

The 6th International Forum for Sustainable Asia and the Pacific (ISAP 2014)
Parallel Session 2: Building Resilient Cities in Asia: From Theory to Practice

Development of Concepts, Policies and Evaluation Indices of Resilient Cities in Response to Climate Change and Natural Disasters

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KENSHI BABA & MITSURU TANAKA (HOSEI UNIVERSITY)

1

Agenda

- Background of Resilient City in Japan
- A Concept: Resilient City and Environmental Resilience
- A Framework of Policy Model and Indices on Resilient City
- Trial Measuring: A Part of the Status Report
- Summary and Further Works

Background of Resilient City in Japan

A definition of Resilience
The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organization, and the capacity to adapt to stress and change (IPCC, 2007)

Great East Japan Earthquake clarified the urgent issues, such as robust energy system, community development aiming at disaster risk reduction

Frequent occurrence of disasters that seems to arise from climate change such as flood, heat wave, and crop damage


Resilient City; A vision of city for 21st Century

International trend of resilient city

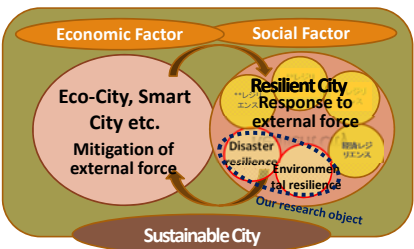
- Concerns are not only on disaster but also on major issues of environmental policy such as climate change, energy, biodiversity

National resilience policy by National Resilience Promotion Office, Cabinet Secretariat

- Major concern is on disaster risk reduction
- The Roles of Environmental policy to build resilience has not been clarified

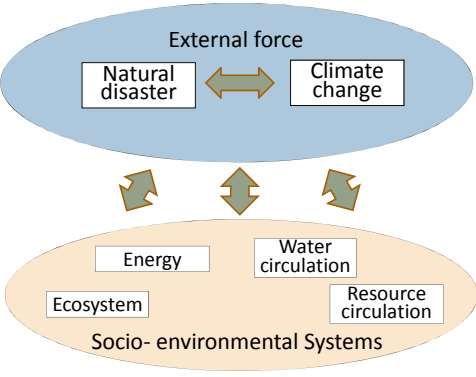

3


A Concept: Resilient City and Environmental Resilience



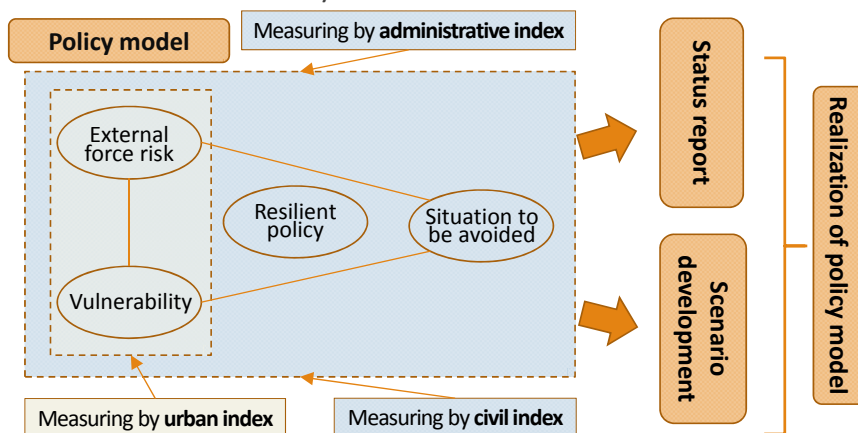
Resilient City; the city which is capable of responding to multiple risk

Environmental resilience; integrated capability for responding to the impact of external forces such as climate change and natural disaster to socio-environmental systems such as energy, ecosystem, water circulation and resource circulation



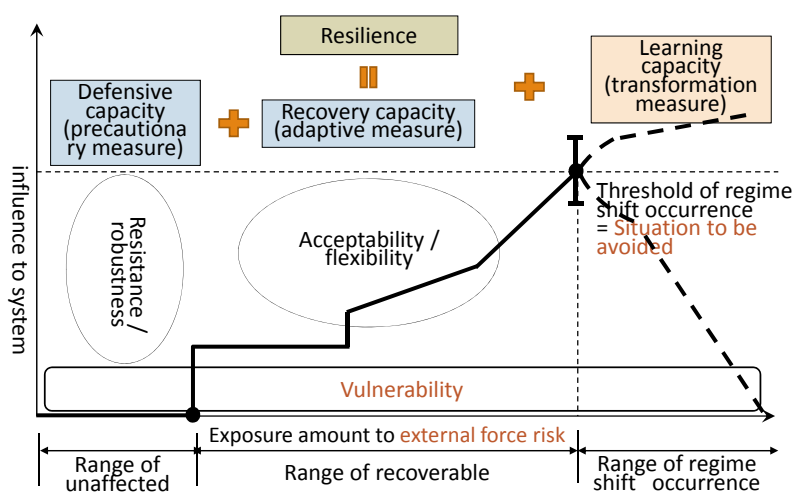

4

A Framework of Policy Model and Indices on Resilient City



Policy model; A hypothetical flow describing the whole process of policymaking
 Indices; Three kinds of indices to measure the status of each component of the policy model
 Status report; Assessing the degree of resilience based on the measuring results with the indices
 Scenario development; Holding some participatory approaches with the status report to realize the policy model

A Framework of Three Measures of Resilient Policy



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- 1. Urban index(UI)**
 - Local governments' officers and experts collaboratively assess the degree of resilience in terms of infrastructure, economic activity and environmental factors contribute to resilience based on some published quantitative data such as the Census
- 2. Administrative index(AI)**
 - Local governments' officers and experts collaboratively assess the degree of resilience in terms of the situation of progress and preparedness of the existing policies contribute to resilience based on the questionnaire to the officers (self-assessment) and scrutiny on the administrative plans
- 3. Civic index(CI)**
 - Stakeholders, the general public and experts collaboratively assess the degree of resilience in terms of civic life and environmental factors such as local knowledge, attitude and social capital contribute to resilience based on the questionnaire to the general public (self-assessment) and some published quantitative data such as the JGSS
- 4. Integration of the assessment results**
 - Examining the gaps and common points of the assessment results by the indices based on the "status report" to understand the degree of resilience comprehensively

Trial Measuring: A Part of the Status Report

What is a "Status Report" ?

The Integrated assessment results of three types of indices of UI, AI, and CI on the four components of the policy model; i) external force risk, ii) vulnerability, iii) situation to be avoided, iv) resilient policy will promote each actor's understanding of what to do for building resilient city

i) External force risk
ii) Vulnerability
iii) Situation to be avoided
iv) Resilient policy

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- Urban index
- Administrative index
- Civic index

↑ Assessment result of external force risk by UI (urban index) in Sendai City (in comparison with the average of the government-decreed cities)

⇐ Assessment result of external force risk by AI (administrative index) in Sendai City (in comparison with the average of the government-decreed cities)

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Summary and Further Works

- Policy model; Hypothesizing three components of “external force risk”, “vulnerability”, and “situation to be avoided” to determine the situation of progress and preparedness of resilient policies
- Resilient policy; Hypothesizing three types of measures and capacity of “defensive capacity (precautionary measure), “Recovery capacity (adaptive measure)”, and “Learning capacity (transformation measure)” according to exposure amount of external force risk
- Indices; Setting up over 100 indices which consist of three types of “Urban index”, “Administrative index”, and “Civic index” to measure the degree of resilience from each perspective ⇒ Summarizing all the results to “Status report”
- Scenario development; Holding some participatory approaches with the “status report” to realize the policy model sharing the framing gaps among actors

Thank you for your kind attention !
If you have any questions, please contact

kenshi.baba.44@hosei.ac.jp

Acknowledgment;

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