LFE: RECOVERY APPROACHES IN THE PAST 10 YEARS

HOUSING RECONSTRUCTION

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Context

- Post-earthquake housing reconstruction
- Emerging countries, but universal parallels
- Reconstruction implementation methodologies
- Factors for success, comparative examples
Successful Recovery

- **Immediate:**
  - houses rebuilt are resistant to earthquakes and other disasters and satisfactory to the people

- **Systematic:**
  - change the construction practice permanently so that houses built after the technical and financial assistance cease (after recovery phase) are also earthquake resistant

Successful Recovery

Criteria for Successful Reconstruction Solutions:

**Technical**

- EQ-resistant design
- EQ-resistant construction
- Durable
- Easily expanded and maintained
- Resistant to other disasters
Successful Recovery

Criteria for Successful Reconstruction Solutions:

**Financial**

- Competitive in cost with local, common building methods
- Skills and materials widely known and locally available
Successful Recovery

- Criteria for Successful Reconstruction Solutions:
  - Social
    - Climatically suitable
    - Appropriate architecture, space and features
    - Secure
    - People trust that the structure is EQ-resistant
Methodologies

- Homeowner-Driven
  - Homeowner drives process and makes decisions

- Community-Driven
  - Representative group selects housing solutions

- Donor-Driven/Contractor-Driven
  - Houses designed by donor or consultant and built by contractor, typically at scale

For a complete comparison see Building Back Housing in Post-Disaster Situations – Basic Engineering Principles for Development Professionals: A Primer.
Homeowner-Driven Reconstruction

- Most successful approach – builds alignment and ownership

- New houses
- House repair + retrofit
- House expansion
Factors for Successful Recovery Program

PEOPLE

TECHNOLOGY

MONEY
Wenchuan, China EQ (2008)

- Technology
  - STANDARDS: Stds existed, but they were simplified and made accessible
  - CAPACITY: Capacity existed

- Money
  - CASH SUBSIDY: Sufficient to cover 100% matls & labor
  - COMPLIANCE INCENTIVES: Contractors incentivized by offer of more work

- People
  - HOMEOWNERS: Were motivated
  - GOVERNMENT ENFORCEMENT: Build Change acted as arm of township government

Result: High completion, compliance, and satisfaction rate (in one township)
West Sumatra, Indonesia EQs (2007, 2009)

- **Technology**
  - **STANDARDS**: No clear standard from govt; guidelines developed based on local practice
  - **CAPACITY**: On-the-job training needed

- **Money**
  - **CASH SUBSIDY**: Insufficient, only 25-50% of materials & labor cost for basic house
  - **COMPLIANCE INCENTIVES**: None, cash grant was not linked to compliance

- **People**
  - **HOMEOWNERS**: Were motivated
  - **GOVERNMENT ENFORCEMENT**: No enforcement

Result: Lower compliance and completion rate for confined masonry (timber with skirt wall higher)
Port-au-Prince, Haiti (2010)

NEW CONSTRUCTION AND RETROFIT

Result: High compliance and completion rate of confined masonry structures, where TA provided.

- Technology
  - ✔ STANDARDS: existed, but incomplete
  - ✔ CAPACITY: training needed at all levels

- Money
  - ✔ CASH SUBSIDY: sufficient (if disbursed per family)
  - ✔ COMPLIANCE INCENTIVES: grant per tranches linked to construction compliance

- People
  - ✔ HOMEOWNERS: had competing priorities, but typically engaged
  - ✔ GOVERNMENT ENFORCEMENT: low capacity of enforcement, low capacity to be involved in implementation
Port-au-Prince, Haiti
Gorkha, Nepal (2015)

- **Technology**
  - STANDARDS: exist, require compilation or in review
  - CAPACITY: skilled builders often leave country for work, geographic challenges

- **Money**
  - CASH SUBSIDY: Proposed amount is a fraction of cost for full safe house recon
  - COMPLIANCE INCENTIVES: TBD, system in development

- **People**
  - HOMEOWNERS: motivated, but competing priorities - agriculture
  - GOVERNMENT ENFORCEMENT: TBD, previously low enforcement, specific system for recovery in development

Result: To be determined.
Factors for Successful Recovery Program
Thank you

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- Post-EQ Housing Reconstruction Primer available at http://www.buildchange.org/resources/new-building-guides/

- Thanks to my colleagues, Dr. Elizabeth Hausler Strand and Anna Calogero for contributions in preparing this presentation
Successful Recovery

- **Criteria for Successful Reconstruction Solutions:**

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<td>Cost-effective</td>
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Homeowner-Driven Reconstruction

- Increase Safety and Resilience
  - If coupled with technical assistance, increases the technical capacity of all the actors of the value chain of construction

- Increase Homeowner Satisfaction
  - Produce a satisfied, empowered homeowner

- Increase Sustainability
  - Leverage the financial resources of the homeowner
  - Put resources back into the local economy

- Speed can be unpredictable
- Requires focus on quality control