The resilience of Yogyakarta urbanized area: perspective of policy for disaster risk reduction

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Abstract. The increasing popularity of resilience in the context of sustainable urban development requires a policy that is capable of adapting to environmental changes due to the impacts of climate change and disasters. This study aims to identify policies that support the implementation of resilience-related principle in the development of Yogyakarta Urbanized Area. This study involves review of some policy documents to construct the concept of resilience which conceived by the policy. The results and discussion of this research show that the elements of urban resilience have internalized into urban development policies with varied characteristics in each policy. To enhance the understanding of this matter, there should be more policy document to be reviewed and expertise opinion to be involved in the discussion.

\textbf{Keywords:} Resilience, Institutional, Policy, Yogyakarta Urbanized Area.

1. Introduction

There should be an integration of resilience concept into urban and regional planning elements \cite{1} particularly related to adaptation capacities to environmental changes due to the impacts of climate change and disasters. This essentials have been elaborated and synthesized into conceptual framework of urban resilience with varied approaches \cite{2} \cite{3} \cite{4}. The discussions of those study comprehend the needs of comprehensive process which involve elements of urban system towards urban resilience. To build more understanding towards the conception the discourses, this research is expected to contribute to the knowledge of institutional transformation and development policy for urban resilience.

According to the background, this research aims to identify, analyze, and discuss the policy aspect of urban development which contributed to the implementation of resilience-related principle in Yogyakarta Urbanized Area or Kaisan Perkotaan Yogyakarta (KPY). Policy is part of elements within the urban system which will affect the whole process of urban development towards resilience. The urban context is used due to its strategic value of urban area in the regional development and main contribution to the achievement of sustainable development. KPY is chosen as the research location because KPY is one of national strategic area in Indonesia for its rapid economic growth and spatial transformation which led the area to become more vulnerable to climate change and disaster \cite{5}. Objectives of this research are formulated into (1) identification of the development and spatial policies of KPY; and (2) identification of resilience perspective within the policies. In this research, the scope of KPY is Yogyakarta City and its agglomeration area in the Special Province of Yogyakarta.
which covers 14 districts in Yogyakarta City, 6 districts in Sleman Regency, and 3 Districts in Bantul Regency. The research areas can be seen in Figure 1.

![Figure 1. Yogyakarta Urbanized Area](source: [7])

2. Methodology
This research is part of an integrated framework for the searching of concept for resilience of built environment. As it is still in the initial stages of the framework therefore this research is conducted through content analysis method which focus on qualitative analysis about documentary content to develop generalization of the thesis [6]. Documentary content analysis use some policies which categorized into strategic planning policy, spatial planning policy, and Disaster Risk Reduction (DRR) policy. Based on those categories, the specific document reviewed are Regulation of Special Province of Yogyakarta No.2/2009 about Long Term Development Plan (RPJP) 2005-2025, Regulation of Special Province of Yogyakarta No.2/2010 about Regional Spatial Plan, and Regulation of Special Province of Yogyakarta No.8/2010 about Disaster Management. The analysis is conducted within conceptual framework of urban resilience developed from literature review as can be seen in Figure 2 [2] [3] [4]. The context of the pressures addressed in this research focuses on issues of climate change and disaster. The context is chosen because the mainstreaming of urban resilience still commonly within the framework of adaptation to climate change and disaster risk. The identification of elements urban resilience both the process elements and urban system elements will be the main discussion in this research. Referring to literature review, policy is part of the social system in urban development, here especially the institutional criteria, that produce the
related regulation which will govern both process and urban elements to develop the resilience of built environment.

3. Policy Perspectives of Urban Resilience for DRR in Yogyakarta Urbanized Area
The results of the identification of policy related to the development of Yogyakarta Urbanized Area and the conceptual aspect of how the resilience-related principles are internalize in the policy are shown in Figure 3 [7] [8] [9]. Some findings which should be considered in order to have insights of how urban resilience concept have been implemented in the policy domain, among others:

(1) The policies for development in Yogyakarta Urbanized Area have shown the elements of urban resilience to be incorporated in each of policy with varied characteristics both in explicit and implicit way. The substances of each policy reviewed mostly related to the development of the disaster management process. Although the substances have yet had clauses which explicitly mentioned Yogyakarta Urbanized Area as the target area, nevertheless Yogyakarta Urbanized Area is always become one of the issues discussed in the analysis and become basic consideration to formulate urban development strategies.

(2) There are differences in characteristics of mainstreaming of urban resilience concept in each of the following policy:
   a. RPJP as the long term development policy highlights the aspects of the enhancement of resilience of the social system in the form of institutional and community participation related to disaster management;
   b. RTRW as the spatial plan policy focuses on the enhancement of resilience of the physical system in the form of land use planning and the arrangement of disaster-prone area; and
   c. Disaster Management as DRR policy has a more comprehensive substances both for social and physical systems with an emphasis on aspects of disaster preparedness and mitigation processes.

(3) From RPJP, institutional aspect of disaster management have to involve the universities and other higher educations to participate in the process of communities capacity building in the form of science development, community assistanship, and institutional development.

(4) The importance of risk analysis in the process of urban resilience development have yet implemented. Risk analysis only mentioned in the DRR policy for one of the activities in the
The pre-disaster phase which should be followed by the formulation of action plan for DRR in the specific case study. Even in the spatial plan policy where the disaster-prone area is appointed, specific risk analysis to develop more robust strategy of adaptation by spatial planning tools has yet to be done.

The internalization of resilience-principle by far has begun to shift the paradigm into adaptation rather than only response. Even though, this paradigm only explicitly stated in the long term development policy and DRR policy. The spatial plan policy have to start the same paradigm with opted in risk analysis for the impacts of climate change and disaster to produce more adaptable land use and infrastructure development.

4. Conclusion
Presented results in this research are from the early phase of the research framework to find the concept of resilience of built environment. In this preliminary stage, the importance of institutional aspect in the development of built environment in the urban area have identified. More policy should be reviewed to obtain more comprehensive insight about the elements and its interaction of urban resilience principle have been implemented so far. It is also important to compare the policy in each regency to understand how local government actually comprehend the essential of the resilience principle towards sustainable development. A methodology to explore about this topic should be developed to have interviewees from the related expertise both academicians and practitioners so that the study will have diverse perspectives of how should urban resilience elements be incorporated into policy formulation, particularly in the context of Yogyakarta Urbanized Area.

5. References
[1] Irajifar, L., Alizadeh, T. and Sipe, N., 2013, May. Disaster resiliency measurement frameworks: State of the art. In S. Kajewski, K. Manley, & K. Hampson. Presented at the World Building Congress, Brisbane, Australia.
[2] Sharifi, A. and Yamagata, Y., 2014. Resilient urban planning: Major principles and criteria. Energy Procedia, 61, pp.1491-1495.
[3] Jabareen, Y., 2013. Planning the resilient city: Concepts and strategies for coping with climate change and environmental risk. Cities, 31, pp.220-229.

[4] Desouza, K.C. and Flanery, T.H., 2013. Designing, planning, and managing resilient cities: A conceptual framework. Cities, 35, pp.89-99.

[5] Gunawan, I., Sagala, S., Amin, S., Zawani, H. and Mangunsong, R., 2015. City Risk Diagnostic for Urban Resilience in Indonesia.

[6] Muhadjir, H. (1996). Metodologi penelitian kualitatif. Yogyakarta, Indonesia: Rake Sarasin.

[7] Peraturan Daerah Provinsi Daerah Istimewa Yogyakarta Nomor 2 Tahun 2009 tentang Rencana Pembangunan Jangka Panjang Daerah (RPJPD) Tahun 2005-2025.

[8] Peraturan Daerah Provinsi Daerah Istimewa Yogyakarta No. 2 Tahun 2010 tentang Rencana Tata Ruang Wilayah Provinsi DIY Tahun 2009-2029.

[9] Peraturan Daerah Provinsi Daerah Istimewa Yogyakarta Nomor 8 Tahun 2010 Tentang Penanggulangan Bencana.