Building DRR Resilience at Central and Local Levels, Experiences from Japan and other Asian Countries

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International Trend: Development Obstructed by Disasters ~Micro, Personal, Family Level~

Poor people living in the vulnerable area

live more vulnerable area sometime on the street

easy to damage

easier to be damaged

deflation spiral

far away from developing plan

loose livelihood

Photo by Lagna Lake Development Authority

Photo by TAKEYA

Photo by TAKEYA

Photo by TAKEYA
International Trend: Development Obstructed by Disasters ~Macro, Country Level~

Development

How to fill the gaps?

Normal Development

Recovery Effort

Development Obstructed by Disasters

Time
Japanese position in the world DRR

- GFDRR & ODI reports, 20 years of international financing of disaster risk reduction (DRR)
- Donor financing is heavily concentrated with Japan and the World Bank accounting for more than 50% of the total.
Total $13.5 billion
20 years of international financing of disaster risk reduction (DRR)

World Bank
- International Bank for Reconstruction & Development

40%

Japan

20%

World Bank
$ 3.57 billion = 25.7%

Japan
$ 3.75 billion = 27.6%
≒ 4,000億円

from GFDRR/ODI Report
Figure B1: Financing for DRR from development banks, financing mechanisms and implementing agencies, 1991-2010, $ millions

- Asian Development Bank: 1310.7 (17%)
- World Bank - International Development Association: 1254.2 (16%)
- European Bank for Reconstruction & Development (EBRD): 320.5 (4%)
- United Nations Development Programme: 89.9 (1%)
- Arab Fund for Economic & Social Development: 50.5 (1%)
- World Bank - International Bank for Reconstruction and Development: 3574.8 (47%)
- Andean Development Corporation: 194.5 (3%)
- Inter-American Development Bank: 299.2 (4%)
- Remaining 10 Funders: 167.8 (2%)

From GFDRR/ODI Report
Among bilateral donors

Figure B2: Financing for DRR direct from donors, 1991-2010, $ millions

- Japan: 3749.3 (64%)
- United States: 429.7 (7%)
- European Communities (EC): 479.5 (8%)
- Remaining 20 Donor Nations: 282.8 (5%)
- Sweden: 70.5 (1%)
- Spain: 76.2 (1%)
- Norway: 106.1 (2%)
- Netherlands: 108.5 (2%)
- United Kingdom: 109.4 (2%)
- Germany: 159.9 (3%)
- Australia: 218.3 (4%)

(from GFDRR/ODI Report)
Pre-investment is much cheaper than recovery cost, but......

**Figure 2.3** Direct economic loss in crisis, 1991-2010

Even $1 pre-disaster investment can save $7 response & recovery cost
JICA’s Support meet to the HFA Priority Action

- The projects related to priority action 4 are increasing rapidly compared to others.
- It entails the best mix of structural and non-structural measures.

Source: JICA
Finalized Sendai Framework for DRR

Sendai Framework for Disaster Risk Reduction 2015 - 2030

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Source: UN Sendai Framework for DRR 2015--2030
JICA’s top 3 points for Post HFA

• pre-disaster prevention investment is most important
  - for some extent level must be protected by the structure measures in order to economically develop
  - this concept make DRR graduates from humanitarian issue to developing issue

• in order to make it happen legal and institutional reforming, budgetary reforming, and mainstreaming DRR into government policy, are needed
  in order to realize these issue, empowerment of central government is most important

• Build Back Better after disaster, use disaster as a trigger to build resilient society, prevent from same kind of hazard

These concepts are from Japanese experiences, only the right way to DRR
Priority 1
Understanding disaster risk

Priority 2
Strengthening disaster risk governance to manage disaster risk

Priority 3
Investing in disaster risk reduction for resilience

Priority 4
Enhancing disaster preparedness for effective response, and to «Build Back Better» in recovery, rehabilitation and reconstruction

Source: UN Sendai Framework for DRR 2015--2030
JICA’s proposed Logic & Priority for Action

**Governance/Mainstreaming**

P2. Strengthening governance to manage disaster risk

**Leadership/Governance/Management**

Investment for prevention

P3. Investing in disaster prevention as an asset for sustainable development

Preparedness

P4. Preparing for effective response

Build Back Better

P5. Recovery and Reconstruction for a resilient society

**Disaster Risk Reduction cycle**

**Knowledge/Evidence/Science Support**

Understanding Disaster Risk

P1. Understanding Disaster Risk
c. economic loss

d. damage to critical infrastructures

Sendai Framework for DRR Targets
=Relation between 7 Targets=

a. mortality
b. affected people
c. economic loss

Sendai Framework for DRR Targets
=Relation between 7 Targets=

a. mortality
b. affected people
c. economic loss

g. Access to information
f. International cooperation
e. National & local Strategy by 2020

MDG/SDG

Humanitarian

Issue

Counter Measures
Prevention

Needs challenge
Sendai Framework for DRR:  
Relation between 4 outcome Targets  

Reduce economic losses  
by preventing economic loss, others can be reduced
Most important target by 2020

e. Increase number of countries with national & local strategies by 2020
The First Mega Disaster after Sendai Framework,

How to realize Resilience
According to Sendai Framework for DRR

“Revealed Risk” and “Underlying Risk”

9. Overall, the Hyogo Framework for Action has provided critical guidance in efforts to reduce disaster risk and has contributed to the progress towards the achievement of the Millennium Development Goals. Its implementation has, however, highlighted a number of gaps in addressing the underlying disaster risk.

Source: UN Sendai Framework for DRR 2015--2030
Prepare for the underlying future risk
According to Sendai Framework for DRR

14. Against this background, and in order to reduce disaster risk, there is a need to address existing challenges and prepare for future ones by focusing on: monitoring, capacities are in place for effective response and recovery at all levels. Empowering women and persons with disabilities to publicly lead and promote gender equitable and universally accessible response, recovery, rehabilitation and reconstruction approaches are key. Disasters have demonstrated that the recovery, rehabilitation and reconstruction phase, which needs to be prepared ahead of a disaster, is a critical opportunity to “Build Back Better”, including through integrating disaster risk reduction into development measures, making nations and communities resilient to disasters.

Priority 4. Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction
"Revealed Risk" & "Underlying Risk"

2002 JICA Study

Mid Nepal Earthquake

Risk was revealed partially by 2015/4/25

- Damaged mainly limited to old masonry houses
- Old type houses located mainly in rural area, so rural area heavily damaged
- Also weak heritage buildings were damaged

PDNA: D&L Based

Source: JICA (2002) The Study on Earthquake Disaster Mitigation in the Kathmandu Valley
“Revealed Risk” & “Underlying Risk”

2002 JICA Study

Underlying Risk

Mid Nepal Earthquake

What is the “Underlying Risk”

Risk was Revealed 2015 /4/25

- Damaged limited mainly old masonry houses
- Old type houses located mainly in rural area
- Weak heritage buildings

Remaining Plate energy gives more serious damage than estimated 2002?

urban
rural

Source: JICA (2002) The Study on Earthquake Disaster Mitigation in the Kathmandu Valley
Understand the Risk by Hazard Mapping

Source: JICA (2002) The Study on Earthquake Disaster Mitigation in the Kathmandu Valley
Example of Practical DRR Strategy

Understand the risk

Adapt for the Risk

Response Plan

Transportation

Anti Earthquake Hospital

Prepare, Mitigate the Risk

Urban Planning

Building Code

Education

Goal is Disaster Risk Reduction
Resilience

The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.

Comment: Resilience means the ability to “resile from” or “spring back from” a shock. The resilience of a community in respect to potential hazard events is determined by the degree to which the community has the necessary resources and is capable of organizing itself both prior to and during times of need.
Players & Roles of DRR

Self Support or Self Protection

Public Support

Mutual Support
Preparedness in Japan case

produced by Tokyo Metropolitan Government
Old house has low quality in Japan, too

Idea Products Selling in Japan: Shelter Room
~ in-house shelter ~

Source: Ichijo Co., Ltd. (Ichijo Komuten)
http://www.ichijo.co.jp/news/shelter/
Self Protection for Tsunami
Idea Products Selling in Japan: Floating Shelter

Source: Hikari Rejin Kogyo https://www.shelter-hikari.com/
• if the school is vulnerable, catastrophic collapse will happen then,
  - evacuation plan has no sense
  - hide under the desk is not enough

• if the school is strong and partially collapsed,
  - evacuation plan has a sense
  - hide under the desk is effective
  - cushion helmet is effective
  - but where is a temporary shelter?

• if the school, hospital and government build is strong enough
  - can be the emergency center for operation
  - can be a shelter for refugee
School Safety retro-fit, anti-earthquake strengthening

- for elementary school case, almost to 100% within 15 years effort

Source: Ministry of Education, Japan
What “public” must do, depends on the level of existing conditions & civil minimum
According to the definition of UNISDR, “recovery” after a disaster is “the restoration, and improvement, where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors” (UNISDR, 2009).

The “Build Back Better” concept is generally understood to utilize disasters as an opportunity to create more resilient nations and societies than before them through the implementation of well-balanced disaster risk reduction measures, including physical restoration of infrastructure, revitalization of livelihood and economy/industry, and the restoration of local culture and environment.
Variation of Level: Vulnerable, Resilient, Strong

**Vulnerable zone**: catastrophic damage, but catastrophic collapse not happen, people can survive.

**Resilient zone**: wall collapse, but catastrophic collapse not happen, people can survive.

**Strong zone**: Strong enough to maintain the function inside, Gov. Building, Hospital, Police.

Level of Safety vs. Cost
Variation of Level: Vulnerable, Resilient, Strong

- **Vulnerable zone**: Catastrophic damage, wall collapse, but catastrophic collapse not happen, people can survive.
- **Resilient zone**: Strong enough to maintain the function inside, Gov. Building, Hospital, Police
- **Strong zone**: Cost

<table>
<thead>
<tr>
<th>Level of Safety</th>
<th>Rural houses</th>
<th>Urban Houses</th>
<th>School, Hospital</th>
<th>Community Center Build.</th>
<th>Government Complex</th>
</tr>
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</tr>
</tbody>
</table>
wall collapse, but main structure re-used: people can survive catastrophic damage.

**Required Level by Sendai Framework for Donors**

- **Strong zone**: Strong enough to maintain the function in a Gov. Building, Hospital, Police
- **Resilient zone**: wall collapse, people can survive
- **Vulnerable zone**: Strong zone

**Level of Safety** vs. **Cost**

- **Urban Houses**: School, Hospital, Community Center Build.
- **Rural houses**: Government Complex
① New ‘Outer Ring Road’
② New Highway
③ 2) New SRN (Feeder Roads)
④ New ‘Inner Ring Road’
⑤ Main wide-area disaster-management base
⑥ Shelter
⑦ Plaza & Water Tank

SRN: Strategic Road Network

National Road or Ring Road
Main Road
Branch Road
Bottle Neck Point
To be Constructed
Traffic Terminal (Bus Terminal)
Main wide-area disaster-management base
World Heritage
Civil Minimum as required safety level

- Required civil minimum of safety changes depends on the society matured level

Diagram:
- Self Support
- Mutual Support
- Public Support
- Un-protected Residual Risk
- DRR Prevention Measures

Development phase
Central Government Support
1/1 = 100%

Selected Provincial Government Support
1/30? = 3%

Selected Municipality Government Support
1/744? = 0.2%

Selected Community Based DRM
1/20,000 = 0.005%
How to spread whole country?

Central Government Support
1/1 = 100%

Selected Provincial Government Support
1/30 = 3%

Selected Municipality Government Support
1/500 = 0.2%

Selected Community Based DRM
1/20,000 = 0.005%
How to spread whole country?

- Sendai Framework describes in para 19 (a)

(a) Each State has the primary responsibility to prevent and reduce disaster risk,

Central Government Support 1/1=100%

Selected Provincial Government Support

Selected Municipal Government Support

Communities

1/20,000 = 0.005%

JICA respect “sovereignty”

Support but not act instead of gov.

Done by the gov. effort

How to spread whole country?
Sendai Framework for DRR Targets
=Relation between 7 Targets for 2030=

to achieve targets,
Sendai Initiative of Japan
4 billion US$ support
training of 40,000 DRR officials,
within 4 years, from 2015 to 2018

During the fiscal year 2015
(Apr. 2015-March 2016), JICA achieved
1.9 billion $ financial support &
15,171 officials training for DRR
Initiative for 2020
Local DRR Strategy must be prepared by 2020

- Concentrate Target (e) until 2020
  
  e. Increase number of countries with national & local strategies by 2020

Show the progress
Idea for Future

Public Support is critically important

Local DRR plan including land use plan and investment plan to prevent or mitigate disaster impact for future growth, based on an appropriate hazard mapping

Select biggest impact hazard and area, as a pilot to make practical “Local DRR Strategy” align to Sendai Framework

Take action by the Leadership, together with central & local government

Without these initiative, same disaster will re-produced again
Unavoidable hazard, but exposure can reduce and coping capacity can be strengthened.

Then finally, disaster damage can be reduced.

“Disaster Risk Reduction” is not the cost but the investment for the future growth.
We are responsible for the future

Philippine Yolanda Typhoon victim’s voice
Discipline shown on the board of shelter

Thank you for your attention