

# **Rurality Classification and the Implications of Indonesia's Village Decentralization toward Development Equity at the Sub-district Level: A Case Study of Indragiri Hulu Regency, Riau Province, Indonesia**

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## **Abstract**

Indonesia's village decentralization, an affirmative policy for rural development, has entered its fourth year of implementation. Recent studies regarding the implementation of the policy have focused on policy evaluation, financial transfers, and the changing nature of village governance. These studies have conducted little, if any, examination of how the policy affects regional development equity in the spatial context. This paper investigates the implications of village decentralization for regional development equity at the sub-district level. The discussion begins with identifying the spatial structure of the case study area based on the availability of public service facilities, populations, and connectivity of the road network. Furthermore, the implications of village decentralization policy in 'small-town' and 'rural' sub-districts are investigated. A mixed-methods approach, incorporating both qualitative and quantitative methods, was employed for this paper. The spatial disparity between sub-districts was measured quantitatively by spatial structure analysis and verified qualitatively through questionnaire surveys and direct observation. The implications of village decentralization among sub-district groups were also analysed using both quantitative and qualitative methods. The findings suggest that the policy has promoted equal opportunities in village-scale infrastructure and public facilities development at the sub-district level. 'Rural' sub-districts that previously received less attention in physical development have had equal opportunity as 'small-town' sub-districts in the provision of village-scale infrastructure and public facilities. Village decentralization policy has also led to a decline in the mean value of district spending for the provision of public facilities beyond the village-scale authority in the two sub-district groups. However, there is no significant difference in the variation in district spending in the two sub-district groups before and after the implementation of village decentralization. This paper discusses a new relation between the concepts of 'rural' and 'urban' in spatial structures of rural areas that differs from the traditional relation of 'urban' and 'rural' in existing studies. This paper also contributes to the empirical evidence that Indonesia's village decentralization has had a significant impact on village-scale development equity at the sub-district level.

Keywords: rurality, village decentralization, development equity, sub-district level, Indonesia.

## 1. Introduction

Spatial inequalities between rural and urban areas, and also between geographically disadvantaged and advantaged regions, are common in many countries, especially developing countries. Kanbur and Venables (2005) suggested that the increasing spatial inequality in developing countries is partly due to the uneven effect of trade openness and globalization. Rural and urban areas are, in part, physical entities that can be differentiated based on geographical characteristics or divided based on administrative boundaries. However, due to globalization, rural and urban areas are also relative spatial entities in an economic context that is always influenced and even controlled by the higher-order systems of production and capital accumulation (Kitano, 2009). Hence, spatial inequity seems to occur not only between countries, islands, and provinces which have different cultures, histories, and geographical backgrounds but also within relatively small regional units with homogeneous social and economic structures, such as sub-districts and villages.

Indonesia, like most developing countries, also experiences spatial polarization. The physical development and benefits of economic growth have become increasingly concentrated in several core urban areas, especially on Java Island. According to Rustiadi, Saefulhakim, and Panuju (2009), the widespread spatial inequality between rural-urban, Java-outer Java, and Western-Eastern Indonesia was generated by economic and other factors, such as geographical location, politics, government policy, administration, and social culture. In the early days after the fall of Suharto's New Order regime in 1998, some provinces were determined to separate from the Republic of Indonesia. Though this effort ultimately failed, the energy behind it was intense. Among other political factors, spatial disparities – especially those disparities felt by regions that had abundant natural resources but were lagging in development – were a driving force behind these provinces' efforts to separate from the Republic of Indonesia at that time (Kimura, 2013). Riau Province, one of the few regions in Indonesia (e.g. Aceh, East Kalimantan and Papua) that has abundant natural resources – gas, oil, palm oil and rubber plantations, forests, and minerals – was one of the provinces which had intended to separate from the Indonesian government.

Since 2015, the Indonesian government has implemented the village decentralization policy in an effort to overcome spatial disparity issues. Riau Province is a developing rural province in Indonesia which is experiencing rapid spatial changes. Deforestation, in-migration, uneven economic growth across regions, and the agglomeration of physical development in a small number of urban activity centres are among the many spatial issues faced by rural provinces in Indonesia. The implementation of Indonesia's village decentralization policy provides a more significant opportunity for rural areas in Riau Province to get involved and benefit from development than in previous periods. Moreover, the principle of the village decentralization funds transfer, which mainly prioritizes budget equality across all villages in Indonesia, is considered to benefit villages that have access to funding from gas and oil revenues, such as Riau Province (Lewis, 2015).

Existing studies related to Indonesia's village decentralization policy have mostly focused on financial transfers (Lewis, 2015; Anshari, 2017; Gonschorek & Schulze, 2018) and the changing nature of village governance from the state administration and public policy perspectives (Vel & Bedner, 2015; Antlov et al., 2016; Phahlevy, 2016; Irawan, 2017; Hartoyo, Sindung, & Fahmi, 2018) at the national, provincial, or district level. Little, if any, emphasis has been placed on the issue of how the policy affects regional development equity from a spatial analysis perspective at the micro level. Moreover, despite diversity in population, infrastructure, and the availability of public service facilities across villages, the studies mentioned above have considered rural areas as a single homogenous entity. Thus, no comprehensive analysis has been performed on the impact of Indonesia's decentralization policy on spatial equity at the micro level. Given that rural areas are *not* homogeneous entities, spatial disparity at the micro level must be

examined first before examining the impact of the village decentralization policy on equitable regional development.

According to Douglass (1998), in most countries, the sub-district scale is the most appropriate unit of development in that it is small enough to afford frequent access to urban functions by rural households yet large enough to overcome the limitations of using the villages as a development unit and thus to expand the scope of economic growth and diversification. This paper uses the sub-district as a unit of observation because, in the Indonesian spatial hierarchy, the sub-district is the smallest cluster unit consisting of a group of villages in which there are 'urban' and 'rural' functions. Lynch (2004) suggests urban-rural interactions are a critical aspect that must be considered in regional planning. However, existing literature regarding urban-rural interaction has mainly focused on spatial issues between large cities and rural areas at the macro and mezzo levels, with little, if any, discussion of planning systems at the micro level. Thus, a comparison of the impact of village decentralization policy between sub-district groups is expected to contribute to the literature on planning systems in rural areas.

This case study is based in Indragiri Hulu Regency, a representative of developing rural districts in Riau Province. The objectives of this case study are to investigate spatial disparities at the sub-district level as well as the implications of village decentralization for the provision of public service facilities across sub-districts. Section 2 provides a brief overview of the study area and the methodology employed in this paper. Section 3 examines spatial disparities at the sub-district level and classifies sub-districts based on their rurality and centrality. Section 4 investigates the implications of village decentralization policy on 'small-town' and 'rural' sub-districts. Section 5 concludes the paper.

## 2. Study Area and Methodology

Indragiri Hulu Regency, located in the southern part of Riau Province, is a representative of developing rural districts in Riau Province. Agriculture is the dominant economic sector in Indragiri Hulu Regency. The main crops grown in the district are cash crops, particularly rubber and palm oil. Per the Agricultural Census of 2013, 57,253 households (54.8%) in Indragiri Hulu Regency rely on these two crops for their livelihood. The population of the area increased from 365,421 in 2010 to 409,431 in 2015, with an average annual growth rate of 2.48%, almost double the national average of 1.36% (Indragiri Hulu Statistics, 2016). Currently, Indragiri Hulu Regency occupies an area of about 8,198.26 km<sup>2</sup>, consisting of 14 sub-districts divided into 178 *desa*/rural villages and 16 *kelurahan*/urban villages (Figure 1).

A mixed-method approaches, incorporating both qualitative and quantitative methods, was employed for this paper. The spatial disparity between sub-districts was measured quantitatively by spatial structure analysis and verified qualitatively through questionnaire surveys and direct observation. The result was the classification of sub-districts based on a hierarchy of rurality and centrality. The sub-district classification was then used as a variable to compare the impact of village decentralization on regional development equity at the sub-district level. The analysis of the implications of village decentralization among sub-district groups also used a mixed-methods approach.

The data collection process was divided into three stages. The first stage of data collection was carried out from July to September 2017. The data collection began with collecting documents and statistical data related to population, development budget, and the number of public service facilities and infrastructure projects built in Indragiri Hulu Regency from 2012 to 2017. The secondary data collection was carried out simultaneously with the spatial data collection through field observation and mapping. Spatial data collection was carried out in all sub-districts in Indragiri Hulu Regency. All public service facilities and road networks in the study area were identified and mapped using ArcMap 10.2.2. Spatial data collection was carried out simultaneously with direct observation and



Figure 1. Indragiri Hulu Regency.

Source: [Peta shp Potensi Desa Seluruh Indonesia]. Retrieved 2 June 2017 from <http://www.info-geospasial.com/2015/10/data-shp-seluruh-indonesia.html>.

questionnaire. A questionnaire survey of 140 local respondents was conducted to obtain community assessments of spatial disparities between sub-districts in the study area. Respondents were asked to identify sub-districts as either 'urban' or 'rural'. The questionnaire survey was conducted in 28 villages, which were chosen as the sample from 194 villages in Indragiri Hulu. There are 14 sub-districts in Indragiri Hulu. Each sub-district has, on average, 14 villages. The sub-district with the fewest villages is Lubuk Batu Jaya (10 villages), and the sub-district with the most is Batang Cenaku (20 villages). Two villages were selected as a sample from each sub-district based on the villages' geographical location, population size, and availability of public service and infrastructure. The sample thus represented all these characteristics in the case study area. Five locals were then randomly selected from each village as respondents. The respondents were villagers aged over 17 years who the authors met while performing direct observation in the villages. The villages were Rawa Asri, Rawa Sekip, Sungai Guntung Hilir, Sungai Beringin, Kota Lama, Sungai Dawu, Titian Resak, Bukit Meranti, Sungai Akar, Penyaguhan, Bukit Lingkar, Talang Mulia, Talang Sungai Limau, Talang Suka Maju, Koto Medan, Simpang Koto Medan, Jati Rejo, Petalongan, Seko Lubuk Tigo, Mekar Sari, Pasir Kelampayan, Pasir Batu Mandi, Air Putih, Pontian Mekar, Gumanti, Semelinang Darat, Sencano Jaya, and Sungai Aur.

Interviews with stakeholders involved in rural development in Indragiri Hulu were conducted during the second stage of data collection. Fifteen participants consisting of six district officials, five sub-district officials, and four community facilitators<sup>1</sup> were involved in a semi-structured interview. The second stage of data collection was carried out in June 2018.

In the third stage of data collection, with the help of four enumerators, a questionnaire survey was conducted with 692 household heads from February to March 2019. The number of respondents is the sum of the samples taken from the population of each village. The sampling method in this paper used the Slovin formula, with a margin of error of 10% and a confidence level of 90%. The number of samples in each village varied from 41 to 66 household heads, depending on the size of the village population. The villages were randomly selected from the villages

surveyed in the first stage of data collection. Sungai Guntung Hilir, Sungai Beringin, Sungai Dawu, Kota Lama, Bukit Meranti, and Titian Resak represent 'small-town' sub-district villages. Meanwhile, Sungai Akar, Penyaguhan, Kota Medan, Simpang Kota Medan, Rawa Asri, and Rawa Sekip represent 'rural' sub-district villages. These villages were randomly selected from a group of villages within a 23-minute radius of travel time from the sub-district capital, which is the average travel time from the villages to the sub-district capital in Indragiri Hulu Regency. Interviews with stakeholders involved in rural development in Indragiri Hulu Regency were also conducted during the third stage of data collection. Nineteen participants consisting of seven sub-district officials and twelve community leaders were involved in the semi-structured interviews. Table 1 is a summary of data collection and field research activities.

**Table 1. Summary of data collection and field research activities.**

Time	Method	Number of samples	Outcome
July–Sept. 2017	Document reviews	14 sub-districts	<ul style="list-style-type: none"> <li>• Spatial disparity analysis and sub-district classification</li> <li>• Analysis of the impact of village decentralization at the sub-district level</li> </ul>
	Questionnaire	140 locals	Spatial disparity analysis and sub-district classification
	Observation and GIS Mapping	14 sub-districts	Spatial disparity analysis and sub-district classification
June 2018	Interviews	6 district officials 5 sub-district officials 4 community facilitators	Analysis of the impact of village decentralization at the sub-district level
Feb.– March 2019	Questionnaire	692 household heads	Analysis of the implications of village decentralization at the sub-district level
	Field Observation	6 villages	Analysis of the impact of village decentralization at the sub-district level
	Interviews	7 sub-district officials 12 community leaders	Analysis of the impact of village decentralization at the sub-district level

Source: Authors.

### 3. Rurality Classification of Sub-districts in Indragiri Hulu Regency

According to Tacoli (2018), the definition of rural and urban in most governments is determined in one of four ways: through the population size threshold; through the population size threshold combined with several other criteria (e.g., population density, proportion of the population working in non-agriculture sectors); through administration or political status; or through a list of settlements that are identified as 'urban' or 'rural' in the national census. Traditionally, in developing countries, where the economy tends to be predominantly dependent on agricultural activities, population size is still used to distinguish small towns from the surrounding rural areas. However, there is no consensus on how many people in a single region should define that region as either 'rural' or 'urban', since the operational definition of the countryside varies from country to country and even from one official body to another within the same country (Ocana-Riola & Sanchez-Cantalejo, 2005). Thus, the definition and level of rurality vary considerably between regions in developing countries.

Despite *rurality* being a term long used by researchers worldwide to indicate that different rural areas cannot be

homogeneously defined, the actual definition of rurality is highly variable (Rousseau, 1995). In developed countries, researchers and international organizations have developed different types of village typologies and indicators to better understand village dynamics and develop policies that are relevant to rural areas. According to Li, Long, and Liu (2015), variations in methods for classifying and defining rural areas in the literature are derived from measuring aspects such as differences in the degree of rurality, including the level of population density, rate of population loss or gain, settlement size, local economic structure, accessibility, and landscape across regions and countries. However, the lack of reliable statistical data at the micro level is a challenge for developing countries like Indonesia in classifying rural areas at the sub-district level.

The rurality indicators selected for the classification of sub-districts, basically, must represent the concept of rural areas in Indonesia. At the same time, the selected indicators must be measurable and quantifiable, and that data must be available and accessible to users. The rurality measurement method in this paper is different from the methods used in existing studies on developed countries. Namely, to a large extent, the former methods have used demographic characteristics as an indicator of rurality. However, demographic characteristics at the sub-district level in rural Indonesia are relatively similar. Most people make a living in the agricultural sector, with non-agricultural activities usually concentrated in the sub-districts' capital. The spatial disparity between sub-districts is reflected in the size of settlements, the availability of public facilities (administrative, health, education, and markets), and the road network connectivity. Thus, instead of using demographic characteristics as an indicator of rurality, this paper uses population size, availability of public facilities, and road network connectivity as the variables for sub-district classification.

The notion of centrality in classic urban geography and, specifically, location theory is generally defined according to location attractiveness. The distance to one or more centres and the size of the centre are used to obtain various 'gravity' models. In spatial interaction models, accessibility coincides with gravitational potential, with each activity aimed at achieving a location in the highest value place (Chiaradia et al., 2009). Meanwhile, in social networking literature, centrality is defined as the extent to which agents are connected to other agents (Firgo, Pennerstorfer, & Weiss, 2015). Centrality in this paper is defined as the role and function of one or more sub-districts towards the surrounding sub-districts based on the interaction index calculated by applying the gravity model. Interaction between sub-districts is determined by the 'mass' size of the sub-district, which consists of population, availability of public facilities, and connectivity of the road network, and by travel time between sub-districts.

The purpose of classifying sub-districts based on their rurality and centrality in this paper is to explain the structure of the rural area, which differs from the usual relation of 'urban' and 'rural' in existing studies. The classification is also used to formulate indicators for analysis in this paper. In the assessment of sub-districts' rurality, the main aspects considered are population, public service facilities, and road network connectivity. The population in each sub-district was taken from the 2017 Indragiri Hulu Statistics. Spatial data were collected from 1 August to 21 September 2017. All public service facilities and road networks in the case study area were identified and mapped using ArchMap 10.2.2. Mapping was carried out simultaneously with the observations and interviews with locals in order to inform the questions on the quality and coverage of services provided to each sub-district. The collected data were then used to classify the rurality of sub-districts.

For the analysis of the public facilities data pool, scalogram analysis<sup>2</sup> was chosen to weigh each available public service facility at the sub-district level (Huisman & Stoffers, 1998). The public service facility variables considered in this study were administrative, health, education, and marketplace facilities. Each facility obtained a score of '1' if it was present, and a score of '0' if it was absent. When various levels were distinguished in certain service groups, a simple weighting system was applied, wherein some scores were added to each subsequent level of service by

considering the hierarchy and range of functions (appendix 1).

The hierarchy of rurality of the sub-districts was determined by the results of the 'mass' calculation of each sub-district, which was identified by the population, the weighted score of public service facilities, and the road network connectivity:

$$m = p \times s \times c \quad (1)$$

where  $m$  is the sub-district's mass,  $p$  is the population,  $s$  is the weighted score of a public service facility, and  $c$  is defined as:

$$c = r_d \times r_l \times \gamma \quad (2)$$

where  $c$  is road network connectivity,  $r_d$  is road density, and  $r_l$  is the length of a road in good condition. The degree of connectivity is indicated by  $\gamma$  (Taaffe et al., 1996):

$$\gamma = \frac{l}{lmax} = \frac{l}{3(v-2)} \quad (3)$$

where  $l$  is the number of road links between villages within a sub-district area,  $v$  is the number of villages in a sub-district, and  $lmax$  is the maximum possible number of road links. The  $\gamma$  index ranges from 0, indicating that none of the villages are linked, to 1, indicating that every village is linked to every other possible village.

Based on the mass calculation results, 14 sub-districts in Indragiri Hulu were grouped into five levels of rurality. Rengat had the highest mass score compared to the other sub-districts and was thus classified into level 1. The second group consisted of one sub-district (level 2) with a mass score between 51 and 100 points. The third group consisted of three sub-districts (level 3) with a score between 26 and 50 points. Six sub-districts that had mass scores between 11 and 25 points were grouped into level 4, and three sub-districts with the lowest mass scores (below 11 points) were grouped into level 5. The rurality hierarchies of each sub-district are listed in Table 2.

The centrality of the sub-districts was measured by applying the gravity model derived from Newton's Gravity Law. Newton's Gravity Law has long been developed and used in the social and economic sciences to explain the phenomenon of the flow of interactions between regions (Anderson, 2011). As an analogy of Newton's Gravity Law, this paper represented the masses of sub-districts using the population, the weighted scores of public service facilities, and the road networks and represented the obstacles to interaction between sub-districts as the travel time between sub-districts:

$$T_{ij} = (m_i m_j) / t_{ij}^2 \quad (4)$$

where  $T_{ij}$  is the interaction index between sub-districts  $i$  and  $j$ ,  $m_i$  is the mass of sub-district  $i$ ,  $m_j$  is the mass of sub-district  $j$ , and  $t_{ij}$  is the travel time from sub-district  $i$  to sub-district  $j$ .

Table 2. The rurality hierarchies across sub-districts in Indragiri Hulu.

Rurality level <sup>1</sup>	Sub-district	Population <sup>2</sup> (p)	Weighted Score of Public Service Facility				Road Connectivity (c)	Mass (m = p x s x c)	
			Administrative <sup>3</sup>	Education <sup>4</sup>	Health <sup>5</sup>	Market <sup>6</sup>			
1	Rengat	5.214	40.48	81.43	68.25	27.83	217.99	0.099	112.52
2	Rengat Barat	4.553	73.81	41.43	68.25	14.03	197.53	0.110	98.92
3	Seberida	5.407	7.14	21.43	18.25	24.38	71.21	0.106	40.81
3	Pasir Penyau	3.546	7.14	41.43	18.25	20.93	87.76	0.107	33.29
3	Peranap	3.211	7.14	21.43	18.25	17.48	64.31	0.130	26.84
4	Batang Cenaku	3.241	7.14	21.43	18.25	10.59	57.42	0.102	18.98
4	Batang Gansal	3.351	7.14	21.43	7.14	10.59	46.31	0.101	15.67
4	Lubuk Batu Jaya	2.084	7.14	21.43	18.25	10.59	57.42	0.115	13.76
4	Lirik	2.662	7.14	21.43	18.25	10.59	57.42	0.088	13.45
4	Rakit Kulim	2.301	7.14	21.43	18.25	10.59	57.42	0.099	13.08
4	Kelayang	2.387	7.14	21.43	7.14	10.59	46.31	0.103	11.38
5	Sungai Lala	1.466	7.14	21.43	7.14	10.59	46.31	0.073	4.95
5	Kuala Cenaku	1.326	7.14	21.43	7.14	10.59	46.31	0.073	4.48
5	Batang Peranap	1.025	7.14	21.43	7.14	10.59	46.31	0.092	4.36

Note: <sup>1</sup>Rurality level: level 1 (sub-district mass >100), level 2 (51-100), level 3 (26-50), level 4 (11-25), level 5 (0-10).

<sup>2</sup>Population in tens of thousands.

<sup>3</sup>Administrative Facility: Sub-district Head Office and District Head Office.

<sup>4</sup>Education Facility: Primary School, Junior High School, Senior High School and College/University.

<sup>5</sup>Health Facility: Community Health Centre, Clinic, and Hospital.

<sup>6</sup>Marketplace: Village Market and Sub-district Market

Source: Statistics of Indragiri Hulu (2016); Authors' calculations.



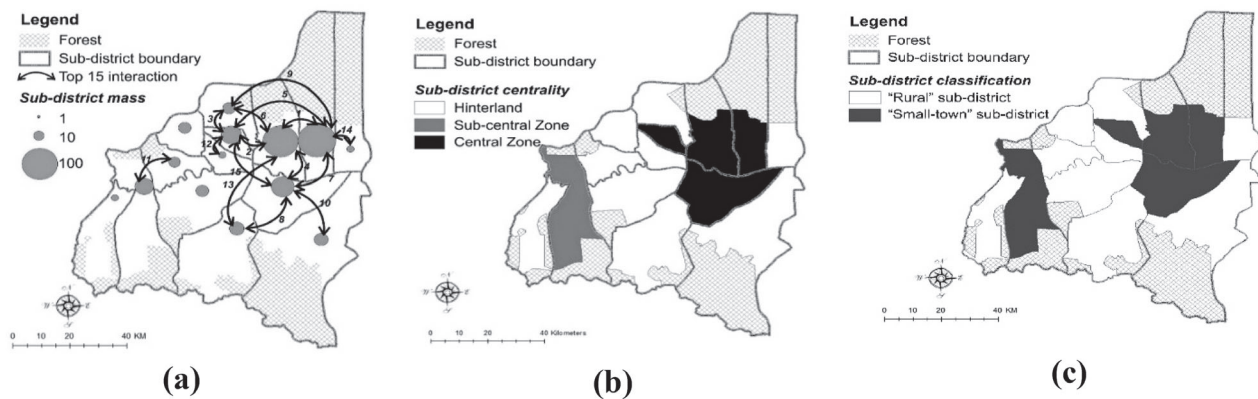


Figure 2. Major interaction (a), centrality (b), and classification (c) of sub-districts.

Source: Authors.

Figure 2 shows the major interaction, centrality, and classification of the sub-districts in Indragiri Hulu based on the gravity model's interaction index (appendix 2). The interaction index table shows that the role of sub-districts with a higher rurality hierarchy (levels 1 to 3) is very significant to the flow of interaction across sub-districts in Indragiri Hulu. The top 10 interactions occur between these sub-districts, especially among four sub-districts located nearby, namely Rengat, Rengat Barat, Pasir Penyu, and Seberida. Based on the interaction index, sub-district centrality towards the surrounding sub-districts can be grouped as follows: Rengat, Rengat Barat, Pasir Penyu, and Seberida are grouped in the central zone; Peranap is grouped in the sub-central zone; and nine other sub-districts are classified as hinterland.

For the purposes of this paper, the sub-district classification in Indragiri Hulu is divided into 'small town' sub-districts (central and sub-central zones) and 'rural' sub-districts (hinterland). From field observations, it was confirmed that the 'small-town' sub-districts are the urban activity centres for the surrounding rural communities. Better public facilities (administrative, education, health, and market) in the capitals of 'small-town' sub-districts attract many people from 'rural' sub-districts, who commute to 'small-town' sub-districts to obtain better services and acquire daily necessities.

The questionnaire survey of 140 randomly selected locals also supported the study findings that spatial inequalities exist between sub-districts. Table 3 shows the profile of the respondents. According to the respondents, several sub-districts, namely Rengat, Pasir Penyu, Rengat Barat, Seberida, and Peranap, are more 'urbanized' than other sub-districts. These five sub-districts emerged from all respondents when they were asked to name sub-districts that are more 'urbanized' than others.

Table 3. Profile of respondents (140 samples).

No	Category	Total		
		Frequency	Percentage	
1	Gender	Male	26	18.57
		Female	114	81.43
2	Education level	Not past elementary	12	8.57
		Elementary school	51	36.43
		Junior high school	49	35
		Senior high school	22	15.71
		Diploma/higher	6	4.29
3	Location	'Small-town' sub-districts	50	35.71
		'Rural' sub-districts	90	64.29

Source: Authors (Survey in August 2017).

#### 4. Village Decentralization and Its Implications for Development Equity at the Sub-district Level

Section 3 has classified the sub-districts in the case study area based on the sub-districts' rurality and centrality. The classification of sub-districts was conducted to identify spatial disparities at the sub-district level and to simplify reality as a rough dichotomy between sub-districts, which are not separate, but rather closely intertwined. The classification thus serves not only as an explanation of the spatial structure in rural areas but also as a variable for investigating the implications of Indonesia's village decentralization for regional development equity at the sub-district level. This section discusses the implications of the village decentralization policy, an affirmative policy for rural development, towards regional development equity at the sub-district level. Comparison of the policy implications in 'small-town' and 'rural' sub-districts is expected to cover the limitations of existing studies concerning policy implications from the perspective of spatial analysis at the micro level.

Indonesia, like many other developing countries, has implemented a decentralization policy as a strategy to overcome spatial disparity issues. Since the fall of Suharto's New Order regime in 1998, Indonesia has experienced two stages of decentralization: local decentralization, then village decentralization. Amid the threat of disintegration due to wide development disparities between regions, the Indonesian government introduced the local decentralization policy in 1999. Since that time, district governments have received more authority than provincial governments to guide the development of public services, including education, health, and infrastructure (Hofman & Kaiser, 2006). This new arrangement under the decentralization policy provided an opportunity for local governments to meet local needs, allowed greater autonomy to lower-level governments, and promoted community participation in development planning.

However, local decentralization has not had a significant impact on rural development equity, and spatial disparities across rural areas in Indonesia persist. The government anticipated that local decentralization would improve the delivery of services. Instead, the result has been a massive proliferation of local governments, and newly established districts have not improved upon the delivery of public services compared to original districts (Firman, 2009; Lewis, 2017). The outcome of local decentralization has been reflected in a low rate of self-sufficiency as measured on an Indonesia-wide village index (Agusta, 2014). Low rates of self-sufficiency among Indonesian villages suggest that development efforts are still unlikely to increase an area's development potential, levels of community

participation, and desired benefits within villages. In 2014, the Indonesian government issued an affirmative policy for rural regions through Village Law Number 6. Indonesia has now decided to decentralize on a village level and has entered its fourth year of implementation.

#### 4.1. Community Involvement in Rural Development

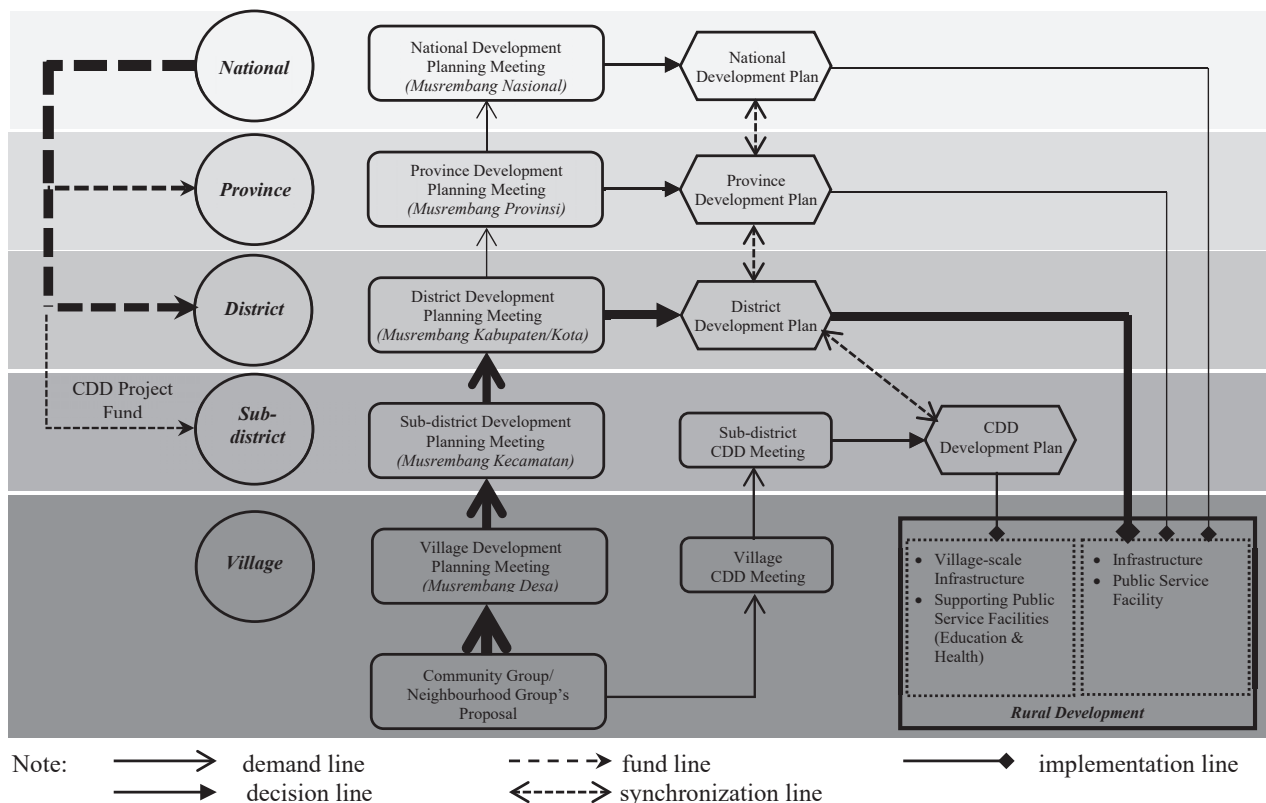


Figure 3. Rural development framework before village decentralization.

Source: Authors.

Figure 3 illustrates the demand, decision-making, and funding process for rural development before village decentralization. Despite the Indonesian government introducing a bottom-up development planning process in 2004, most decisions are still made through a top-down approach at the district level. Communities submit infrastructure and public facility development proposals through two channels, namely the village *musrebang*<sup>3</sup> and community-driven development (CDD)<sup>4</sup> project meetings. Priority projects agreed upon at the village *musrebang* are delivered at the sub-district *musrebang* and compete with development proposals from other villages. Priority projects that are decided upon at the sub-district level are then discussed at the district *musrebang* and district agencies' technical meetings before being jointly agreed upon by the legislative and executive parties at the district level. Village communities can also submit development proposals through CDD projects. Priority projects agreed upon at the village level are presented at the sub-district level to compete with proposals from other villages before being selected as part of the CDD's project development plan.

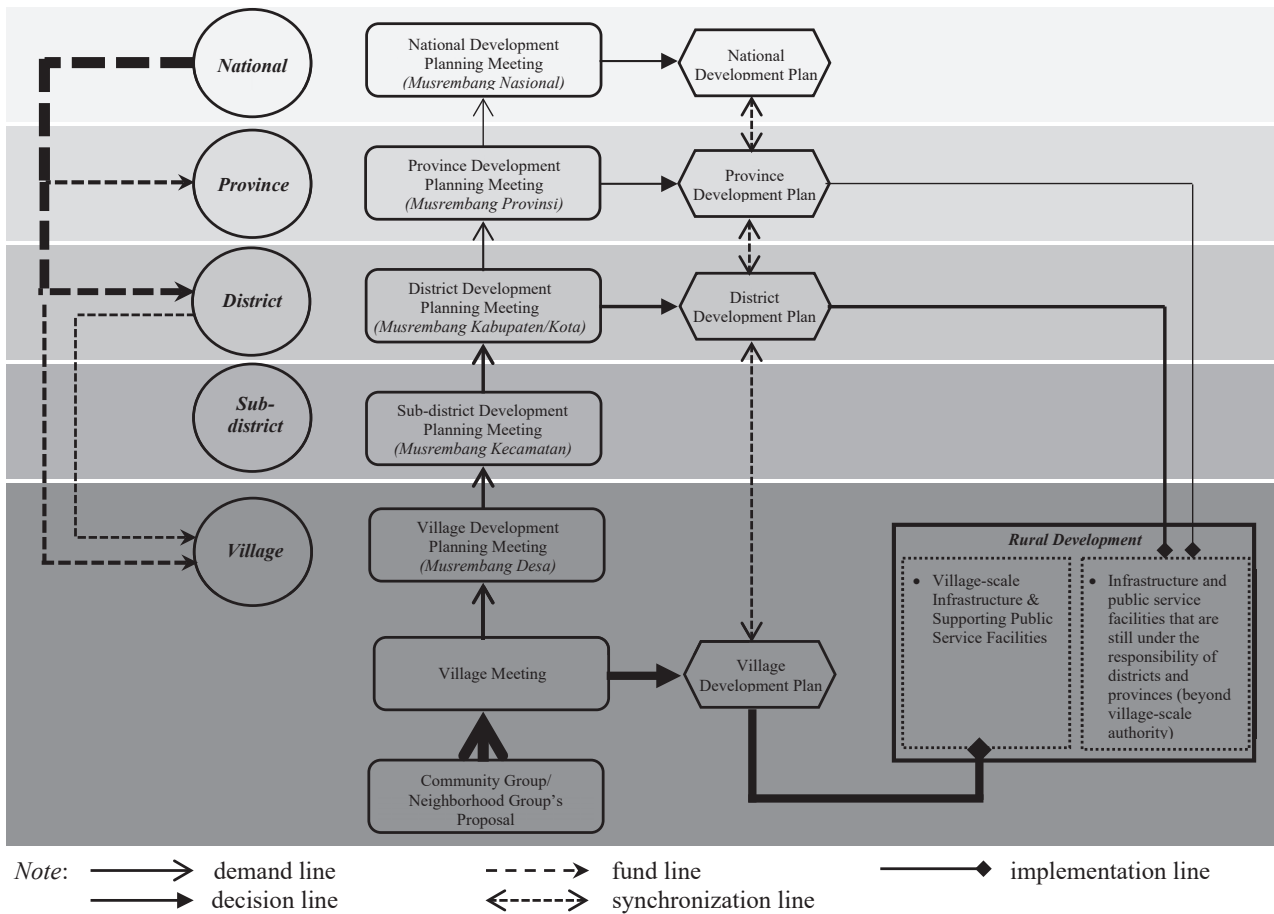


Figure 4. Rural development framework under village decentralization.

Source: Authors.

Under village decentralization, the bottom-up approach in rural development planning is stronger than ever. The delegation of authority and the support of financial transfers from the central government to village governments strengthens community involvement in the bottom-up development approach initiated by CDD projects. Rural communities can plan and be directly involved in the construction of infrastructure and public facilities in their villages. The decision-making process for the provision of village-scale infrastructure and public facilities is carried out in the village meeting. The agreement reached during the village meeting concerning priority projects and budgeting is then stated in the village development plan. The village meeting is essential since the process of planning, monitoring, and reporting on the implementation of village development is carried out through this mechanism. In village meetings, rural communities express ideas, criticisms, and proposals concerning infrastructure development following their daily needs and problems. Proposals for infrastructure and public service provisions that are still the responsibility of the district are presented to the district government through the *musrembang* mechanism (Figure 4).

**Table 4. Profile of respondents (692 samples).**

No	Category	Total		
		Frequency	Percentage	
1	Gender	Male	601	86.85
		Female	91	13.15
2	Education level	Not past elementary	69	9.97
		Elementary school	276	39.88
		Junior high school	201	29.05
		Senior high school	130	18.79
		Diploma/higher	16	2.31
3	Location	'Small-town' sub-districts	367	53
		'Rural' sub-districts	325	47

Source: Authors (Survey February to March 2019).

A questionnaire survey was conducted to investigate the implications of village decentralization policy for community participation in the decision-making process at the village level. Table 4 shows the profile of the respondents participating in the survey; this profile further illuminates the characteristics of the respondents on Indragiri Hulu. There are 692 respondents in total. Six hundred and one respondents are male (87%), and 91 respondents are female (13%). In terms of education level, 10% of participants had no education, 40% had not graduated from elementary school, 30% had graduated only from elementary school, 29% from junior high school, and 21% from senior high school or higher. In terms of location, 53% of respondents live in 'small-town' sub-districts, and 47% live in 'rural' sub-districts.

As many as 75% of all respondents involved in the data collection process had participated in village meetings at least once since the implementation of village decentralization. Most of the respondents who had participated in a village meeting, both in 'rural' sub-district villages and 'small-town' sub-district villages, stated that they had attended village meetings more frequently since the village decentralization. (Table 5). The chi-square value is 8.817, which is significant with  $p < 0.05$ . The result indicates that the sub-district group and attendance at village meetings have a statistically significant association.

**Table 5. Community participation in decision-making process and development supervision.**

		Attendance (more frequent after VD)			Total
		No	Yes	Never attended	
Group	'small-town' sub-district	78 (21.2%)	187 (51%)	102 (27.8%)	367 (100%)
	'rural' sub-district	52 (16%)	202 (62.2%)	71 (21.8%)	325 (100%)
Total		130 (18.8%)	389 (56.2%)	173 (25%)	692 (100%)
Chi sq. (2) = 8.817, $p = 0,012 < 0,05$					

Source: Authors.

The percentage of respondents who participated in village meetings in 'rural' sub-districts was higher than the percentage who participated in 'small-town' sub-districts, 78.2% in comparison with 72.8%, respectively. Increased

community participation in the decision-making process at the village level after the implementation of village decentralization is in line with the findings of Hartoyo et al. (2018), which indicate that the level of village community participation in the categories of planning, community empowerment, and development supervision is better under village decentralization relative to the previous period. The findings of the present paper further reveal a variation in the level of participation between communities in 'rural' and 'small-town' sub-districts. Community involvement in the decision-making process and development supervision is higher in the 'rural' sub-districts than in the 'small-town' sub-districts.

Table 6 presents a summary of the semi-structured interviews with rural development stakeholders in Indragiri Hulu. The stakeholders consisted of six district officers, twelve sub-district officers, twelve community leaders, and four community facilitators. The interviews explored two main topics: the aspects that influence community involvement in village meetings and the significance of village decentralization policy. The participants' answers were grouped based on these two main topics. For the topic on the most influential community participation aspects, the answers from the participants were further grouped into community awareness and capability of village heads.

**Table 6. Determinant aspects of community participation and significance of village decentralization.**

Participant group			Significance of village decentralization			Total
			Financial transfer	Division of authority	Decision-making process	
District official (n = 6)	The most influential aspect of community participation in village meetings	Public awareness	3 (75%)		1 (25%)	4 (100%)
		Village head capability		2 (100%)		2 (100%)
	Total		3 (50%)	2 (33.3%)	1 (16.7%)	6 (100%)
Sub-district official (n = 12)	The most influential aspect of community participation in village meetings	Public awareness	8 (100%)			8 (100%)
		Village head capability	2 (50%)	2 (50%)		4 (100%)
	Total		10 (83.3%)	2 (16.7%)		12 (100%)
Community leader (n = 12)	The most influential aspect of community participation in village meetings	Public awareness	10 (100%)			10 (100%)
		Village head capability	2 (100%)			2 (100%)
	Total		12 (100%)			12 (100%)
Community facilitator (n = 4)	The most influential aspect of community participation in village meetings	Public awareness	2 (66.7%)		1 (33.3%)	3 (100%)
		Village head capability	1 (100%)			1 (100%)
	Total		3 (75%)		1 (25%)	4 (100%)
Total (n = 34)	The most influential aspect of community participation in village meetings	Public awareness	23 (92%)		2 (8%)	25 (100%)
		Village head capability	5 (55.6%)	4 (44.4%)		9 (100%)
	Total		28 (82.3%)	4 (11.8%)	2 (5.9%)	34 (100%)

Source: Authors.

According to most of the stakeholders in Indragiri Hulu, increased participation in the decision-making process since the implementation of village decentralization has been a direct result of community awareness of village development. Twenty-three out of thirty-four participants said that the community has become more concerned about rural development since the village government was given the authority to manage significant amounts of finances for development. Furthermore, according to community leaders' opinion, the public wants to ensure they will benefit from the policy and therefore is striving to be involved in the decision-making process. The community leaders' perspectives regarding community participation can best be represented by this statement:

*The community is more eager to come to the village meeting since the opportunity to realize development proposals is greater than ever, especially in remote villages that lacked development before the implementation of the village decentralization policy.* (Jaharan, Community leader of Sungai Akar, 'Rural' sub-district village, Interview)

Financial transfers, the division of authority, and decision-making processes are significant values of village decentralization from the perspective of stakeholders in Indragiri Hulu. Nevertheless, 82.3% of the participants considered financial transfers to be more fundamental than the two other aspects. One of sub-district official reinforced the importance of financial transfers as follows:

*The division of authority and changes in the decision-making process will not have a significant impact on rural development if adequate development funds do not support it. . . . the decentralization fund transfer aims to reduce rural poverty and development inequality.* (Gandhi Hernawan, Sub-district official of Batang Gansal, 'Rural' sub-district, Interview).

Since the implementation of village decentralization, the village budgets sourced from village funds and village allocation funds in Indragiri Hulu Regency have increased significantly (Table 7). There has been a drastic increase in the average budget per village, from 9,017 USD before the implementation of village decentralization in 2014 to 86,700.05 USD in the third year since implementation. Significant improvements in village financial resources derived from the Village Fund and Village Fund Allocation provide greater opportunities for communities and village governments in rural development.

**Table 7. Village budget in Indragiri Hulu Regency (2014–2017).**

No.	Source	Budget (USD)*			
		Before	After village decentralization		
		2014	2015	2016	2017
1.	Village fund (state budget)	0	3,513,831.10	8,060,899.58	10,198,843.80
	On average per village	0	18,115	41,550	52,574
2.	Village fund allocation (district budget)	1,749,214	6,443,581.01	6,198,255.77	6,620,524.34
	On average per village	9,017	33,215	31,953	34,126
Total average per village (Village fund + Village fund allocation)		9,017	51,330	73,503	86,700.05

Note: \* Budget figures were initially provided in Indonesian rupiah and converted to US dollars using the exchange rate at the year of implementation. Source: Indragiri Hulu's Financial and Asset Management Agency, 2017.

The significant increase in village funds since the implementation of village decentralization has not only increased community participation in rural development but also raised concerns regarding the capability of village officials in financial management. For example, Husna and Abdullah (2016) highlighted the issue of lack of quality human resources; limited or absent mastery of village financial management has led officials to use third parties' services in the preparation of required reports. Meanwhile, Husin (2016) proposes the necessity for modification of the financial accounting system due to the complexity of procedures and the limited understanding of village officials regarding financial accounting under the village decentralization policy. District government officials expressed similar concerns:

*We realize that financial management under the village decentralization policy is quite complex and difficult for village officials to understand. . . . Not to mention the wide variations in human resource capabilities at the village level. . . . Workshops and training have been carried out to enhance the capabilities of village officials in financial management. However, it still takes time to improve the capabilities of village officials.* (Kamaruzaman, Head Division of Village's Finance and Asset Development, Community Empowerment Agency of Indragiri Hulu Regency, Interview)

*Problems that often arise in the implementation of village decentralization in Indragiri Hulu are mostly due to the inability of village government officials to prepare work plans and budgeting costs. . . . In my opinion, increasing the capability of the government apparatus in financial management is key to the successful implementation of village decentralization.* (Erlina Wahyuningsih, Division Head of the Village Administration, District Secretariat Office, Interview)

From interviews with stakeholders in Indragiri Hulu, it can be concluded that the implementation of village decentralization has contributed to increasing community participation in rural development. Namely, since the implementation of village decentralization, village budgets have substantially increased. This increase has contributed significantly to increasing community awareness of rural development. Increased public awareness of rural development has, in turn, increased community participation in the decision-making process and development supervision. However, the lack of capability among village officials in financial management remains a significant issue. Enhancing the capability of village officials is the next step that must be considered by the government to improve the implementation of the village decentralization policy.

#### **4.2. The Provision of Village-scale Infrastructure and Public Facilities in 'Small-town' and 'Rural' Sub-districts**

The implementation of village decentralization has not only led to a significant increase in village budgets but also promoted equal opportunities in village-scale infrastructure and public facilities development between sub-districts in Indragiri Hulu Regency. Village decentralization provides village-scale authority to village governments in the provision of infrastructure (village roads, drainage, irrigation channels, clean water and neighborhood sanitation, ponds, bridges, etc.) and public service facilities such as village markets, village health service posts, and non-formal education facilities.



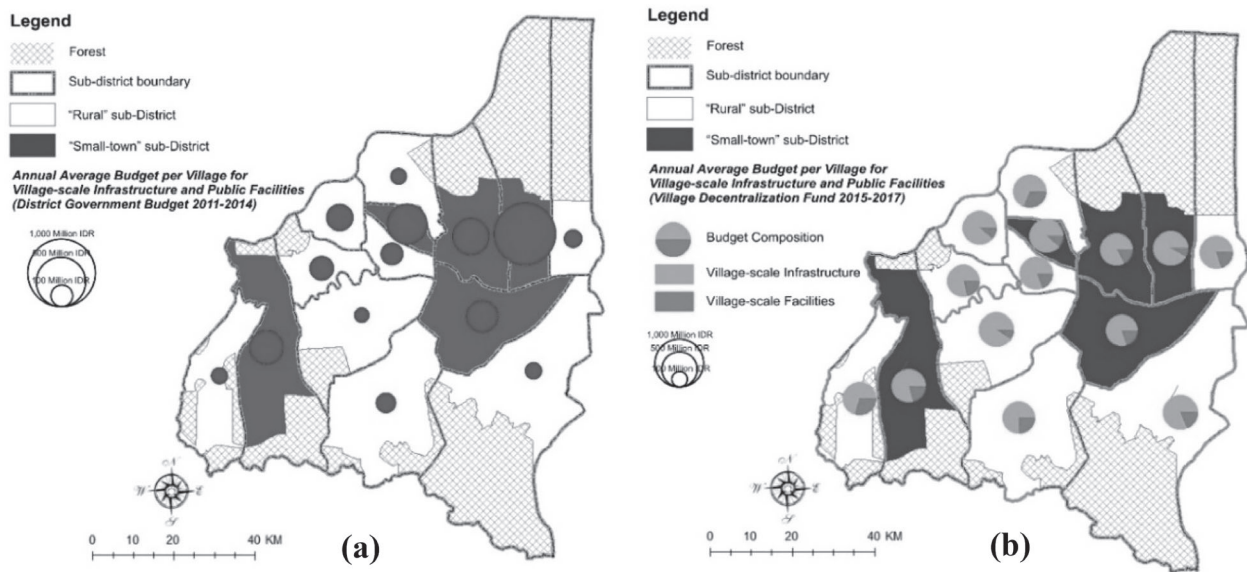


Figure 5. Annual budget per villages before (a) and after (b) village decentralization.

Source: Authors' calculation using data from Indragiri Hulu Agencies (2017).

Figure 5 (a) shows the distribution of the annual average budget per village for the construction of village-scale infrastructure and public facilities before village decentralization. From 2011 to 2014, the distribution of the district government budget for village-scale infrastructure and public service facilities development was uneven across sub-districts. A considerable portion of development funding during this period was concentrated in 'small-town' sub-districts. Meanwhile, 'rural' sub-districts received only a small portion of the overall development funds. Figure 5 (b) shows the distribution and composition of village-scale infrastructure and public facilities development budget from 2015 to 2017.

Table 8. Paired samples test of average annual budget per village before and after village decentralization

Group of Sub-Districts	Average Annual Budget		Number of Sub-district	Result of T-test
	Before VD	After VD		
'Small-town' sub-district	341,493,865.00	464,602,249.00	5	t = -2.436 df = 4 p = 0.072 > 0.05
'Rural' sub-district	92,099,102.00	469,902,090.30	9	t = -22.255 df = 8 p = 0.000 < 0.05

Source: Authors.

Table 8 shows that there is an increase in the average annual budget for the development of village-scale infrastructure and public facilities in the two sub-district groups after the implementation of the village decentralization. However, statistically, there is no significant difference in the average annual budget per village in the 'small-town' sub-district before and after village decentralization. Meanwhile, in 'rural' sub-districts there is a significant difference in the annual budget per village after the implementation of village decentralization; the value of sig. (2-tailed) is 0.000, which is less than 0.05. The result indicates that the implementation of the village

decentralization policy has a significant positive impact on increasing the budget for village-scale infrastructure and public facilities development in the ‘rural’ sub-districts.

Eighty-one per cent of village development funds in Indragiri Hulu, from 2015 to 2017, have been utilized for village-scale infrastructure development. The rest is for the provision of village-scale public service facilities. Village roads are the primary preference of communities for rural development, both in ‘small-town’ sub-district villages and in ‘rural’ sub-district villages. More than 50% of the physical development budget in both ‘small-town’ and ‘rural’ sub-districts has gone towards constructing 628.57 kilometres of village roads since the implementation of village decentralization (Figure 6). In Indragiri Hulu Regency, most roadways that provide access to agricultural land are dirt and gravel roads, which can only be traversed by foot or motorcycle. Narrow and unpaved roads are burdensome to rural communities in transporting crops to sell, particularly during rainy seasons. Roadways in poor conditions result in higher transportation costs for agricultural products, which in turn reduce farmers’ incomes.

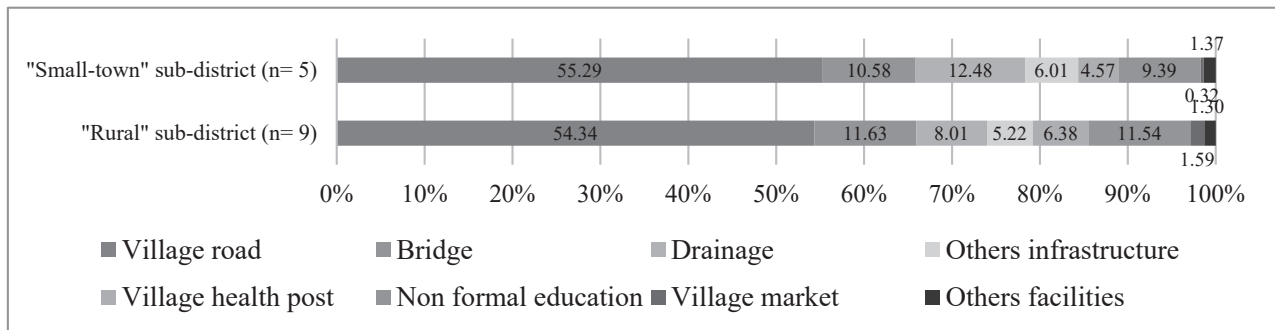


Figure 6. Village budget utilization based on type of infrastructure and public facilities

Source: Authors’ calculation using data from Indragiri Hulu Agencies (2017).

The crucial role of village roads for rural livelihoods has been reflected in the high demand across both groups of villages for the provision of village road infrastructure. Communities in both the ‘small-town’ sub-district villages and ‘rural’ sub-district villages argue that village road infrastructure projects are more important than other village-scale infrastructure and public service facilities. The following statements represent the reasons why village road infrastructure is a priority of the communities in both sub-district groups:

*Village road infrastructure projects are still a development priority in our village because many village roads’ surfaces have been degraded, and some plantation areas do not yet have access to transport agricultural products. . . . existing roads improvement and new road construction projects are expected to improve the community’s economy.* (Yoto, Village Official of Sungai Dawu, ‘Small-town’ sub-district villager, Interview)

*Village decentralization funds in our village have been used to provide various types of village-scale infrastructure and public facilities, but the most significant proportion is for village road infrastructure projects. . . . village road infrastructure projects are the most popular proposals among villagers in village meetings.* (Ahmad Maibun, Village Official of Bukit Meranti, ‘Small-town’ sub-district villager, Interview)

*In my opinion, in the next few years, village road infrastructure projects are still needed in this village, especially to facilitate access to plantation areas.* (Agus Surojo, Community leader of Sungai Akar, ‘Rural’ sub-district villager, Interview)

Field observations were carried out in 6 villages in February 2019 to investigate the characteristics of village road infrastructure projects after the implementation of village decentralization. Sungai Guntung Hilir, Sungai Dawu, and Bukit Meranti represent villages in the 'small-town' sub-district. Sungai Akar, Simpang Koto Medan, and Rawa Sekip represent 'rural' sub-district villages. The villages were randomly selected from the 12 villages that were previously surveyed. In general, village road infrastructure projects are the most popular rural development projects at the village level, both in 'small-town' sub-district villages and 'rural' sub-district villages. Village road infrastructure projects can easily be found in all villages visited in this study. However, the field observations indicated a difference in the characteristics of infrastructure projects in the 'small-town' sub-district versus those in 'rural' sub-district.

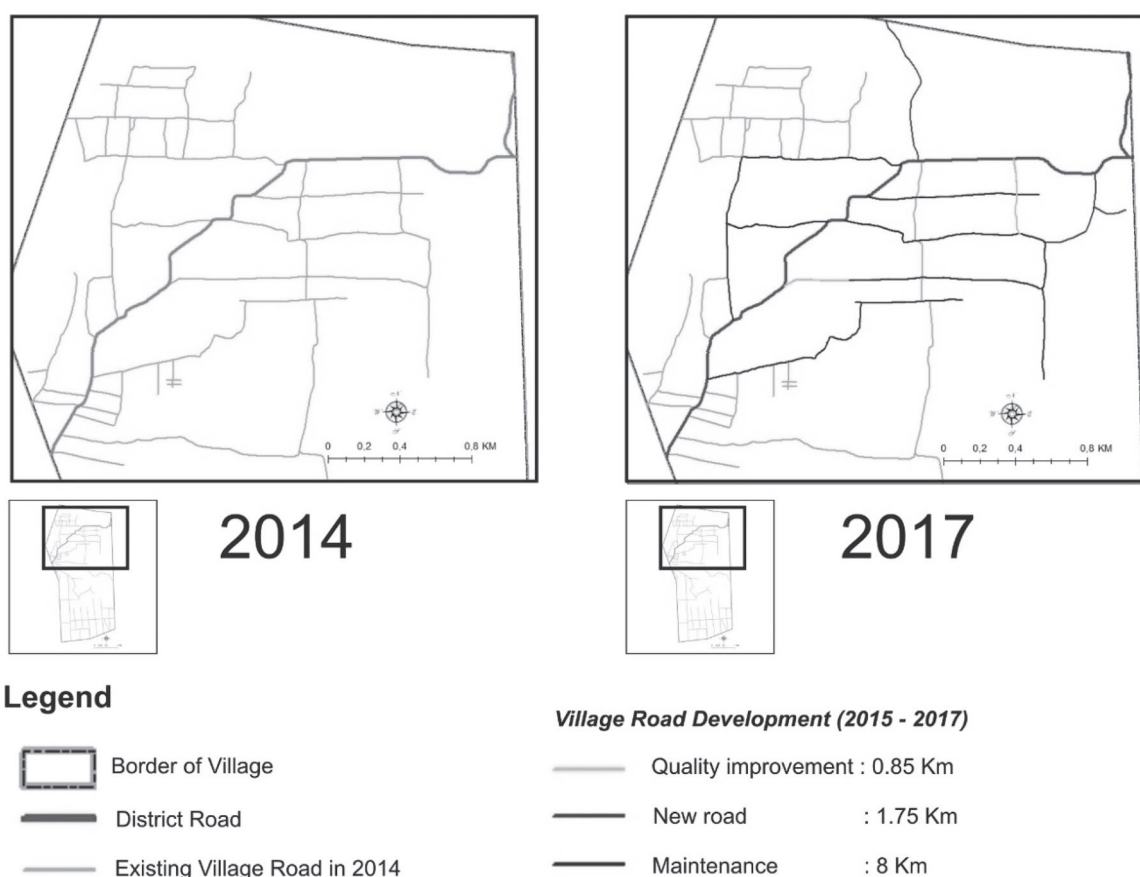
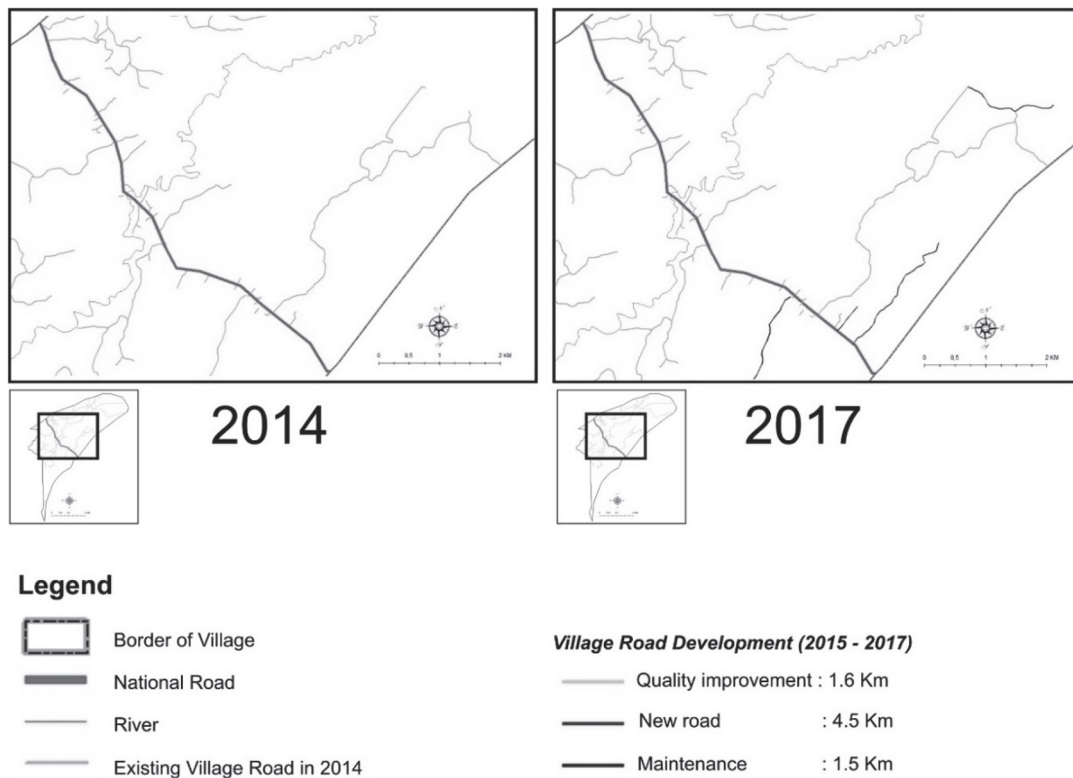


Figure 7. Village road development in Bukit Meranti ('small-town' sub-district village).

Source: Authors.

In 'small-town' sub-district villages, village road maintenance<sup>5</sup> projects, rather than new road construction, were predominant in infrastructure projects. For example, figure 7 illustrates the village road network in Bukit Meranti in 2014 and 2017. Bukit Meranti is located in the central part of Seberida, 6 kilometres from the sub-district capital, and 31 kilometres from the district capital. Bukit Meranti is a typical village in a 'small-town' sub-district that has a relatively better village road infrastructure in terms of connectivity and road surface quality than villages in 'rural' sub-districts. The village roads on Bukit Meranti, like most village roads in Indragiri Hulu, are predominated by gravel roads that are easily eroded, especially during the rainy season. Thus, routine maintenance projects are essential to support community activities. During the three years of village decentralization, 8 kilometres of village roads were maintained using village decentralization funds.



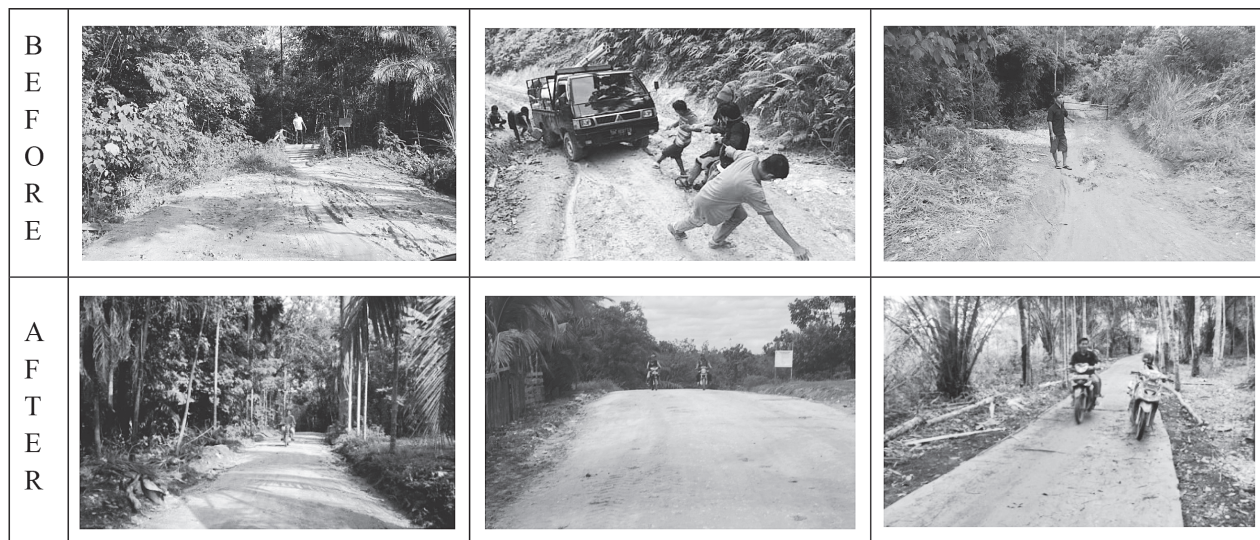
**Figure 8. Village road development in Sungai Akar ('rural' sub-district village).**

Source: Authors.

Meanwhile, new road construction projects predominate over road maintenance and quality improvement<sup>6</sup> projects among village road infrastructure projects in 'rural' sub-district villages. Village road infrastructure projects in Sungai Akar were taken as an example to represent villages in 'rural' sub-districts. Sungai Akar is located in the southern part of Batang Gansal, 15.5 kilometres away from sub-district capital, and 76 kilometres from the district capital. Sungai Akar is a typical village in a 'rural' sub-district that has relatively poor road network connectivity. The existing village roads in 'rural' sub-district villages are mostly road segments that have not been connected. Most of the village roads in Sungai Akar are dirt and gravel roads which once served as operational paths for logging companies in this area. Since logging companies ceased operations in the early 1990s, the community have used the abandoned logging areas and roads for plantation purposes. At present, most of the plantation roads are in poor condition, and only 1.5 kilometres of the plantation roads have been repaired since 2015. The construction of 4.5 kilometres of new road from 2015 to 2017 was intended to support community plantation activities, especially for the extraction of crops from agricultural land to village roads and national roads. Figure 8 shows the village road network in Sungai Akar, before and after village decentralization (2014–2017).

Field observations found that, before the implementation of village decentralization, the road network connectivity in the 'small-town' sub-district villages was relatively better than in the 'rural' sub-district villages. Since the implementation of village decentralization, the pre-existing disparity in road network connectivity has impacted the road infrastructure development priorities of the two groups of villages. 'Small-town' sub-district villages that had a relatively better road network connectivity have focused on road maintenance and repair projects. Meanwhile, 'rural' sub-district villages have prioritized increasing road network connectivity through new road construction projects rather than road maintenance and repair projects. The construction of new roads is expected to facilitate accessibility for the community. However, due to limited funds, new road construction projects in the 'rural' sub-

district villages are still segmented and have not been connected to other roads. Figure 9 illustrates village roads, before and after the implementation of road infrastructure projects.



**Figure 9. Village roads, before and after road infrastructure projects.**

Source: Indragiri Hulu's Public Works Agency (2017).

Inter-village connectivity remains an issue in the villages visited in this study. Although the villages in Indragiri Hulu have been connected through district roads, the road network connectivity between sub-districts varies. Village decentralization provides an opportunity for villages to improve the connectivity of the road network within the sub-district area through the synergy of development between villages. However, this opportunity has not yet been utilized by the villages. These villages have focused instead on improving road network connectivity within their respective areas. No collaboration or coordination was found between neighbouring villages in the planning of road infrastructure development. Thus, three years of the implementation of village decentralization has only had an impact on increasing the connectivity of the road network within the village area; the connectivity between villages within the sub-district area has not increased.

According to village officials, village road infrastructure projects have been planned based on proposals from the community following community members' preferences and needs. Village connectivity with neighbouring villages has not been a concern of the community.

*Most of the villagers proposed road maintenance and repair at village meetings since in some areas the road surface has been damaged. The rest proposed the construction of agricultural roads to facilitate transportation to the plantation area. . . . The accessibility of this village to neighbouring villages is quite good, and in recent years the condition of district roads has been good. (Suparman, Village Official of Sungai Dawu, 'Small-town' sub-district villager, Interview)*

*Infrastructure development planning in this village was carried out independently and was not affected by development plans from neighbouring villages . . . the focus of road infrastructure projects in this village is to increase community access to plantation land to improve the community's economy. . . . connectivity between villages is the responsibility of the district government. (Rizki Ade Chandra, Village Official of Sungai Akar, 'Rural'*

sub-district villager, Interview)

There are some fact findings from the field observations regarding development planning in rural areas. The findings can be summarized as follows:

1. Under village decentralization, development planning at the village level has been more responsive to community needs and problems. However, no village spatial planning is available to guide village development planning.
2. There is no synergy in inter-village development planning within the sub-district area. Villages only focus on physical development within their respective administrative areas and ignore opportunities to collaborate with surrounding villages. For example, this study found no collaboration between villages aimed at village road development planning to connect one village with its neighbouring village.
3. The role of the sub-district government as an intermediary between the district and village governments is significant in aligning village development plans with district development and spatial plans. However, at present, the role of the sub-district government is limited to administrative affairs in village development planning.
4. Synergy in inter-village development planning within the sub-district area and synchronization with district development and spatial planning are the next steps that need to be considered by the government.

#### **4.3. The Provision of Infrastructure and Public Facilities Beyond Village Government Authority in ‘Small-town’ and ‘Rural’ Sub-districts**

In the three years of village decentralization, villages in Indragiri Hulu Regency have experienced unprecedented progress in the provision of village-scale infrastructure and public service facilities. As for the provision of infrastructure and public facilities beyond the village-scale authority, such as district roads, sub-district markets, sub-district administrative offices, formal education facilities (elementary, junior high, and senior high schools) and health facilities (community health centres at the sub-district level and hospitals), these remain the authority of the district government. The village governments must propose the provision of such infrastructure and public facilities to the district government through the *musrembang* mechanism per the public policy process at the district level.

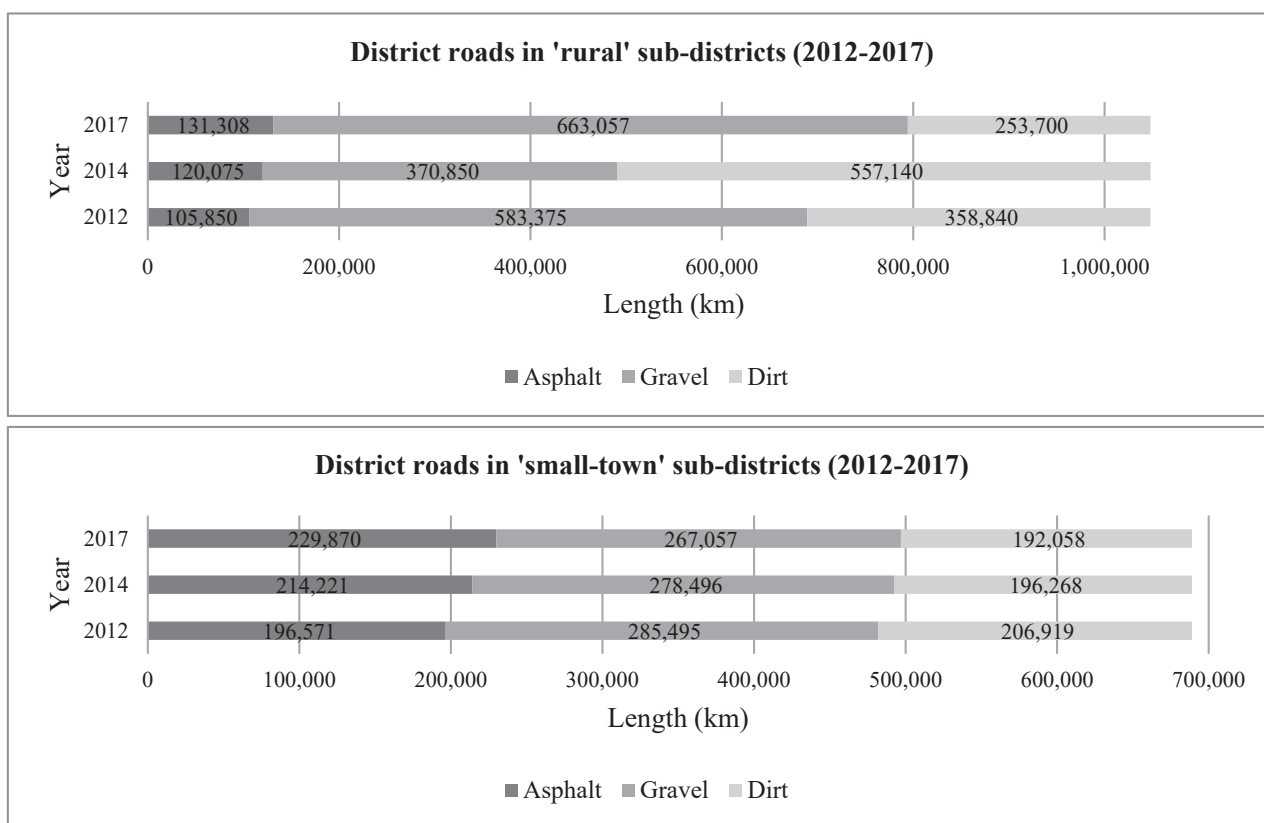
According to district government officials, the development policy priority in Indragiri Hulu is the provision of infrastructure and public service facilities to support the development of agriculture and plantations.

*Agriculture and plantations are the sectors that contribute most to Indragiri Hulu’s economy, so infrastructure development and public service facilities prioritize projects that support the development of these sectors. . . . Provision of infrastructure and public facilities follow the economic potential of the sub-districts.* (Rianto, Head Division of Settlement, Indragiri Hulu’s Housing and Settlements Agency, Interview)

*In general, the sub-districts in Indragiri Hulu still lack infrastructure, especially roads and bridges. . . . roads and bridges are vital to encourage the community’s economy.* (Zulkarnain, Head Division of Infrastructure and Facilities, Indragiri Hulu’s Regional Development Planning Agency, Interview)

*The district government has allocated significant funds for road and bridge infrastructure projects [such as] road and bridge construction projects aimed at opening access to remote areas to encourage economic growth across the*

*sub-districts.* (Nafriandi, Head Division of Regional Roads, Indragiri Hulu's Public Works Agency, Interview)



**Figure 10. Comparison of district roads across sub-district groups by surface types.**

Source: Calculated from Indragiri Hulu Statistics (2015, 2018).

Figure 10 shows district roads based on the type of surface in 'small-town' and 'rural' sub-districts of Indragiri Hulu Regency in 2012, 2014, and 2017. District roads are a vital component of infrastructure at the local level in Indonesia's road network system, connecting the district capital with sub-district capitals, linking sub-district capitals, connecting district capitals and local activity centres, and integrating local activity centres within the district area.<sup>7</sup> The length of the regency road in Indragiri Hulu is 1,737,050 kilometres, consisting of asphalt, gravel and dirt roads. No additional lengths of new district roads were built from 2011 to 2017. Although the total length of roads in 'small-town' districts is shorter than in 'rural' districts, the road surface in 'small-town' sub-districts is relatively better than in 'rural' sub-districts. The length of paved roads in 'small-town' sub-districts is almost double that in 'rural' sub-districts.

District roads in 'small-town' sub-districts experienced a steady increase in surface types both before (2012–2014) and after (2015–2017) village decentralization. The lengths of dirt and gravel roads in 'small-town' sub-districts have been steadily decreasing, being upgraded over time to gravel and asphalt roads, respectively. Meanwhile, in 'rural' sub-districts, a steady increase has only occurred with asphalt roads, both before and after village decentralization. In the period from 2012 to 2014, more than one-third of the gravel roads in 'rural' sub-districts had deteriorated and were becoming dirt roads. In the three years of village decentralization (2015–2017), there was a significant increase in the length of gravel roads in 'rural' sub-districts, where more than one-half of the total length of dirt roads has been upgraded to gravel roads.

These data indicate that the village decentralization policy has an impact on district development policy for

district road infrastructure projects. Since the implementation of the village decentralization policy, district road infrastructure projects are no longer concentrated only in 'small-town' sub-districts, but also occur in 'rural' sub-districts as well. 'Rural' sub-districts which previously only received a relatively small proportion of the budget for district road infrastructure projects have received significant budget increases since village decentralization, which have in turn led to improvements in the surface quality of district roads in 'rural' sub-districts. However, 'small-town' sub-districts still benefit from the steady increase in district road infrastructure projects, just as they were before the implementation of village decentralization.

Figure 11 illustrates the distribution of district government spending for the provision of public facilities beyond the village-scale authority across sub-districts, before (2012–2014) and after (2015–2017) village decentralization. Some sub-districts, both 'small-town' and 'rural' sub-districts, experienced a decrease in budget allocation after the implementation of village decentralization, while others experienced the opposite trend. However, in the case of variations between sub-districts, the distribution of district government spending on the construction of public service facilities between sub-districts is relatively more equitable than in the period before the implementation of village decentralization.

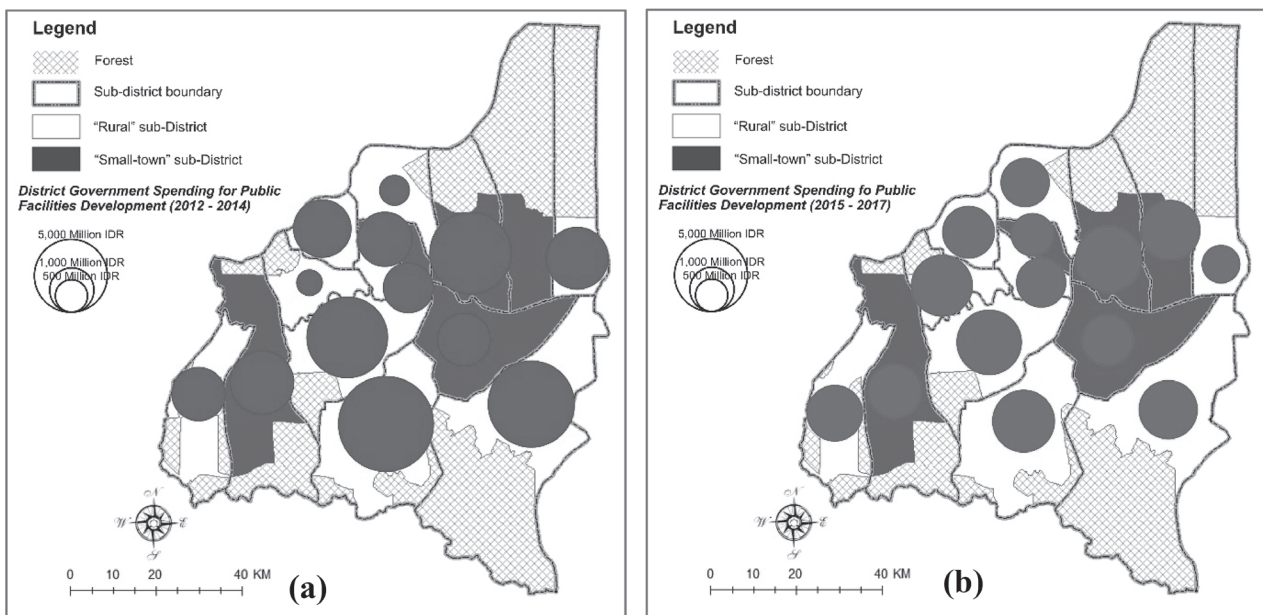


Figure 11. District spending for public facilities beyond the village-scale authority, before (a) and after village decentralization (b).

Source: Authors' calculation using data from Indragiri Hulu Agencies (2017).

Table 9 shows that there is a decline in the average annual district spending for the provision of public facilities beyond the village-scale authority after the implementation of village decentralization. The average annual district spending in 'small-town' sub-districts is relatively higher than in 'rural' sub-districts, before and after village decentralization. However, statistically, the implementation of village decentralization has no implications for district spending variation in the two sub-district groups. The p value in the two village groups is higher than 0.05, which indicates that there were no significant differences in the average annual district spending on the provision of public facilities beyond the village-scale authority in the two sub-district groups before and after village decentralization.



**Table 9. Paired samples test of average annual district spending before and after village decentralization**

Group of Sub-Districts	Average Annual District Spending		Number of sub-district	Result of T-test
	Before VD	After VD		
'Small-town' sub-district	2,996,000,000.00	2,512,000,000.00	5	t = 0.491 df = 4 p = 0.649 > 0.05
'Rural' sub-district	3,412,222,222.22	2,085,555,555.56	9	t = 1.868 df = 8 p = 0.099 > 0.05

Source: Authors.

Stakeholders in the district acknowledge that there is a spatial disparity between sub-districts in Indragiri Hulu, and the district's development policy has taken into account the principle of equitable development among districts. However, stakeholders at the sub-district level have different views on the topic. According to sub-district officials, the development gap occurs because the district government prioritizes certain sub-districts rather than other sub-districts.

*Rengat and several other sub-districts such as Rengat Barat and Pasir Penyau get a bigger proportion of the development budget compared to other sub-districts in Indragiri Hulu.* (Abdul Hayat, Sub-district official of Seberida, 'Small-town' sub-district, Interview)

From the sub-district officials perspective, political representation is considered as significant factor in decision making at the district level. The following statement highlights the significant role of legislators in district-level decision making.

*There is a political interest in development planning at the district level. Sub-districts that have more legislative members have relatively larger portions of the development budget. . . . legislative members have authority in planning district development budgets.* (Azazi Kudus, Sub-district official of Batang Gansal, 'Rural' sub-district, Interview)

The planning and decision-making process for the provision of infrastructure and public service facilities beyond the village-scale authority takes place at the district level. The public policy process at the district level is a complex activity and involves parties with various respective interests. The most influential parties in the process of planning and implementing public policy at the district level are the district government (executive) and the representative council (legislative). According to Johnson (2016), executive and legislative relations constitute a self-interest model. Legislators want to be re-elected in the next election, while executives want to maximize the budget; for their part, the public wants to maximize the benefits of development. In order to be re-elected, legislators are looking for programmes and projects that will make them popular. Meanwhile, the executive proposes new programmes so that the agencies develop, and the community feels that it is benefitting from the government. Since all parties can 'meet' in the same action, consensus between the legislator and the district government is a necessity. In the discussion of the district budget, the executive and legislature make agreements reached through bargaining before the budget is determined as public policy (Abdullah & Asmara, 2006).

This study found that political factors are more prominent than technical considerations in the provision of infrastructure and public service facilities beyond the village-scale authority. Personal closeness factors or political views shared between village heads and decision-makers at the district level are often more decisive in the process of selecting which infrastructure and public facilities will be built by the district. For example, some villages in 'small-town' sub-districts that have relatively better road infrastructure than villages in 'rural' sub-districts are given preference in district road development projects. Despite having submitted proposals through *musrembang*, 'rural' sub-district villages that still lack village road infrastructure have not gained the attention of the district. From interviews with locals, it was found that the 'small-town' sub-district villages had personal closeness either with legislative members or regional officials. Thus, development project proposals in these villages are faster to be realized than in villages that do not have a personal closeness to decision-makers at the district level. Data from the secretariat office of the district representative house shows that out of a total of 40 legislative members in Indragiri Hulu, 26 legislative members reside in 'small-town' sub-districts. In general, villages in 'small-town' sub-districts benefit more from personal closeness to decision-makers at the district level since most legislative members and executives reside in 'small-town' sub-districts.

## 5. Conclusions

Traditionally, development policy research has adopted a simplified concept of rural and urban areas with rural referring to more remote farming areas and urban to cities (Lynch, 2004). This paper provides a new discussion of the concepts of 'rural' and 'urban' in spatial structures of rural areas. Based on its rurality and centrality, sub-districts in this paper classified into 'small-town' sub-districts and 'rural' sub-districts. The classification of sub-districts is conducted to identify spatial disparities at the sub-district level and to simplify reality as a rough dichotomy between sub-districts, which are not separate, but rather closely intertwined. The classification thus serves not only as an explanation of the spatial structure in rural areas but also as a variable for investigating the implications of Indonesia's village decentralization for regional development equity at the sub-district level.

The implementation of village decentralization has increased community involvement in rural development at the sub-district level, especially at 'rural' sub-districts. Substantial increases in village budgets from the central government have contributed significantly to increasing community awareness of rural development, prompting more active involvement. Village decentralization has not only led to a significant increase in village budgets but also promoted equal opportunities in village-scale infrastructure and public facilities development at the sub-district level. 'Rural' sub-district villages that previously received less attention in physical development have received relatively the same budget allocations as 'small-town' sub-district villages. Village decentralization policy also has implications for the decline in the mean value of district spending for the provision of public facilities beyond the village-scale authority in the two sub-district groups. However, there is no significant difference in the variation in district spending in the two sub-district groups before and after the implementation of village decentralization. In other words, the village decentralization policy has not yet had implications for district budget policy in the provision of public facilities at the sub-district level. Meanwhile, the 'small-town' sub-district is still in a more advantageous position than the 'rural' sub-district due to the availability of better infrastructure and public facilities and to personal closeness to decision makers at the district level.

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## Notes

- <sup>1</sup> Community facilitators are professionals in financial management and civil engineering who are assigned by the government to increase community empowerment in a village.
- <sup>2</sup> Scalogram analysis, also known as Guttman scaling, is a technique used to examine whether a set of items is consistent, in the sense that all the items measure the same thing.
- <sup>3</sup> *Musrembang* is a development planning meeting at the village, sub-district, provincial, and national levels that consists of a series of public consultations on development planning and budgeting, as regulated by Law 25/2004 of the Development Planning System.
- <sup>4</sup> The implementation of *Kecamatan*/Sub-District Development Program (KDP) in 1998 marked the beginning of the CDD project in Indonesia. In general, the KDP aims to alleviate poverty through community empowerment by providing block grants to the poorest sub-districts in Indonesia in order to promote small-scale infrastructure development and social and economic activities. Block grants are distributed directly to the sub-districts, while villages compete by proposing projects to obtain funds. Continuing the successful implementation of the KDP, the government launched the *Program Nasional Pemberdayaan Masyarakat* (PNPM), or National Program for Community Empowerment, in 2006. The implementation of the PNPM (2006–2014) has made the CDD project a national strategy for the alleviation of poverty.
- <sup>5</sup> Village road maintenance in this study refers to activities to keep road surfaces, which are mostly dirt and gravel, in usable conditions.
- <sup>6</sup> The quality improvement of village roads in this study refers to activities to upgrade the surface of dirt and gravel roads into concrete roads.
- <sup>7</sup> According to Law number 38 of 2004 on Roads.

## References

- Abdullah, S., & Asmara, J. A. (2006). Perilaku oportunistik legislatif dalam penganggaran daerah. *Simposium Nasional Akuntansi*, 9, 23-26.
- Agusta, I. (Ed.). (2014). *Indeks Kemandirian Desa: Metode, Hasil, dan Alokasi Program Pembangunan*. Yayasan Pustaka Obor Indonesia.
- Anderson, J. E. (2011). The gravity model. *Annual Review of Economics*, 3(1), 133-160.
- Anshari, K., (2017). Indonesia's Village Fiscal Transfers: A Fiscal Decentralization Review. *Jurnal Studi Pemerintahan*, 8(3), 296-326.
- Antlöv, H., Wetterberg, A., & Dharmawan, L. (2016). Village governance, community life, and the 2014 village law in Indonesia. *Bulletin of Indonesian Economic Studies*, 52(2), 161-183.
- Chiaradia, A., Hillier, B., Schwander, C., & Wedderburn, M. (2009). Spatial Centrality, Economic Vitality/Viability. In *Proceedings, 7th International Space Syntax Symposium, KTH Royal Institute of Technology, Stockholm, Sweden*.
- Douglass, M. (1998). A regional network strategy for reciprocal rural-urban linkages: an agenda for policy research with reference to Indonesia. *Third World Planning Review*, 20(1), 1.
- Firgo, M., Pennerstorfer, D., & Weiss, C. R. (2015). Centrality and pricing in spatially differentiated markets: The case of gasoline. *International Journal of Industrial Organization*, 40, 81-90.
- Firman, T. (2009). Decentralization reform and local-government proliferation in Indonesia: Towards a fragmentation of regional development. *Review of Urban and Regional Development Studies*, 21(2-3), 143-157.
- Gonschorek, G. J., & Schulze, G. G. (2018). Continuity or Change? Indonesia's Intergovernmental Fiscal Transfer System under Jokowi. *Journal of Southeast Asian Economies*, 35(2), 143-164.
- Hartoyo, H., Sindung Haryanto, S., & Fahmi, T. (2018). Towards a New Village Development Paradigm in Lampung Province, Indonesia. *Journal of Legal, Ethical and Regulatory Issues*, 21(Special), 1-18.
- Hofman, B., & Kaiser, K. (2006). Decentralization, democratic transition, and local governance in Indonesia. *Decentralization and Local Governance in Developing Countries: A Comparative Perspective*, 81-124.
- Huisman, H., & Stoffers, W. (1998). In the shadow of Yogyakarta? Rural service centres and rural development in Bantul district. *Town and Hinterland in Developing Countries: Perspectives on Rural-Urban Interaction and Regional Development*, 179-203.

- Husin, D. (2016). Flexibility of budget accountability using flow modification in the design of village financial accounting. *Asia Pacific Fraud Journal*, 1(1), 19-35.
- Husna, S., & Abdullah, S. (2016). Kesiapan aparatur desa dalam pelaksanaan pengelolaan keuangan desa secara akuntabilitas sesuai undang-undang nomor 6 tahun 2014 tentang desa (studi pada beberapa desa di kabupaten Pidie). *Jurnal Ilmiah Mahasiswa Ekonomi Akuntansi*, 1(1), 282-293.
- Irawan, N. (2017). *Tata Kelola Pemerintahan Desa Era UU Desa*. Yayasan Pustaka Obor Indonesia.
- Johnson, G. (2016). *The dynamics of conflict between bureaucrats and legislators*. New York: Routledge.
- Kanbur, R., & Venables, A. J. (Eds.). (2005). *Spatial inequality and development*. OUP Oxford.
- Kimura, E. (2013). *Political change and territoriality in Indonesia: Provincial proliferation* (Vol. 46). London, England: Routledge.
- Kitano, S. (2009). *Space, planning, and rurality: uneven rural development in Japan*. Victoria, BC, Canada: Trafford Publishing.
- Lewis, B. D. (2015). Decentralising to villages in Indonesia: Money (and other) mistakes. *Public Administration and Development*, 35(5), 347-359.
- Lewis, B. D. (2017). Does local government proliferation improve public service delivery? Evidence from Indonesia. *Journal of Urban Affairs*, 39(8), 1047-1065.
- Li, Y., Long, H., & Liu, Y. (2015). Spatial-temporal pattern of China's rural development: A rurality index perspective. *Journal of Rural Studies*, 38, 12-26.
- Lynch, K. (2004). *Rural-urban interaction in the developing world*. New York: Routledge.
- Ocaña-Riola, R., & Sánchez-Cantalejo, C. (2005). Rurality index for small areas in Spain. *Social Indicators Research*, 73(2), 247-266.
- Phahlevy, R. R. (2016). The concept of village autonomy in Indonesia (Indonesian constitution perspective). *Rechtsidee*, 3(1), 27-40.
- Rousseau, N. (1995). What is rurality? *Occasional paper (Royal College of General Practitioners)*, (71), 1.
- Rustiadi, E., Saefulhakim, S., & Panuju, D. R. (2009). *Perencanaan dan pengembangan wilayah*. Yayasan Pustaka Obor Indonesia.
- Taaffe, E., Gauthier, H., & O'Kelly, M. (1996). *Geography of Transportation* (second ed.), Prentice-Hall, Englewood Cliffs, New Jersey, USA.
- Tacoli, C. (Ed.). (2018). *The Earthscan Reader in Rural-Urban Linkages*. New York: Routledge.
- Vel, J. A., & Bedner, A. W. (2015). Decentralization and village governance in Indonesia: the return to the nagari and the 2014 Village Law. *The Journal of Legal Pluralism and Unofficial Law*, 47(3), 493-507.

## Appendix 1. Scalogram Analysis

Table A. Public Service Facilities Availability

sub-District	Education Facility				Administrative Facility		Health Facility			Market Facility	
	1	2	3	4	5	6	7	8	9	10	11
Batang Peranap	√	√	√		√		√			√	√
Batang Cenaku	√	√	√		√		√	√		√	√
Batang Gansal	√	√	√		√		√			√	√
Kelayang	√	√	√		√		√			√	√
Rakit Kulim	√	√	√		√		√	√		√	√
Lubuk Batu Jaya	√	√	√		√		√	√		√	√
Kuala Cenaku	√	√	√		√		√			√	√
Sungai Lala	√	√	√		√		√			√	√
Lirik	√	√	√		√		√	√		√	√
Seberida	√	√	√		√		√	√		√	√
Peranap	√	√	√		√		√	√		√	√
Pasir Penyu	√	√	√	√	√		√	√		√	√
Rengat Barat	√	√	√	√	√	√	√	√	√	√	√
Rengat	√	√	√	√	√	√	√	√	√	√	√

Note: 1. Elementary School; 2. Junior High School; 3. Senior High School; 4. College/Academy; 5. sub-District Level Facility; 6. District Level Facility; 7. Community Health Centre; 8. Medical Clinic; 9. Hospital; 10. Village Market; 11. Sub District Market.

Source: Authors

Table B. Calculation of Weight for Public Service Facilities' Function

sub-District	Education Facility				Administrative Facility		Health Facility			Market Facility	
	1	2	3	4	5	6	7	8	9	10	11
Batang Peranap	1	1	1		1		1			1	1
Batang Cenaku	1	1	1		1		1	1		1	1
Batang Gansal	1	1	1		1		1			1	1
Kelayang	1	1	1		1		1			1	1
Rakit Kulim	1	1	1		1		1	1		1	1
Lubuk Batu Jaya	1	1	1		1		1	1		1	1
Kuala Cenaku	1	1	1		1		1			1	1
Sungai Lala	1	1	1		1		1			1	1
Lirik	1	1	1		1		1	1		1	1
Seberida	1	1	1		1		1	1		1	5
Peranap	1	1	1		1		1	1		1	3
Pasir Penyu	1	1	1	1	1		1	1		1	4
Rengat Barat	1	1	1	1	1	2	1	1	1	1	2
Rengat	1	1	1	3	1	1	1	1	1	1	6
<b>Total</b>	14	14	14	5	14	3	14	9	2	14	29
<b>Total weight</b>	100	100	100	100	100	100	100	100	100	100	100
<b>Weight</b>	7.14	7.14	7.14	20	7.14	33.33	7.14	11.11	50.00	7.14	3.45

Note: 1. Elementary School; 2. Junior High School; 3. Senior High School; 4. College/Academy; 5. sub-District Level Facility; 6. District Level Facility; 7. Community Health Centre; 8. Medical Clinic; 9. Hospital; 10. Village Market; 11. Sub District Market.

Source: Authors

Table C. Weighted Score of Public Service Facilities

sub-District	Education Facility				Administrative Facility			Health Facility			Market Facility			Total Score		
	1	2	3	4	Score	1	2	Score	1	2	3	Score	1		2	Score
Batang Peranap	7.14	7.14	7.14	7.14	21.43	7.14	7.14	7.14	7.14	7.14	7.14	7.14	7.14	3.44	10.59	46.31
Batang Cenaku	7.14	7.14	7.14	7.14	21.43	7.14	7.14	7.14	11.11	18.25	7.14	3.44	10.59	57.42		
Batang Gansal	7.14	7.14	7.14	7.14	21.43	7.14	7.14	7.14	7.14	7.14	7.14	7.14	3.44	10.59	46.31	
Kelayang	7.14	7.14	7.14	7.14	21.43	7.14	7.14	7.14	7.14	7.14	7.14	7.14	3.44	10.59	46.31	
Rakit Kulim	7.14	7.14	7.14	7.14	21.43	7.14	7.14	7.14	11.11	18.25	7.14	3.44	10.59	57.42		
Lubuk Batu Jaya	7.14	7.14	7.14	7.14	21.43	7.14	7.14	7.14	11.11	18.25	7.14	3.44	10.59	57.42		
Kuala Cenaku	7.14	7.14	7.14	7.14	21.43	7.14	7.14	7.14	7.14	7.14	7.14	3.44	10.59	46.31		
Sungai Lala	7.14	7.14	7.14	7.14	21.43	7.14	7.14	7.14	7.14	7.14	7.14	3.44	10.59	46.31		
Lirik	7.14	7.14	7.14	7.14	21.43	7.14	7.14	7.14	11.11	18.25	7.14	3.44	10.59	57.42		
Seberida	7.14	7.14	7.14	7.14	21.43	7.14	7.14	7.14	11.11	18.25	7.14	17.24	24.38	71.21		
Peranap	7.14	7.14	7.14	7.14	21.43	7.14	7.14	7.14	11.11	18.25	7.14	10.34	17.48	64.31		
Pasir Penyau	7.14	7.14	7.14	20	41.43	7.14	7.14	7.14	11.11	18.25	7.14	13.79	20.93	87.76		
Rengat Barat	7.14	7.14	7.14	20	41.43	7.14	66.67	73.81	11.11	50	68.25	7.14	6.89	14.03	197.53	
Rengat	7.14	7.14	7.14	60	81.43	7.14	33.33	40.48	11.11	50	68.25	7.14	20.69	27.83	217.99	

Note: 1. Elementary School; 2. Junior High School; 3. Senior High School; 4. College/Academy; 5. sub-District Level Facility; 6. District Level Facility; 7. Community Health Centre; 8. Medical Clinic; 9. Hospital; 10. Village Market; 11. Sub District Market.

Source: Authors

Appendix 2. sub-District Interaction Index Based on Gravity Model

	Rengat	Rengat Barat	Seberida	Pasir Penyu	Peranap	Batang Cenaku	Batang Gansal	Lubuk Batu Jaya	Lirik	Rakit Kulim	Kelayang	Sungai Lala	Kuala Cenaku	Batang Peranap
Rengat	0													
Rengat Barat	30.8361	0												
Seberida	1.5749	3.2960	0											
Pasir Penyu	1.8503	4.8730	0.3652	0										
Peranap	0.2245	0.2823	0.0629	0.1773	0									
Batang Cenaku	0.3337	0.5047	1.1460	0.0835	0.0437	0								
Batang Gansal	0.2441	0.3560	0.6657	0.0617	0.0146	0.0704								
Lubuk Batu Jaya	0.1112	0.1389	0.0313	0.0860	0.0961	0.0278	0.0101	0						
Lirik	0.7153	1.8254	0.1428	3.7016	0.0564	0.0315	0.0203	0.0771	0					
Rakit Kulim	0.1533	0.2073	0.1089	0.1551	0.1009	0.0993	0.0182	0.0781	0.0416	0				
Kelayang	0.1450	0.2002	0.0384	0.1579	0.5778	0.0292	0.0087	0.1630	0.0589	0.1655	0			
Sungai Lala	0.1405	0.2533	0.0324	0.5093	0.0474	0.0124	0.0051	0.1409	0.0462	0.0889	0.1166	0		
Kuala Cenaku	0.4632	0.1640	0.0242	0.0245	0.0054	0.0067	0.0046	0.0038	0.0029	0.0083	0.0032	0.0019	0	
Batang Peranap	0.0282	0.0338	0.0081	0.0192	0.3247	0.0051	0.0019	0.0250	0.0097	0.0061	0.0080	0.0044	0.0007	0

Source: Authors