Urban planning for disaster resilient cities in case of Japan

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Urban planning & mega hazard

- <Great Earthquake in Tokyo = Great Kanto Earthquake 1923>
- Big fire, 100,000 people were dead mainly because of fire
- Quick response of government to make planning for reconstruction
- Implementation of innovative planning, land readjustment in huge built-up area
- Contribution for further development of Tokyo
- Hereafter, prevention of the spread of fire is the main target of disaster prevention planning
Damaged Area of Great Kanto Earthquake 1923
Land readjustment of damaged area

Project of planned street for reconstruction

Source: (東京市役所編纂,「帝都復興事業図表」, 東京市, 昭和5年3月)
Urban planning & mega hazard

• < Hanshin Great Earthquake 1995>
• 6,000 people were dead, mainly because of the collapse of houses and buildings
• New type of disaster problems: collapse of infrastructure, weakness & recovery of urban life system
• Difficulty of consensus making for reconstruction making (condominium)
• Importance of voluntary activity: NPO, NGO
Fall down of City Highway

Source: Kobe Shnbun
Special character of East Japan Earthquake

• Huge damaged area & multiple damage: 500km long damaged coast by Tsunami, 37 local municipalities, 9200 km2 in Iwate, Miyagi & Fukushima were strongly damaged, damaged population: ca. 1.8 million people,

• Aspect of man-made disaster: Fukushima nuclear power plant

• Disaster in shrinking area
Great East Japan Earthquake:
Primary Quake and Quakes Larger than Magnitude 7.0 occurring in March and April

Area of the epicenter of the primary quake

Source: Kahoku Shinpo Publishing Co. 2011.06 “The Great East Japan Earthquake & Tsunami”

Main disaster zone

Source: The Japan Times Special Report, 2011.06 “3.11 A Chronicle of events following the Great East Japan Earthquake”
Minami Sanriku Town in Miyagi Pref.  Before
In addition, Accident of Nuclear Power Plant
Tasks and hurdle for realization of reconstruction planning

• Reality and realization process of seawall for Tsunami prevention
• Treatment for dangerous area in case of Tsunami: land use control for building prohibition
• Relation of fishery and marine products industry to sea side
• Delay of infrastructure restoration and reconstruction: ex. Railway, fish harbor, raising of ground sinkage
• Dependence danger for public subsidy
Tasks and hurdle for realization of reconstruction planning

- Long term continuation of temporally housing
- Housing reconstruction: location and housing type, possibility & problem of collective relocation, site problem: highland or on the present site, financial problem of self reconstruction, flexible treatment of public housing, treatment of personal financial problem (ex. double housing loan)
- Possibility of compact town under the condition of demographic change and shrinking of industry
- Possibility of human resource and power: formation of active citizens group, innovative idea and action of NPO, support of professional and expert
Action Plan for disaster prevention by Tokyo Metropolitan Government (TMG)

• Urban development plan for disaster-resistance (January 2010)

• Close-set wooden housing area as a target area for resilient improvement: 28 development district 7000ha, 11 priority development district 2400ha

• Ten-year project to advance fire resistance in close-set wooden housing areas
  a. Acceleration of the establishment of fireproof zones in cooperation with the wards
  b. Construction of major city-planned roads to form firebreak belts
  c. Creating an atmosphere conducive to building disaster-resistant communities
source: TMG-creation of a highly disaster resilient city
Example of a widened community road

Source: ibid
Special zoning for fire protection

指定面積

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凡例

- 整備地域
- 新防火規制区域
- 防火地域
Location of Ten-year project to advance fire resistance in close-set wooden housing areas
Critical points for ten-year project

• Necessary to understand of formation process of close-set wooden housing areas
• How to maintain the function of affordable housing area for low income group and elderly group
• How to develop a sustainable community with attractiveness of mixed use
Perspective for reconstruction, revitalization and sustainable development

• New planning paradigm under changing socio-economic and environmental conditions: not only for reconstruction for damaged area, but also for resilient national land to reduce the damage of disaster

• Rethinking of national planning and regional planning: from monopolistic centralization to multiple decentralized national land, balanced and resilient society

• Support for innovative project and experimental project: smart city project, new agricultural experimental project, renewable energy, tourism in connection with reconstruction process

• Utilization of local knowledge and human resource of community