From local building practices to vulnerability reduction: building resilience through existing resources, knowledge and know-how

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The history of construction shows that builders have always been able to evolve their habitat taking into account locally available resources to meet their needs, while adapting to social constraints, local climatic and natural risks.
Local solutions and strategies

Crisis

Local building culture

Early recovery
Re-use of salvaged materials

Emergency shelter

Reconstruction
Self BBBS, learning by experience

Transitional shelter

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How does external support help on improving local resilience?

- Tents
- Temporary Shelter
- Local Building Culture
- Permanent Houses
- Shelter Kit
From 1970 to 2007
From 1970 to 2007,

2007, SIDR, improvement
From 1970 to 2007

2007, SIDR, improvement

2008 - 2009, Pilot project
SINCE 2009
PROJECT APPROACH

STRENGTHS AND WEAKNESSES OF EXISTING LOCAL BUILDING CULTURES
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STRENGTHS AND WEAKNESSES OF EXISTING LOCAL BUILDING CULTURES

EVOLUTION OF LOCAL CONTEXT

CULTURAL

SOCIAL

TECHNICAL / ECONOMICAL

ENVIRONMENTAL
PROJECT APPROACH

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EVOLUTION OF LOCAL CONTEXT

METHODOLOGIES

DESIGN AND TECHNICAL SOLUTIONS

PROJECT ECONOMICAL IMPACT AT LOCAL LEVEL

CAPACITIES BUILDING

EXISTING

DECISION MAKERS

IMPLEMENTING AGENCIES

TECHNICAL PERSONS

LOCAL POPULATION
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METHODOLOGIES

HOUSING IMPROVEMENT / RISK REDUCTION

- TECHNICAL IMPROVEMENT
- REPAIRED
- SAFER HOUSE

EXISTING

DISASTER PREPAREDNESS

CRISIS

EMERGENCY SHELTER RESPONSE

DECISION MAKERS
- IMPLEMENTING AGENCIES
- TECHNICAL PERSONS
- LOCAL POPULATION

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LOCAL POPULATION

COPYING STRATEGIES BY NON DIRECT BENEFICIARIES

IMPROVED LOCAL RESILIENCE

EARLY RECOVERING INCREASED

IMPROVED LOCAL LIVING CONDITION

IMPROVED LOCAL ECONOMY

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PROJECT SEQUENCE IN EACH CONTEXTS

Information collection from site

Preliminary Design

Validation With community
PROJECT SEQUENCE IN EACH CONTEXTS

Information collection from site

Preliminary Design

Validation with community

Final Design for model Houses

Validation With community

Revised Preliminary Design
PROJECT SEQUENCE IN EACH CONTEXTS

1. Information collection from site
2. Preliminary Design
3. Validation with community
4. Revised Preliminary Design
5. Validation with community
6. Final Design for model Houses
7. Construct Model Houses
8. Feedback from community
PROJECT SEQUENCE IN EACH CONTEXTS

- Information collection from site
  - Preliminary Design
  - Validation with community
    - Revised Preliminary Design

- Validation with community
  - Final Design for model Houses
    - Construct Model Houses
      - Feedback from community

- Design of Prototype house
  - Construction of Prototype House
Project Sequence in Each Contexts

1. Information Collection from Site
   - Preliminary Design
     - Validation with Community
       - Revised Preliminary Design

2. Validation with Community
   - Final Design for Model Houses
     - Construct Model Houses
       - Feedback from Community

3. Design of Prototype House
   - Construction of Prototype House
     - Feedback from Community
       - Finalize Design of Prototype House for Future
THE NEED FOR SCIENTIFIC RECOGNITION AND VALIDATION

FINITE ELEMENT MODELLING

- A 3D Finite Element model has been developed using ETABS
- All loads are applied
- Sections selected using the stress results and allowable strength values obtained from test results

FIELD TEST

- Seismic test (Haïti)

Dr Vieux Champagne. F 2013:

Analyse de la vulnérabilité sismique des structures à ossature en bois avec remplissage.
par Florent Vieux-champagne
Université Joseph Fourier; Laboratoire 3S-R
RESULTS AT LOCAL LEVEL

Solutions to dismantle and move the house in less than 1 hour!!!
RESULTS AT LOCAL LEVEL

In the same village, two communities, two ways of life...
Two shelters approaches
RESULTS AT NATIONAL LEVEL

• Same supports; different results according to the context
• Discussion at the Shelter Cluster Level
• BUET is teaching the topic
KEY INNOVATIVE ASPECTS OF THE PROJECT AND RECOMMENDATIONS

• Learning from the existing local building culture and valuing existing communities’ best practices

• To link tradition and modernity:

• To design post disaster project as a support for poverty alleviation

• To link action, research and education.

• To link emergency, rehabilitation, development, risk reduction and disaster preparedness
Thanks for listening

http://craterre.org