	1,658,956	1,909,524	2,363,925	2,761,186	3,079,219	3,128,708	3,206,270
Kab. Tegal	879.7	764,285	865,641	1,099,937	1,239,351	1,382,435	1,394,839	1,424,891
Kab. Brebes	1,657.73	894,671	1,043,883	1,263,988	1,521,835	1,696,784	1,733,869	1,781,379
Tegal Area	2,571.92	1,747,972	2,015,276	2,495,365	2,990,899	3,316,119	3,368,307	3,452,389
Urban Population								
Tegal City (Core)	34.49	89,016	105,752	131,440	225,770	236,900	239,599	246,119
Peripheries	na	na	na	370,621	783,180	1,306,907	1,561,263	na
Kab. Tegal	na	na	na	262,375	494,077	755,651	811,372	na
Kab. Brebes	na	na	na	108,246	289,103	551,256	749,891	na
Tegal Area	na	na	na	502,061	1,008,950	1,543,807	1,800,862	na

As a consequence of the reclassification process, the population living in the reclassified villages were counted as urban populations, even though before they were classified as non-urban populations in the previous period. Therefore, with a more than double the number of urban villages in the peripheries, from 115 urban villages in 1990 to 247 urban villages in 2017, urban populations in the peripheries increase nearly two times too, that exploded it from 1.66 million urban inhabitants in 1961 to 3.21 million in 2017. Meanwhile, the phenomena of reclassification in Tegal City. This condition leads the urban population growth in the core area to be less high as that of the peripheries.

Therefore, similar to the phenomena in many Asian cities presented by Jones [3], the growth in the core area (Tegal City) was not as high as in the peripheries. Moreover, the growth in peripheries was not the same in every part of the region, where in *Kabupaten* Tegal (south and east peripheries) that was more urbanized was also higher than *Kabupaten* Brebes (45.1% compared to 41.6% in 2010). *Kabupaten* Tegal had an annual 5.4% of urban population growth from 1980 to 2000, while *Kabupaten* Brebes had 8.5% per year and Tegal City only experienced about 3.0% growth per year in the same period. Meanwhile between 2000 and 2010, the annual urban population growth of *Kabupaten* Tegal was about 0.71%, while that of *Kabupaten* Brebes and Tegal City were about 3.13% and 0.11%, respectively. This indicates that the more urbanized a region, the lower the likely annual urban population growth.

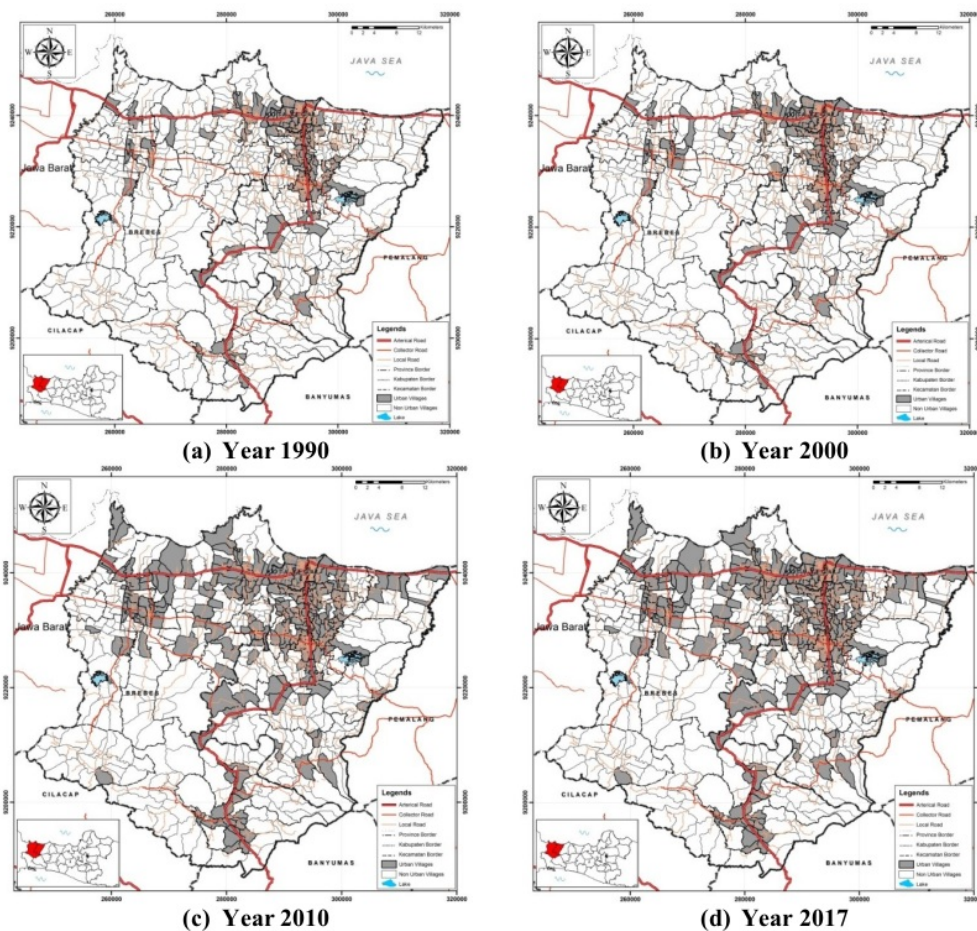


Figure 1. The growth of urban villages' area 1990 – 2017
Sources: Analyzed from 1990, 2000, 2010 and 2017 Podes data, 2019.

Maps in Figure 1 show the growth of villages classified as urban villages from 1990 to 2017 to explain the spatial process of the extended urbanization. The classification of urban villages is done by BPS using three criteria to do this, i.e., based on the density (population density of the villages), type of income (percentage of households in the village that work in agricultural activities as the source of income), and facilities (the presence of particular facilities in the villages). As shown in Map (a), in 1990 when *Kabupaten Tegal* still had only 83 urban villages and *Kabupaten Brebes* had only 32 urban villages, the pattern of urban agglomeration of Tegal Area was still an inverted L-shape. The distribution of urban villages was mainly limited or concentrated in Tegal City and into a narrow strip along the regional road that connects Tegal City to Slawi, the capital of the *Kabupaten Tegal* in the south. The distance of the corridor is about 10 kilometers from Tegal border in the southern part of the city to the Slawi Area. A similar situation was also unfolding in *Kabupaten Brebes*, but in a shorter corridor. Urban villages in this *kabupaten* was still concentrated in an about 5 kilometers corridor between Tegal to Brebes, the capital of the *Kabupaten Brebes*, and some scattered areas in a smaller number than that of in *Kabupaten Tegal*.

Most of the *kecamatan*'s towns that formed in this era were *kecamatan* located along regional roads. In *Kabupaten* Tegal, these were Lebaksiu, Balapulang, Margasari and Prupuk that are located along the regional road that connecting from Tegal to Purwokerto, an urban agglomeration that features as the main center of services in southwest of Central Java Province. Meanwhile, in *Kabupaten* Brebes, these towns were Wanasari, Kluwut, Tanjung and Losari that are located along Pantura road from Tegal to the west. Some other *kecamatan*'s towns that formed in this era were Tonggara, Jatinegara, Bojong, Bumijawa and Jejeg in the inland of *Kabupaten* Tegal, as well as Cikandang, Karangmalang, Banjarharjo and Bumiayu, Kalilangkap, Pagojengan and Paguyangan in *Kabupaten* Brebes. Different with other *kecamatan*'s towns in *Kabupaten* Tegal that were scattered in the region, other *kecamatan*'s towns in *Kabupaten* Brebes have tended to group in certain locations. The first three *kecamatan*'s towns of *Kabupaten* Brebes grouped in the northwest of the *kabupaten*, while the last four *kecamatan*'s towns grouped in the south part.

In 2000, the pattern of urban villages in the two *kabupaten* peripheries did not change so much. The significant changes was occurred in the subsequent period, which took place in the year 2010 when the two *kabupaten* had 142 and 104 urban villages respectively. The significant number of additional urban villages in both *kabupaten* has brought significant changes in the spatial pattern of urban villages in the peripheries. In this period, the significant "filling in" of additional urban villages beganto change the pattern of urban agglomeration in the Tegal region into a more massive shape of the urban areas. In addition to the bordering villages being adjacent to the *kecamatan*'s towns, many urban villages changed the urban agglomeration pattern in this period were not only urban villages that has administrative roles as *kecamatan*'s town, but also other villages that can be considered as rural centers, the villages that play roles as service center for the surrounding villages even though they have not administrative roles. In the subsequent period, shown in the map of year 2017, the pattern did not change much because there was only one additional urban villagefrom 2010 to 2017.

From this chronological observation, we can say that the 1990s was the time that Tegal's urban agglomeration to have the strengthening period, which reinforce the L-shaped urban formation with two urban strips: a 10 kilometer urban strip from Tegal to Slawi; and another 5 kilometer urban strip from Tegal to Brebes, which together forming the inverted L-shape pattern of urban agglomeration in Tegal Areas. In this era, the presence of the towns of the capital of the two *kabupaten* brough significant influences into the formation of urban agglomeration in the peripheries. Thereafter, the subsequent developmentis in 2010, the era of 'filling in' that changed the pattern of the Tegal urban agglomeration into a more massive urban agglomeration. In the era, smaller centers in the peripheries began to bring influence into the formation of urban agglomeration.

4.2. The Growth of Town and Cities in Tegal Areas

The growth of towns in the peripheries characterized the urbanization process of the areas. The city could be considered as the core of the urban agglomeration. The extended urbanization process into the peripherieshas formed many towns in the peripheries. The towns referred to here are urban areas formed by the growth and development of urban villages in the peripheries. This research identified the towns by utilizing the situation of the villages classified urban villages, and also the administrative area of *kecamatan* as the administrative sub-division of the *kabupaten*. All urban villages clustered within the same *kecamatan* are considered a town, or a single urban entity in a *kabupaten*. Thus, separated clustered urban villages are considered to be different towns, and the clustered urban villages located in different *kecamatan*are considered as different towns in this research, even though they are bordering one to each other.

Maps in Figure 2 show the growing number of towns in Tegal region. They show the towns that have been formed in the peripheries of Tegal region in 1990, 2000, 2010 and 2017. In addition to the growing number of towns in the peripheries of Tegal region, the maps also indicate that the location of the towns today is more scattered than that of in 1990s. If in 1990s the towns were concentrated along the main regional roads, mainly in the regional road that connects Tegal City to the south, today the towns are scattered without any special pattern.

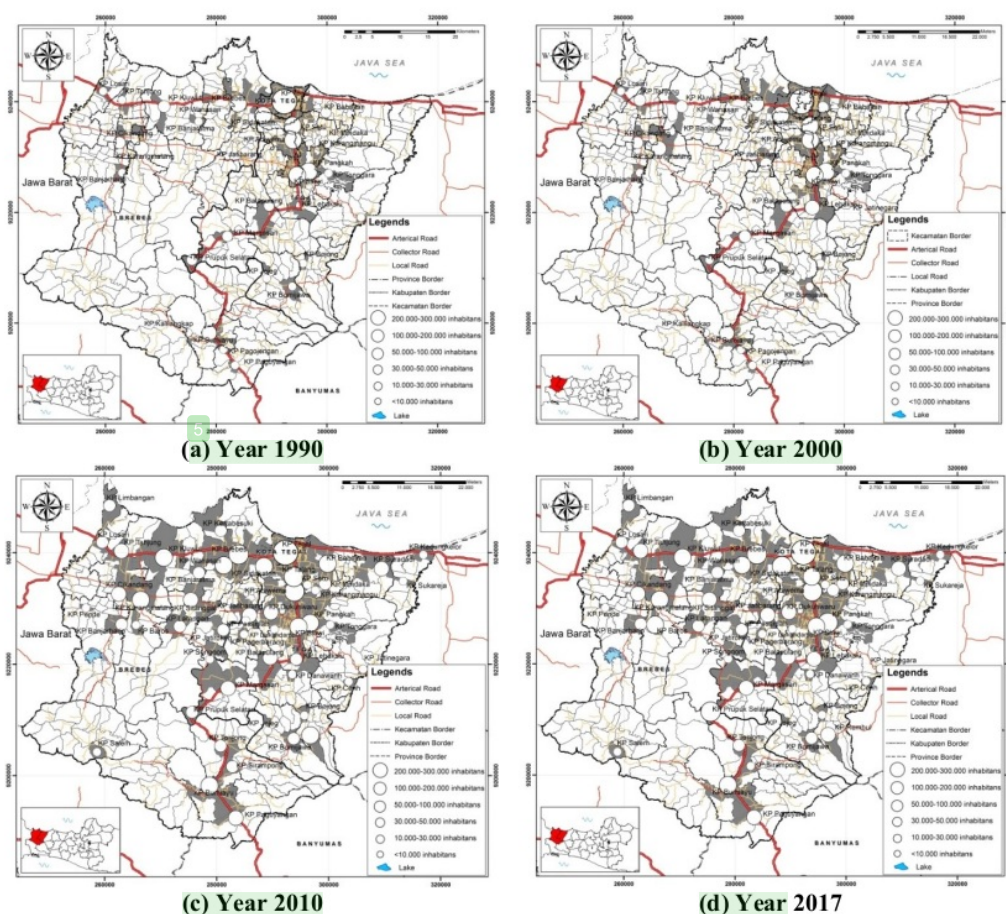


Figure 2. The development of towns in Tegal Area 1990 – 2017
Sources: Analyzed from 1990, 2000, 2010 and 2017 Podes data, 2019.

Table 2. The growing number of towns and cities in Tegal Areas, detailed according to the population size, 1990 – 2017. Analyzed from census data, except for the year 2015 that was extracted from 2015 SUPAS data.

Towns' Size	1990	2000	2010	2017
Tegal City (200,000 – 300,000 inhabitants)	1	1	1	1
Towns with a population of 100,000 –199,999	0	0	3	4
Towns with a population of 50,000 – 99,999	6	6	9	7
Towns with a population of 30,000 – 49,999	2	3	9	11
Towns with a population of 10,000 – 29,999	8	9	13	12
Towns with less than 10,000 inhabitants	14	14	17	17
Total of the Towns	31	33	52	52

Regarding to the size of the towns, Table 2 shows the growing number of towns and cities in the urban agglomeration of Tegal region. Tegal City is the core of the urban region. It is in the population size range of 200,000 to 300,000 from 1990 to 2017. The table indicates the growing number of towns in the peripheries of the Tegal urban area. The number of towns in the peripheries has grown from 31 towns in 1990 into 52 towns in 2010 and 2017. There are at least two interesting information features about these towns development: (1) an increasing number of towns in all of the town's size, and (2) the smaller population size towns, which means towns with less than 50,000 population, have more dynamic growth in numbers.

It is interesting to realize that the towns with a population of 100,000 to 199,999 inhabitants have been formed in the urbanization process of Tegal region, because there was no town in the periphery areas in that size before. Then started in 2010 by three towns, and now there are four towns in that size. The three towns were Adiwerna and Pangkah in *Kabupaten* Tegal, and Brebes the capital of *Kabupaten* Brebes, while the town that enter to the list in 2017 was Dukuhturi in *Kabupaten* Tegal. In addition, there was another town called Talang in *Kabupaten* Tegal has more than 99.3 thousand inhabitants in 2017. That population size is comparable to the size of many small municipalities in Indonesia today. According to the result of SUPAS of Intercensal Population Survey 2015, Indonesia has 9 municipalities with a population size that less than 100,000 inhabitant each [19]. In addition there are also 26 other municipalities with a population of 100,000 to 199,999 inhabitants. Therefore, the extended urbanization process in the Tegal region has also formed several towns that each populated by a population size that is comparable to many small municipalities in Indonesia today. Furthermore, Adiwerna and Brebes, which has a population of about 185 thousand and 133 thousand dwellers respectively, are in a comparable size to the size of Tegal City in 1980s. In addition, if we realize that Adiwerna, Dukuhturi and Talang are the towns that are located side by side one to each other, then we will found Adiwerna-Talang-Dukuhturi as a town with a population of nearly 400,000 inhabitants, a population size that is larger than that of Tegal City, the core of urban region. From this point of view, we can also say that the extended process of urbanization in Tegal region has formed a town that has larger population than its core area.

In the spatial pattern, the four peripheries towns with more than a hundred thousand inhabitants have proximity to the urban core, with a distant less than 15 kilometers from the city center of Tegal. All of the kecamatan, except Brebes, are located in *Kabupaten* Tegal, while Brebes is located in *Kabupaten* Brebes. All of the towns are located in the corridor of existing regional road, i.e. the regional road from Tegal City to the south for the first three towns and Talang, and the regional road from Tegal City to the west for Brebes.

Most of the smaller population size towns are towns with 50 to 100 thousand populations in *Kabupaten* Tegal, i.e., Talang, Slawi and Babakan, have proximity of 15 kilometers to the center of Tegal City, while those in *Kabupaten* Brebes, i.e., Klampok/Wanasari, Kluwut/ Bulakamba and Karangmalang /Ketanggungan are the towns within a distance about 30 to 45 km from the center of Tegal City. Even more, Bumiayu, one of the towns in the same population size, is located in a distant about 60 kilometers from the city center. Most of the towns located more than 15 kilometers are the smaller population towns. Therefore, this situation could be considered similar to the situation that Jones observed in some major Asian cities that has greater urban population growth in the inner zone of the peripheries than in the outer zone of the peripheries [3]. The difference is in the distance that separates the inner zone of the peripheries to the outer zone of the peripheries. If Jones suggest a distance about 30 to 50 kilometers from the city center [3], the case of Tegal indicates a distance of 15 to 20 kilometers as the distance that separate the inner zone of the peripheries and the outer one. In addition, if Jones suggested a distance of up to 100 kilometers for the limit of the outer zone of the peripheries in large major Asian cities [3], this study indicates a distance of about 50 to 60 kilometers.

5. Conclusion

The case of extended urbanization process in the Tegal Area shows the urbanization process in a smaller city in Java that has replicated the process of much larger cities, by forming an urban

agglomeration that extends up to 60 kilometers from the city center. The extended urban agglomeration has also developed many towns in various sizes in the peripheries, in which some of the towns formed have developed into a comparable size to small cities in Indonesia. Most of the larger towns are located at a distance that brings proximity to the city center, so they could be said to be located in the inner zone of the peripheries, and most of the towns developed outside the inner zone are the smaller towns. Moreover, with nearly two million urban populations residing in this urban area, this process could be considered to form a metropolitan region with the city of Tegal as the core.

Comparing to the case of extended urbanization processes observed in and around Jakarta, this study should be followed by analyzing economic roles of the towns in the extended process of urbanization, which will analyze whether the extended urbanization process in small cities will also lead to a strengthening process of towns in peripheries like the extended urbanization process in larger cities. By using the case of Jakarta and Bandung, Firman [20] explains that the extended urbanization process of large cities has reinforced the role of towns and other urban centers in the peripheries to be the place for economic activities that develop.

Moreover, as extended urbanization processes of smaller cities have taken place in different localities, another question that emerges in these processes is in terms of managing sustainable urbanization processes. The case of Tegal region indicates that different localities will have different process in its urbanization process that could also lead into fragmented urbanization process in the region [21]. In these circumstances, more attention need be paid to managing such processes in order to integrate the development process in the core and the peripheries, as well as to improve their spatial, societal and economic development. In these context, the question of what regional policies and strategies that should be adopted in the small cities' urbanization process would be an important question.

The extended urbanization process may also be seen as an indication of a weak growth management system in managing the urbanization process, so the process extends to the surroundings and change many villages from rural to urban villages. The extended urbanization process also stimulates the transformation of villages in the peripheries into parts of the urban agglomeration. These phenomena lead to significant challenges in managing urbanization processes, especially in formulating the managing policies in order to shape more sustainable process of urbanization. As *kabupaten* (non urban districts) have likely become important places for the rapid urbanization process in Indonesia, the challenge in managing rapid urbanization process involves the challenge in strengthening *kabupaten* government so they could have greater capacity in managing urbanization processes as well as managing urban development in their territory.

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