Index-based Analysis of Participatory Community Recovery from the Great East Japan Earthquake and Tsunami in Kesennuma, Japan

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Key Words: Recovery, Participation, the Great East Japan Earthquake and Tsunami, Recovery Index, build back better, resilience

1. Research Background and Objective

Nearly four years have passed since The Great East Japan Earthquake and Tsunami (GEJET). United Nation World Conference on Disaster Risk Reduction was held at Sendai, Japan, and priorities for actions until 2030 were adopted for the next 15 years. Although one of these priorities to "build back better", there is neither consensus definition of better recovery, nor indicators to measure the better recovery. Kesennuma city, which was severely affected by GEJET is also on the path to recovery even though it is unclear for citizens what better recovery in Kesennuma city entails. Hence, the objective of this research is answering these points. 1) Identifying the elements that contribute to better recovery at the community level, and 2) Measuring community recovery using place-specific indicators for community recovery. The research builds upon earlier findings that participation in the recovery process by community members and local government support are keys to enhancing preparedness against natural disasters.

2. Research Methodology

A Participatory Community Recovery Index (PCRI) was created as a tool to measure community recovery. The index adopts seven primary indicators and 20 tertiary indicators, including: socio-economic aspect, housing, health, environment, self-organization, transformation, and institution. The index was applied to nine districts in Kesennuma city. Secondary and primary data by questionnaire surveys with local residents' organization leaders and interviews with crisis management department officials in city government were also obtained. The indicator results were transformed into numerous scores between 1 to 5, and the results were shown for each district.

3. Results and Analysis

Based on the result of PCRI, 16 communities out of 125 were identified as "better recovery communities" in nine districts, and these communities are categorized into three types: "urban type", "semi-urban type", and "rural type" according to population density and primary industry work force ratio. In urban type communities, temporary shopping arcades played central role to revitalize community activities and disaster risk reduction (DRR) activities. In rural type communities, networks with neighboring residents' organizations were utilized for post-disaster recovery. In semi-urban type communities, the results showed a relatively high sense of place in the whole district, and the Town Planning Council proposed an integrated community recovery plan for city government. In addition, since non-affected districts also improved DRR activities in the post-disaster, it is clear that these communities also require support.

On the other hand, poorly functioning communities showed a difference in socio-environmental background, including impacts from the destruction of reclaimed land from salt pan lands, and a low dependency of primary industry work force. These areas exhibited low community bonding since the land was reclaimed and settled recently, therefore, cutting linkage with livelihood linkage caused dysfunction in these communities.

4. Conclusion

Better recovery communities tend to have maintained strong internal networks or links with neighboring residents' organizations since before the disaster, and DRR activities have been maintained and strengthened post-disaster. Thus, better recovery at the community level represents recovering the same level of pre-disaster function of a community, and transforming DRR activities based on lessons learnt from previous disaster. PCRI proved useful to measure community recovery based on the unique features of each locality.