

# Peri-urbanization and the dynamics of urban-rural linkage: the case of Sukoharjo Regency, Central Java

W Pradoto<sup>1,3</sup>, B Setiyono<sup>2,3</sup> and H Wahyono<sup>1,3</sup>

<sup>1</sup> Department of Urban and Regional Planning,

<sup>2</sup> Department of Governmental Science

<sup>3</sup> Universitas Diponegoro, Semarang, Indonesia

Email: [wisnu.pradoto@gmail.com](mailto:wisnu.pradoto@gmail.com)

**Abstract.** The dynamic of metropolitan growth as the result of rapid urbanization creates a continuously transformation in peri-urban region. Tremendous development triggers the peasants to diversify their livelihood and change the rural economy. The new investment in the city outskirts increases migration and land-use change. The emerging pattern of urban-rural linkage demonstrates the complex relationship between urbanization and capitalism. The study aims to explore the process of urban-rural linkage in the newly developing region Sukoharjo Regency. The linkage between urban and rural are differ due to various situation. In Sukoharjo, the development of Solo Baru triggers the massive transformation of rural economy in which numbers of former rural areas have been transforming into new urbanized regions and performs urbanizing rural areas. In the meantime, gated community become the social phenomenon where segregated between migrants and native community have emerged.

**Keywords:** *metropolitan growth; peri-urbanization; urban-rural linkage; Sukoharjo Regency*

## 1. Introduction

Urbanization in developing countries, one of which was marked by the development of the metropolitan area of a fast and dynamic. The most obvious fact is the expansion of population and economic activity, which has changed the structure of the space of the territory Klaesson, et al. [1]. The attraction between the region occur and integrating population and its hinterland areas of activity, thus forming a regional agglomeration. The economic attraction of encouraging the emergence of regional agglomerations [27][34]. For businesses, the regional agglomeration is seen as opportunities get bigger resources of rural areas [17] and will encourage the expansion of metropolitan areas. The expansion of the metropolitan area and a very fast population growth in third world countries are pushing the change pattern of interaction between rural and urban areas [18].

As an entity of the results of the regional agglomeration phenomenon of the *desakota* shows a unique form of activity. A mix of urban and rural activity has its own complexity in management. The rural areas around urban areas continuously experiencing a decrease in agricultural productivity [11]. because it has shifted into its central region to settlements buttresses [14]. Land prices tend to be lower in rural areas, became the choice for developers and the community to develop the settlements [29]. Encouraged also by the closeness to the city centre as a services centre which will reduce the cost of daily activity.



Forms of interaction between urban and rural areas will tend to show the competition to dominate each other. Capitalisation of urban areas would encourage the dominance of urban activities in the area of rural [16]. Such dominance makes the activity of rural experience developmental stagnation [18]. Until the farm is no longer considered profitable activities. The phenomenon of this kind will be bad for all aspects of public life, in particular that still rely on the activity of agriculture [4]. In the context of the development of regions, urban and rural activity interaction a challenge for holders of power, so that there are no societies which are marginalized.

In developing countries, the role of Governments and planners tend to be low in facilitating development, will give rise to pressure which forced the construction of urban activity in rural areas, so that the mixture has occurred between the activity of rural and urban [33]. McGee et al. [21] conducted a study in depth on the Metropolitan area of Jabodetabek. The research shows that there is one area where the transition as the *desakota* regions based rural economy has been transformed into an urban-based economic region. Continuously, urban agricultural activities are the reduction of activity with the decline in economic activity and land use mix [26].

The Metropolitan area of Surakarta has undergone rapid development in the last two decades. An area of Surakarta city administratively 44.04 km<sup>2</sup> only started having functionally expansion. Urban activities have been exploiting the rural activity in some parts of the border, especially those bordering the city of Surakarta on the West and South. Some regions have experienced a development by leaps and bounds, and can be one of the centres of activity in the area of urban suburbs. The development that started in the year 1980-90s up to now still not experiencing shrinkage. The growth of activity in the suburb of Surakarta is one form of cooperation was drawn up by the Government of the time with private parties. The development of suburban areas of Surakarta bring consequences on the surrounding rural area. Symptoms that appear such as the phenomenon of social segregation, especially among residents in new housing with the indigenous population. This phenomenon even affected the trend of land prices on the outskirts of the city of Surakarta. The distance from the Center in the suburban area of Surakarta to become the benchmark in determining the increase in prices of land. This shows the expansion of urban activity in the region is not only affecting the rural dominance of urban activity in suburban areas, but further had given the impact on the valuation of land.

The magnitude of the challenge in combining the interaction of urban rural activity into challenges in the perspective of development. This article will describe how the metropolitan area of Surakarta urban-rural interaction forms on its territory. Cross-cutting point of view and the Administration will give an explanation of the phenomenon. Policy factors will be examined to see its effect on the interaction of urban-rural activities in the Metropolitan area.

## **2. Rural-Urban Linkage in the Metropolitan Area**

Since the term metropolitan was introduced in 1950, the metropolitan area continues to grow increasingly dynamic [9]. Metropolitanisation process encourage the occurrence of changes not only in urban areas, but to contribute actively in the region surrounding transformation[31]. Expansion by urban areas to the suburbs of metropolitan encourages social mixing happen one [22] The developmental process of the territory brought changes to the lifestyle of the community, which would degrade the value of social geography in rural areas until the [2]. Driven by a very flexible land use in suburban areas [10], as well as the opportunities the existence of points of balance between urban and rural demand [28], will further improve the opportunities arising out of the interaction the activity of the rural and the urban. When the government does not provide a policy that can streamline unavailable agricultural activity, farmers will be subjected to speculators and attempt to hold their land up to the highest bid because their farmland is considered unproductive again [30].

Approaches in which the interaction of rural urban can be seen from a different perspective. Forms of interaction activity rural and urban can be seen from how large the loss of territory and the limitations of the rural characteristics of the development of urban activity [12]. Meanwhile, the Organization for Economic Cooperation and Development (OECD) classifies the activity of rural urban interactions in the suburban areas of dominance of its activities, i.e. between the predominantly

urban and predominantly rural [25]. Budiayanti and Pratiwi[3]; Soegijoko[28] look at the interaction of urban and rural activities of the region how much has evolved and will evolve based on the perspective of urban activity on its territory. Basically, the interaction between urban and rural and the dominance between urban and rural activity, can be seen in its land use tendencies and the dominance of the sector.

Dominance of one form of activity, will affect the region in conditions of social life, economics, to the spatial basis. Investment opportunities in the region against the backdrop of rural, residential and commercial activity in the region. Lifestyle factors and occupancy factors the reason perform the migration in rural areas which is still bordered by urban [8][1]. This process will be further decentralized activity form up on urban. Even the urban increase in activity could reach a scale big enough to be one of the new CBD [21].

### **3. Activity Interaction in Surakarta Peri-Urban Area**

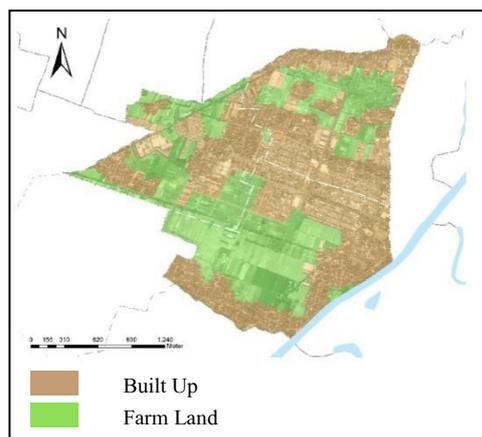
Interaction activity on the region of Surakarta is already starting to take shape long before the independence of Indonesia. In the era of monarchy in Indonesia, Surakarta and surrounding region is one unit within the Government and ruler of Mangkunegaran Surakarta which covers and surrounding counties. In 1946, the region of Surakarta residency was abolished officially by the Central Government. Increased activity on the territory of Surakarta is closely associated with economic capitalization happens in post independence era Indonesia. Zaida and Arifin [35] explained that, in colonial times, the direction of development of Surakarta city heavily influenced by culture and religion, by forming a grid pattern. However, during the reign of the new order economic capitalization encourages the onset of construction by the private sector, so that the grid pattern started to appear less regularly in the suburban areas of Surakarta.

The acceleration of the development of urban activity in Sukoharjo is strongly driven by the role of the private sector and the public sector. From the interview got an explanation of how the process of development in the Solo Baru Area. The trigger of urban activity that emerged in Grogol Sub-district was Solo Baru area. The area of Solo Baru was developed in the late 1980s, initiated by the cooperation of central government, local government and developer (PT Pondok Solo Permai). Solo Baru area was originally planned as a housing centre with an area of about 200 hectares. However, the idea developed to build a new city of Solo Baru with an area of up to 1,035 hectares. The process of building this area along with the emergence of the phenomenon of the explosion of commercial housing development by developers in Indonesia. In that span of the year, monetary policy in Indonesia seems to encourage housing development and private sector participation in developing land [33]. The period of development of the Solo Baru area looks like it happens in two major terms. The first terminology was in the early period of development from 1980 to the beginning of 2000. This period was dominated by large-scale housing construction and was supported by several basic facilities such as schools, hospitals and several trade and service areas. The second terminology occurred in the period 2010 to the present, where the development of the Solo Baru region began to lead to trading activities and services with a larger scale and occupancy that began shaped high rise building in the form of an apartment. This period is marked by the construction of several trade and service activities such as several hotel buildings, shopping malls and several other business activities.

The development of the Solo Baru area has a very significant effect on the transformation of activity and the land transformation in Grogol District. More areas of concern are the villages directly adjacent to the city of Surakarta. Three villages representing the area are Gedangan, Langenharjo and Madigondo villages. The three villages are part of the Solo Baru area, and are in the business centre of Solo Baru, Ir. Soekarno. If viewed from the development of built up area in this region, there is a phenomenon of land dominant change in the interval of 2000-2017. The increase built up area occurring in the three villages is about 20%. By 2017 the percentage of built up area has reached 78%. The phenomenon that can be seen from the figures is not only limited to the increase in the value of land awakening, but also how the dominance of agricultural land that was successfully shifted. During the construction period, the majority of the developed land was land for housing and some commercial

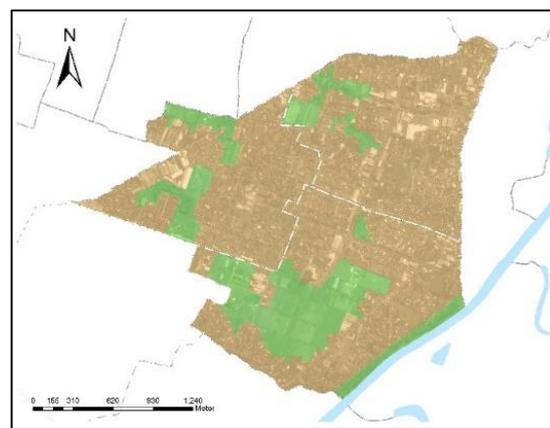
activities. If you look at the development trend in this area, the potential for greater land conversion in the future will still occur. The reason is quite strong considering that some of the land has been occupied by the developer, although it has not been converted into a wake up land. Supported by the agglomeration of activities in this area that will become more attraction for developers to continue to exploit.

Over the same year, population growth also occurred significantly in all three villages. The average population growth occurred within the 17-year interval of more than 1000 residents in each village. In 2000, the number of people in each village has reached more than 5000 population. This amount is strongly influenced by the massive housing development in Grogol Sub-district, which is supported by the development of Solo Baru area. In the process of its development from its migration value, the three villages also have a positive number of incoming migrations. The number of people who enter into their territory is always greater than the number of people who moved from their territory. The occurrence of increased land builds, as well as an increase in population through migration is a process of activity transformation. The process of activity transformation, especially from rural to urban, can be seen from the tendency of its territory. The most notable characteristics are generally the changes in the local economy and the livelihood structure of the population shifting from agriculture, followed by massive population growth and increasing land values and increasingly mixed land use [10].



**Figure 1.** Map of built up area in Solo Baru

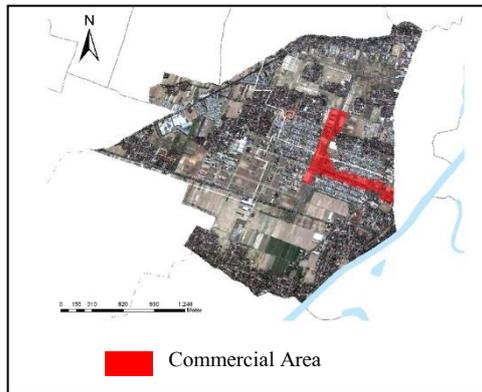
*Source: [36]*



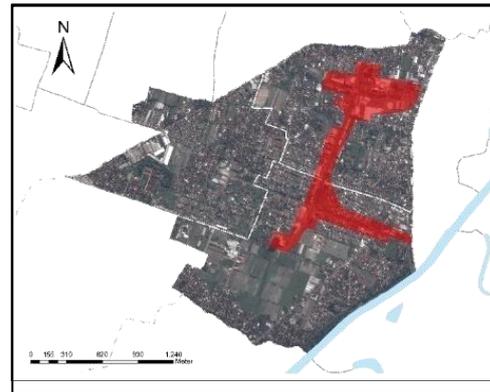
**Figure 2.** Map of built up area in Solo Baru in 2017.

*Source: [36]*

The development of commercial activities in the Solo Baru Area can be an interesting point of view to be considered in the transformation process of its territory. The development of commercial activities around the road Ir. Soekarno pointed to an increase in the intensity of urban activity towards a higher level in this area. Roads Ir. Soekarno in the year 2000 initially dominated only by commercial activity with a moderate scale. The dominance of the function of the building is just a store house. Until now, this road segment continues to grow with the increase of trading activities and services along this road. The construction of shopping centers, hotels, and several other commercial buildings further expanded the commercial area of the region. This trend illustrates how the private sector has increasingly shown strong influence on the region. The process that begins from conversion of agricultural land to land is built, followed by the transformation of small-scale trading activities into much larger scale trading and service activities. Increasing the value of land in the formerly rural area is part of the change of regional entity into an urban area will also be accompanied by an increase in development that tends to consider the value of land in the region [33].



**Figure 3.** Map of commercial area in Solo Baru at 2000  
*Source: [36]*



**Figure 4.** Map of commercial area in Solo Baru at 2017  
*Source: [36]*

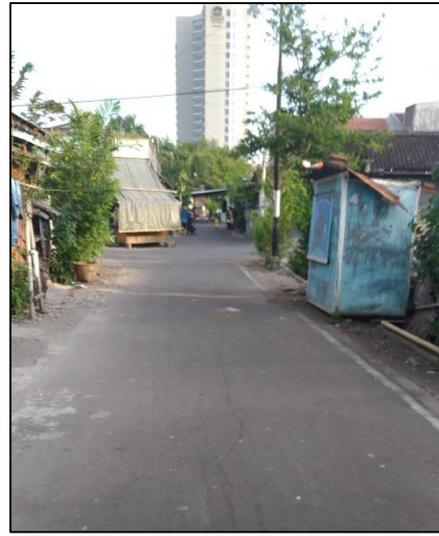
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#### **4. Rural-Urban Linkage in Sukoharjo District**

The emergence of interactions of urban rural activities that occur in the suburbs of Surakarta can occur due to various backgrounds. In the southern city of Surakarta, especially in the Solo Baru Region, initiation of new cities becomes the most powerful background of why activity interaction can occur. Solo Baru area which became the forerunner of urban activity on the outskirts of Surakarta City continuously shifts the existence of rural activity in this region. The history of the Solo Baru area that used to be the residential location of some rural inhabitants and as a cultivation land for them has now transformed into an urban activity centre.



**Figure 5.** Location of natives street vendors



**Figure 6.** Condition of natives dwelling area.

Although it has evolved into considerable urban activity in the outskirts of Surakarta, some traces of rural activity can still be identified in the region. From the aspect of the residential location, the three villages that became the study area have not completely changed into a new residential area developed by the developer. Some points of location are still controlled by the natives. Physically, the main differentiator that can be seen from the location of indigenous residents is the pattern of housing development that is still unplanned, with the form of houses that tend to be more heterogeneous and generally less good road network. In terms of economic activity, there are still some residents who still depend their lives on the agricultural sector, although their tendency is as agricultural labor. While some others began to shift to the informal trade and services sector. The development of urban activity which tend to be controlled by private sector in Solo Baru area, makes some economic activity of middle class society down marginalized. Inside the Solo Baru area, dominating activities are large-scale trading and service activities, with trends in lease payments very high. Communities with lower and middle-class economies who participate in competing activities in the trade and services sector continue to be marginalized and move away from the commercial centre of Solo Baru. The location where the resident trade is generally located in the outermost position of the Solo Baru area occupies vacant lands or is on the main roadside with asemi-permanent building.

From the social aspect, the conditions found in Solo Baru appear to have a similar trend to the development of other new cities. The existence of a fenced community established by the developer, makes the boundary between the activities of people in housing and outside housing. The location of indigenous housing is scattered at some point, such as around Ir. Soekarno and around the Grogol-Baki road. Indigenous residential locations are generally located at close proximity to residential locations in Solo Baru, but are deliberately given a limit for several reasons. The existence of this gated community shows the existence of a physical segregation of the settlement in Solo Baru area. Coupled with the differences in the location of community settlements with different level of education, income, and jobs, which tend to be separated between higher and lower classes. When compared to the segregation pattern that happened in Metropolitan Jabodetabek area, the pattern of segregation in new town seemed to be worried. The study of Firman [7] and Leisch[15] shows that the continuous development of new cities has shifted the existence of indigenous peoples, particularly in core areas with very high economic activity. In the area of Solo Baru, indigenous people still survive in the vicinity of the economic centre, it is highly possible to be changed in the future.



**Figure 7.** Gated community in Solo Baru



**Figure 8.** Middle class housing in Solo Baru.

Sukoharjo District it is becoming increasingly difficult to delineate parts of rural and urban activities. The two more coherent activities undermine the role of rural activity as a centre for agricultural production, and begin to be replaced by secondary and tertiary sectors carried by urban activity. Basically there is no fundamental problem of loss of agricultural production in the Solo Baru Area, because agricultural production will still be met from other more productive areas. But the problems that can arise are about the livelihoods of people who used to depend on the agricultural sector. Until now there has been no form of intervention from the government to accommodate the exploitation of urban activity on the part of Sukoharjo area. There is no form of security for people who are still dependent on the agricultural sector or for people who have been dependent on agricultural.

The classical paradigm used to describe rural society as an entity of agricultural society is still deeply rooted. The paradigm can be a barrier in integrating urban rural activity. The classical point of view that becomes a stigma against rural society as an agricultural society makes the steps to be taken for the integration of less developed urban rural activities. With the conditions that currently occur in the area of Solo Baru seems to be very difficult to intervene in restraining urban activity development, on the other hand also to maintain the productivity of people who depend on agriculture in the region is also quite difficult, one of them because of land ownership.

## 5. Conclusion

The effect of metropolitan growth is complex and specific depends on the socioeconomic characteristic. Peri-urbanization dynamics in Sukoharjo Regency brought an explosion of urban spatial economy towards rural regions. Such an urbanization process shows a gradual and multifaceted transformation in which different pattern of social, economy and spatial change can be investigated. The bargaining between local government authority and business groups' interest are then interesting to be examined. The emerging urban-rural linkage demonstrates how the characteristic of socio-spatial transformation is diverse. There are regions which have been predominated by urban nuance, while the others have less transformed and still strongly express the rural characteristic. Those distinct changes create an interesting puzzle of urban-rural linkages from which the typology of new pattern of urbanization can be identified.

The dynamics of peri-urban growth in Sukoharjo Regency, especially in Solo Baru, has shifted the social and economic characteristic of most local people who originally settled there. They are

displaced by massive economic activity. Some rural communities remain and living in a predominated urban milieu neighbourhood, while others are moving to the inner land in search of new farming land. Some of the local economy economic has been shifting towards services. Meanwhile, some others have engaged with the more capitalistic economy in which the role of a more educated middle-class migrants are dominated. The incoming industries and services economy are required well-trained labours. In this sense, the linkages between urban and rural economy in term of new employment opportunity for the local people has not been happened at all. Therefore the multiplier of new economy could not yet effectively foster the local economy and raise the living standard of mostly former farm households. The localities are mostly not being connected proportionally to the trans-national economy. This study has searched how the ongoing process of rural into urban change and how the urban settings have shaped the localities into the diversity of rural-urban nuance.

## 6. References

- [1] Ainsaar, M., 2002. *Reasons for move: A study on trends and reasons of internal migration with particular interest in Estonia*, pp. 1989--2000.
- [2] Antrop, M., 2000. Changing patterns in the urbanized countryside of Western Europe. *Landscape ecology*, 15(3), pp. 257-270.
- [3] Budiyantini, Y. and Pratiwi, V., 2016. Peri-urban Typology of Bandung Metropolitan Area. *Procedia-Social and Behavioral Sciences*, 227, pp. 833-837.
- [4] Cobbinah, P. B., Gaisie, E., and Owusu-Amponsah, L., 2015. Peri-urban morphology and indigenous livelihoods in Ghana. *Habitat International*, 50, pp. 120-129.
- [5] Gonçalves, J., Gomes, M. C., Ezequiel, S., Moreira, F., and Loupa-Ramos, I., 2017. Differentiating peri-urban areas: A transdisciplinary approach towards a typology. *Land Use Policy*. Ch. 63, pp. 331-41.
- [6] Edelman, M. A., Roe, J., and Patton, D. B., 1999. *Land use conflict: When city and county clash*. A Project of the National Public Policy Education Committee in Cooperation with the Farm Foundation.
- [7] Firman, T., 2004. New town development in Jakarta Metropolitan Region: a perspective of spatial segregation. *Habitat International*, 28(3), pp. 349-368.
- [8] Fisher T., 2003. Differentiation of growth processes in the peri-urban region: An Australian case study. *Urban Studies*, vol. 40, No. 3, pp. 551-565.
- [9] Fuguitt, G. V., Heaton, T. B., and Lichter, D. T., 1988. *Monitoring the metropolitanization process*. *Demography*, 25(1), pp. 115-128.
- [10] Hedblom, M., Andersson, E., and Borgström, S., 2017. Flexible land-use and undefined governance: From threats to potentials in peri-urban landscape planning. *Land Use Policy*, 63, pp. 523-527.
- [11] Hudalah, D., Winarso, H., and Woltjer, J., 2007. Peri-urbanisation in East Asia: a new challenge for planning? *International Development Planning Review*, 29(4), pp. 503-519.
- [12] Iaquina, D. L., and Drescher, A. W., 2000. Defining the peri-urban: Rural-urban linkages and institutional connections. *Land Reform*, 2, pp. 8-27.
- [13] Klaesson, J., Johansson, B., and Karlsson, C. eds., 2013. *Metropolitan regions: Knowledge infrastructures of the global economy*. Springer Science & Business Media.
- [14] Lazauskaite, D., Šarkienė, E., and Skripkienė, R., 2015. The Assessment of Development Scenarios for Suburban Metropolitan Districts under the Multiple Criteria Methods. *Procedia Engineering*, 122, pp. 19-28.
- [15] Leisch, H., 2002. Gated communities in Indonesia. *Cities*, 19(5), pp. 341-350.
- [16] Leibert, T., 2013. The peripheralization of rural areas in post-socialist central Europe: A case of fragmenting development? Lessons from rural Hungary. *Peripheralization*. Springer Fachmedien Wiesbaden, pp. 101-20.
- [17] Luque, J., 2015. *Urban Land Economics*. Springer.

- [18] Lynch, K., 2004. *Rural-urban interaction in the developing world*. Presbyterian Publishing Corp, vol. 4.
- [19] Mahzouni, A., 2013. The Missing-link between Urban and Rural Development: Lessons from Iraqi Kurdistan Region, in A. Fischer-Tahir and M. Naumann. eds., *Peripheralization: The Making of Spatial Dependencies and Social Injustice*. Wiesbaden: Springer VS, pp. 121-144.
- [20] Mayer, H., Habersetzer, A., and Meili, R., 2016. *Rural–Urban Linkages and Sustainable Regional Development: The Role of Entrepreneurs in Linking Peripheries and Centers. Sustainability*, 8(8), pp. 745.
- [21] McMillen, D. P., 2004. Employment subcenters and home price appreciation rates in metropolitan Chicago. *Spatial and Spatiotemporal Econometrics*, pp. 237-257. Emerald Group Publishing Limited.
- [22] McGee, T.G., 1991. The emergence of desakota region in Asian: Expanding a hypothesis. In Ginsburg N., Koppel B. and McGee T G. eds. *The extended metropolis: Settlement transition in Asia*. Honolulu: University of Hawaii Press.
- [23] Michelini, J.J. and Pintos, P., 2015. Metropolitan expansion dan new socio-spatial segregation scenarios in contemporary Argentina. The case of Nordelta-Las Tunas (Buenos Aires). *Habitat International*, vol. 54 (1), pp. 40-49.
- [24] Ndabeni, L. L., 2008. The contribution of business incubators and technology stations to small enterprise development in South Africa. *Development Southern Africa*, 25(3), pp. 259-268.
- [25] Nørgaard, H., 2011. Futures of rural dan peripheral areas-challenges, strategies dan policies. *Landinspektoeren: Tidsskrift for Kortlaegningog Areal Forvaltning.*, 46(1), pp. 81-95.
- [26] OECD, Organization for Economic Cooperation and Development, 2010. *OECD Regional Typology*. Directorate of Public Governance and Territorial Development. Available at: <http://www.oecd.org/gov/regional-policy/42392595.pdf> (Accessed 1 September 2017).
- [27] Pribadi, D. O., and Pauleit, S., 2015. The dynamics of peri-urban agriculture during rapid urbanization of Jabodetabek Metropolitan Area. *Land Use Policy*, 48, pp. 13-24.
- [28] Ravetz, J., Fertner, C. and Nielsen, T.S., 2013. The dynamics of peri-urbanization. In *Peri-urban futures: Scenarios and models for landuse change in Europe*. Springer Berlin-Heidelberg, pp. 13-44.
- [29] Soegijoko, B.T., 2007, 'Keterkaitan desa-kota.' In H. Winarso and D. Hudalah. Eds., *Metropolitan di Indonesia: Kenyataan dan Tantangan dalam Penataan Ruang*, Jakarta, Directorate of Spatial Planning, Ministry Of Public Works, pp. 175–96.
- [30] Tian, L., Ge, B., and Li, Y., 2017. Impacts of state-led and bottom-up urbanization on land use change in the peri-urban areas of Shanghai: Planned growth or uncontrolled sprawl. *Cities*, 60, pp. 476-486.
- [31] Teipelke, R., 2013. *The Thika Highway Improvement Project: Changes in the Peri-Urban Northern Nairobi Metropolitan Region*. Springer Science & Business Media.
- [32] Török, I., 2015. City Region Building and Socio-Spatial Polarization in Romania. *Procedia Earth and Planetary Science*, 15, pp. 951-955.
- [33] Webster, D., Cai, J., and Muller, L., 2014. The New Face Of Peri-Urbanization in East Asia: Modern Production Zones, Middle-Class Lifesytles, And Rising Expectations. *Journal of Urban Affairs*, 36(1), pp. 315-333.
- [34] Winarso H, Hudalah D, Firman T., 2015. Peri-urban transformation in the Jakarta metropolitan area. *Habitat International*, 49, pp. 221-229.
- [35] Van Leeuwen, E., 2009. *Urban-Rural Interactions*. Springer.
- [36] Zaida, S. N. A., and Arifin, N. H., 2010. Surakarta: Perkembangan Kota Sebagai Akibat Pengaruh Perubahan Sosial pada Bekas Ibukota Kerajaan di Jawa. *Jurnal Lanskap Indonesia*, 2(2).
- [37] Baperlitbang Sukoharjo 2017