COPING WITH URBAN SOCIAL VULNERABILITY TO HAZARDS IN TOKYO: CURRENT STATUS OF DISASTER MITIGATION PLANS AND ITS IMPLICATIONS

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Summary

Natural hazards such as earthquakes, when they occur in an urban area, may result in grave consequences as disasters to damage urban life and infrastructure. The impact of such disasters could be enormous and hamper the process toward the development of sustainable cities. To reduce the damage and ease difficulties in the recovery process, many cities have developed elaborate disaster mitigation plans. These plans are comprehensive to cover various issues, but generally they need further improvement as illustrated by the Kobe example in 1995 when people of certain social groups faced more damage by the earthquake and more difficulties during the recovery phase.

This issue of urban social vulnerability to hazards is examined for the metropolitan area of Tokyo using disaster mitigation planning for anticipated earthquakes as an example. The author and his team interviewed 28 municipalities in the metropolitan area to know the current status of disaster management with respect to the incorporation of social vulnerability to hazards.

The results indicate that social vulnerability to hazards is not generally addressed in the current disaster mitigation plans. Given the limitation of financial resources and manpower of municipalities, it seems to be very important to integrate outside resources into the existing disaster mitigation framework. The interviews with four non-governmental organizations show that these organizations have good potential to provide essential services that the public sector cannot provide for people of special needs.

1. Introduction

As urban population grows across the world, there is an increasing concern to prepare for large-scale disturbances of urban life and activities. Of these disturbances, those caused by natural hazards such as earthquakes and floods are of significance for many cities. Natural hazards may cause devastating damage, such as destruction of buildings, to the built environment of cities, but it is also important to develop a system that will ease the impact on human life and economic activities. The improvement of planning to aim such achievement is essential not only to reduce the damage and facilitate quick recoveries but also to minimize interruption to the development of sustainable urban societies.

In many cities, general disaster mitigation plans are widely available. These plans have been developed to reduce the impact of natural hazards and aid the recovery process, e.g. identifying disaster-prone areas such as flood plains and active faults, designating evacuation sites, and developing distribution systems of emergency supplies. Human considerations in these plans, however, lag behind considerations of the general, overall framework of disaster mitigation that tend to focus on the physical side with fewer human elements. For example, people are counted in general terms in many cases: simple population figures are often used to assess the size of damage that will be done by a hypothetical earthquake. Here, physical elements such as geological formations and building materials are important variables. As our past experiences show, however, some people are more prone to disasters; e.g. marginal people are forced to live in a marginal area of a city such as plots adjacent to flood plains. During the recovery process, too, this kind of bias exists. Some people are quicker to recover because of access to more resources, financial or otherwise.

Vulnerability issues acknowledge the existence of variations in susceptibility to a disaster or inability to resist the loss caused by a disaster. This is an important aspect to consider, but in reality, given the limitation in resources to improve disaster mitigation plans, disaster vulnerability has been largely neglected. Taking Tokyo as a case city and earthquakes as a case hazard, this study examines the issue of urban social vulnerability to hazards. Social vulnerability to hazards in the study means low ability, based on social attributes and contexts, of a group of persons who are exposed to a larger likelihood and impact of a disaster and who will have more difficulties in recovering from a disaster. The next chapter briefly reviews disaster mitigation plans of Tokyo. Chapter 3 discusses the current status of considering social vulnerability to hazards in those plans for municipalities in the Tokyo metropolitan region. Chapter 4 explains potential roles of non-governmental organizations to supplement the existing disaster management framework. The last chapter concludes the study by proposing possible

avenues to improve current disaster mitigation plans by incorporating new resources of non-governmental organizations.

2. Disaster Mitigation Plans of Tokyo

Disaster mitigation planning in Japan tends to have a "top-down" scheme. The government of Japan makes the national version of disaster mitigation plans, whose framework largely confines the disaster mitigation plans of Tokyo Metropolitan Government (TMG), which is one of the 47 prefectures of Japan. Similarly, the plans of TMG become the basis of the plans by each ward, city, and town under the jurisdiction of TMG. These disaster mitigation plans are comprehensive and cover various issues that relate to the mitigation of the impact caused by an anticipated large-scale earthquake.

To see the comprehensiveness of disaster mitigation plans, let us look at the contents of the publication that explains the plans. The publication covers issues such as the framework of information gathering and dissemination after a disaster, establishment of relief centers as pivotal points to conduct relief activities, establishment of shelters to accommodate those who have lost their homes, traffic control of affected areas, logistics of relief supplies, provision of medical assistance, handling and disposal of corpses, garbage, waste, and rubble, and the list goes on. A brief check of the contents might give us the impression that the public sector is well prepared to cope with disasters.

However, being comprehensive unfortunately does not necessarily mean that disaster mitigation plans are perfect. Past experiences have shown that inefficiencies and insufficiencies exist in these plans. One reason is that we haven't experienced enough to sufficiently improve the plans based on past experiences. Another reason is the changing nature of urban populations in such matters as density variation, age composition, and social network—e.g. the decreasing importance of neighborhoods in urban life. One of the newer issues discussed in disaster studies is urban social vulnerability to hazards. Since urban population is composed of different groups of people and some of them are more susceptible to the impact of a disaster than others, it becomes necessary to take this into account when allocating resources and attention to alleviate the difficulties of sufferers. For example, after a large earthquake hit the Kobe and surrounding areas in January 1995, public sectors had difficulties in providing adequate relief services to people of special needs such as undocumented foreigners who wanted to avoid contacting authorities, families with infants who need special food, and people needing special medical care such as those who are under dialysis treatment.

3. Consideration of Urban Social Vulnerability to Hazards in Tokyo

To examine the current status of disaster mitigation plans of Tokyo metropolitan area at the municipality level with respect to the incorporation of social vulnerability to hazards, the author and his team conducted interviews with administrative personnel of the 23 wards of Tokyo and five cities in the surrounding region. The survey was part of a larger study financed by the United Nations University to address the issue of urban social vulnerability to hazards in large cities across the world.

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Bibliography

Blaikie P., Cannon T., Davis I. and Wisner B. (1994). *At Risk: Natural Hazards, People's Vulnerability, and Disasters*, 284 pp. London: Routledge. [This book discusses disaster vulnerability in general and that in various types of disasters including earthquakes. This book is often cited in studies that deal with vulnerability issues in disasters.]

Bolin R. and Stanford L. (1998). The Northridge earthquake: community-based approaches to unmet recovery needs. *Disasters*, Vol. **22**, No. 1, pp. 21-38. Oxford: Blackwell Publishers. [This paper offers an example of urban social vulnerability observed in the recovery process of Northridge earthquake and roles of non-governmental and community-based organizations to cope with the vulnerability.]

Cybriwsky, R. (1998). *Tokyo: The Shogun's City at the Twenty-First Century*, 260 pp. Chichester, West Sussex: John Wiley & Sons Ltd. [This book provides detailed information on contemporary Tokyo including historical development and social aspects.]

Mitchell J. K. (ed.) (1999). *Crucibles of Hazard: Mega-Cities and Disasters in Transition*, 535 pp. Tokyo: United Nations University Press. [With some chapters dealing with urban social vulnerability, the book presents case studies of 10 large cities across the world with respect to their positions to natural and human-made hazards. One chapter describes disaster mitigation plans of Tokyo in the conventional framework that mainly focuses on physical and engineering sides of the plans.]

Morrow B. H. (1999). Identifying and mapping community vulnerability. *Disasters*, Vol. **23**, No. 1, pp. 1-18. Oxford: Blackwell Publishers. [This paper presents general discussion of vulnerability to disasters with US examples with a good set of references.]

Biographical Sketch

Shigeo Takahashi is a Professor in the Department of Economics, Aoyama Gakuin University, Tokyo, Japan. He obtained his B.A. in geography at Tokyo University of Education, 1977, and his M.A. and Ph.D. in geography at the University of Kansas, USA, in 1982, and 1988 respectively.

His research interests are urban and economic geography, and geography of Japan and USA. Selected publications include "A new approach to disaster mitigation and planning in mega-cities" (in *Cities and the Environment: New Approaches for Eco-Societies*, UNU Press, 1999, co-authored) and "Social geography and disaster vulnerability in Tokyo" (in *Applied Geography*, 1998), as well as other articles and books on urban and economic geography such as office location and retail geography.