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Industrialization Impact on Worker Mobility and Land Use in Peri Urban Area (Case study of Semarang District, Indonesia)

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Abstract. In many cases, industrialization has stimulated the urbanization process massively. It tends to attract substantial number of labor migrants from nearby region to fulfill the demand of workers. The paper reports the research result of industrialization phenomena in Semarang district, Indonesia. It carried out the survey by taking 250 samples of migrant workers. The result shows that the presence of labor-intensive industries becomes the most influence factor for many migrants, rather than the driving factors from the place of origin. The attraction factor could cover regional and across the province force, as indicated that all migrant respondents come from both inside and outside of Central Java Province. Furthermore, based on the land-use distribution of the migrant settlement area, it indicates a growing land-use change, both of land cover and land functions.

Keywords: Industrialization, Peri urban area, Worker Mobility

1. Introduction

Industry sectors play significant role in enhancing the economic development in most of developing countries, since the primary sectors have low contribution to accelerate the national economic. The share of this sector in commodity value added has a highly significant positive correlation of income per capita [1,2]. Manufacture and labor-intensive industries are so powerful to build up the economic development by its contribution in non-mining export, absorbing the surplus manpower, influence the emergence of new employments [3].

The presence of this manufacturing in Semarang District also contributes to the improvement of economic income. Though, this manufacture performance replaced the farming sector as a mainstay priority sector in 1990s [4]. Some studies stated that the manufactures were growing faster in Semarang District as a result of the expansion of industrial development from Semarang City [5–9]. The higher land-price in Semarang City gives more pressure to the industrial development. Based on the business principal, the manufacture expands to the Peri Urban area that has the lower land-price, just like in Semarang District. It applies to the new manufacture and the expansion of the old ones.

Industrialization in peri urban plays an important role in the process of urbanization, which the most relevant trigger for the urbanization is the population growth, especially in migration cases [10]. The characteristics of manufactures in Semarang District are labour-intensive industries, which are mostly of garment industries. The substantial number demand of workers could not be fulfilled by the



local supplies. The industries in Semarang district provide many job creations for local and non-local people from inside and outside districts, whether urban or rural areas. This demand and supply on job opportunities create the worker mobility and migration flow inside Semarang District.

These immigrants have the highly contribution to the urbanization. They support the population growth which is followed by the growing needs and activities. The urban transformation begins when these ascending needs are met. It has driven the transformation of socio economic, the population density, and land use conversion for the most[11]. Study about the expansion of urbanization from the downtown to the periphery of Semarang City stated that the transformation specifically can be seen in (1) the majority of livelihood from the farming sectors to non-farming sectors; (2) the cultural blending between the local people and the migrants; (3) land conversion from agricultural into residential, industry, and business[12].

This study aims to identify the industrialization impact in Semarang District, specifically on migrant and worker mobility and the land use conversion. This paper addresses the following research question: (1) Does the industrialization become the pull factor for migrants?; (2) Where is the location scope of the origin of migrants? (3) How is the land conversion in industrial land surrounding? The three main questions identify how industrialization process attracts the migrants and has further influence on the urbanization, with the main indicator in land use conversion.

2. Methods

The research used primarily data that was collected from sample workers in Semarang District. Data collection was done through field survey that was conducted in May to early June 2017. The field survey was based on the questionnaire that has been made to get their profile about their life and working experience. There were several criteria applied to choose and balance respondents' i.e. Male and female; Work in Semarang District; Age 15-29 year; Migrant (born or live outside Semarang District).

By using the criteria, there were 249 respondents get for this research that were divided into 2 agreed migrant characteristics: migrant and commuter. The migrant itself is respondents who used to live outside Semarang District and has been living in Semarang District by May 2017. Based on these criteria, we found 198 respondents. While the rest of the respondents, as many as 49 respondents, were commuters whose characteristics live outside Semarang District and need to commute between Semarang District and their hometown every day.

After conducted data collection, the data were analysed with 3 kinds of analysis. The first step was answering Research question no. 1 which was using quantitative analysis. This analysis was using SPSS software with descriptive statistics analysis. The second one was spatial analysis with GIS software. This analysis aims to analyse the location of migrant origin distribution before they moved to Semarang District. The last analysis was spatial analysis using Landsat Map. This analysis was used to analyse the land use change from open space to build environment.

3. Results

3.1. Migration Factor

Survey of migrants in Semarang District focuses on identification the main reason why the migrants move and stay or commute in Semarang Districts. All respondents are migrants in the age 17 to 29 years old, where the majority is the 19 (17,7%) and 29 (14,1%) years old migrants. Its result is that 69,1% respondents move and commute to Semarang District because of the chances to get a better job (**Figure 1**). Most of them work as employee (93,2%), which is mostly in industrial sector (66,7%), then the rest are entrepreneurs (6,8%). This result indicates that the presence of industrial sector in Semarang District become the pull factor for migrants.

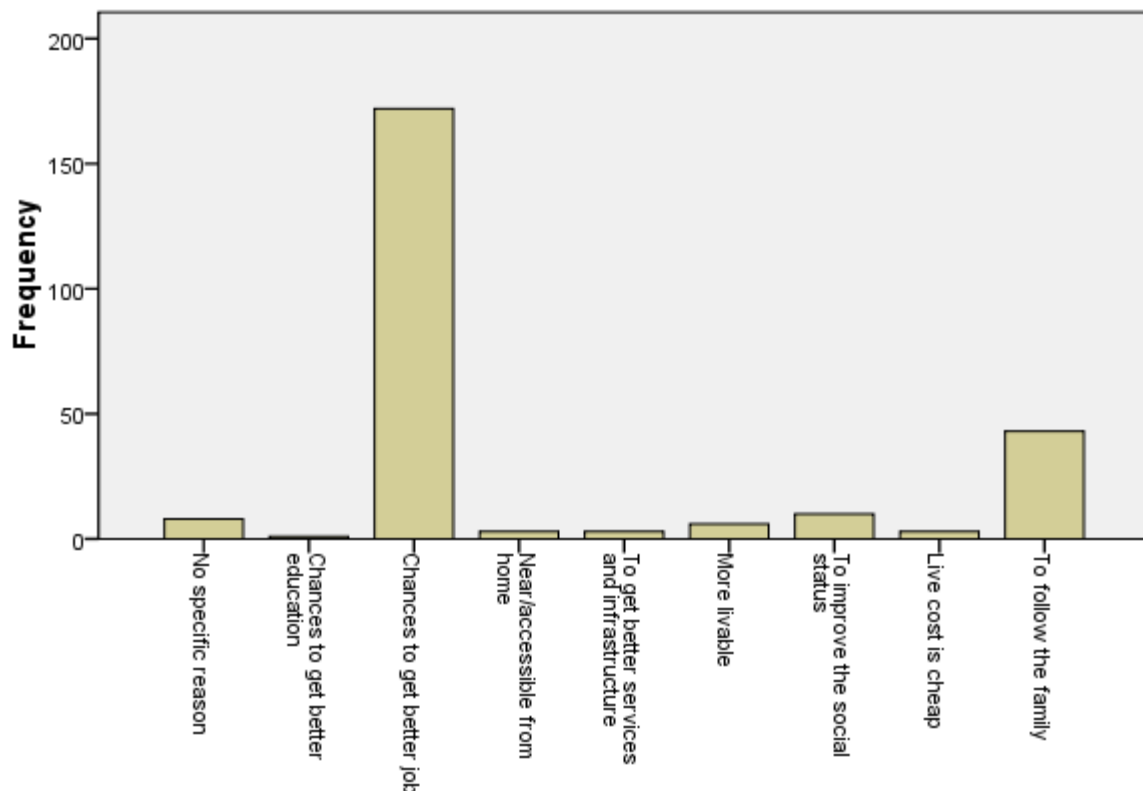


Figure 1. The main reason to move and commuting to Semarang District (Pull Factors)

The data shows the pull factor is associated with the push factor from many migrants. Most of respondents (80,3%) stated that they migrate from their origin to work or seek a job (**Figure 2**). Based on survey, many respondents get the information about the presence of manufactures in Semarang District that offers the abundant job creation that suited with their background qualification. These job opportunities and the job needs are met. Mostly respondents take the migration preference in Semarang District because of the job oriented, which is get a job or new better job.

The migrant's respondents are relatively low educated, so that they have less bargaining in job position. There are only 3 respondents (1%) that passed the diploma/bachelor degree, then the rest take the education in the level elementary school (2%); junior high (27,7%); senior high (30,5%); and vocational high school (38%). There is almost 60% of respondents work in manufacturers as machine operator, and some others are marketing/sales service; administration; cleaning/home service; public service; experts/skilled worker; and unskilled worker. Some respondents that passed the vocational high or senior high school have the skill qualification on garment; automotive; information, technology, and communication; administration; and fashion design. Yet, they have already had the skill and competence in some sector, but it is almost useless in the job. Most of respondent stated that the employers have the specific rules and qualification, so that the skill and experience are mostly useless because there will be specific training at first.

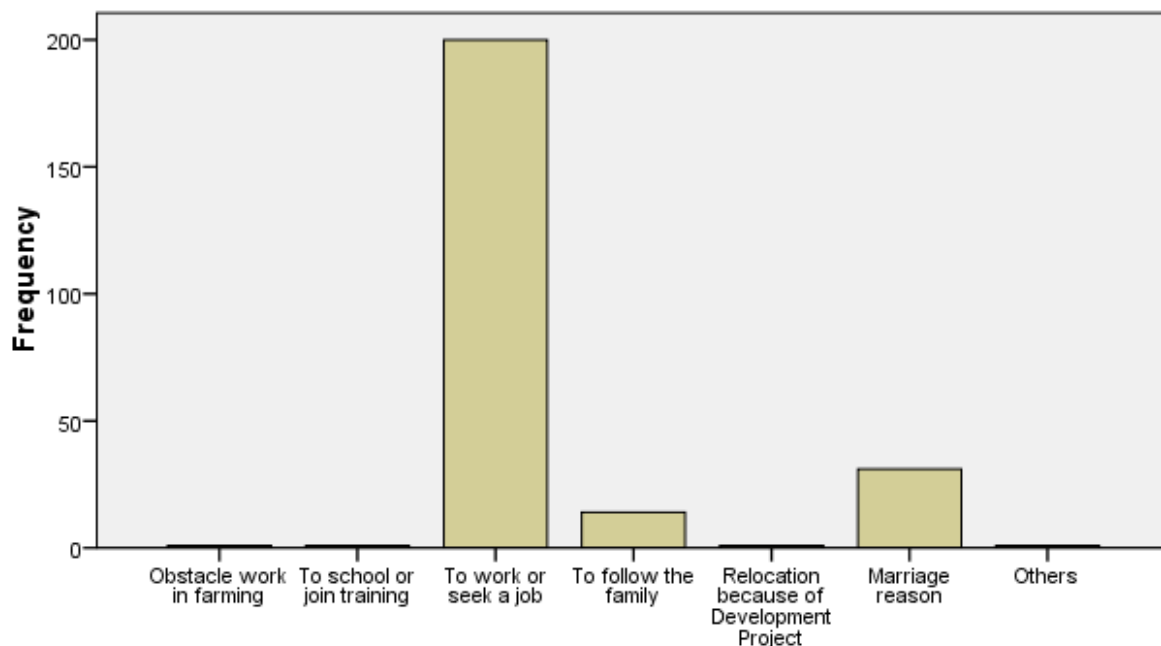


Figure 2. The main reason for migrating (Push Factors)

The presence of industry becomes the most influence factor to pull migration inside Semarang District. The industrial sector has developed since 1980s and was growing faster because of expansion from urban area in Semarang City. Many urban areas, just like Semarang City, Jakarta, or Surabaya, loss their competitiveness to this industrial expansion, in terms of highly wages, higher lands price, and the supporting infrastructures. The industrial expand to the peri urban area to get lower in operational costs, specifically in Central Java Province. There are some advantages, which is the affordable land supply, the lower wages for workers, the easy investment program, and some local government supporting program in infrastructure and services.

3.2. The Origin Distribution of Migrants

The attraction of industrial sector of Semarang District reaches multi provincial level on national scope. It can be seen by the origin of migrants in Semarang District. There are two types of migrants for the respondent in this study, which is migrants and commuters. Some migrants come from Eastern Java (4%), Yogyakarta Province (0,8%), West Java (0,4%), and Jakarta Province (0,4%), while the most come from nearby Semarang District in Central Java Province (**Figure 3**). It means that these migrants live in there before moving and live in Semarang District. Most respondents (61,8%) migrate in the age 15-20 years old, when they passed the junior or senior high school, rather than the rest are migrants that find new better job in the above 20 years old. Based on in-depth interview with some migrants, they get the job vacancy information from their friends, families, senior in high school, or colleagues or just follow them to seek the job vacancy in Semarang District.

The existence of migrants in Semarang District commonly creates less mobility. The reason is most migrants live in a boarding house (56%) and they reach the workplace on foot. They get motorcycle or public transport to spend some holiday. For this reason, the migrants also have less contribution to the traffic jam and fuel consumption.



Figure 3. The origin distribution of Migrant Respondents

Besides migrants, there are also 49 commuter's respondents that work in Semarang District and travel from home to the destination every work time. These commuters live in nearby of Semarang District, that is the most live in Semarang City (80,4%); Salatiga (11,8%); Demak (3,9%); Kendal (2%) and Magelang District (2%) (**Figure 4**). Most of commuters comes from Semarang City, especially people in periphery of Semarang City and Semarang District, such as in Banyumanik and Gunung Pati Sub District. It is an anomaly case that these people prefer to work in District, rather than in the urban area of Semarang City. It occurs mostly because of working matters, such as the supply of job that suit with the qualification, and the closer location from home (we found that the Semarang District is closer to the periphery area of Semarang City).

The preference for commuting is because the easily accessible for travelling, that is in term of good road infrastructure, the readiness of public transportation, and the distance between home and work destination is relatively close. In fact, all commuters' respondents take the motorcycle to reach the work destination with the most travel distance is about 10-29 km and the travel time duration is 30 minutes till 1 hour. This situation describes that the commuters have a highly contribution to the traffic jam and fuel consumption.

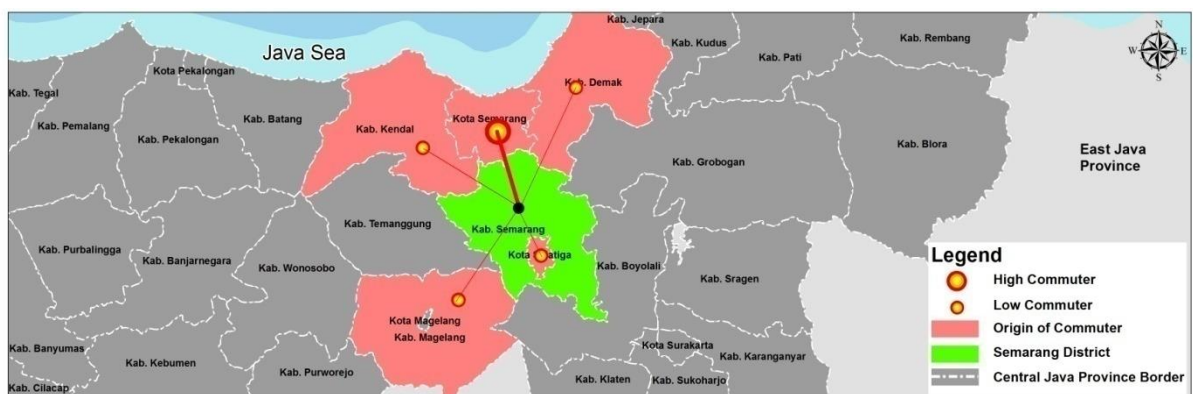


Figure 4. The origin distribution of Commuter Respondents

The existence of manufacturer in Semarang District attracts the workers till the national scope areas. The fundamental reason of this is the higher job creation in Semarang District. This pull factor is met with the push factor, where there are lack opportunities to get a job in the origin area. Inevitable, this migration reason is demand-supply interaction. So, what about the impact of these migrants phenomenon to the origin area and also to the destination that is Semarang District. Undeniable the presence of migrants promotes the growing needs to be fulfilled, such as housing, food

and consumption, clothing, as well the life styles. A study stated that it is not economic growth, but the population growth that highly contribution to the urbanization process and also causes the development problem[10]. It sounds like disadvantage for the Semarang District, but in terms of local economic development, it contributes to the positive improvement. A study results that the job creation (similar case of industrialization in Semarang District) becomes the main driver to the recoveries of economic development in United States, than the out migrations ones [13]. The wisely policy should be aware to optimize this positive impact to the local economic growths, and well-prepared for the disadvantage that may threaten the sustainable development.

3.3. Indicator for Urbanization: Industrial Expansion and Land Conversion

In line with the increasing number of manufacturers, the land conversion in Semarang District raises up as well. In 20 years, the number of manufacturer increases significantly. They agglomerate near the urban area (that is Semarang City) at first, but they expand to the south part of Semarang District, follow the heavy business track, that is Semarang City to Solo. The expansion of built up area follows the concentration of industry location. The built-up area covers the residential, amenities, trade and business area, etc. The most developed areas are in Ungaran Barat, Ungaran Timur, Bergas, Bawen, and Ambarawa Sub District, where it lays the agglomeration of industries.

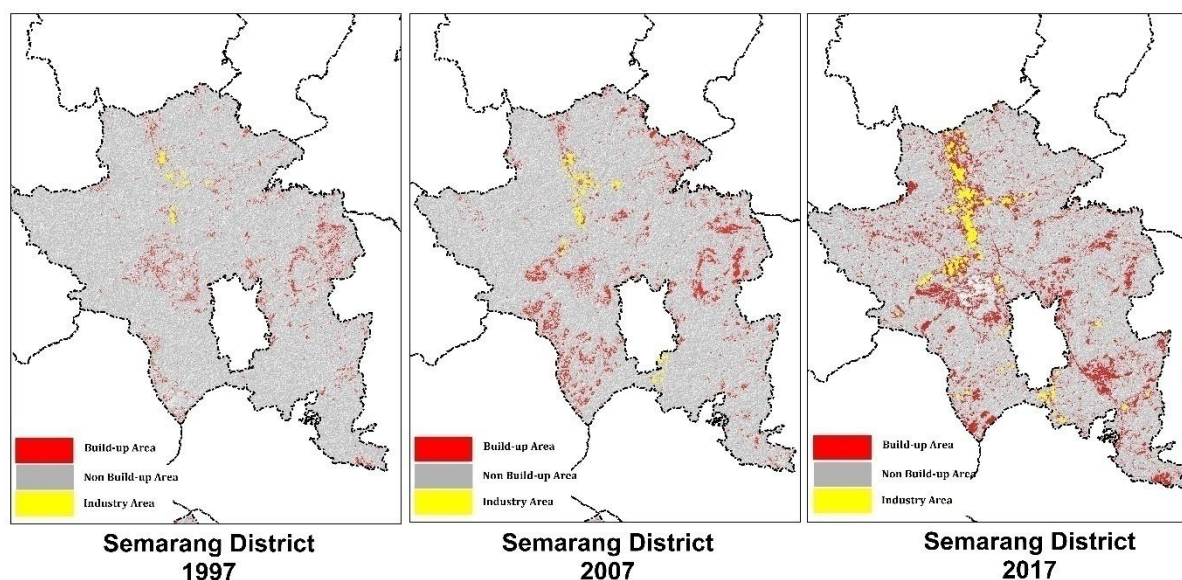


Figure 5. Land conversion in Semarang District in 20-year time series

There is not only the growing built up area, but also the land use transformation. Based on observation and interview with the dwellers in surrounding of PT. Semarang Garment manufacturer, there are many changes in the land use. The land used to be field transformed to the manufacturer building, beside that many houses extend to boarding house, bike and motorcycle custody, food stalls, shop groceries, mobile phone services, etc. There are many migrants live in the boarding house near the workplace. Most of them go to work on foot and they often go home to their boarding house to take a lunch at the working break time. After its development in 2002, the running activities of this garment manufacturer absorbs many workers, which is local people and migrants. There are many changes in the surroundings of the manufacturer location, to meet the daily needs of workers. It is not only about the land conversion and land use transformation, but also the social and economic impact in local area. For now, local people are more aware to the mobile technology and information, beside the opportunities to increase the income from the new business and service activities.

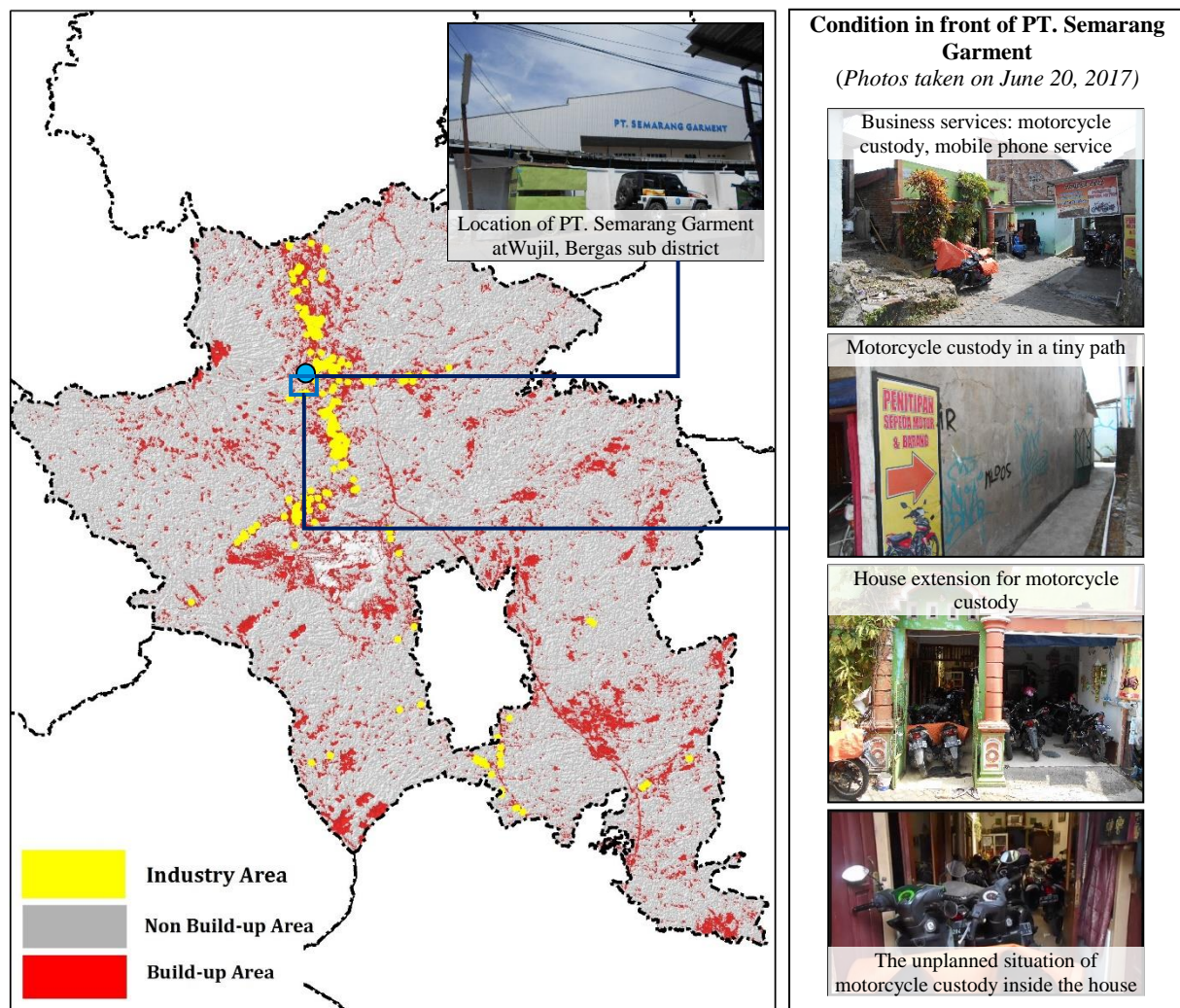


Figure 6. Land use transformation in the surrounding of PT. Semarang Garment Manufacturer in Wujil, Bergas sub district

4. Results and Discussion

Land use conversion and population growth often become the visible indicator for the urbanization process, besides the other invisible indicators, i.e. social and economic indicators [11,14,15]. The research result shows that the industrial development drives the population growing, the improvement of built-up area, the land use transformation, as well the social and economic change of local people. It begins with the manufactures development in some agricultural or non-agricultural land that promotes the growing land conversion into built-up areas. For further effect, it also absorbs many workers from local people or migrants that promote the growing population. In the process of increasing daily needs, some local people extend their residential land use into business and services for workers. Besides that, the presence of migrants has influence the social transformation by the diffusion of mobile technology and information. In the economy context, there are several opportunities to increase the income from the new business and service activities. For the case in Semarang District, industrialization has driven the urbanization process.

The phenomenon of commuters from Semarang City exposes the happenings of Desakota context. The emergence of Desakota was driven by the economic impetus and it occurs as interlock between bottom-up rural industrialization and top down urban expansion[16]. We found there is preference of peri urban people for accessing the job opportunities in District area, rather than in Centre Business or

Service area of Urban. The mega urban context frame it as an urban expansion, when the city cannot supply the needs (in terms of job opportunities), the dwellers will stick to their more appropriate area, especially in the district areas. There are mostly people in periphery of Semarang City that work in Semarang District, due to it is closer distance to their home. In the other side, the Desa kota area exposes that the industrialization raises the job opportunities that becomes the attraction point for peri urban dwellers. The evidence supports the argument that economic impetus has become the most attraction point for the Desakota area, in case of these commuters from urban area.

The rural urbanization process in developing countries is growing faster, and will be greater in the future. It is driven by the strong beliefs of the contemporary economic wisdom that industry and services sectors promote the higher returns than agriculture sector. The industrialization growths follow the economic principal, where the land prices become the most stimulant factor. There are many cases in developing countries that this rural-urban transition are growing uncontrollable/unplanned, so that it creates the more sensitive to issues of sustainable development, especially in terms of environment, energy demand, food security, regional inequality, and some social economic problem, just like urban poverty [17]. For this reason, there is a need the wisely policy to support the urbanization process to promote the important component of sustainable development. Some scholars suggested the importance of studies to follow up the rapid industrialization in rural area to understand the rural growth and to smoothly promote the rural urban development in balance and sustain [18,19]. The clear policy to redefining the spatial patterns is needed to straight the position and role to support the sustainable development.

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