Outline of R&D for Simple and Affordable Seismic Isolation

International Workshop on Simple and Affordable Seismic Isolation

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Tatsuo Narafu

General Coordinator of R&D Project

Facilitator of Study Group on Simple and Affordable Seismic Isolation in Consortium for Building Research and Development (CBRD)

Senior Coordinator for International Cooperation,

Building Research Institute Japan (BRI)

Contents of Presentation

- Background of R&D on “Simple and Affordable Seismic Isolation”
- Activities so far

  - Study Group for Simple and Affordable SI supported by Consortium for Building Research and Development (CBRD)

  - Collaborative R&D Project on Safer Housing in Developing Countries supported by MEXT in 2006 - 2008
- Program for Next Step

Background of R&D

- Earthquakes cause serious damages to human societies

Serious Damages to Community Buildings such as Schools, Medical Care Center

- Collapse of buildings/houses causes serious damages to children, teachers, doctors, medical staff

Damaged school in Bantol, Central Java, Indonesia

Serious Damages to Community Buildings such as Schools, Medical Care Center

- Collapse of buildings/houses causes serious damages to children, teachers, doctors, medical staff

Collapsed School in Balakot, Pakistan

Damaged hospital in Mansehra, Pakistan

Study Group on Simple and Affordable Seismic Isolation in CBRD

- Seismic Isolation is one of the effective way to mitigate damages
- Not yet widely applied because of specialized technology and higher cost
- Study Group was organized to make Seismic Isolation more applicable with support of Consortium for Building Research and Development (CBRD) in April 2006

Study Group in CBRD

- Targeted buildings/houses
  - community buildings like schools, medical care centers
  - historical/cultural constructions
  - conventional houses
- Members
  - researchers
  - professional practitioners
  - people in technical cooperation to developing countries
- Meetings were held around every one and half months

Launch of new R&D in 2006
<Collaborative R&D Project for Disaster Mitigation on Network of Research Institutes in Asia>

- **Term of R&D**

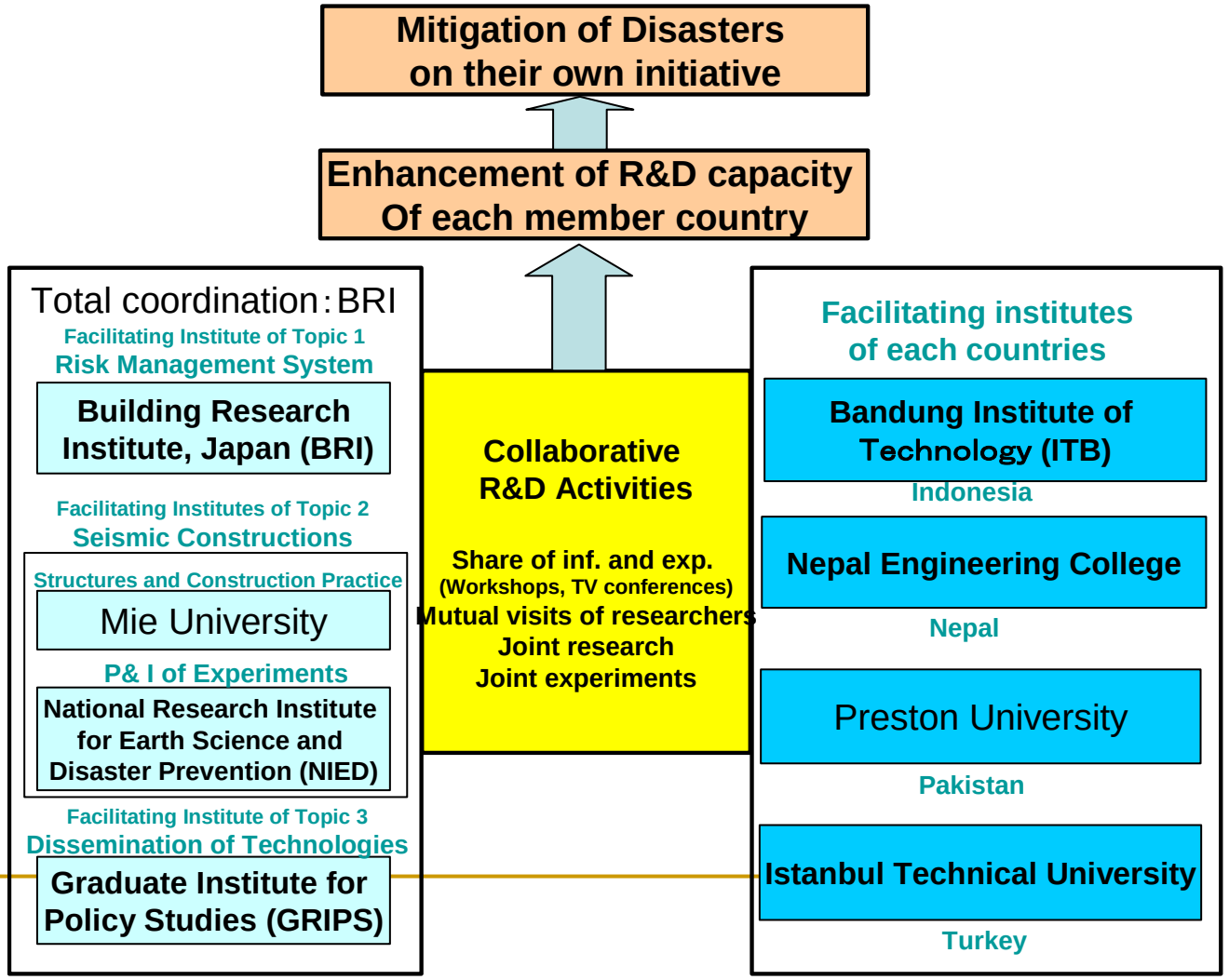
  three years

  (2006-2008)

- **Funds**

  -The Asia S&T Strategic Cooperation Promotion Program prepared by MEXT

  - BRI budget



Research Topics of Collaborative R&D Project for Disaster Mitigation on Network of Research Institutes in Asia

- R&D focuses on realization of mitigation of disasters
- To concentrate conventional houses which is the main cause of human losses
- To prepare complete proposal of strategies without "missing ring"
- Propose three major topics
  - Feasible and Affordable Seismic Constructions
  - Strategies for Dissemination of Technologies to Communities
  - Risk Management System

Feasible and Affordable Seismic Constructions

To develop appropriate seismic structures and construction practices, which will be expected to be accepted by communities, and to verify them by a series of joint experiments

Strategies for Dissemination of Technologies to Communities

To develop strategies and tools for dissemination of technologies to people and communities such as consecutive workshops in communities, demonstrations, capacity development of housing facilitators

Risk Management System

To develop systems for evaluation of seismic risks with assumed earthquakes, conditions of buildings etc., and to manage them through development of new strategies to mitigate disasters

Basic scheme of R&D

- Platform for collaboration among participating institutes

  - mutual visits
  - events for sharing information and discussion
  - communication by IT tools like video conference system, internet

- R&D components for collaborative work

  - proposals by any people/institutes
  - elaboration of work plan
  - implementation with contribution of all the participating countries
  - achievements should be shared through the Platform and other channels

Platform of R&D activities

Tokyo International Workshop 2006

- **Kick off events for launch of the New R&D Project**

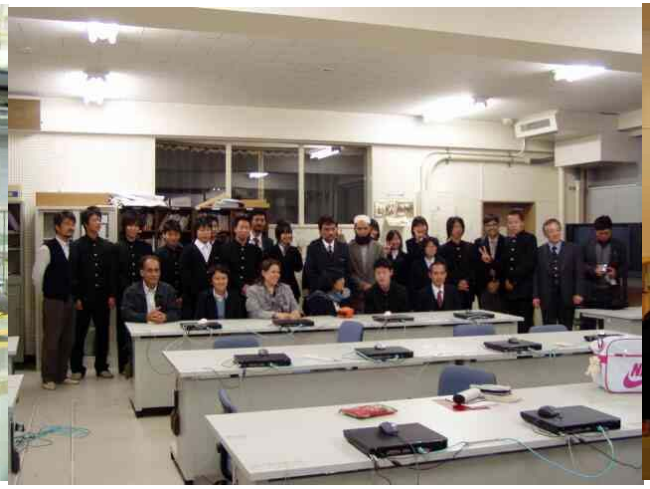
  - **Plenary Meeting** on Nov. 22
  - **Group Discussion** on Nov. 23 on five countries (Indonesia, Nepal, Pakistan, Turkey and Peru)
  - connecting **nine sub venues in five countries**

    Japan – Tsukuba
    Indonesia – Jakarta, Bandung, Banda Aceh
    Nepal – Kathmaudu
    Pakistan – Islamabad
    Turkey – Istanbul, Ankara

Platform of R&D activities

Relevant events (KTT Session 2006) to Workshop

- **Kobe, Tokyo and Tsukuba Session 2006 for Safer Housing (KTT Session 2006)**
  - Thematic workshop on “Aseismic Building Technology Acceptable to Communities”
  - Series of events of special lectures, briefings and discussions
  - Technical visits
  - Thematic discussion on each research topic
  - **Duration of fourteen days (Nov. 15 to Nov. 28)**


Principles of R&D Components under R&D Project

- Any people/institutes in any country is eligible for proposals and participation
- Collaboration on equal partnership with contributions from all the participating institutes

examples of contributions:

Planning/programming of activities

Management of activities

Human resources like surveyors, interviewers, technicians

Inputs like data, experiences, expertise

Financial support

Six components proposed during KTT Session

- **Component 1**

  Development of Feasible and Affordable Seismic Constructions by experiments of structural elements and full scale shaking table experiments

- **Component 2**

  Field survey on people's perception of seismic risk and incentives for safer houses

- **Component 3**

  Participatory Seismic Evaluation and GIS mapping

- **Component 4**

  Bridge between Engineering and Construction Works

- **Component 5**

  Development of Simple and Affordable Seismic Isolation

- **Component 6**

  Data Collection/Compilation of Information, Manuals and so on

- **Component** 7

  Data Collection/Compilation of Information, Manuals and so on

- **New proposals are expected to be made by any institutes**

Activities for Next Step

- **Development of Isolation Devices**

  * Several kind of materials are proposed

  - sliding type
  - roller type
  - sands type
  - rubber products

- **Development of Low Cost Rigid Base** which supports Upper Structures
- **Verification by Experiments**

Activities in FY 2007/08

- Comparison/Evaluation of proposed materials for Seismic Isolation Devices
- Experiments to Verify Performance of Seismic Isolation including Shaking Table Experiments with Actual Level of Load with Collaboration with Researchers in the World

BRI and the partners

expect

active participation and contribution of researchers, engineers and people in practice in the world

for safer built environment

Thank you