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## **5-2. Supporting HFA Implementation in the Asian Region**

### **5-2-1. HFA Progress of Member Countries**

The Asian Conference on Disaster Reduction (ACDR) 2010 was held in Kobe, Japan from 17 to 19 January 2010. Prior to the conference, the member countries were asked to fill in questionnaires to review the progress of HFA. Out of 28 member countries, 16 responded. The followings are the outline of its results.

#### **5-2-1-1. Analysis**

Although there is disparity in the progress of the HFA implementation among member countries, most of them made progress forward in line with the principles of the HFA. Although developed countries are, of course, making the steady progress, among developing countries those who are disaster-prone or who experienced massive disasters recently are also likely to have made progress. It is noteworthy that international organizations are strenuously engaged in assisting these countries in HFA implementation. Therefore, assisting those countries in HFA implementation by donor organizations is one of the important factors to advance HFA implementation.

As year 2010 is the turning of HFA implementation period, its implementation should be strengthened, taking into consideration the results of Mid-Term Review of HFA carried out by UNISDR.

## 5. Promoting Cooperation with Member Countries, International Organizations and NGOs

### 1 Priority for action 1: Ensure that disaster risk reduction is a national and local priority with a strong institutional basis for implementation

#### 1-1. National policy and legal framework for disaster risk reduction exists with decentralised responsibilities and capacities at all levels

|   | Armenia   | Azerbaijan  | Bhutan  | India   | Indonesia   | Japan   | Lao PDR                  | Malaysia  |
|---|---|---|---|---|---|---|--------------------------|---|
| National laws for disaster risk reduction (Year of enforcement)   | Law on Seismic Protection (2002)                            | (2005)  | National Disaster Management Act (to be endorsed in 2010) | Disaster Management Act (2005)                | Law No. 24 Year 2007 on Disaster Management (2007) and others   | Basic Act on Disaster Control Measures (1961, periodically amended) | Decree No. 158/PM (1999) | (Blank)   |
| National policy for disaster risk reduction (Year of enforcement) | National Long-Term Program on Seismic Risk Reduction (1998) | (The Ministry works out the state policy and regulation.) | National Disaster Risk Management Framework (2006)        | National Policy on Disaster Management (2009) | National Action Plan for DRR 2010-2012 (currently being finalized)<br>National Disaster Management Plan 2009-2014 | Basic Disaster Prevention Plan (annually reviewed)                  | (Blank)                  | NSC Directive No. 20: Policy and Mechanism for National Disaster and Relief Management (1997) |

#### 1-2. Dedicated and adequate resources are available to implement disaster risk reduction activities at all administrative levels

|  | Armenia  | Azerbaijan                       | Bhutan   | India  | Indonesia  | Japan                          | Lao PDR   | Malaysia   |
|--|--|----------------------------------|--|--|--|--------------------------------|---|--|
| Funds allocation for disaster risk reduction                               | 15 mln. USD  | (Blank)                          | (Blank)  | Calamity Relief Fund<br>National Calamity Contingency Fund<br>Many development schemes inbuilt | Routine Funding to support ministries/departments' routine and operational activities especially DRR | approximately 2.1 trillion yen | Not adequately allocated                        | Flood Mitigation Project (RM5.81 billion for 2006-2010) and others                             |
| Department for disaster risk reduction at national level (number of staff) | Ministry of Emergency Situations<br>Incorporates Armenian NSSP, Armenian S&R Service, Hydrometeorology and Environment Monitoring Agency (4,500 persons, nationwide) | Ministry of Emergency Situations | Department of Disaster Management (12 persons) | National Disaster Management Authority (35 persons)  | National Agency for Disaster Management (BNPB) (113 persons)   | Cabinet Office                 | National Disaster Management Office (8 persons) | Disaster Management Division, National Security Council (360 persons including district level) |

#### 1-3. Community participation and decentralization are ensured through the delegation of authority and resources to local levels

|   | Armenia   | Azerbaijan   | Bhutan   | India   | Indonesia   | Japan   | Lao PDR  | Malaysia   |
|---|---|--------------|--|---|---|---|--|--|
| System to ensure community participation in disaster risk reduction | Administrative and Regional Departments of Armenian NSSP and Armenian S&R Service | Establishing | CBDRM training and capacity building programs<br>Disaster management committees at the Block and community level | Decentralized governance system for disaster management<br>District Disaster Management Authorities at the district level | Local level capacity is only very limited due to the reasons that much of the existing resources is still pooled at the national government | Basic Framework for Promoting a Nationwide Movement for Disaster Reduction - Actions with Added Value to Security and Safety (2006) | Local disaster management committee (provincial and district DM committees, as well as village disaster protection unit) | District Disaster and Relief Management Committee and State Disaster and Relief Management Committee (NSC) |

#### 1-4. A national multi-sectoral platform for disaster risk reduction is functioning

|   | Armenia | Azerbaijan                             | Bhutan   | India   | Indonesia  | Japan                               | Lao PDR | Malaysia   |
|---|---------|--|--|---|--|-------------------------------------|---------|--|
| Multi-sectoral platform for disaster risk reduction | N.A.    | (Ministry's collective responsibility) | National Disaster Management Authority (to be formed)<br>National Committee for Disaster Management (2006) | National Disaster Management Authority (2005) | Platform Nasional Pengurangan Risiko Bencana (Planas PRB) (2008) | Central Disaster Management Council | N.A.    | National Disaster and Relief Management Committee (NSC) (1997) |

**1 Priority for action 1: Ensure that disaster risk reduction is a national and local priority with a strong institutional basis for implementation**

**1-1. National policy and legal framework for disaster risk reduction exists with decentralised responsibilities and capacities at all levels**

|   | Mongolia   | Myanmar  | Nepal   | Pakistan   | Singapore  | Sri Lanka   | Thailand   |
|---|--|--|---|--|--|---|--|
| National laws for disaster risk reduction (Year of enforcement)   | Law on Disaster Protection (2003)  | N.A.   | Natural Calamity Act (1982)                         | National Disaster Management Ordinance (2006)      | Civil Defence Act (1986), and others   | Disaster Management Act No 13 (2005)  | The Disaster Prevention and Mitigation Act (2007)            |
| National policy for disaster risk reduction (Year of enforcement) | National Program on Natural Disaster Reduction (1999, preparedness & prevention)<br>State Policy on Disaster Protection (to be approved)<br>National Program on Earthquake | Standing Order on Natural Disaster Management (2009) | National Strategy on Disaster Risk Reduction (2009) | National Disaster Risk Management Framework (2007) | Homefront Crisis Management System to execute the Operation Civil Emergency (Ops CE) Plan (1997) | National Policy for Disaster Management In Sri Lanka (draft to be approved) | The Strategic National Action Plan (SNAP) on DRR (2010-2019) |

**1-2. Dedicated and adequate resources are available to implement disaster risk reduction activities at all administrative levels**

|  | Mongolia  | Myanmar  | Nepal  | Pakistan  | Singapore  | Sri Lanka  | Thailand   |
|--|---|--|--|---|--|--|--|
| Funds allocation for disaster risk reduction                               | 1.5 millions US\$   | 120 million (Kyat) per year (for response)           | Allocated Sector wise annually   | USD 3.6 million   | allocated to various ministries  | US\$ 1.2 mns (for mitigation in 2008)                                    | US\$86,298,100 (FY 2010)   |
| Department for disaster risk reduction at national Level (number of staff) | National Emergency Management Agency (NEMA) (3,000 people nationwide) | Relief and Resettlement Department (591, nationwide) | Ministry of Home Affairs (3,759 people, nationwide)<br>Dept. of Water Induced Disaster Prevention (249 people) | National Disaster Management Authority (NDMA) (111 persons) | Homefront Crisis Executive Group (HCEG) under Homefront Crisis Ministerial Committee (HCMC)<br>Singapore Civil Defence Force (SCDF) subordinated HCEG (2,145 persons nationwide) | Disaster Management Centre (National level: 75, Sub-national level: 135) | Department of Disaster Prevention and Mitigation (DDPM), Ministry of Interior (2,057 nationwide) |

**1-3. Community participation and decentralization are ensured through the delegation of authority and resources to local levels**

|   | Mongolia  | Myanmar   | Nepal   | Pakistan   | Singapore                                      | Sri Lanka  | Thailand  |
|---|---|---|---|--|--|--|---|
| System to ensure community participation in disaster risk reduction | NEMA Emergency Management Departments and Divisions in aims (districts) | Disaster Management/ Preparedness Committees in each administrative level | Self Governance Act, Village Development Committee, Metropolitan Committee, District Development Committee (for preparedness) | NCBDRM project under the one UNJoint DRM Programme, and others | Community Safety and Security Programme (CSSP) | Engagement of community organisations in the process of amendments of DM Act | The National Plan on Disaster Prevention and Mitigation, Community-Based Disaster Risk Management (CBDRM), and others |

**1-4. A national multi-sectoral platform for disaster risk reduction is functioning**

|   | Mongolia                          | Myanmar | Nepal                    | Pakistan   | Singapore                               | Sri Lanka  | Thailand   |
|---|-----------------------------------|---------|--------------------------|--|---|--|--|
| Multi-sectoral platform for disaster risk reduction | State Emergency Commission (2005) | N.A.    | National Platform (2009) | National Disaster Management Authority (NDMA) (2006) | Operation Civil Emergency (Ops CE) Plan | National Disaster Management Coordinating Committee (NDMCC) (2007) | National Committee on Disaster Prevention and Mitigation (NCDPM) (2007) and others |

## 5. Promoting Cooperation with Member Countries, International Organizations and NGOs

### 2 Priority for action 2: Identify, assess and monitor disaster risks and enhance early warning

#### 2-1. National and local risk assessments based on hazard data and vulnerability information are available and include risk assessments for key sectors

|   | Armenia  | Azerbaijan        | Bhutan   | India   | Indonesia   | Japan   | Lao PDR                                | Malaysia  |
|---|--|-------------------|--|---|---|---|--|---|
| Development of hazard maps (Type of disasters) (Year of completion) | Seismic Hazard Map for the territory of Armenia Hazard Maps for Major Cities and Settlements (EQ, LS) (since 1998)     | Under development | Hazard Zonation for Punatsangchu Basin (GLOF) (2007)               | Vulnerability Atlas of India (EQ, ST, FL) (1997, revised in 2007) | National level hazard data have been produced by the different sectorial ministries (All types) | Hazard maps (TS, FL, LS, VO, EQ) by local public bodies (available in the website)  | Under development with support of UNDP | Hazard maps of Landslides, Haze, Earthquake, Flood (reviewed on yearly basis) |
| Risk assessment (Type of disasters) (Year of completion)            | Development of appropriate methodology and common approaches for multi hazard risk assessment (All types) (since 1998) |                   | Community based disaster risk assessment in 4 districts (on going) | Assessment on the housing sector (EQ, FL, ST, LS)                 | Local Disaster Management agencies (BPBD) has been preparing hazard maps                        | Assessment of damages and countermeasures in possible large-scale disasters by the Committees for Technical Investigation under the Central Disaster Management Council | Under development with support of UNDP | Risk Assessment of Landslide and Major Earthquakes (reviewed on yearly basis) |

#### 2-2. Systems are in place to monitor, archive and disseminate data on key hazards and vulnerabilities

|   | Armenia   | Azerbaijan   | Bhutan   | India  | Indonesia   | Japan   | Lao PDR  | Malaysia  |
|---|---|--|--|--|---|---|--|---|
| Disaster monitoring system (Types of hazards)                 | National Observation Network incorporating about 150 stations (EQ)                  | Use of information sources such as rainfall map, geological data or disaster history | System to Inform and report from districts to the Department (All types) | (Blank)  | National level disaster monitoring system The archive system and dissemination of hazard data by the individual responsible sectorial agencies/ministries | Covering for all of Japan's national territory  | N.A.   | Early Warning System for Earthquake, Tsunami, Drought, Flood, Landslide, Haze |
| Disaster Information system (archive & dissemination of data) | Processes for data collection, archiving and dissemination are in place (All types) | Archiving the information in a special database                                      | N.A.   | Technical organizations have been identified to monitor, archive and disseminate data on key hazards and other related informations. | DIBI (Indonesian Disaster Data and Information) (ongoing development) (all types)   | Disaster Information Sharing Platform (in the process of development) (various disasters) | Records of disaster impact information since 1996 Disaster database (2000 to 2005) | Information System for Landslide, Haze, Flood                                 |

### 2 Priority for action 2: Identify, assess and monitor disaster risks and enhance early warning

#### 2-1. National and local risk assessments based on hazard data and vulnerability information are available and include risk assessments for key sectors

|   | Monqolia   | Myanmar                                       | Nepal  | Pakistan   | Singapore   | Sri Lanka   | Thailand   |
|---|--|---|--|--|---|---|--|
| Development of hazard maps (Type of disasters) (Year of completion) | Maps of 1:500,000 to 1:100,000 scale (Digitizing related GIS) (WF, EQ, DR, Dzud)                         | Hazard Profile of Myanmar (EQ, FL, DR) (2009) | Risk Assessment and Hazard Mapping (EQ) (on going) | National Composite Risk Assessment Project (in progress) | Risk Assessment and Horizon Scanning Programme (on going)   | Collection of data and preparation digital maps (FL, LS, DR, TC) (on going by 2010) | DDPM Hazard Maps (2006), DMR Hazard Maps (2005), GISTDA Tsunami Hazard Maps (2006), and Community Hazard Maps (on going) |
| Risk assessment (Type of disasters) (Year of completion)            | Government Resolution on Risk and Vulnerability Assessment Procedure (ongoing since 2007) (WF, DR, Dzud) | N.A.  | Multi Hazard Risk Assessment (Hydromet) (on going) | As above   | Multi-Agency Risk Assessment Framework (on going) Tsunami Risk Assessment managed by National Environment Agency (NEA) (2009) | Preparation of Vulnerability maps (on going by 2011)                                | Risk Assessment by Community through CBDRM practice (on going)   |

#### 2-2. Systems are in place to monitor, archive and disseminate data on key hazards and vulnerabilities

|   | Monqolia                   | Myanmar  | Nepal                    | Pakistan                        | Singapore  | Sri Lanka  | Thailand  |
|---|----------------------------|--|--------------------------|---------------------------------|--|--|---|
| Disaster monitoring system (Types of hazards)                 | in the development process | 102 stations nation-wide (EQ, FL, TS, TC, ST)                | Sectoral ministries      | in the process of establishment | Multi-Hazard Warning Centre (all types)  | District Disaster Management Coordinating units are responsible                            | Monitoring systems by various ministries (TC, EQ, LS, FF, TS)     |
| Disaster Information system (archive & dissemination of data) | in the development process | Department of Meteorology and Hydrology (EQ, FL, TS, TC, ST) | Ministry of Home Affairs | planning to establish           | System of data collection and dissemination to relevant stakeholders was established Operations Readiness Information Online (ORION) | Information of past disasters since 1974 is collected and validated (available in website) | Disaster Information and Dissemination System of NDWC, and others |

2-3. Early warning systems are in place for all major hazards, with outreach to communities

|  | Armenia                                       | Azerbaijan  | Bhutan  | India   | Indonesia   | Japan   | Lao PDR   | Malaysia   |
|--|---|---|---|---|---|---|---|--|
| Disaster warning system (information flow) | Earthquake early warning non-automatic system | (There is a major need for better coordination.)      | (Blank)   | Key departments/organizations has been identified to provide early warnings on different hazards. | National level system for several types of hazard<br>Local level system is still only available in advanced areas | Online system linking disaster management organizations of the national and local governments and media organizations | National level system using telephone and FAX                                 | Warning information available for Haze, Drought, Flood |
| Early warning and evacuation system        | under preparation                             | The Ministry transform awareness into prompt response | Manual early warning and evacuation system for GLOF (Automated system is under preparation) | (blank)   | Systematic evacuation system still needs to be strengthened   | All of Japan's national territory is covered by early warning systems (ST, SS, CW, LS, MS, TS, SS, FF, FL)            | Community level monitoring and warning systems are developed on project basis | mentioned in 2-2                                       |

2-4. National and local risk assessments take account of regional / trans-boundary risks, with a view to regional cooperation on risk reduction.

|  | Armenia  | Azerbaijan | Bhutan   | India   | Indonesia   | Japan   | Lao PDR  | Malaysia   |
|--|--|------------|--|---|---|---|--|--|
| Regional (trans-boundary) information sharing system for disaster monitoring and early warning | Various type of Agreements on seismic hazard and risk evaluation and reduction | (N.A.)     | Part of RIMES, ADPC and SAARC Disaster Management Center | SAARC Disaster Management Centre (SDMC) hosted by the government of India | Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS)<br>ASEAN Regional Programme on Disaster Management (ARPD) | Early warning system against tsunamis in the Pacific Ocean. Japan Meteorological Agency acts in coordination with the Pacific Tsunami Warning Center (PTWC) | Mekong River Commission (MRC) Flood Management and Mitigation Programme (FMMP)<br>Flood Vulnerability Assessment and Mapping Project (FVAMP) | ASEAN Agreement on Transboundary Haze Pollution mechanism and ASEAN Specialised Meteorological Centre (ASMC) |

2-3. Early warning systems are in place for all major hazards, with outreach to communities

|  | Mongolia  | Myanmar   | Nepal                           | Pakistan  | Singapore   | Sri Lanka  | Thailand  |
|--|---|---|---------------------------------|---|---|--|---|
| Disaster warning system (information flow) | (MODIS and NOAA satellite data are used)  | Established   | In some places for flash floods | Disaster warning/advisories to the NDMA at the federal level and the provincial governments using multiple media including fax, sms, print & electronic media and website | Crisis Information Management System (CIMS)   | Contact established with global and regional EW provides.              | Warning agencies (NDWC, TMD, DMR, DDPM) activate the warning system, alert the public media and local governments |
| Early warning and evacuation system        | Agreement with national radio, public television and mobile phone operators for dissemination | Township Peace and Development Council is responsible for dissemination to public | managed by DDRC                 | Provincial and District Authorities declare emergency in the threatened area and mobilize civil administration, civil defence police and volunteers                       | Public Warning System (PWS) based on SOPs for early warnings by the Met Services of NEA | Early warning towers<br>Short message information dissemination system | 2005 Master Plan for Tsunami Evacuation System (TS)   |

2-4. National and local risk assessments take account of regional / trans-boundary risks, with a view to regional cooperation on risk reduction.

|  | Mongolia  | Myanmar  | Nepal  | Pakistan                                | Singapore  | Sri Lanka  | Thailand   |
|--|---|--|--|---|--|--|--|
| Regional (trans-boundary) information sharing system for disaster monitoring and early warning | disaster early warning system in cooperaton with JAXA | Department of Meteorology and Hydrology (TC, TS, EQ) | SAARC Disaster Management Center (on discussion) | SAARC Disaster management Center (SDMC) | ASEAN Agreement on Disaster Management and Emergency Response (AADMER) (Dec. 2009) | Contact established with JMA, PTWC, India, Thailand, Indonesia to share information on tsunami | ASEAN Disaster Information Sharing, Monitoring and Early Warning |

## 5. Promoting Cooperation with Member Countries, International Organizations and NGOs

3-1. Relevant information on disasters is available and accessible at all levels, to all stakeholders (through networks, development of information sharing systems etc)

|  | Armenia   | Azerbaijan   | Bhutan   | India   | Indonesia   | Japan  | Lao PDR   | Malaysia  |
|--|---|--|--|---------|---|--|---|---|
| Public awareness on disasters and disaster risks | Weekly Emergency Newspaper (all types)<br>Information on seismic events and current seismic regime in Armenia and worldwide is provided to the leading information agencies for dissemination among population. | on the stage of building disaster networks using improvement of public awareness | Pamphlets, issues in the Newspapers<br>Animation programs on T.V.<br>School Safety Campaign<br>Community awareness programs<br>International Day for DR<br>Emergency Safety and First Aid Handbook (all types) | (blank) | Various government and non-government organizations/institutions have developed disaster information system | White Paper on Disaster Prevention (Annual Governmental Report on Disaster Prevention)<br>Agreements with the Japan Broadcasting Corporation and private broadcasters to cover relevant information on | Not available for comprehensive information management system | Public education and awareness programs at landslide-prone areas (PWD)<br>Zero Burnings Campaign (DOE)<br>Exhibition on space-based related to disaster activities (MRSA) |

3-2. School curricula, education material and relevant trainings include disaster risk reduction and recovery concepts and practices

|   | Armenia                               | Azerbaijan      | Bhutan   | India  | Indonesia  | Japan  | Lao PDR   | Malaysia   |
|---|---------------------------------------|-----------------|--|--|--|--|---|--|
| School curricula include disaster risk reduction concepts           | N.A.                                  | On establishing | General safety tips are included<br>School curricula | Included as a subject in social sciences in the secondary education (since 2004)   | Yes in some schools  | Yes  | Project to integrate disaster risk reduction into the secondary school curriculum is ongoing since 2007 | N.A.   |
| Educational materials for learning/teaching disaster risk reduction | Only available for Informal Education | On establishing | In the process                                       | Supplementary text books in the higher secondary curriculum<br>Formal courses on disaster management in a few universities | Available for both formal and informal education (still limited) | Available for both formal and informal education | (Blank)   | Informal (Safe School Manual by Ministry of Education (MOE), Safety Guideline on Disaster and Crisis Situation by National Security Council) |

3-1. Relevant information on disasters is available and accessible at all levels, to all stakeholders (through networks, development of information sharing systems)

|  | Mongolia  | Myanmar   | Nepal  | Pakistan   | Singapore   | Sri Lanka                     | Thailand   |
|--|---|---|--|--|---|-------------------------------|--|
| Public awareness on disasters and disaster risks | conducted according to Law on Disaster Protection and annual plan | Conducted the following trainings and workshops | Initiated by the government /Non government organization | Local level awareness raising campaigns through audio, visual and printed material in 20 high risks districts (on going), and others | Community Safety and Security Programme (CSSP), Community Emergency Preparedness Programme (CEPP), and others | National Safety Day on 26 Dec | Disaster reduction training, Periodical printed media, DDPM websites, Training for Local Communities |

3-2. School curricula, education material and relevant trainings include disaster risk reduction and recovery concepts and practices

|   | Mongolia                                    | Myanmar              | Nepal     | Pakistan   | Singapore                              | Sri Lanka                           | Thailand                                |
|---|---|----------------------|-----------|--|--|-------------------------------------|---|
| School curricula include disaster risk reduction concepts           | disaster preparedness class in universities | Yes                  | Yes       | In progress  | Yes                                    | Yes                                 | Yes                                     |
| Educational materials for learning/teaching disaster risk reduction | For informal education                      | For formal education | initiated | Informal education materials for 9 earthquake affected districts | for both formal and informal education | DRR included in teacher guide books | For both formal and informal educations |

|   |     |                 |  |  |   |   |         |                                       |
|---|-----|-----------------|--|--|---|---|---------|---------------------------------------|
| Training program for learning disaster risk reduction | Yes | On establishing | School Safety Campaign includes training of Principals and teachers on DRR | Web-based online training programme on comprehensive DRM Framework | Prepared by various stakeholders (still not standardized) | Various programs including e-college, systematic training in institutes | (Blank) | Programs are done by various agencies |
|---|-----|-----------------|--|--|---|---|---------|---------------------------------------|

3-3. Research methods and tools for multi-risk assessments and cost benefit analysis are developed and strengthened

|   | Armenia   | Azerbaijan        | Bhutan | India  | Indonesia  | Japan   | Lao PDR | Malaysia   |
|---|---|-------------------|--------|--|--|---|---------|--|
| Development of research methods and tools for multi-risk assessment | Determination of earthquake hazard and vulnerability assessment of school facilities. Technical guidelines for improving performance of school facilities and ensuring the safety of physical environment | Under development | N.A.   | No standardized research methodology or tool, however several initiatives have been on going | Guidelines for disaster multi-risk assessment is under preparation. Various disaster research centres at universities have been recently established | addressed based on the Basic Plan for Research and Development in Disaster Reduction (for example 10-year policy for earthquake research) | (Blank) | Studies on Climate Change, Earthquake and Tsunami High Land Sustainable Development Studies and others |

3-4. Country-wide public awareness strategy exists to stimulate a culture of disaster resilience, with outreach to urban and rural communities

|  | Armenia  | Azerbaijan        | Bhutan    | India  | Indonesia  | Japan   | Lao PDR | Malaysia  |
|--|--|-------------------|-----------|--|--|---|---------|---|
| Country-wide public awareness strategy | Project for mainstreaming disaster risk reduction into land-use policy at the community level is on going since 2008 | Under development | (No.Info) | A steering committee for mass media campaign has been constituted. Funds allocated through NDMA for conducting specific awareness programmes. Disaster Risk Management Programme by GOI and UNDP | National public awareness strategy (currently being drafted) | Disaster Reduction Day (1 September) and Week Activities based on Basic Framework for Promoting a Nationwide Movement for Disaster Reduction - Actions with Added Value to Security and Safety. | (Blank) | Multi-Hazard Community Awareness Campaign by NSC and MMD (since 2005) |

|   |  |     |     |     |     |   |     |
|---|--|-----|-----|-----|-----|---|-----|
| Training program for learning disaster risk reduction | Disaster preparedness trainings for civilians, students and staffs | Yes | Yes | Yes | Yes | Special projects to minimize risk in schools, and others. Essay and art competition | Yes |
|---|--|-----|-----|-----|-----|---|-----|

3-3. Research methods and tools for multi-risk assessments and cost benefit analysis are developed and strengthened

|   | Mongolia  | Myanmar | Nepal     | Pakistan | Singapore  | Sri Lanka                        | Thailand   |
|---|---|---------|-----------|----------|--|----------------------------------|--|
| Development of research methods and tools for multi-risk assessment | a map of multi-risk assessment based on high and lower resolution. Satellite data is developing | N.A.    | initiated | N.A.     | Risk Assessment and Horizon Scanning Programme. Multi-Agency Risk Assessment Framework | Initial discussion was initiated | Research and International Cooperation Bureau of DDPM is responsible |

3-4. Country-wide public awareness strategy exists to stimulate a culture of disaster resilience, with outreach to urban and rural communities

|  | Mongolia            | Myanmar                                  | Nepal                                    | Pakistan   | Singapore                               | Sri Lanka                      | Thailand  |
|--|---------------------|--|--|--|---|--------------------------------|---|
| Country-wide public awareness strategy | to be approved soon | Annual event on Fire Brigade Day (5 May) | National Strategy for Disaster Risk Mgt. | Observance of National Disasters Awareness Day on 8th October (since 2007) | Community Safety and Security Programme | National Safety day on 26 Dec. | National Disaster Prevention Day on 26 Dec., and others |

## 5. Promoting Cooperation with Member Countries, International Organizations and NGOs

### 4 Priority for action 4: Reduce the underlying risk factors

4-1. Disaster risk reduction is an integral objective of environment related policies and plans, including for land use natural resource management and adaptation to climate change

|   | Armenia | Azerbaijan        | Bhutan                    | India   | Indonesia   | Japan   | Lao PDR  | Malaysia |
|---|---------|-------------------|---------------------------|---|---|---|--|----------|
| Environmental related policies include disaster risk reduction concepts | Yes     | Under development | Climate change adaptation | National Action Plan on Climate Change (NAPCC)  | Yes (National Action Plan for Climate Change Adaptation is on drafting) | Forest Improvement and Conservation Works Master Plan | under coordination by National Steering Committee on Climate Change (recently established) | Yes      |
| National land use planning include disaster risk reduction concepts     | Yes     | Under development | Need to be strengthened   | Land use plans based on the regulations provided by the State Town and Country Planning Act | Yes (based on Law No. 26/2008 on Spatial Planning, and others)          | National Spatial Strategies                           | (Blank)  | Yes      |

4-2. Social development policies and plans are being implemented to reduce the vulnerability of populations most at risk

|  | Armenia | Azerbaijan        | Bhutan | India  | Indonesia                     | Japan  | Lao PDR   | Malaysia |
|--|---------|-------------------|--------|--|-------------------------------|--|---|----------|
| Social development policies include disaster risk reduction concepts | Yes     | Under development | N.A.   | National Rural Employment Guarantee Scheme (NREGS), and others | Yes (not yet comprehensively) | broaden the discretion of local governments in dealing with the expenditures for DRR | identified as key component under United Nations Development Assistance Framework (2007-2011) | Yes      |

4-3. Economic and productive sectorial policies and plans have been implemented to reduce the vulnerability of economic activities

|   | Armenia | Azerbaijan        | Bhutan | India   | Indonesia                    | Japan  | Lao PDR | Malaysia |
|---|---------|-------------------|--------|---|------------------------------|--|---------|----------|
| Economic and productive sectorial policies include disaster risk reduction concepts | Yes     | Under development | N.A.   | The irrigation component of the Bharat Nirman Programme, and others | Yes (not yet systematically) | Promotion of development of BCP (Business Continuity Plan) of Corporations | (Blank) | Yes      |

### 4 Priority for action 4: Reduce the underlying risk factors

4-1. Disaster risk reduction is an integral objective of environment related policies and plans, including for land use natural resource management and adaptation

|   | Mongolia | Myanmar       | Nepal | Pakistan | Singapore | Sri Lanka                                    | Thailand |
|---|----------|---------------|-------|----------|-----------|--|----------|
| Environmental related policies include disaster risk reduction concepts | Yes      | Under process | Yes   | Yes      | Yes       | Yes  | Yes      |
| National land use planning include disaster risk reduction concepts     | Yes      | Under process | Yes   | N.A.     | Yes       | Yes<br>Preparation of guidelines is on going | Yes      |

4-2. Social development policies and plans are being implemented to reduce the vulnerability of populations most at risk

|  | Mongolia | Myanmar | Nepal   | Pakistan | Singapore | Sri Lanka | Thailand |
|--|----------|---------|---------|----------|-----------|-----------|----------|
| Social development policies include disaster risk reduction concepts | Yes      | Yes     | Not Yet | Yes      | Yes       | Yes       | Yes      |

4-3. Economic and productive sectorial policies and plans have been implemented to reduce the vulnerability of economic activities

|   | Mongolia | Myanmar | Nepal | Pakistan | Singapore | Sri Lanka   | Thailand |
|---|----------|---------|-------|----------|-----------|---|----------|
| Economic and productive sectorial policies include disaster risk reduction concepts | Yes      | Yes     | Yes   | No       | Yes       | Yes<br>Strategic Environmental Assessment incorporating DRR | Yes      |



4-4. Planning and management of human settlements incorporate disaster risk reduction elements, including enforcement of building codes

|  | Armenia | Azerbaijan        | Bhutan  | India   | Indonesia                     | Japan   | Lao PDR  | Malaysia |
|--|---------|-------------------|---|---|-------------------------------|---|--|----------|
| Planning and management of human settlements include disaster risk reduction | Yes     | Under development | Standard building codes and standards are existing but need to further strengthen the enforcement | National Standards/Codes for construction practices, and others | Yes (not yet comprehensively) | City Planning Act, Building Standard Act, the Act on Promotion of Seismic Retrofitting of Buildings | a research on the impact of disasters on the education sector is ongoing | Yes      |

4-5. Disaster risk reduction measures are integrated into post disaster recovery and rehabilitation processes

|   | Armenia | Azerbaijan        | Bhutan  | India | Indonesia                                       | Japan  | Lao PDR              | Malaysia |
|---|---------|-------------------|---------|-------|---|--|----------------------|----------|
| Disaster risk reduction measures are integrated into post disaster recovery | Yes     | Under development | (Blank) | Yes   | Yes (still limited in resources and capacities) | recovery and rehabilitation activities stipulated in the Basic Act | (still ad-hoc basis) | Yes      |

4-6. Procedures are in place to assess the disaster risk impacts of major development projects, especially infrastructure

|  | Armenia | Azerbaijan | Bhutan | India   | Indonesia                     | Japan   | Lao PDR | Malaysia |
|--|---------|------------|--------|---|-------------------------------|---|---------|----------|
| Procedures to assess the disaster risk impacts of major development projects | Yes     |            | Yes    | Hazard specific guidelines for ensuring structural safety | Yes (not yet comprehensively) | Priority Plan for Social Infrastructure Development | (Blank) | Yes      |

4-4. Planning and management of human settlements incorporate disaster risk reduction elements, including enforcement of building codes

|  | Mongolia | Myanmar | Nepal | Pakistan | Singapore | Sri Lanka   | Thailand |
|--|----------|---------|-------|----------|-----------|---|----------|
| Planning and management of human settlements include disaster risk reduction | Yes      | Yes     | Yes   | Yes      | Yes       | Yes<br>Guidelines for the construction of buildings in Disaster prone areas | Yes      |

4-5. Disaster risk reduction measures are integrated into post disaster recovery and rehabilitation processes

|   | Mongolia | Myanmar | Nepal | Pakistan | Singapore | Sri Lanka   | Thailand |
|---|----------|---------|-------|----------|-----------|---|----------|
| Disaster risk reduction measures are integrated into post disaster recovery | Yes      | Yes     | Yes   | Yes      | Yes       | Yes<br>Build back better concept accepted by the govt for all rehabilitation work | Yes      |

4-6. Procedures are in place to assess the disaster risk impacts of major development projects, especially infrastructure

|  | Mongolia | Myanmar | Nepal        | Pakistan | Singapore | Sri Lanka | Thailand   |
|--|----------|---------|--------------|----------|-----------|-----------|--|
| Procedures to assess the disaster risk impacts of major development projects | Yes      | Yes     | Not adequate | No       | Yes       | Yes       | Yes<br>approval of the projects based on Environmental Impact Assessment (EIA) |

## 5. Promoting Cooperation with Member Countries, International Organizations and NGOs

### 5 Priority for action 5: Strengthen disaster preparedness for effective response at all levels

5-1. Strong policy, technical and institutional capacities and mechanisms for disaster risk management, with a disaster risk reduction perspective are in place

|  | Armenia   | Azerbaijan    | Bhutan  | India   | Indonesia  | Japan  | Lao PDR  | Malaysia   |
|--|---|---------------|---|---|--|--|--|--|
| Policy and mechanisms for disaster risk management (ex. task force for disaster risk management) | Effective preparedness system with pre-disaster activities has been creating. | nondisclosure | National policy and draft plan provide a strong basis for risk reduction in all spheres and at all levels | Policies, plans and guidelines formulated by National Disaster Management Authority | National Disaster Assessment and Response Team (SRC PB) (recently established) | Mechanisms for effective disaster responses stipulated in the Basic act and other relevant laws and acts | Still weak (only functioned in a) information coordination and b) training/mentoring of sub-national focal points) | NSC Directive No. 20: Policy and Mechanism for National Disaster and Relief Management (NSC) |

5-2. Disaster preparedness plans and contingency plans are in place at all administrative levels, and regular training drills and rehearsals are held to test and develop disaster response programmes

|   | Armenia                                    | Azerbaijan    | Bhutan                           | India   | Indonesia              | Japan  | Lao PDR | Malaysia  |
|---|--|---------------|----------------------------------|---|------------------------|--|---------|---|
| Disaster preparedness plans               | Earthquake preparedness plan for community | nondisclosure | Under preparation in 4 districts | Disaster Preparedness and Response Plans at state and district level<br>National Plan on Disaster Management is being developed | (Blank)                | Basic Disaster Prevention Plan                                     | N.A.    | NSC Directive No. 20: Policy and Mechanism for National Disaster and Relief Management (NSC) 7 Standard Operating Procedure for various disasters |
| Disaster contingency plans                | Earthquake contingency plan for community  | nondisclosure | Under development                | Multi hazard Preparedness and Response Plans are now being prepared at the state and district level                             | (Blank)                | Disaster Management Operation Plan, Local Disaster Prevention Plan | N.A.    | As above  |
| National level disaster management drills | Periodically conducted                     | nondisclosure | N.A.                             | Periodically conducted  | (Blank)                | Comprehensive Disaster Reduction Drills Plan                       | (Blank) | Periodically conducted  |
| Local level disaster management drills    | Periodically conducted                     | nondisclosure | Periodically conducted           | (Blank)   | Periodically conducted | Regularly conducted  | (Blank) | Periodically conducted  |

### 5 Priority for action 5: Strengthen disaster preparedness for effective response at all levels

5-1. Strong policy, technical and institutional capacities and mechanisms for disaster risk management, with a disaster risk reduction perspective are in place

|  | Mongolia   | Myanmar  | Nepal  | Pakistan                                    | Singapore                                 | Sri Lanka               | Thailand  |
|--|--|--|--|---|---|-------------------------|---|
| Policy and mechanisms for disaster risk management (ex. task force for disaster risk management) | "State Pursuing Policy on Disaster Protection" and "National Program for Strengthening Disaster Protection Capacity" (to be approved soon) | National Disaster Preparedness Central Committee(NDPC C)<br>National Disaster Preparedness Executive Working Committee | Act and Policies are existed. Cadres of skilled manpower are mobilized in emergency. | National Disaster Risk Management Framework | Homefront Crisis Management System (HCMS) | Disaster Management Act | National Security Policy, National Preparedness Policy, National Disaster Prevention and Mitigation Plan (in civilian side), Strategic National Action Plan for Disaster Risk Reduction 2009 – 2018, and others |

5-2. Disaster preparedness plans and contingency plans are in place at all administrative levels, and regular training drills and rehearsals are held to test and develop disaster response programmes

|   | Mongolia   | Myanmar   | Nepal  | Pakistan   | Singapore   | Sri Lanka   | Thailand  |
|---|--|---|--|--|---|---|---|
| Disaster preparedness plans               | National Plan for Disaster Protection<br>Disaster Preparedness Plan (district level) | Disaster Preparedness, Mitigation and Rehabilitation Plan of National Disaster Preparedness Central Committee (National & Regional) | National Action Plan<br>District Action Plan (only in some districts)            | 1) National Response Plan<br>2) Provincial DM plans<br>3) District DM Plans (30) | Operations Civil Emergency Plan                         | Disaster Preparedness Plan (divisic village) (on go | National Preparedness Plan, National Master Plan on Disaster Prevention and Mitigation, and others        |
| Disaster contingency plans                | Supplemental plans by each type of disasters   | Disaster Response Action Plans (draft)  | National Contingency Plan<br>District Contingency Plan (only in a few districts) | National Monsoon/flood Contingency Plan and others                               | Plans for major fires, Tsunami, and technical disasters | National Disaster Operation Plan (to be developed)  | Master Contingency Plan at nation level, Master Contingency Plan at provincial and local government level |
| National level disaster management drills | Periodically conducted   | Periodically conducted  | Periodically conducted   | not conducted  | Regularly conducted                                     | Regularly conducted                                 | Periodically conducted  |
| Local level disaster management drills    | Periodically conducted   | Periodically conducted  | not conducted  | Periodically conducted   | Regularly conducted                                     | Regularly conducted                                 | Regularly conducted   |

5-3. Financial reserves and contingency mechanisms are in place to support effective response and recovery when required

|                                 | Armenia | Azerbaijan    | Bhutan   | India                                 | Indonesia   | Japan   | Lao PDR | Malaysia  |
|---------------------------------|---------|---------------|--|---------------------------------------|---|---|---------|---|
| Financial reserve for disasters | N.A.    | nondisclosure | (Blank)  | US\$ 4.74 bn for the period 2005-2010 | around 40-50 billion rupiahs (can be increased when needed) |   | (Blank) | Rehabilitation/ Emergency expenses by Government agencies will be reimbursed by Ministry of Finance |
| Compensation for disasters      | Yes     | nondisclosure | (Blank)  | No                                    | (Blank)   | Act on Support for Reconstructing Livelihood of Disaster Victim, and others   | (Blank) | National Disaster Relief Fund   |
| Insurance for disasters         | N.A.    | nondisclosure | Rural House Insurance Scheme – Royal Insurance Corporation of Bhutan | Yes                                   | (Blank)   | Insurance for Fire, Earthquake, and others                                    | (Blank) | Fire and Flood Insurance  |
| Tax reduction or exemption      | N.A.    | nondisclosure | (Blank)  | Yes                                   | (Blank)   | reduction, exemption and postponed collection of income and residential taxes | (Blank) | Private Sectors will be given tax exemption for donating into the National Disaster Relief Fund     |

5-4. Procedures are in place to exchange relevant information during hazard events and disasters, and to undertake post-event reviews

|  | Armenia | Azerbaijan    | Bhutan      | India  | Indonesia  | Japan   | Lao PDR | Malaysia   |
|--|---------|---------------|-------------|--|--|---|---------|--|
| Procedures for exchanging relevant information during disasters (Knowledge compilation of lessons learned from previous disasters) | Yes     | nondisclosure | (No. Info.) | Mechanism to track informations for reporting of various hazards and also to disseminate disaster related informations | Coordination meetings during emergency response situations Situation analysis and dissemination of lessons learned should be more strengthened | databases on the lessons learned through the experiences of the responses of the large-scale disasters collecting the lessons learned through the past disasters since 17th century | (Blank) | Disaster and Relief Committee at all level (Federal, State and District) |

5-3. Financial reserves and contingency mechanisms are in place to support effective response and recovery when required

|                                 | Mongolia                           | Myanmar                         | Nepal               | Pakistan   | Singapore  | Sri Lanka   | Thailand                               |
|---------------------------------|------------------------------------|---------------------------------|---------------------|--|--|---|--|
| Financial reserve for disasters | approximately 7.5 million US\$     | Annual budget by the Government | US\$ 1 Million      | USD 3.6 million Additional USD 3.5 million for National Disaster Management Fund | draw on national reserve when appropriate in accordance with national legislations | US\$ 0.1 million for disaster response                  | Disaster Emergency Relief Fund         |
| Compensation for disasters      | through State Emergency Commission | Yes                             | Relief distribution | SOPs for disbursement of compensation  | consider compensation in accordance with national legislations                     | Yes (US\$30 to US\$1000 depending on damages)           | Disaster Emergency Relief Fund         |
| Insurance for disasters         | Livestock index-linked insurance   | Yes                             | Not yet             | N.A.   | N.A.   | Crop Insurance scheme                                   | Private insurance related to disasters |
| Tax reduction or exemption      | Customs and value-added tax        | Donation of goods and materials | Yes                 | reduce/exempt taxes in a disaster hit area through special notification          | consider in accordance with national legislations                                  | Tax exemptions for investment made on disaster response | Yes                                    |

5-4. Procedures are in place to exchange relevant information during hazard events and disasters, and to undertake post-event reviews

|  | Mongolia | Myanmar | Nepal | Pakistan   | Singapore | Sri Lanka | Thailand  |
|--|----------|---------|-------|--|-----------|-----------|---|
| Procedures for exchanging relevant information during disasters (Knowledge compilation of lessons learned from previous disasters) | Yes      | Yes     | Yes   | Compiling lessons learnt from Earthquake 2005 (available on website) | Yes       | Yes       | Yes by printed media, training program, museums, and educational institutes |

## **5-2-2. Dissemination of a Model Program for Earthquake Risk Reduction and Recovery Preparedness**

### **5-2-2-1. Background**

Asia is the most disaster prone region in the world. Many countries in the region are affected by natural disasters of varying severity, including earthquakes, floods, landslides, mudslides, tsunamis, and droughts. Three of the recent major earthquakes in the ADRC, namely Muzafabad, Pakistan in 2005, Sichuan, China in 2008, and Sumatra, Indonesia in 2009 occurred in ADRC member countries.

The devastating effects of these disasters have hindered the overall development efforts of countries in the region. Governments and populations need to be aware of the risks facing them, and to take concrete actions to prepare and mitigate the natural disasters that affect their areas. Thus, governments, bilateral, and multilateral donor communities, and other stakeholders need to pay greater attention to efforts aimed at identifying and reducing disaster risks within local communities. It is important to disseminate disaster reduction information that can be easily adapted to local conditions in Asia. As a part of its efforts to promote seismic resistance improvements that will help reduce earthquake damage, ADRC is working to disseminate methods of promoting locally applicable seismic reinforcement techniques.

### **5-2-2-2. Objectives**

The recent earthquakes in Pakistan, China, and Indonesia were wake-up calls for disaster stakeholders in the region. Those disasters highlighted the need for well coordinated earthquake risk reduction initiatives. Most of the fatalities in past earthquakes were due to the collapse of buildings, constructed using brick masonry considered as “Non-Engineered Construction”. In order to identify possible structural mitigation measures, a “Pull Down Test” was conducted. The main objective of this model program was to investigate the potential of seismic performance of existing buildings in both retrofitted and non retrofitted environments. The test provided further opportunity to review and analyze the retrofitting method for non-engineered masonry building. It enhanced the knowledge and technical capacity on retrofitting and are being disseminated and applied at the national level project implementation.

### **5-2-2-3. Project Outline**

The Hyogo Framework for Action (HFA) promotes seismic strengthening as specific disaster risk reduction measure as well as address existing vulnerabilities. Weak buildings are vulnerable to earthquakes, wherein huge amount of damage could be attributed to its collapse. This observation was clearly manifested in the earthquakes that struck Sichuan and Central Java. Retrofitting an existing vulnerable building can be an effective countermeasure for

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earthquake. The targets of this model program are conventional masonry buildings that were constructed without any consideration to earthquake resistance. This program investigates the methods of seismically reinforcing masonry walls, so as to prevent the fragile collapse of those structures. ADRC provided technical assistance by sending Japanese experts in various events, such as the workshops of local engineers in Nepal.

The first “Pull Down Test” was able to identify the potential seismic performance of existing buildings in retrofitted and non-retrofitted environments. The second “Pull Down Test” was able to verify the effectiveness of retrofitting by Jacketing method (steel wire mesh sheets plus mortar coating on both side of the wall). The outcomes of “Pull Down Tests” were properly documented to serve as guidance for practitioners. Knowledge products include “Retrofitting Guidelines Using Wire Mesh Sheet”, posters on “Pull Down Test”, and videos of “Pull Down Tests”. These knowledge products are being disseminated by ADRC for national and local level project implementation as well as help engineers and masons to get familiarized with basic retrofitting skills, enhance knowledge, awareness, and technical capacities.

#### **5-2-2-4. Activities in fiscal year 2009**

The activities in fiscal year 2009 are followings:

- (1) Introduction of the Japanese knowledge on disaster reduction through exchange of information at workshops and seminars
- (2) Conducted “Pull Down Test” in Nepal, which contributed to raising awareness level of community on the vulnerability of the existing non-engineered buildings
- (3) Verified the effectiveness of “retrofitting methods” through the conduct of second “Pull Down Test”
- (4) Reviewed the “Earthquake Risk Evaluation Standards” and “Retrofitting Standards” of Bhutan Government
- (5) Organized workshops in Bhutan to disseminate the result of the review of standards to engineers and other practitioners
- (6) Developed and disseminated the guidelines, “Retrofitting Method: Wire Mesh Jacketing” (see retrofitting procedure as described in next page) to various government authorities.



Fig. 5-2-4-1 Mini Workshop for Pull down Test in Nepal



Fig. 5-2-4-2 Pull down test was completed successfully



Fig. 5-2-4-3 Workshop in Bhutan

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**“Retrofitting Method: Wire Mesh Jacketing”**

**Step 1: Preparation work. Remove existing wall finishing materials.**

- ✓ Remove existing finishing materials (such as cement mortar, mud mortar, or tile) to expose the structure
- ✓ Clean the wall or concrete surface, removing loose mortar with a brush and water

**STEP 2: Check the condition of the existing structure.**

- ✓ Carefully check whether there are any cracks or other signs of damage to the existing structure (mortar wall or RC frame)
- ✓ Minor cracks: Inject mortar grout or an epoxy resin into cracks. Epoxy resin can be injected into even small cracks due to its strong adhesiveness and low viscosity. Alternatively, a rich mortar blend (1:3 cement-to-sand ratio, by volume) can be injected into cracks or the joints between bricks
- ✓ Large cracks (1 cm or larger): Discuss with an engineer whether the cracks are repairable or whether reconstruction is required

**STEP 3: Apply a galvanized iron (GI) wire mesh sheet**

- ✓ Obtain a wire mesh sheet
  - The size of the wire mesh depends on the masonry material and wall thickness.
  - For a 9-inch (21-23 cm) brick wall, the use of 16-gauge (1.6mm) x 19mm is recommended. Because thicker walls will be heavier in the event of a collapse, a strong wire mesh must be used. The amount of wire mesh needed will be 1.5 times the area of the wall being reinforced
- ✓ Drill holes in the wall for inserting the binding wire that will be used to affix the wire mesh at 1 ft (30 cm) intervals vertically and horizontally along the wall
- ✓ Affix the wire mesh
  - If a hole can be drilled through the wall: Install the wire mesh on both sides of the wall, securing both sides in place with the binding wire
  - If an anchor plug can be used, drill a hole in the brick about 3 cm deep, and insert a curl plug. Then affix the wire mesh to the surface using a screw bolt with a large washer
- ✓ Wire mesh fasteners should be placed at intervals of no more than 1 ft. (30 cm) intervals, vertically and horizontally
- ✓ The wire mesh sheets should overlap by the same length (1 ft. or 30 cm) both vertically and horizontally

**Step 4: Applying mortar to the wire sheet**

- ✓ Apply a rich mortar, 1:3 cement-to-sand ratio (by volume).
- ✓ Two or more coats of plaster should be applied. The first coat should cover the wire mesh. The second and third coats should be applied in the same way as is done during general plastering work. A 2-inch (5 cm) plaster thickness is recommended.

### **5-2-3. Multi-disciplinary Hazard Reduction from Earthquakes and Volcanoes in Indonesia**

#### **5-2-3-1. Outline**

The project “Multi-disciplinary Hazard Reduction from Earthquakes and Volcanoes in Indonesia” officially started in June 2009 as a part of the Science and Technology Research Partnership for Sustainable Development supported jointly by the Japan Science and Technology Agency (JST) and the Japan International Cooperation Agency (JICA). The ultimate goal of this project is to reduce damage caused by earthquakes and volcanoes by enhancing hazard forecasting capabilities, reducing social vulnerabilities, and promoting education and outreach related to research outcomes. We also plan to provide a platform for collaboration among researchers in the natural sciences, engineering, and the social sciences, as well as officials in national and local governments.

The research activities are being conducted in six groups. Two groups will focus on natural disasters and the natural sciences: (1) Analysis and prediction of the mechanisms that generate earthquakes and tsunamis based on geophysical surveys, and (2) Short-term and long-term prediction of volcanic eruptions and development of evaluation methods. Two groups will focus on vulnerability, engineering, and the human/social sciences: (3) Building a disaster-resistant social infrastructure, and (4) Mitigation of social vulnerabilities against natural disasters. The last research group will focus on (5) Disaster reduction education and outreach, while a final coordinating group will be responsible for (6) Promoting collaboration between researchers and government officials on the application of results. Each of the five research groups will have several sub-groups, and a total of more than 20 subgroups will conduct joint field surveys and workshops.

The Joint Coordinating Committee (JCC) consists of the group leaders and government officials of relevant agencies in Indonesia, and meets regularly to supervise the project activities. The project not only reports research activities to the JCC but also plans to make policy recommendations so that research findings can be utilized to facilitate government-led disaster reduction activities.

ADRC will organize Group 6 and will manage sub-group 5-1-1.

#### **5-2-3-2. Activities**

##### **(1) Group 5-1-1: Research on effective disaster education in schools**

G5-1-1 will develop disaster awareness education materials so that disaster risks and disaster prevention resources will be easily accessible to schools and local communities. Education materials will be produced based on the results of discussions regarding the current state of disaster education in Indonesia.



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In 2009, ADRC carried out the following activities;

1. Project members discussed and agreed upon the plans for this project.
2. Banda-Aceh was selected as the target area.
3. A Group 5 meeting was held in Banda-Aceh in August 2009. All members of Group 5 attended this meeting and exchanged opinions on this program.
4. A representative of Group 5 gave a presentation at the international workshop in October 2009.
5. A teacher training program was held in Banda-Aceh in December 2009. Teachers from elementary schools, junior high schools, and religious schools participated in this workshop. At this meeting, LIPI and ADRC reported on the latest education programs in Indonesia, and participants exchanged opinions about future disaster education activities.



Fig. 5-2-3 Training of teachers in Banda-Aceh, Indonesia

## **(2) Group 6: The application of research findings and the establishment of collaborative mechanisms between researchers and government officials**

Objectives: Group 6 aims to develop some synergy between research, policy-making, and policy implementation tasks such that the results of research activities can be applied to policy-making both practically and effectively in Indonesia. To this end, a committee composed of researchers, government officials at different levels, and practitioners should be established.

Methodologies: Group 6 leaders, namely, Mr. Pariatomono of Indonesia and Mr. Koresawa of Japan, should continue to discuss the development of a system to enable the above-mentioned objectives to be achieved. In so doing, they should try to involve the National Disaster Management Agency (BNPB), which is responsible for the overall coordination of disaster-related activities in Indonesia, and representatives from relevant regional/local authorities. They should also strive to identify gaps and challenges, and to propose ways to improve coordination among stakeholders.

Achievements toward the initial plan: Group 6 leaders have approached BNPB through their respective channels, and, as a result, BNPB has confirmed its cooperation.