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An integrated and sustainable infrastructure development to improve the quality of rural area in peri-urban

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Abstract. Rapid urbanization has created the disparity between urban-rural which potentially increase urban slum growth and expand urban problems to rural area in peri-urban. In order to anticipate this problems, the quality of rural area in peri-urban need to improve through the development of integrated and sustainable infrastructure. The purpose of this paper are: 1) to review the rural infrastructure development planning in peri-urban areas; and 2) to formulate strategies for integrated rural infrastructure development in peri-urban area based on spatial planning. Qualitative approach is used in this paper by using descriptive analysis.

Keywords: Rural area, peri-urban, infrastructure, integrated, sustainable.

1. Introduction

Indonesia has experienced rapid increase of population in recent decades. Currently, the total urban population reaches 51% of the total of Indonesian population, and it is continues to grow compared than ten years ago that is about 45%. Estimated in 2035, urban population will reach 66%. The urbanization also results high mobility of people to moving to urban areas, and it is in line with the urban economic growth. Moreover, the ecological footprint from production activities and urban areas consumption is getting higher and it giving pressure for its surrounding region. This condition impact to the environmental degradation, diminishes the ability of natural resources and has implications for various urban problems such as slums area, land conversion either in protected areas or in development areas that impact for ecosystem destruction, decreased of land productivity, floods, congestion, and decreased of green open space that now ranges 13.13% in cities and 16.32% in urban areas. Urbanization contributes to the increase of rural poverty, where the potential human resources of the village migrate to urban areas and subsequently unskilled human resources in the urban areas are hard to find the employment. The number of poor people in urban areas increased by 0.29 million people from 10.36 million people in September 2014 to 10.65 million people in March 2015, while in rural areas rose by 0.57 million people, from 17.37 million people in September 2014 to 17.94 million people in March 2015 [8].

Indeed, urban and rural areas have linkages. The pressure on urban areas affect its surrounding area that is rural areas in peri-urban such as the spread of slum in urban areas to the peri-urban settlements. The impacts of urbanization in rural areas are the lack of economic activity and the increase of poverty rate in rural areas. On the other hand, rural areas in peri-urban have various potentials, such as: natural resource, socio-cultural, and human resource, if it is managed optimally it will be able to improve the quality of rural areas and in turn will be able to prosper the community. The efforts for rural area management should be sustainable, environmental friendly, social friendly, and economic friendly.
In line with the target of Government of Indonesia in upgrading rural settlement of 78.384 hectares within 2015-2019, government normatively has issued several policies, some of them, Law No. 1 of 2011 about Housing and Settlement which followed by Government Regulation No. 14 of 2016 about Implementation of Housing and Settlement. Those regulations defined that rural settlement is developed in accordance with its function as a residential neighborhood and a place of people’s activity. Development of rural settlement as a residential neighborhood should consider minimum service standard of settlement, while development of rural settlement as a place of people’s activity should consider the value chain and main activity in rural area such as: Agriculture-based, Fisheries-based, and Tourism-based. Furthermore, those functions of rural settlement can be optimized by the development of its infrastructure. Law No. 26 of 2007 about Spatial Planning instructs that the development of infrastructure must be based on spatial planning.

This paper aims to present the study of normative aspects, the role of stakeholders, the concept and strategy of rural settlement infrastructure development in peri-urban based on spatial planning to improve the quality of peri-urban through the integrated and sustainable infrastructure development.

2. Methodes
This paper uses a qualitative approach with descriptive analysis to analyse the management of rural areas in peri-urban in a sustainable ways in the perspective of infrastructure and spatial planning, so that it can be disclosed the understanding of rural infrastructure development planning in peri-urban and rural infrastructure development in peri-urban-based on spatial planning.

3. Result and Discussions
This section will discuss several aspects that are: 1) an understanding of the development planning of rural settlement infrastructure in peri-urban, and 2) an understanding of the development of rural settlement infrastructure in peri-urban based on spatial planning.

3.1 Understanding of Rural Settlement Infrastructure Development Planning in Peri-urban
Rural settlement infrastructure development planning is an important part in realization of sustainable peri-urban. Preparation of rural settlement infrastructure development plan in peri-urban, required valid and comprehensively data base through a series of steps, such us: 1) site selection; 2) identification of the main activities, superior commodity and regional value chains; 3) identification existing condition of settlement infrastructure; and 4) compilation and analysis of data. Location selection of peri-urban areas in rural settlement development are determined by document planning both spatially and non-spatial. After rural settlement development location is determined, next stage is to identify rural main activities such as agriculture, fisheries and tourism. Based on potential of the main activities, rural can be managed with agriculture, fishery based, and tourism approach consider by value chain start from production, processing, and marketing. Identification of rural settlement existing condition is needed as the one analysis variable to determine needs and priorities of infrastructure development. Based on that analysis, qualified rural settlement plan can be prepare and become the instrument in establishing sustainable peri-urban.

Infrastructure development plan in peri-urban can be done gradually with considering treatment priority to support rural settlement development as a unified system of integrated settlement infrastructure development. Rural settlement infrastructure development plan is needed, especially to determine the type of infrastructure as an instrument in order to improve quality of peri-urban and support rural settlement development by their potential. Preparation of sustainable rural settlement infrastructure development plan in peri-urban should consider several important aspects, such as: problems and potential of region study, direction of rural settlement development and the track of value chain in rural settlement areas in accordance with leading commodities and regional development approach, good agriculture, and fishery based and tourism.

3.2 Understanding of Infrastructure Development in Peri-urban Based on Spatial Planning
The development of rural settlement infrastructure in peri-urban based on spatial planning is aimed at
establishing rural areas that can not only improve the quality of rural areas, but also can preserve the environment in rural areas. The aspect of environmental sustainability is an inherent part in every stage of spatial planning. Bio-region approach is giving attention to carrying capacity and environmental capacity, as well as efforts to develop and improve the quality of rural areas in peri urban has become an integral part of spatial planning. Spatial planning through the stages of spatial planning, spatial implementation, and controlling of spatial implementation have a very important role, as an instrument to overcome the complexity of both the environmental, social, cultural, and economic development in rural areas, which in turn is able to reduce the gap between urban and rural areas, reduce poverty and able to prosper its rural communities.

Based on Law No. 26 Year 2007 of Spatial Planning stated that the development of infrastructure in the settlement area in both urban and rural areas is done based on spatial plan. Spatial plan shows spatial structure plan and land use pattern. The spatial structure plan is a development directive of the elements which forms the structure of space, consisting of a system of settlements and infrastructure systems. The plan contains land use pattern directives of distribution allotment of space for various activities both spatial allocation for protection functions as well as cultivation functions. Development of rural areas cannot be separated from other areas, given the linkage between one region to another. Spatial planning in the rural areas cannot be carried out only due regard to the interests of the internal (inward looking), but also should pay attention to the influence of other regions as well as the impact on other regions.

Spatial implementation is an attempt to actualize spatial structure and land use pattern in accordance with the spatial planning through establishment and implementation of programs and financing. Spatial implementation, program is established based on spatial plan that has been set by the stakeholders in accordance with the role and authority. In the establishment and implementation of programs in rural areas in peri-urban, the stakeholders must coordinate and synchronize including the type and proportion of the program, the construction site, as well as the division of roles and responsibilities, including financing share, it is intended to create synergies in achieving the goals set in the spatial plan. For example: in the construction of road infrastructure, need to be coordinated with the sectors that will utilize the road, so that the road network was built to give benefits far greater than simply connecting two points. Furthermore, the control phase of spatial implementation has a significant role in spatial planning cycles. Controlling of spatial implementation is an effort to direct the use of space in order to remain in accordance with the spatial plan that has been set. Control of the use of space implemented through zoning regulations, permits, monitoring, evaluation, and control of spatial implementation.

Development of rural areas infrastructure in peri-urban has to consider: 1) refers to the existing planning, both spatial and non-spatial planning; 2) oriented to the development of the region or linkage between local producers to the market area and access between regions; 3) prioritize the infrastructure that supports the improvement and development of main commodities; 4) using the appropriate technology by taking into account the value of local knowledge; 5) using local materials; 6) does not cause negative impacts to the environment, social and cultural rights; and 7) integrated with the existing infrastructure to collaborate all available funding sources.

4. Conclusions
The preparation of rural settlement infrastructure development plan in peri-urban requires collaboration, active participation, commitment, and support from stakeholders. This is intended to obtain the quality of planning and able to respond to the potentials and problems, and also accommodate the needs of the people in rural settlement. Furthermore, rural settlement infrastructure development planning in peri-urban must be followed up with the implementation of infrastructure intervention that involves society empowerment inclusivity.

The development of rural settlement in peri-urban through the provision of infrastructure is carried out in accordance with the function of the area, both as a residential neighbourhood and a place of activity through the fulfilment of Minimum Standard of Services (MSS) and infrastructure supporting economic activities that are implemented in an integrated, inter-sector based on spatial planning, and principled on sustainable development either environmentally, socially and culturally. Last but not least,
the development of rural settlement in peri-urban requires collaboration, support, commitment and active participation from all stakeholders so that in the future, the productive and sustainable rural settlement in peri-urban can be realized.

5. Appendix A.

Facilities are a facility in a residential neighbourhood which serves to support the implementation and the development of social life, culture, and economy.

Implementation of spatial planning is an activity that includes the plan, guidance, implementation, and supervision of spatial planning.

Infrastructure is the physical basis of completeness of environmental housing that meet certain standards for needs a decent living, healthy, safe, and comfortable.

Management is an integrated effort to protect, develop and utilize the rural areas through a policy setting planning, implementing, and controlling for the welfare of the people.

Peri-urban is an interface zone in which there is mixing land structure between urban and rural.

Rural areas is the region that has a major agricultural activities, including the management of natural resources with the composition as a function of the rural area, government services, social services, and economic activity.

Rural areas in peri-urban areas are rural areas spatially adjacent to municipalities, but are administratively located in the districts and are designated as rural settlement areas within the district spatial plan.

Settlement are part of the development areas outside protected areas, both in urban and rural areas, which function as residential or residential neighbourhood and places of activity that support living and livelihoods.

Spatial planning is a system of spatial planning processes, spatial implementation, and control of spatial implementation.

Spatial plan is the result of spatial planning.

Sustainable development is a conscious and planned effort that combines aspects of environmental, social, and economic development strategies to ensure the environmental integrity and safety, capability, welfare, and quality of life of the present generation and future generations.

6. References

[1] Direktorat Jenderal Cipta Karya, Pedoman Penyusunan Database dan Delineasi, 2016. Pedoman penyusunan perencanaan kawasan permukiman perdesaan

[2] Crosby, B.L. (1992). Stakeholder Analysis: A vital tool for strategic managers. Washington DC: Technical Notes, No. 2. Agency for International Development.

[3] Dovers, S. (2005). Environment and Sustainability Policy: Creation, Implementation, Evaluation, The Federation Press, Sydney.

[4] Krishna, R. and C. Lovell. (1985). Rural and Development in Asia and the Pacific. The Synopsis of ADB Regional Seminar on Rural Development in Asia and the Pacific, 15–23 October 1984. Manila: Asian Development Bank.

[5] Soemarwoto, Otto. (1983). Ekologi, Lingkungan Hidup dan Pembangunan. Jakarta: Djambatan.

[6] Sugandhy, A. (2007). Pembangunan berkelanjutan berwawasan lingkungan. Jakarta: Bumi Aksara.

[7] Sugandhy, A. (1999). Penataan ruang dalam pengelolaan lingkungan hidup. Jakarta: Gramedia Pustaka Utama.

[8] BPS, 2016.

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