Recovery Experiences after Two Major Disasters in Taiwan

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Overview

1. Background
2. Issues after the 921 Earthquake
3. Issues after Typhoon Morakot
4. Conclusion
Background: Discover Taiwan

【Capital】
Taipei City

【Area】
36,000 km²

【Population】
23 million

【Population density】
632 per km² (USA 30 per km²)
(Japan 337 per km²)

【Jurisdictions】
22 counties/cities & 319 townships

【GDP/capita】
$20,101 (USA $51,700; Japan $46,700)
Background: Typical types of housing

- Single family housing
- Street housing
- Walkup Apartment (3-5 stories)
- Condominium “community”
Issues after the 921 Earthquake

The fact of the earthquake

- Happened in Sept. 21, 1999
- ML 7.3
- Impacted central of Taiwan
- 2,494 death, 11,305 injured
- 84,255 buildings collapsed or damaged
Most of the damaged areas are agriculture villages, some are condominium communities in urban areas.

After removing the debris of the collapsed buildings, housing can be rebuilt in the same site.

In the past 50 years, Taiwan did not have large scale disaster recovery experience.

“Community empowerment "has been promoted in the meantime
Issues after the 921 Earthquake

Community based in-site Recovery

The case of Tao-mi Village

- Population: 1,264; 369 households
- Industry: agriculture
- 60% of buildings were collapsed in the earthquake
Issues after the 921 Earthquake

Recovery Strategies

- From traditional agriculture village to **Eco-village**
  - Organic agriculture, Ecology preservation, Leisure experience
- From *learning* to *change*, and to *action*
- Residents, local NGOs, professional groups and government works together
Issues after 921 Earthquake

- Investigate special species in the community
- Establish Proto-plant nursery garden
- Nurture wetland
Issues after the 921 Earthquake

- Environmental reform by local workers
Issues after the 921 Earthquake

- 921 Earthquake Memorial Hall
- Paper dome
Issues after the 921 Earthquake

- Training Eco-village tour guides
- Tour guides are local residents
- Develop B&B with local distinguishing features
The central government (15%), NGOs(65%) and Japan government (20%) built 5,854 manufactured/prefabricated homes in 112 sites.

The size of manufactured homes was from 25 to 44 m² (269-473 ft²).
Issues after the 921 Earthquake

- Central government: **planning** and **construction**
  Local governments: **management**

- The **amounts** of temporary housings is difficult to be assessed.

- The **locations** of temporary housings sites did not fit victims’ demand.
  - Far away from original community, works----

- Temporary housing community **management** and when will the community be **shut down** are critical.
Issues after the 921 Earthquake

Condominium Recovery

- 162 condominium “communities” collapsed (roughly 11,543 households)
- Condominium housing reconstruction speed is slower than the single family about 3 years
Issues after the 921 Earthquake

*The condominium “community”*

One or more buildings in the same site. Many ownerships own the same parcel.

Difficulties in condominium “community” reconstruction
1. Common property ownership
2. Collective decision making
3. Financial problems
Issues after the 921 Earthquake

Damage

- Repair
- Rebuild

- Original project reconstruction (100% of property owners)
- Urban renewal reconstruction (⅔ of floor area + land area)

- Buy any house in the real estate market
- Buy public housing (30% off)

Collapsed

- Original project reconstruction (100% of property owners)
  - Fast! Without building permit.

- Urban renewal reconstruction
  - Easier! Benefits & subsidies.
  - But complicated process.

Rebuild

- Condominium

- Not rebuild (move away)
Issues after the 921 Earthquake

- Only about 60% of the condominium “communities” were rebuilt.
- The residents’ reconstruction agreement threshold is too high.
- The 921 foundation’s subsides help to reach the threshold.
Issues after 2009 Typhoon Morakot

The fact of the typhoon

- Center Position at 08:00
- Center Position at 20:00
The rainfall brought by Typhoon Morakot is record-breaking.

In many places, the rainfall is more than 70% of the annual precipitation.
Wide area of Flooding
Numerous places of Land slope disaster
Massive deep landsliding

More than 400 killed at this area

32 killed at this area
Based on past 921 earthquake experience

- The impacted villages/tribes in the mountain areas are in debris flow/landslide high risk area

- The government tried to recover the impacted areas ASAP.

- NGOs provided budgets to help housing recovery in some extent
Issues after Typhoon Morakot

The “permanent housing first” policy

- Difficulties in the temporary housing management in the 921 earthquake
- Most of the victims were indigenous will have financial difficulty to rebuild their permanent housing
- Funds raised by NGOs were not able to be afforded to help both temporary and permanent housing
The “permanent housing first” policy

- the government acquired land and constructed necessary infrastructures,
- while the NGOs built free permanent housings with private donations
The “permanent housing first” policy transformed to “community relocation” policy

- Most of the impacted villages/tribes were vulnerable to debris flow/landslides.
- They were encouraged to move to safer places assessed by professional experts.
- Considering the limited availability of safer lands and the effective construction process in big sites, the mega-sites for permanent housing reconstruction were welcomed by both governments and NGOs.
<table>
<thead>
<tr>
<th>NGO</th>
<th>Permanent housing site</th>
<th>Impacted communities</th>
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</thead>
<tbody>
<tr>
<td><strong>Tzu-Chi</strong></td>
<td>Units/area: 1,008/59.2ha, Land taking: Taking (Taiwan Sugar Corp.)</td>
<td>relocation: 8 ~ 45 km, 120 ~ 690 m (vertical)</td>
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<tr>
<td></td>
<td>Classroom, plaza, church, park, elementary school, service facilities, organic farm</td>
<td>characteristic: 25 from 6 townships, Han and 3 indigenous (Rukai, Bunun, Pingpu) Tribes</td>
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<tr>
<td></td>
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<td>industry: tourism, agriculture</td>
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</tbody>
</table>
Issues after Typhoon Morakot

Issues on Government+NOGs assistances for free permanent housing

- Skipping “temporary housing” phase seems **speed** the recovery
- Free permanent housing as an incentive for relocation to implement **hazard mitigation**
- Communities may destroy **culture identify of indigenous**.
- The free permanent housing may only be **a building, not a home**.
- Housing reconstruction may need “temporary housing” phase for victims to “image” their homes.
Conclusions

- 1.) Community based recovery approach, 2.) same-site housing reconstruction, and 3.) market-driven housing reconstruction are the majors characteristics after the earthquake recovery.
- Government and NGOs’ assistances for free permanent housing, and relocate to safer places are the key characteristics after Typhoon Morakot recovery.
- Though housing reconstruction is important, the recovery for life also need to be emphasized.
Conclusions

- Not only “physical” recovery, the “software” recovery such as jobs, community networking, culture are also important.

- Relocation, though a good policy for hazards mitigation, need to be seriously considered the issues of the original community networking and culture, especially for the indigenous tribes.

- Not only housing reconstruction, but home recovery.
Thank You!