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Disaster Recovery for Transportation: China's Wenchuan Earthquake of 2008 and Japan's Tohoku Earthquake and Tsunami of 2011

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Description of Problem:

This project examined issues related to the recovery of transportation infrastructure and services in two countries following catastrophic disasters: the People's Republic of China, after the 2008 Wenchuan Earthquake in Sichuan Province, and Japan, in the aftermath of the 2011 Great East Japan Earthquake and Tsunami and subsequent nuclear crisis. Both disasters severely disrupted surface transportation networks, infrastructure, and services in their respective countries. Given the need both (1) for *emergency* transportation to bring assistance to survivors and begin the task of reconstruction and (2) for restoration of *regular* transportation service, the Chinese and Japanese governments gave significant priority to the large task of restoring and reconfiguring transportation infrastructure and operations in the disaster-affected regions.

This project examined decision-making and implementation of policies to restore transportation in the wake of these two disasters. It gave particular attention to the tension between simply replicating infrastructure/services that previously existed and using the opportunity of the disaster to rethink the nature of the transportation network and operations in order to make choices appropriate for current and future needs in the region. In doing so, the project considered the politics of transportation decision making, including contention over a vision of the region's future, among different stakeholders and between local and central government policy makers; the economics and budget issues in restoring infrastructure; and the operational and management challenges of transportation recovery.

NOTE: Following project start-up, additional UTC funds were added to the project budget. The investigators subsequently refined their research strategy to focus more closely on recovery in Japan, which presented a particularly rich set of issues related to the project's core research questions. During this latter stage of the research project, they focused on the restoration of other forms of infrastructure that helped frame transportation recovery issues. These issues included land use policy and planning decisions made in coastal communities affected by the disaster, as well as the difficulties of implementing these policies.

Approach and Methodology:

This project used empirical research methods widely employed by political scientists and policy analysts studying decision-making and institutional processes. Specifically, the investigators conducted literature reviews and interviews with public officials and leaders of relevant community groups and private sector organizations. The research consisted of the following tasks, listed in sequential order:

Task 1: Review of literature relevant to recovery of transportation services and infrastructure;

Task 2: Development of semi-structured, elite interview protocols for Chinese and Japanese officials responsible for the restoration and recovery of transportation services and infrastructure, and leaders of relevant community groups and private sector entities;

Task 3: Identification and recruitment of emergency management and transportation officials in China and Japan to participate in interviews;

Task 4: Interviews with Chinese and Japanese officials responsible for post-disaster transportation restoration and recovery (since most of the respondents were not fluent in English, bilingual interpreters and translators assisted in the interview process and review of collected data);

Task 5: Analysis and synthesis of data obtained through interviews and collected literature;

Task 6: Identification of core research findings and preparation of materials for publication, presentation in conference/workshop settings, and incorporation into Dr. Howitt's teaching.

Findings, conclusions, recommendations

Recovery from a catastrophic disaster can be a long and complex process, and this is undoubtedly true of China and Japan's experiences following the 2008 Wenchuan Earthquake and 2011 Great East Japan

Earthquake and Tsunami, respectively. Each of these events was a “landscape-scale” disaster affecting very large swathes of territory, killing tens of thousands of people (about 80,000 in China and 20,000 in Japan), injuring many thousands more, and leaving everyday life in shambles. In both countries, among the crucial initial steps of reconstruction was the restoration of transportation infrastructure and services, particularly railways and roadways which enabled truck, auto, and bus travel and thus facilitated the movement of people and goods in the disaster area. In addition, over the longer term, transportation infrastructure recovery has been a critical element of strategies for returning these areas to “normal” levels of social and commercial activity. Among the notable findings of this research project are that China’s centralized and highly directive system of government has allowed for a comparatively speedy recovery of its transportation network when compared with efforts in Japan, where all forms of post-disaster land use policy have been heavily affected by extensive public deliberation and consensus building. But transportation recovery in Japan has not been entirely characterized by methodically slow progress. In fact, in the days and weeks following the 03/11/11 earthquake and tsunami, extremely rapid action by the Tohoku Regional Bureau of the Ministry of Land, Infrastructure, Transit, and Tourism to clear roadways and restore basic surface transportation operations is a prime example of decentralized intelligent adaptation, one of the most effective modes of disaster response and early recovery. The research team’s findings have been incorporated and detailed in the following publications and presentations. The publications may be obtained by contacting arnold_howitt@hks.harvard.edu or david_giles@hks.harvard.edu.

Publications:

David W. Giles, “The Triple Catastrophe: Japan’s 03/11/11 Earthquake, Tsunami, and Nuclear Crisis,” Harvard Kennedy School Case Study (Cambridge, MA: President & Fellows of Harvard College, 2016).

Caroline Brassard, David W. Giles, and Arnold M. Howitt, “Chapter One: Confronting Disaster: Recent Lessons from the Asia Pacific,” in Caroline Brassard, David W. Giles, and Arnold M. Howitt, eds., *Natural Disaster Management in the Asia-Pacific: Policy and Governance* (Tokyo: Springer, 2015).

Arnold M. Howitt, Haruo Hayashi, Hiromi Akiyama, David W. Giles, and Herman B. “Dutch” Leonard, “An Incident Management System for Japan?” *Crisis/Response* 9 (1), 17-19, 2013.

Presentations:

Arnold M. Howitt, “Building Resilience: Nepal and Japan in the Aftermath of Disaster,” presentation at the Program on Crisis Leadership, Harvard Kennedy School, Cambridge, MA, October 14, 2015.

Arnold M. Howitt, David W. Giles, and Hiromi Akiyama, “Greater Centralization or Decentralization for More Effective Disaster Response? The Great East Japan Earthquake and Tsunami in Perspective,” presentation at Temple University, Tokyo, Japan, July 17, 2015.

Arnold M. Howitt, David W. Giles, and Hiromi Akiyama, “Emergency Disaster Response Capacity: Perspectives on the 3.11 Disasters,” presentation at Iwate University, Morioka, Japan, July 16, 2015.

David W. Giles, “The Tohoku Disaster: Emergency Response to the Great East Japan Earthquake & Tsunami,” presentation at the National Graduate Institute for Policy Studies, Tokyo, Japan, February 19, 2013.

Arnold M. Howitt, “Getting Ready for Crisis,” presentation at the National Graduate Institute for Policy Studies,” Tokyo, Japan, February 19, 2013.

Arnold M. Howitt, “The Tohoku Disaster: Responding to Japan’s 3.11 Earthquake Tsunami, and Nuclear Accident,” presentation at the Taubman Center for State and Local Government, Harvard Kennedy School, Cambridge, MA, November 14, 2012.

Arnold M. Howitt, “Assessing Emergency Response to the 3.11 Earthquake, Tsunami, and Nuclear Accident in Japan,” presentation at the Harvard University Asia Center, Cambridge, MA, October 26, 2012.