4. Promoting Cooperation with Member Countries,International Organizations and NGOs

4-1 Cooperative Projects with Member Countries

Based on the Asian countries' needs identified through its network with member countries, ADRC has been providing technical and financial support in the form of cooperative projects to disaster reduction programs implemented by governments of member countries and international organizations.

Through these collaborative projects, ADRC has contributed to the improvement of disaster reduction capabilities of member countries, and disseminated information on the achievements and lessons of the projects to member countries as well as the rest of the world.

4-1-1. "Towards the Safer Communities through Education and Training in Disaster-Prone Mountain Areas"

Back ground ：

The Project entitled "Towards the Safer Communities through Education and Training in Disaster-Prone Mountain Areas (one lesson on high level can save one hundred lives)" has been assigned under the Memorandum of Understanding between Asian Disaster Reduction Center (ADRC) and Armenian National Survey for Seismic Protection (Armenian NSSP) for realization in the period Nov. 2008 – Mar. 2009.

Armenia provides an example of the land-locked country with distinctive mountainous relief and average elevation of about 1800m above sea level.

The most of the territory (71,8%), huge number of settlements (41%) and mighty amount of population (more than 900,000 people) are located and inhabited in the extreme conditions at the elevation of 1500m above sea level.

The entire territory of Armenia is exposed to seismic hazard level of 0.2-0.4g corresponding to VIII-IX value on the most commonly used Modified Mercalli Intensity (MMI) scale for earthquake intensity measurement. In mountain areas with rugged and steep relief disaster risk is considerably increased due to earthquake induced secondary hazards namely landslides, rock avalanches and reservoir and dam collapse because of instability of slopes and liquefaction.

The most mountain communities are remote and somewhat isolated from the national and regional centers and there is lack of:

- Information and resources on natural hazards;
- Appropriate teaching and training personnel;
- Head to head education.

They are mostly out of reach of the international humanitarian organizations dealing with natural hazards. Many of those communities are located in the downstream of reservoirs and exposed to flood threat in case of major earthquake and induced secondary hazards.

Our preliminary survey of hazard and disaster awareness level revealed that there is considerable difference between the knowledge of community leaders, students and teachers and those lived in the capital city of Yerevan and one of the main endeavors of the Project is the bridging the existing gap.

Education and Training Program :

(1) Target area

The Project has been implemented in four most mountainous marzes (prefectures) in Armenia: Gegharkunik, Aragatsotn, Syunik and Vayots Dzor which are characterized with the complicated morphological image, steep and dissected relief, narrow river vicinities.

Some facts regarding the marzs are provided in the Table:

Marz	Area(km2)	Population	Communities	Schools	Pupils	Teachers
Aragatsotn	3,956	140,204	89	103	22,354	2,876
Gegharkunik	5,423	240,345	152	191	40,811	4,352
Syunik	4,506	163,112	109	128	24,111	3,127
Vayots Dzor	2,308	55,997	44	51	8,300	1,068

Table4-1-1 No of Population, Communities, Schools, Pupils, Teachers in each marzs

(2) Data arrangement and Hazard mapping

Most of 82 operating dams and reservoirs in Armenia are located in the mountain areas within 1500 – 2500m above sea level.

The subsequent selection of communities as well local authorities, teachers and students to be taught and sensitized would be performed subject to hazardous dislocation in downstream of high-placed reservoirs and risk of possible flood threat during onset event taking into account dam and reservoir characteristics as well as the disaster knowledge and awareness level of community members.

Earthquake is most costly natural disaster in Armenia. Dam failure and flush flood are the secondary hazards triggered by earthquake. Therefore, flush flood protection must be included in risk analysis for dam failure.

The dam collapse is possible due to major earthquake but mostly we encounter the damage as follows:

- Overtopping through dam crest;
- Erosion of dam surface due to swift moving water or wave action;
- Abnormal seepage through dam body due to cracking, etc.

The Project was submitted to Aragatsotn, Gegharkunik and Syunik marz (regional) governors. They have arranged meetings, where representatives of local authorities participated. The importance and mission of the Project were presented there.

At request of the governor of Vayots Dzor marz, works were also carried out in the marz. Moreover, a Workshop with Japan specialists for officials of this marz and communities has been organized there (it is mentioned about in the report).

Fig 4-1-1 Map for reservoirs of Aragatsotn marz

NSSP specialists carried out visual examinations of schools in 41 communities of three marzes and assessed seismic vulnerability of these schools premises.

There was carried out dams' vulnerability assessment and determination of flood areas, and also damage and loss assessment.

Recommendations on strengthening and retrofitting of critical facilities (dams and reservoirs) and on strengthening and retrofitting of school premises were given.

Getting familiarized with the current situation, people's awareness, available teaching materials we come to the conclusion of the necessity of developing simple and affordable educational guidelines for professionals and population living in the inundation zone aimed at the developing of proper behavior to the dam failure induced by the earthquake.

The task is to create mobile resource centers in the regions for training the active rural residents, teachers and students exposed to floods caused by dam failure.

At the same time it is getting clear that there is no sufficient interaction and understanding between local administration, dam safety engineers and operators, and rescuers in emergency.

Necessity of joint efforts of the involved parties to cope with disaster is essential.

It is important to develop the effective education and training program for community members in possible threat area.

Training included the rules and techniques of interaction between authorities of all levels and emergency workers and response specialists, as well as and dam panel engineers and technicians with active participation of active rural residents.

Important component of the Project is to familiarize teachers and students with Earthquake safety steps including those caused by dam failure and flash flood.

The main task we are going to reach through the Project is the involvement of rural residents into disaster management activities through:

- Education and training of active community members in four mentioned marzes for responding properly to the disaster chain "Earthquake-Dam Failure-Flush Flood";
- Workshops on disaster management methodology at regional and local levels for all parties which have important roles to cope with calamity including local officials, dam safety specialists, active rural residents, local authorities and teachers and students.

Meetings with the most active rural residents, local administration and school teachers and students and dam safety operators would allow to identify the tasks to be solved and types of interactive educational materials: presentations, flyers, leaflets and posters.

The information on earthquake response of dam panel engineers and operators, and their in-situ activities before and during dam failure has been obtained.

(3) Pilot workshop undertaken by Japanese experts from ADRC

On 24 and 25 November 2008, the Armenian National Survey for Seismic Protection (NSSP) and the ADRC held a seminar entitled "Knowledge: Achieving Safer Communities through Education and Training in Disaster-Prone Mountainous Areas" in Syunik Prefecture and Vayots Dzor Prefecture. This was a cooperative project between the ADRC and the government of Armenia.

A seminar for school teachers and public school children was held in Syunik Prefecture in 2006 with the goal of raising awareness of earthquake disasters. This year, Mr. Takaaki Shiratori of the Takenaka Corporation, a leading private construction company in Japan, was invited to give a seminar focusing on measures for coping with the damage caused by the collapse of school buildings, reservoirs and dams triggered by earthquakes.

The workshop held on 24 November in Syunik Prefecture was attended by 25 students and several teachers from Kapan No.7 High School. Mr. Shiratori described examples of school buildings that have been retrofitted in Japan and discussed earthquake countermeasures. The workshop held on 25 November in Vayots Dzor Prefecture drew 28 public officials as well as the governor. Mr. Shiratori gave a lecture on the seismic reinforcement measures taken at dams in Japan and made proposals regarding seismic retrofitting. The participants were highly interested in both lectures, as Armenia and Japan share similar geographical features, including mountainous terrain, and both were followed by active question-and-answer sessions. The active sharing of information on disaster

reduction measures for school buildings and dam construction will be particularly important for disaster reduction efforts in Armenia.

The ADRC would like to continue working closely with the NSSP to further disseminate knowledge about earthquake disasters and to improve disaster risk reduction capacity in Armenia.

For the success implementation of the Project two Workshops with participation of Japan specialists have been organized in the cities of Kapan, Syunik marz and Eghegnadzor, Vayots Dzor marz.


Photo 4-1-1 Pictures on trainings and Workshops carried out in the marzes

(4) Workshop implementation in the area

Educational materials were developed using the valuable Japan experience and materials educated in Japan and provided by ADRC were also used.

There was carried out lectures for more than 162 teachers divided into 6 groups of 20-30 persons each. There were educated more than 358 pupils divided into 15 groups of 15-30 persons each. There were educated more than 70 persons divided into 4 groups of 20-30 persons each. Officials of local authorities, the governors of marzes, dam staff and rescuers participated in last groups. The goals of the Project were reached as the rural residents living in the area of possible flush flood have been educated regarding their actions in emergency before arrival of emergency workers, dam safety officials, local administration, others.

Region	Participants	Quantity	Date
Kapan	Teachers and pupils	31 (25+6)	24.11.08
Eghegnadzor	Officials of marz and others	28	25.11.08
Kapan	Teachers	63	10.12.08 15.12.08
Ashtarak	Teachers	48	03.01.09 25.01.09
Sevan	Teachers	45	23.12.08 10.01.09
Agarak	Pupils	61	04.12.08 05.12.08 06.12.08
Ashnak	Pupils	43	17.12.08 18.12.08
Katnaghbyur	Pupils	36	26.12.08 27.12.08
Lanjaghbyur	Pupils	59	01.02.09 02.02.09 03.02.09
Noraduz	Pupils	30	04.02.09
David-Bek	Pupils	28	16.02.09

Kapan	Pupils	76	11.02.09 14.02.09 17.02.09 18.02.09
Ashtarak	Officials of local authorities	26	02.03.09
Sevan	Officials of local authorities	32	05.03.09
Kapan	Officials of local authorities	29	10.03.09

Table 4-1-1
Time table of the educations carried out in Aragatsotn, Gegharkunik, Syunik and Vayots Dzor marzes

The following "Dams safety during the strong earthquakes" education materials on guidelines for dams' safety staff and population in case of possible dam failure have been provided to all groups.

The Project has admitted to get the main findings:

- In rural area in marzes the local disaster-related strategy is poorly developed and reached to direct end-users especially for the chain of disasters: earthquake-dam failure-flush flood;
- Rural residents can reduce their own vulnerability by taking some simple and inexpensive action within their own communities (villages) before official assistance;
- Training to use sandbags by dam operators as preventive measures against damages on dam body as well as the sandbags using by rural residents for diverting flood water from houses, roads and bridges and lifelines;
- Establishing links between earthquake engineers, dam safety and flood control specialists at the all levels is the main priority;
- Education all sections of population and interested parties to cope with calamity aiming at creation a culture of prevention is an interactive process of mutual teaching and learning;
- Children knowledge about natural hazards and risk reduction is raised significantly;
- A few tens of teachers and hundreds of students have raised their awareness of earthquake-dam failure-flush flood;
- The Project has helped to increase understanding and interaction between all the parties in emergency at community level first place active rural residents, school teachers and students, mates and parents living in inundation area.

Bring the stakeholders together (local government officials, dam safety specialists, regular rescuers and others) and establish strategy for developing new and updating recent programs with wide participation of the residents of inundation area.

Photo 4-1-1 Pictures on trainings and Workshops carried out in Kapan

4-1-2. Strengthening Disaster Reduction and Preparedness in the Upland Agricultural Areas (Philippines)

4-1-2-1. Project Background

Upland areas in the Philippines cover about three-fourths of the country's total land area. Agriculture is the main economic activity in these areas, and poor farming practices has enhanced resource degradation and resulted in widespread poverty. Since government facilities and support are lacking in these areas, they are considered to be resource-poor communities.

The upland environments are described as highly sensitive and vulnerable to natural disasters due to their topography and other inherent conditions that make them unsuitable for economic activity. Risk exposure is high not only to upland inhabitants, but also to downstream populations and properties.

To support the economic activities of the upland communities and at the same time conserve soil and water resources, the Bureau of Soils and Water Management (BSWM) of the Department of Agriculture (DA) engage in efforts to develop water-harvesting technologies such as the Small Water Impounding Projects (SWIP). SWIP collects water during the rainy season and stores it for use in the dry season. It also regulates floodwater and controls erosion as a means of protecting the downstream communities against floods.

Another challenge facing the resource-poor upland farmers is climate change. Agriculture and water resources, and therefore food security, are the most adversely affected sectors of a changing climate. Water resources will likely be affected as precipitation and evaporation patterns change. This may lead to extreme events such as floods and extended dry spells, which will adversely affect production areas, damage infrastructure, and expose human populations to high risk. Climate monitoring is considered invaluable to agriculture and to the community in general.

To empower the upland farming communities to meet the challenges of climate change, efforts should be made to equip them with timely and accurate information on weather and climate, and sufficient knowledge and skills relating to disaster management and preparedness. Thus, ADRC is working with the BSWM in the Philippines on implementing a cooperative project that aims to reduce the vulnerability of resource-poor upland farmers and their communities to hydrological disasters through timely and accurate agro-meteorological data monitoring. The project involves the installation of weather and climate monitoring devices in selected upland areas and efforts to train upland farmers on how to collect data and undertake a simple analysis of agro-meteorological data for disaster preparedness purposes.

4-1-2-2. Project Objectives and Goals

The major objective of this project is to reduce the vulnerability of resource-poor upland farmers and their communities to meteorological-related disasters through timely and accurate agro-meteorological data monitoring. Real-time data will enhance early warnings of disasters in both upland and downstream areas.

Hence, the specific goals of the project are as follows:

(1) To install automatic weather stations (AWS) in strategic upland areas for natural disaster preparedness and prevention in low-lying communities;
(2) To train and engage upland farmers and their communities in the collection, monitoring, and simple analysis of agro-meteorological data for disaster management and preparedness;
(3) To collect agro-meteorological data more accurately to facilitate database development and data analysis for future disaster prediction and preparedness efforts.

4-1-2-3. Activities

This project facilitates the installation of automatic weather monitoring instruments in selected upland areas. Project sites are prioritized according to the critical needs for such instruments (e.g. perennial flooding in the low-lying areas) for providing early warning to downstream communities. By offering various training sessions and workshops on weather data measurements and disaster preparedness, this project will empower local government units and upland communities to monitor weather conditions, particularly during extreme conditions, and to provide early warning to upland and low-lying communities of any impending weather-related disasters. Database development, analysis, and interpretation will be done at the local government unit level and at the national level through the BSWM. The data that will be collected will be utilized in the

development of an agro-meteorology database at the BSWM and will be made available for local public use.

(1) Installation of automatic weather stations (AWS) in strategic upland areas for natural disaster preparedness and prevention in low-lying communities.

The six sites shown below were selected.

Luzon

1. Limay, Bataan (Region 3)
2. Labo, Camarines Norte (Region 5)

Visayas

3. Bayawan, Negros Oriental (Region 7)
4. Villareal, Western Samar (Region 8)

Mindanao

5. Polangco, Zamboanga Sibugay (Region 9)
6. Nabunturan, Compostela Valley (Region 11)

Figure 4-1-2-1 shows the national distribution of the project sites.

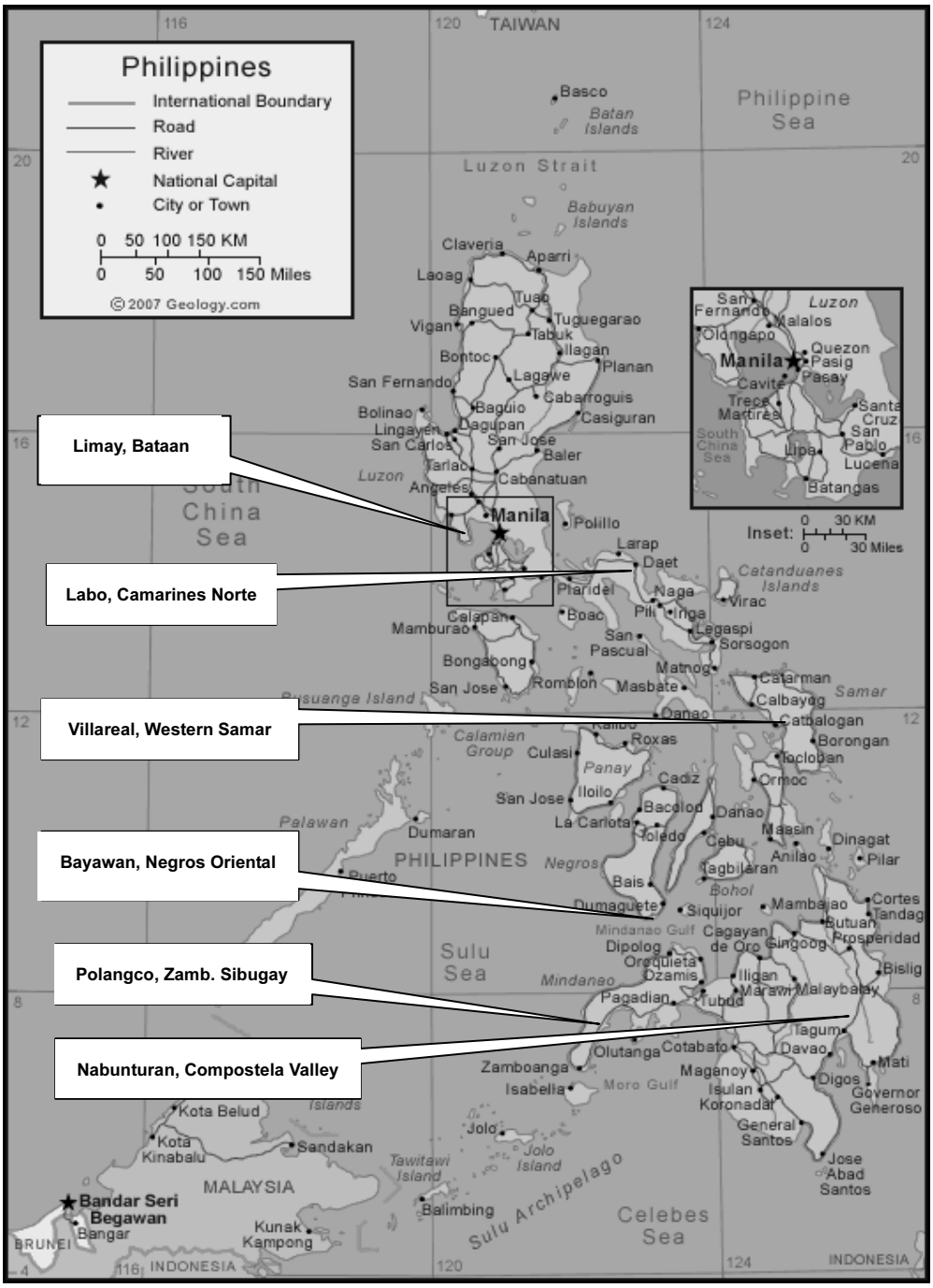

Figure4-1-2-1 Locations of the six Automatic Weather Stations (AWS).

ISS with solar panel　　Console

Figure4-1-2-2　Photographs of a wireless weather station installed in Limay, Bataan

This unit, which was procured through a bidding process, is a wireless weather station consisting of two components: the Integrated Sensor Suite (ISS), which manages the external sensor array, and the console, which provides the user interface, data display, and analogue/digital conversion in the ISS, and performs calculations. The ISS and the console communicate via a transmitter/receiver certified by the Federal Communications Commission (FCC) of the US. The wireless ISS is solar powered with a battery backup. The weather station can be interfaced with a computer to log weather data, and to upload weather information to the Internet using software provided by the supplier. Figure 4-1-2-2 shows the ISS and the console of the AWS.

(2) Training and engagement of upland farmers and their communities in the collection, monitoring, and simple analysis of agro-meteorological data for disaster management and preparedness.

The project training component started with the training of BSWM staff in AWS installation and in the operation and maintenance of the unit. Trainees were instructed in the proper orientation of the equipment in the field, data downloading, common troubleshooting measures, and other skills. Later, the assigned observers were trained by the BSWM staff on the same topics. Figure 4-1-2-3 shows the training conducted at the BSWM and at one of the sites in which an AWS had already been installed.

The training of upland farmers will be pursued when all of the AWS units have been installed. This will be undertaken in coordination with concerned local government units and/or institutions to fully utilize the AWS in providing warnings to lowland communities. Meetings with the community are already underway to facilitate the training process.

Training for BSWM staff

AWS being tested at the BSWM

Training of local government officials (Limay, Bataan) by the BSWM

Figure4-1-2-3 AWS training in progress

(3) Ensuring the more accurate collection of agro-meteorological data to facilitate database development and data analysis for future disaster prediction and preparedness efforts.

Data collection has already started at the Limay, Bataan sites while the other sites will start collecting data when all of the AWS stations have been installed. The data to be collected will be integrated with the previously developed agro-meteorological database of the BSWM. The operation and maintenance of the AWS stations will be mainstreamed within the BSWM annual program of activities. Thus, these stations will become part of the existing network of 12 agro-meteorological stations now being operated by the BSWM nationwide. The BSWM staff will assist the local government units in the establishment of their own databases so that appropriate data analysis can be undertaken at their level.

4-1-2-4. Summary and Future Challenges

This project went smoothly thanks to the efforts of the BSWM and the local government units in the Philippines, as well as to ADRC. Its success can be attributed to the following:

(1) There is great interest at the local government level in the Philippines in installing AWS stations in their areas, as these are now known to be an important early warning tool for dealing with climate-related disasters.
(2) The BSWM has a well trained staff with the knowledge and technologies needed for installing and managing the AWS stations.

(3) ADRC involvement facilitated the utilization of Asian disaster-reduction knowledge in project implementation.

To maximize the benefits to be gained from this project, the following activities will be undertaken in the future:

(1) Train local government staff in the operation and maintenance of AWS stations. Conduct briefings and orientation sessions for upland farmers on how the AWS stations serve as early warning tools.
(2) Empower upland farmers by conducting a Climate Field School at the project sites.

4-1-3. Project for Community Centered Early Warning Capability for Landslides

(1) Back ground

In Sri Lanka, the Disaster Management Center (DMC) in collaboration with United Nations Development Program (UNDP) is introducing the early warning system for landslide into a pilot area. But due to the complicated topography and vulnerable communication net in the mountain area, further time and finance would be still need to carry out the system effectively.

The main objective of this project is to build up the local early warning capability of vulnerable communities in landslide prone area using a portable and simple rain gauge.

(2) Selecting of suitable Areas for project implementation

The Disaster Management Center (DMC) is having its District Disaster Management Units (DDMU) in each District and basically manages local level Disaster Management Activities. They mainly involve in a coordinating role in which government and non- government stakeholders are been contacted for Disaster Risk Reduction activities. The DMC is receiving the technical guidance for Landslide Risk Reduction from the National Building Research Organization (NBRO). The organization is the focal agency for sedimentation disasters in Sri Lanka therefore has done tremendous work to identify hazardous areas in the mountainous areas. According to NBRO out of 25 administration districts in Sri Lanka ten (10) districts are prone to landslides namely Nuwara Eliya, Badulla, Kegalle, Kalutara, Kandy, Matale, and recently Matara, Galle and Hambantota. The above area covers approximately 20,000 sq. km. It is about 25% of the total land area of the island occupied by about 35% of the total population of Sri Lanka. Studding the prevailing information and consulting NBRO Nuwara Eliya and Rathnapura Districts have been selected for Implementation.

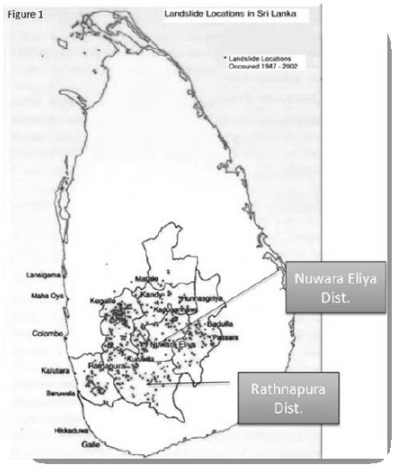

Fig. 4-1-3-1 Distribution of Implementation area (Muwara Eliya and Rathnapura)

Under the guidance of NBRO suitable implementation sites were identified by the DMC through DDMU. Information on past hazards was analyzed by DDMU when identifying villages. Hazard maps of communal networks were considered when selecting villages. In the selected villages Village Disaster Management Committees (VDMC) were established by DDMU. Those VDMC members were given the awareness on prevailing hazard mapping exercises were conducted.

District	Area (ha)	Hazard							
		Safe		Low		Medium		High	
		(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)
Nuwara Eliya	1670	467	28	849	51	258	15	96	6
Ratnapura	3281	1619	49	690	30	590	18	92	3

Table 4-1-3-1 Area with risk in Nuwara Eliya and Ratnapura

District	Divisional Secretariat	Grama Niladari Division	Beneficiaries (Families)
Nuwara Eliya	Kotmale	Shingama	230
	Walapone	Udamadura	168
		Dabbare	129
	Haguranketa	Degalahinna	270
		Godigomuwa	385
Ratnapura	Elapatha	Palawela Batakada	320
		Dambuluwana	394
		Hangamuwa	480
	Ratnapura	Devalegawa	498
		Helauda	200
		Total Families	3074

Table 4-1-3-2 Selected Grama Niladari Divisions

Some villages have their community maps ready and families living in identified vulnerable areas are aware of the village map and evacuation routes. The Community Centered Early Warning Project could intervene with the concept of introducing local rain gauges for those communities so that they could conduct themselves a series of the early warning system consisting of rain observation, issue of early warning and evacuation.

Fig. 4-1-3-2 Making of an area map(Palawela Batakada)

(3) Installation of Rain gauges

A portable and simple rain gauge was proposed for communities and after getting the consent from technical agencies (Department of Meteorology and NBRO) order was placed for 500 rain gauges. These rain gauges were distributed among the vulnerable groups living in selected communities.

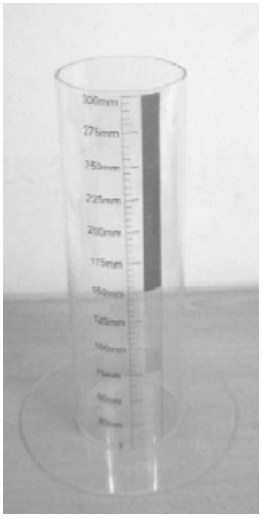

Fig. 4-1-3-3 Portable rain gauge

(4) Procedures of Early Warning System

System shall be operated by rainfall monitoring by manual reading. Method is shown below. Monitored data shall be submitted to NBRO through the divisional secretariat periodically, and shall be utilized for governmental EWE system.

Fig. 4-1-3-4 Monitoring activity in a community

Category	Necessary Contents
Observation	- Monitoring of 25 rain gauges in a community - Manual Reading and Record of rainfall amount twice a day - Record time of landslide occurrence and rainfall amount
Advisory	- Issued by VDMC when rainfall amount exceeds 100mm/24hours - “wait for next information” - Report Divisional secretariat
Warning	- Report Divisional secretariat and evacuate voluntary if rainfall amount Report Divisional secretariat and evacuate voluntary if rainfall amount exceeds 150mm/24hours and 75mm/1hour

Table 4-1-3-3 Method of Community Level EWE System

(5) Outcomes and Issues

- Awareness of early warning of landslide was strengthening, because many of community people could monitor rainfall visually.
- Prospects to build a national data base through daily monitoring and recording of rainfall.
- Need to establish the way of how to operate and maintain the system, such as monitoring in the night, recording the data, and maintenance of the equipments.
- Continual following up the early warning system in each community by Divisional secretariat and NBEO.
- To develop reliability from the residence on this system by developing the accuracy of regulation for evacuation of each community.

4-1-4 Urban Search-and-Rescue Training in Singapore

(1) Basic concept

Asia is the most disaster-prone region in the world. The natural disasters that have occurred here in recent years have been the most severe, prolonged and widespread ever experienced in the region. Moreover, the regional vulnerability tends to increase due to rapid urbanization, insufficient speed in building an infrastructure capable of coping with urbanization, the coupling of independent risk sources (interaction of natural hazards with chemical, technological, lifestyle, and social risks), and insufficient management capacity.

The Singaporean government holds an annual training course for search and rescue officers, and over the past nine years, the course has included trainees from outside Singapore. Training is provided on the search-and-rescue expertise required in urban disaster situations. The training facility complex of the Civil Defence Academy (CDA) of the Singapore Civil Defence Force (SCDF) is one of the most advanced facilities in Asia. In an effort to utilize their expertise and facilities, ADRC has been inviting fire fighters and rescuers from member countries to participate in this training course since 2001. Officers from Bhutan, Kazakhstan, Mongolia, and Thailand participated in this year's course.

(2) Dates

5 to 16 January 2009 (2 weeks)

(3) Details

① Participants
4 crew members (from 4 countries: Bhutan, Kazakhstan, Mongolia, and Thailand)

② Lecturers
SCDF Staff

③ Training program

a) Lectures
- Principles of USAR operations
- International marking system
- Overseas mission sharing
- Confined-space rescue operations
- Emergency behavior management
- Single/Mass Casualty Management
- INSARAG System

b) Drills & Practice
- BA search procedures and techniques
- Evacuation of casualties with/without equipment
- High angle rescue techniques
- Shoring methods
- Simulation exercises

(4) Overview

The SCDF established the CDA in 1999. The Academy houses a high-tech training facility that includes computer-controlled simulators like the LPG bullet tank fire-fighting simulator, and the nine-story fire fighting and rescue training tower. These provide trainees with realistic indoor and outdoor training scenarios in fire-fighting, rescue, paramedical, and other emergency functions. Trainees range from full-time Civil Defence National Servicemen and regular staff, to members of the public and foreign trainees.

This training course is particularly beneficial to international participants since they have few opportunities to learn search-and-rescue skills in such a well-equipped facility. The information and knowledge gained from experienced instructors will be of great help for their careers and for the advancement of search-and-rescue capabilities in their countries. In addition, this project provides a great opportunityo devel the network of fire fighters and rescuers around the world.

Figure 4-1-4-1 Training activities at the CDA

The questionnaire clearly shows that Singapore has invaluable human resources as well as facilities for search-and-rescue training. ADRC will continue collaborating with Singapore on providing training courses that suit the needs of member countries.