Recovery of Livelihood and Infrastructure
– Lessons of the Great Hanshin-Awaji Earthquake –

Yoshiteru Murosaki
Professor
Graduate School
University of Hyogo
Recovery after the Great Hanshin-Awaji Earthquake
Overview of Recovery

- In the enormous task ahead, it was particularly difficult to accomplish effective recovery with limited resources and preparedness.

  Damage statistics
  - Fatalities: About 6,000
  - Completely or partially destroyed buildings: About 250,000
  - (Direct) financial damages: About 1 billion yen

  Time required for recovery
  - Infrastructure: 2 years
  - Housing: 5 years
  - Population: 10 years

Positive aspects of recovery
- Rapid recovery of urban functions despite extensive damage
- Rapid recovery of infrastructure and relatively rapid provision of temporary and permanent housing for those affected

Negative aspects of recovery
- Reconstruction and rebuilding took a long time
- Increased indirect damages including disaster-related deaths caused disruption and decline of the regional economy
Transformation of recovery strategy

Massive damage drastically changed the concept of reconstruction and recovery.

Transformation of recovery strategy and goals:

(1) From reconstruction to the original state to creative reconstruction to build back better

(2) From urban recovery to recovery of livelihoods and people
Importance of recovery of infrastructure
Infrastructure for recovery of people

- Lifelines are the most important foundation for recovery when setting goals on recovering livelihoods and people. However, lifelines alone are not sufficient for recovery; it requires a comprehensive system built on diverse foundations.

(1) Hard infrastructure
   - Lifeline infrastructure
   - Public facilities infrastructure: Schools, hospitals, welfare facilities, etc.
   - Infrastructure of facilities required for livelihood: Housing, etc.

(2) Soft infrastructure
   - Infrastructure of legal system for recovery: Legal systems that promote recovery projects and support the rebuilding of livelihoods, etc.
   - Infrastructure for emergency management: Disaster response and preparedness system, etc.
Lifelines for recovery

- Damages to lifelines such as electricity, gas, water, telephone, rail and roads had major negative impacts on all stages, from emergency response to recovery.

(1) Overview of damages
   - Electricity: 2.6 million houses, 6 days
   - Gas: 850,000 houses, 84 days
   - Water: 1.27 million houses, 42 days
   - Landline phones: 190,000 lines, 14 days
   - Conventional JR railway lines: 74 days
   - Hanshin Expressway Kobe Line: 622 days

(2) Effects on disaster response
   - Emergency response: Delay in grasping the damage status and initial response due to disruption of information
   - Quick-fix response: Loss of lifelines directly hindered lifesaving activities; caused confusion for those living in evacuation centers
   - Actions for recovery: Also delays in rebuilding of livelihoods and recovery of industries

Recovery of infrastructure is the foundation and first step for recovery of the city and livelihoods.
Soft infrastructure for recovery

- The Great Hanshin-Awaji Earthquake caused serious indirect damages, such as disaster-related deaths. This was partly due to weaknesses in public facilities infrastructure and soft infrastructure.

  (1) Vulnerable emergency response system in the event of disaster
  (2) Poor living environment in evacuation centers, etc.
  (3) Insufficient system to support rebuilding of livelihoods
  (4) Insufficient system to support recovery of industries

We urgently need to develop a legal system that can cope with disasters that are becoming bigger and causing more serious damages.