

Theme 3: Strategies for Dissemination of Technologies to Communities

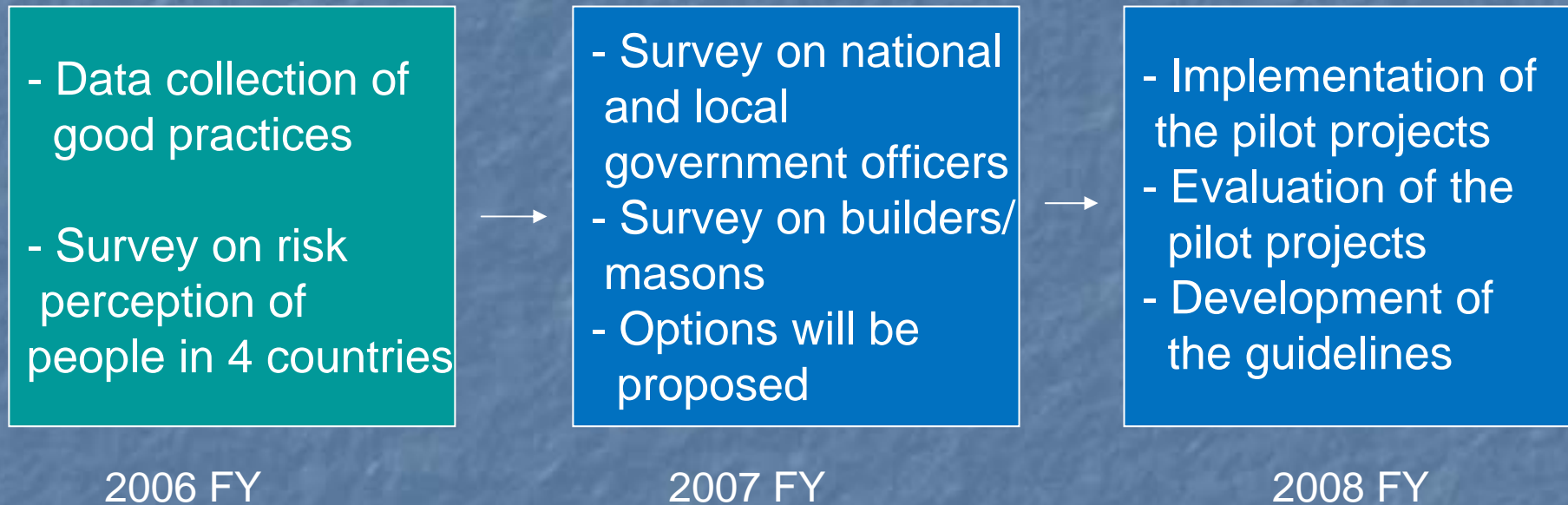
Upcoming Activities

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Strategies for Dissemination of Technologies to Communities

Activities 2006-2008 FY (3 years)



Outcome of the joint research

- Introduction of good practices for dissemination and application of technologies for safer housing
- Understanding of the risk perception of the stakeholders
- Pilot projects in the 4 countries
- Guidelines for dissemination and application of technologies for safer housing

Surveys on the risk perception of government officers and house builders/head masons

- ◎ Surveys on the risk perception of government officers and builders/head masons are conducted in 2007-2008 in the 4 countries
- ◎ The survey on the risk perception of national and local government officers in Nepal was conducted by NSET in July 2007

Survey on the risk perception of government officers

- To better understand the earthquake risk perception of the national/local government officers and house builders/head masons.
- The survey will be conducted, using the questionnaires developed by GRIPS in cooperation with partner institutions. The targeted government officers are those responsible for disaster risk management or safer building construction. The targeted builders/masons are those construct the conventional houses and make decisions on the quality of the houses
- The surveys are expected to be conducted between November 2007 and January 2008.

Survey on the government officers

- National government

The targeted national government officers are those responsible for disaster risk management or safer building construction at national level. The answers to the questionnaire are descriptive.

- Local governments

The targeted local government officers are those responsible for disaster risk management or safer building construction at local level. The questionnaire shall be sent by post (or by email). The surveyors may conduct a telephone interview with local government officers, or directly visit them, if feasible. At least 30 local government officers are expected to respond to the questionnaire.

Questions to the central government officers

- How do you think the earthquake is a major problem of the country in terms of natural hazards?
- Do you think there is any immediate threat of earthquakes in your country looking at the country's history and recent past earthquakes?
- What is the highest level of anticipated loss such as the number of deaths from single future earthquake in the country?
- How do you rank the problem of natural disaster risk in comparison with other agenda like lack of basic service infrastructure- health and education, unemployment, environmental degradation?
- Among the natural disasters, is earthquake risk the most prominent? And, does it deserve special attention?
- What is the most contributing underlying factor to earthquake disasters in your country?
- Considering the available resources/capacity and prevailing risk situation, how do you prioritize the needs of earthquake risk management stages- pre-disaster measures like building code enforcement and planning for effective response and relief?

- What is the root cause of the vulnerability in building construction system?
- Does the government recognize the need to attach “earthquake safety” condition in its shelter (housing) policy?
- How do you think the economic viability of making building safe against earthquakes considering the associated cost of technology and uncertain nature of occurrence?
- What do you think Benefit-Cost (B/C) ratio for building safety investment?
- How do you find the current status of the building control system towards earthquake safety of buildings
- What are the immediate actions to be taken for effectiveness of building code implementation
- In order to improve the building safety against earthquakes, what kinds of policies and activities do you think should be taken by the local governments?
- In order to disseminate practical technologies for safer building, what measures do you think would be most effective?
- In order to convince people to invest for retrofitting of their vulnerable houses, what do you think would be most effective?
- What kinds of contributions do you expect from the international organizations such as the United Nations and NPOs?
- What is the future plan of your agency towards safer buildings against earthquakes?

Questions to the local government officers

- Do you think that your city will be severely hit by a big earthquake in near future?
- Please rank the problems in your city in terms of urgency and importance
- What kinds of impacts do you anticipate in your city due to a big earthquake?
- What is the most contributing underlying earthquake risk factor to your city?
- Has your city undergone earthquake disaster risk assessment?
- Do you have city action plan for earthquake risk management?
- What is the route cause of the vulnerability in building construction system?
- If a big earthquake would occur, what do you think causes the human loss most?
- What is the composition of building construction typology in the city
- Which part of the city do you think most vulnerable to earthquakes from building safety point of view?
- Does your city have building permit system?
- Does the building code implementation is part of the building permit system?
- What is the basis of regulation of the building code that your city is enforcing?
- What is most difficult issue in enforcing building code effectively ?
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- What is the success ratio of building code enforcement coverage per total annual construction of buildings that must comply with the Building Code?
- What measures are planned for future to increase this ratio?
- What is the percentage of total budget of city goes to building control system?
- What is the percentage of total income from building permit process ?
- What are the city governments doing for safer building other than building control?
- What is the priority need of the city to build capacity to address the building safety problem
- Who do you think would be considered most responsible for damage of buildings and loss of lives due to future earthquakes?
- Which stakeholders or members/group can contribute most towards improvement of building safety in your city?
- What do you think the most important intervention that city government can make towards building safety of cities?
- What is the best method of disseminating earthquake safer techniques to the local communities?
- It was identified that the key factors for dissemination of earthquake safer techniques to the communities were as follows. What do you think would be very effective?
- In order to reduce the existing vulnerable building stock in the city, what can be done from city government to encourage house owners for retrofitting?

Survey on the house builders/head masons

- The targeted house builders and/or head masons are those who are actually constructing the conventional or common houses.
- The questionnaire shall be sent by post (or by email). The surveyors may visit the house builders and/or head masons to conduct interviews. At least 50 house builders and/or head masons are expected to respond to the questionnaire.

Questions to Builders/Head Masons (Draft)

- Nature of work
- **Question 1:** What is your major concern while constructing a house?
 - good looking from inside and outside aesthetically
 - fully functional and trouble-proof (e.g. resistant to rainwater leaking)
 - structurally sound to withstand normal natural forces
 - strong enough to withstand earthquake forces that may occur once in a lifetime
- **Question 2:** Do you think that buildings you have been constructing will face severe earthquake in near future?
- (1) No (2) Within a few years (3) Within 10 years (4) Within 50 years (5) After 50 years or never (6) Don't know

- **Question 3:** What do you think the most contributing factor to loss of lives in case of earthquake? (please rank)

- (1) People killed in street while collapsing the houses at sides
- (2) Lack of treatment of injury to people caused by damage of houses
- (3) People killed by collapse of their own houses
- (4) People killed by diseases spread after earthquake because of dead body
- (5) Any others

- **Question 4:** What do you think a big earthquake will affect the buildings you construct?

- No damage
- Furniture fall, damage to light fixtures etc.
- Light damage like cracks in wall, falling of parapet, gable chimney etc.
- Heavy damage to wall, beam and column but not collapse.
- Collapse of house

- **Question 5:** What do you think the most critical component to make building withstand the earthquake? (please rank)
(1) Foundation, (2) Floor slab and roof, (3) Wooden or concrete beam, (4) Fall in masonry house, (5) Column in RC building, (6) Staircase
- **Question 6:** What is the main causative factor to make buildings vulnerable to earthquakes?
 - Bad quality of material (brick, sand, cement, steel rod, etc)
 - Lack of know-how (techniques) to make building earthquake resistant
 - Home owners not being able to afford the extra cost incurred for earthquake resistant system
 - Lack of awareness to homeowners on need of earthquake resistant system.
 - Poor maintenance of the houses
- **Question 7:** Have you ever heard about the big disasters (loss of thousands of people) caused by collapse of houses in earthquake?

- **Question 8:** What kind of measures do you take to make buildings strong against earthquakes?
 - good foundation
 - structural connection between building components(wall-to-wall, wall to frame, wall to floor and roof
 - bracing to frame and walls
 - additional reinforcement (steel rod, wood, bamboo) in all part of the house
 - additional care in connection between beam, column members
 - any other measures
- **Question 9:** Is the quality of construction material you get in market good enough to maintain earthquake resistance system while building a house?
 - No - Yes
 - Not so good, yet fairly good construction can be made from the available material quality
 - Don't know

- **Question 10:** How do you think that the material for house construction used in your city is compatible with need of earthquake resistance?
 - Earthquake safe house can not be made from available sub-standard material like adobe, stone, bamboo etc.
 - Minimum level of earthquake safety can be achieved with those materials.
 - Brick masonry wall houses can not be earthquake resistant. Only reinforced concrete and steel construction are suit for the earthquake resistant system
 - Brick masonry with reinforcement can be good option for earthquake resistant house
 - If we go for reinforced concrete frame, that will be automatically earthquake resistant and we don't need worry much about construction details.
 - We need to do specific earthquake detailing of buildings even if they are constructed with reinforced concrete and steel.
 - No statement is correct

- **Question 11:** What is the most critical aspect of process in making earthquake resistant building?
 - Design of the layout(configuration)
 - Design detailing and their construction (techniques)
 - Quality control and workmanship (curing, proper laying of the brick and mortar, concrete pouring etc)
 - Other aspects (please specify)
- **Question 12:** Do you know about the details of the building code/housing guidelines developed by government?
 - have not heard
 - heard but don't know the details
 - know some details but not being able to apply in construction
 - have been applying its provision in building construction
 - know but think that provisions are not practical
- **Question 13:** Have you (and/or your masons) ever taken any formal training on earthquake resistant construction?
 - Yes - No

- **Question 14:** How would you react if big earthquake in near future destroys the house you have recently built?
 - regret the loss, take responsibility of weakness in my part and leave this profession
 - nothing to do as it would happen beyond my control beforehand
 - ask all the masons to go for earthquake trainings before joining the reconstruction and take strict measure to ensure EQ resistance system afterwards
 - can not imagine now
- **Question 15:** If the building you constructed collapses in big earthquake, who should be blamed the most?
 - Nobody as it is god's curse
 - Governments for not providing training and other necessary system to make buildings safe
 - Engineers who designs (make drawings) the house
 - Owners as they don't go for quake resistant construction even after advised so
 - Myself for not being able to make good construction

- **Question 16:** What do you expect from government in your effort of making building earthquake resistant?
 - Proper licensing system that ensures only trained masons/builder are permitted for building construction
 - Training programs on earthquake resistant construction to masons/ builders
 - System of penalty to mason/builders who do not follow the earthquake resistant system
 - Awareness program to homeowners to motivate them for safe buildings
 - Development and distribution of simple guidebook on earthquake-resistant construction targeting to mason/builders
 - Any others (please specify)

- **Question 17:** What are the major difficulties you are facing in making the construction earthquake resistant?
 - The detailing of construction is very cumbersome
 - The construction is very time consuming and we can not get payment for that extra time
 - There is no material that specifies the rule of construction of earthquake resistant construction
 - Homeowners resist as they don't want to pay extra cost incurred due to additional material, labor and better workmanship
 - Any other (please specify)

- **Question 18:** In addition to making building earthquake-safe that you construct, what kind of role can you play in society for earthquake safety?
 - No, there is nothing to do in my capacity
 - Awareness campaign to home owners on need of earthquake safety
 - Sensitization to fellow masons/ builders to go for earthquake safe construction
 - Social marketing of the skill to build earthquake resistant construction to have better pay off by trained masons
 - Serve as resource person in training of masons for earthquake resistant construction
 - Any other (please specify)

- **Question 19:** What is (would be) the most motivating factor for you to go for earthquake resistant construction?
 - Feel that it is moral responsibility to make safe house
 - Get high payment (wage) being skilful in earthquake resistant construction
 - Get job easily once people know of my skill on safe house construction
 - Have compulsion to be trained and do practice for safe construction by government
 - Any other (please specify)

■ **Question 20:** How do you think that seismic retrofitting of existing houses is viable?

-I don't know about the retrofitting at all.

-It is too complicated and costly and hence not viable.

-We can not improve the strength (earthquake resistance) of houses significantly once it is constructed.

-Though little costlier, effective retrofitting can be done as it significantly enhances the building performance in earthquakes.

-We can do retrofitting with simple techniques and it is not expensive either.

-How do you find this questionnaire interview in regards to earthquake safe house construction? Please write your further comment on this issue, if any.

Question 21: How do you find this questionnaire?

Thank you!

Please send your comments/suggestions
on the draft questionnaire to:

okazakik@grips.ac.jp