Analysis Method of Recovery with Consideration of Community

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Abstract
In the recovery process of Aceh, Indonesia post 2004 tsunami, NGOs had significant role in implementing the reconstruction and recovery. Many of the projects involved community participation, but only some of them considering community as the subject of recovery. This paper would like to study the process, result and impact of recovery towards the life of community. Previous recovery analysis frame have been focusing on quantitative indices, or the physical infrastructure analysis, such as the housing and infrastructures. This paper studies recovery from a comprehensive viewpoint with consideration of community involvement. This aimed to create recovery analysis frame focusing on community participation process, and according to the selected case studies, analysing the factors which lead to successful recovery.

Most of the data have been collected through in-depth interview to the community, NGOs and expert as support groups, and government. Firstly to understand the criteria of ideal recovery process, and then to find the factors lead to successful recovery. There are four *kampungs* or villages of Banda Aceh which were investigated for this research: Pande, Lambung, Lampulo, and Neuheun Villages.

Findings of this research are two kinds of way to measure recovery, which are macroscopic indices and microscopic indices. Macroscopic indices are the main consideration on how recovery has been measured, those consists of physical, social, and economy indices. Microscopic indices consist of sustainability, satisfaction, and integration. Recovery considering community participation should not only be measured through the macroscopic indices which previously have been used and more quantitative, but also to take into account the microscopic indices which are more qualitative.

Keywords: analysis method, community participation, macroscopic indices, microscopic indices, comprehensive

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Introduction

Measuring recovery in general has been usually done by using quantitative indicators, however it is also needed that recovery is measured by qualitative indicators. It can be seen from Indonesia reports tsunami recovery of Aceh and Nias by Agency for the Rehabilitation and Reconstruction (BRR) which focus on the result of recovery in quantitative factors (BRR, 2006, 2007, 2008). A research by Murao and Nakazato (2010) focuses on physical indices of housing and infrastructure reconstruction in Sri Lanka, however they mentioned that recovery itself is broad, contains physical environment, social system, and individual recovery. Some comprehensive viewpoint of recovery are mentioned in Tatsuki and Hayashi's research of variables of life recovery consists of 9 elements, and Tanaka's (2014) on 10 years assessment of Kobe Earthquake.

Comprehensive viewpoint towards the recovery process and stakeholders will be discussed in this paper, by looking at community and household viewpoint, not only government and programs or projects purpose and result.

Analysis to decide the factors of recovery has been done through comparison of the reports of reconstruction of several disasters in several countries, and by using case study of community groups in Aceh post Indian earthquake tsunami in 2004. The reason of selecting 4 communities in Aceh was because those communities could represent the situation of active community participation efforts during reconstruction and recovery, proactive leaders, and good collaboration with the NGOs and government. The characteristics of the villages: Pande *Kampung*, Lambung *Kampung*, and Lampulo *Kampung* are coastal fishery village. While Neuheun Village is a relocated village, located on a hill. So the community structure are also different, the three first-mentioned kampungs are more homogenous, and originated from same *kampungs* as before, while Neuheun villages consists of more various background community.

Seeing recovery as a continuous process, not only finished right after the reconstruction projects ends is a way to evaluate recovery in comprehensive way. Sustainability or long term viewpoint has been adopted since 1990 to disaster researches (Smith, G. P., Wenger, D. 2007).

According to the analysis of recovery reports and statistics, also research on recovery results, the indexes could be classified into macroscopic and microscopic. Macroscopic indices are seen from the higher viewpoint as entire city or area to evaluate the result, while microscopic indices are seen from the viewpoint of community groups or households. Microscopic indices are obtained from analysis of community interviews data. The advantage of knowing microscopic factors are having viewpoint of community as the subject, consideration of satisfaction of community and its impact, and enhance the possibility to achieve balance role of stakeholders in the recovery process in the future.

Macroscopic and microscopic indices

The indices are classified into two big types, macroscopic and microscopic. Macroscopic indices are indices which are commonly analysed within an entire city, or district. It is aimed to see the recovery process in entire parts of the city, and usually established officially by the government. These indices are mostly measured by quantitative data. The classification of indices was chosen according to the report of government of Indonesia by BRR in 2006, 2008 and 2012, and report from NGO (MDF, 2007).

Microscopic indices focus on household recovery, and focusing on long-term phase. What are written on the report provided by government and NGOs and donor agencies are mainly considering about the report of an entire process of programs of projects. But these microscopic indices try to focus on each household, or community group. Therefore the indices are analysed on the subjectivity of respondents, consists of one main part: sustainability, and additional part: satisfaction.

Timeline to measure the recovery

The macroscopic indices are measured at the end of the official recovery process, according to the government or NGOs. Ideally, it is measured in community or neighbourhood level, but depending on the availability of data, the city level is also possible to be used. For the microscopic indices, time frame to measure is after the official recovery process, because it indicates the long-term viewpoint and sustainability.

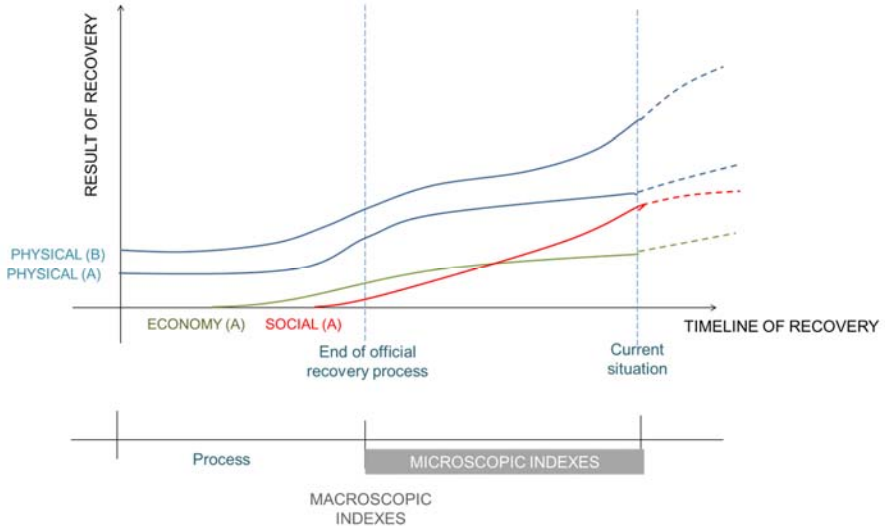

Figure 1. The timeline of recovery analysis

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1) Macroscopic indices

These are countable indices, or statistically measurable indices. It consists of two parts: physical and non-physical. The physical indices consist of all construction-related work, which are: 1) constructed housings, 2) infrastructure such as roads, ports, bridges, and 3) disaster preparedness structure, such as coastal protection and tsunami early warning system.

The non-physical indices consist of social service and economy. The social service consists of education and health. Education consists of numbers of facilities such as schools; and quality of education such as teachers trained, distributed textbooks, and school enrolment. Health consists of the amount of health facilities, such as hospitals, clinics, health centres, and children-elderly care facilities.

2) Microscopic indices

Sustainability means continuity, or consideration of the empowered community and ability to continue the process of recovery to the development or improved situation. These require qualitative data for sustainability in physical and non-physical aspects. For physical aspects, it consists of housing, infrastructure improvement and disaster preparedness in structural measures. The difference with the same aspects in macroscopic indices are that this indices uses the improved quality, for example, housing consists of parameters of improving standard of living, fulfilment of residents' needs, and modification and improving house quality.

For non-physical aspects, it consists of social and economy aspects of each community group, or household. It is community or household achievement in recovery and the process afterwards. Social aspects consist of these indices: education, health, community, and disaster preparedness in non-structural countermeasures. The economy aspects consist of these indices in improved livelihood, such as proper job, steady income, and fulfilment of family needs.

Satisfaction of people or community is measured because it is one purpose of recovery, and could influence the result of recovery. It consists of satisfaction towards the process and result of recovery. For process, the factors to be measured are expectation of community, and the consensus building, and participatory process.

Measuring the indices and parameter

For further steps, detail parameters will be decided to measure those indices. And according to the indices and the correlations of those indices to the process and result of recovery, the score will be weighted.

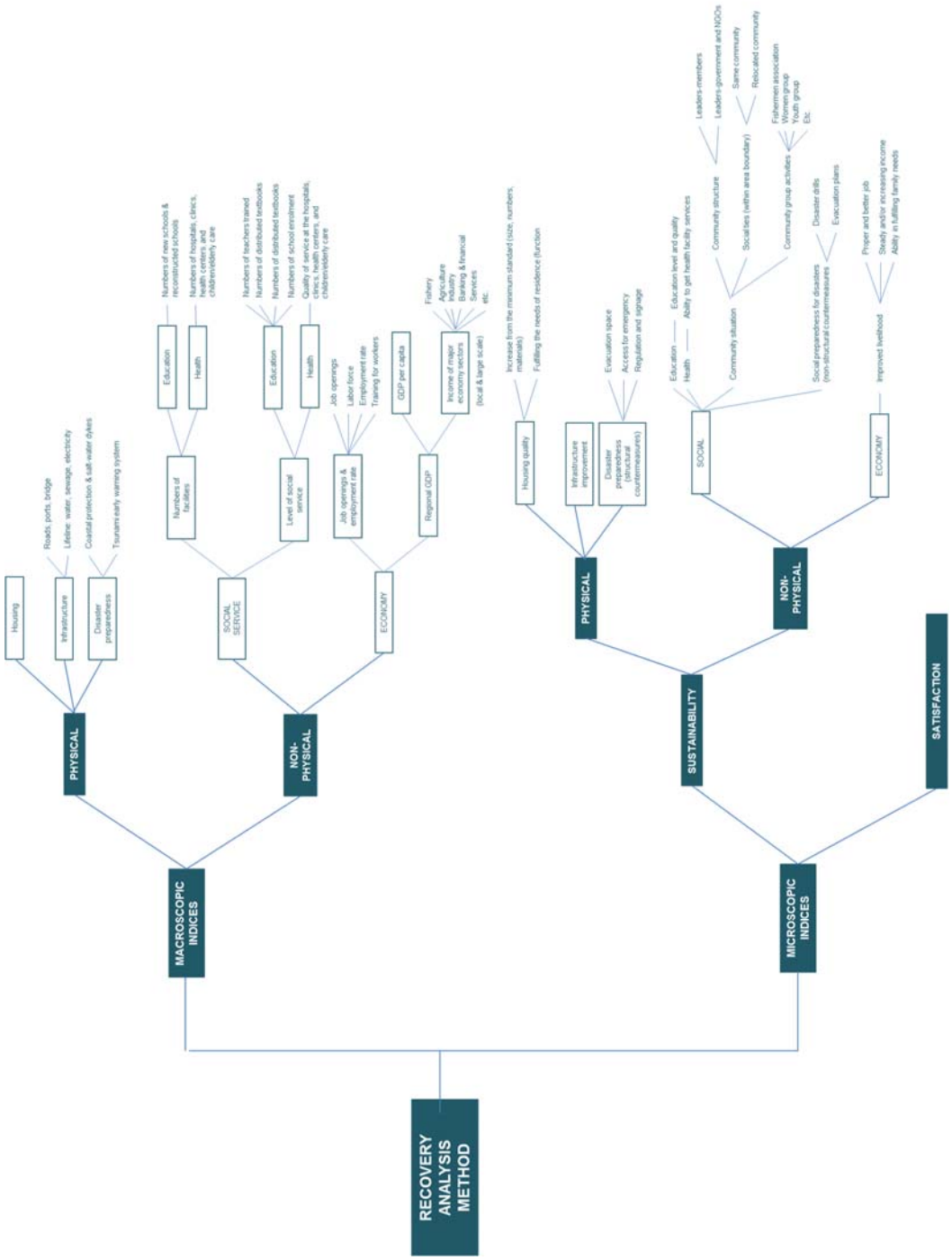

Figure 2. Recovery Analysis Frame

Conclusion and discussion

Analysing recovery comprehensively could be achieved by seeing recovery from both quantitative and qualitative indices, from general viewpoint of recovery achievement of one area or city, to community group and household. Macroscopic indices consist of physical and non-physical indices, can both can be measured by quantitative data. Microscopic indices consists of sustainability and satisfaction, both are qualitative indices. Sustainability consists of physical and non-physical indices. The non-physical indices include social and economy indices.

However, consideration of disaster type and locality aspects of disaster is further needed to adapt the detail parameters of the indices. It might be possible to categorize those indices into general indices and specific indices which is specific for each disaster situation and specific communities.

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Author's Biography

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Maria Bernadet Karina Dewi is a doctoral student at the Department of Urban Engineering, the University of Tokyo, Japan. Belongs to the Kato Takaaki Laboratory of Social and Safety System, she has been focusing on researches related with disaster recovery and disaster preparedness with community participation and community-based activities. Most of the researches have been done from both perspective of Indonesia and Japan.