Foreword

In the past two decades, on average more than 200 million people have been affected every year by natural disasters. Even as for the grave natural disasters in last year, a mudslide triggered by heavy rains buried a whole village in the Philippine province of Southern Leyte on 17th of February 2006. Reportedly more than 200 people were killed in the slide with about 1,500 people missing. On 27th of May 2006 an M6.3 earthquake has struck the very highly populated region of Jogjakarta, Indonesia. The death toll reached 6,200 and the number of injured was 53,000. A strong undersea earthquake, which had a M 7.7, struck off the southern coast of Indonesia's Java island on 17th of July 2006, triggering a tsunami that swept away wooden buildings and killed at least 500 people. These crises triggered and brought about serious awareness for the necessity of regional solidarity and cooperation for disaster management.

Asian Disaster Reduction Center (ADRC) will not only continue to support the development of scientific capability against disasters, but will also pay increasing attention to the social dimensions of disaster prevention. ADRC has collaborative status with the United Nation Office for the Coordination of Humanitarian Affairs (UN-OCHA) Kobe and International Recovery Platform (IRP), and also works in collaboration with many stakeholders in Asia. ADRC and these partner organizations have formulated a holistic approach to disaster risk reduction known as Total Disaster Risk Management (TDRM).

"Total Disaster Risk Management: Good Practices" is a user-friendly handbook including the concept of TDRM and its good practices, that was published for UN World Conference on Disaster Reduction that was held on 18-22 January 2005 in Kobe, Japan. Herein "2007 Supplement of Good Practices" contains good practices submitted by ADRC member countries for relevant stakeholders to share knowledge in order to contribute to global disaster risk reduction.

Furthermore, it would be our great pleasure to continue receiving a broad range of good practices from you. I hope this publication will stimulate the promotion of the TDRM approach and contribute to efforts to build a safer world.

March 2007

Koji Suzuki

Executive Director

Asian Disaster Reduction Center

Contents

Community-Based Capacity Building in Public Schools in Armenia

Armenia

When an earthquake strikes, children are among the most vulnerable population group, especially those attending school in times of disaster. The Armenian National Survey for Seismic Protection (Armenian NSSP) has developed and implemented education and training programs addressing to needs of students and teachers at community level. Special attention is given to the adoption of the experience of world leading organizations.

Long-term successful cooperation between the Armenian NSSP and the Asian Disaster Reduction Center (Kobe, Japan) resulted in special activities for earthquake disaster awareness and preparedness raising in Public Schools in Syunik Marz (Prefecture) in Armenia. The main objectives of the activities were to promote the integration of earthquake disaster risk reduction in school curricula and to promote the safe construction and retrofitting of school buildings to withstand seismic hazards. The targets of the activities were primary and secondary school children, teachers, parents, engineers, and building professionals, the Ministries of Science and Education, the Housing and Urban Development, and institutions in charge of disaster management issues, local authorities and community decision makers.

On November 14-17, 2006 the reconnaissance team comprised of specialists of the Armenian NSSP, ADRC and Kobe municipality conducted lectures and trainings at the pilot school in Kapan city of Syunik marz.

Training in N1 school, Kapan city, Syunik

The aim of the workshop gathered a large audience, was to urge principals, teachers and students at community level to advocate for safer schools and disaster reduction education. Mr. Matsuzaki from the Kobe City Board of Education shared valuable experience gained from the Great Hanshin-Awaji 1995 Earthquake and cited realistic stories on how the Japanese have been coping with the devastating earthquake and its aftermath in Kobe, and presented situational scenarios played with the audience.

Dr. Alvaro Antonyan introduced lessons learned from the Spitak 1988 Earthquake: the population is not adequately protected, and necessary measures to secure their normal lifestyle should become a crucial priority in Armenia and the special service to help the population and develop earthquake preparedness programs has been established in Armenia i.e. the National Survey for Seismic Protection.

Furthermore, on December 6, 2006 among the framework of activities dedicated to the 18th anniversary of Spitak earthquake specialists of the Armenian NSSP carried out a special training in public school using the educational tools provided by Japanese colleagues. Though the pictures depicted Japan, children were able to imagine the given situation and give their own resolutions to the problem.

Now the educational tools in Armenia using Japanese guidelines are under development, while the approval of those tools could be disseminated at the community level for practicing.

Educational Programs in public schools of the Republic are realized through the various methods, i. e. colored books, video tapes, games, computer games, interactive plays, discussions, seminars and other means developed by local and foreign specialists. The purpose of the programs is to increase awareness and preparedness on the positive impacts of school safety and earthquake disaster risk reduction in schools, experience trainings, as well as to increase the action and use case studies to build an earthquake

preparedness capacity for students and teachers.

"The Great Hanshin-Awaji Earthquake Sugoroku"
Training in N 189 school, Yerevan

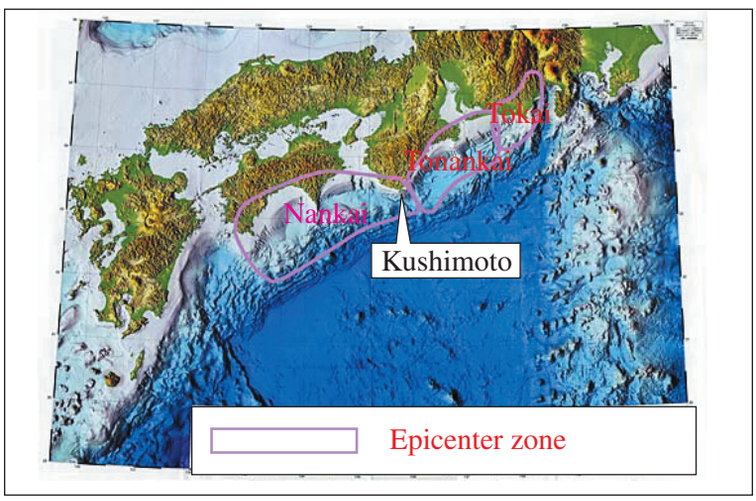
- Background	Earthquake Disaster Community-Based Risk Reduction
- Objective	Empower students and teachers in earthquake preparedness
- Term/ Time Frame	9 months
- Activities undertaken	Development and implementation of educational tools
- Major achievements	Earthquake awareness and preparedness raising
- Total budget	9950 US$
- Contact details	Alvaro Antonyan, PhD, President, Armenian National Survey for Seismic Protection, Davidashen massive 4, 375054,Yerevan, Armenia Tel. 374 1 28-64-94, fax. 374 1 36-62-80 E-mail: president@nssp-gov.am

Voluntary Disaster Reduction Activities of Omisaki District (Kushimoto Town, Wakayama Prefecture)

Japan

- Main Story

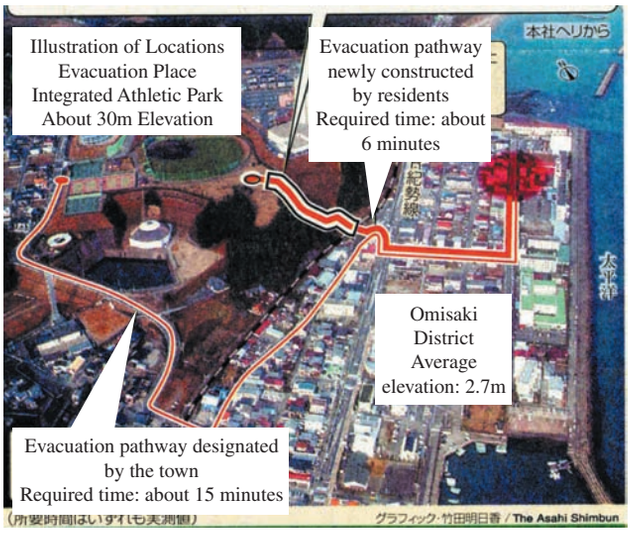
Omisaki District of Kushimoto Town is located at the east side of the root area of Cape-Shionomisaki located at the southernmost part of the mainland Japan. Most of the district was created by land reclamation in 1968 having population of about 690 people and households of about 330. The entire east side of the district faces the sea and the most part of the land is 3m or less above sea-level, and the district is one of the areas in Kushimoto Town where tsunami damage is most concerned.



Tokai/Tonankai/Nankai Seismic Zone

A lecture presentation by the town mayor of Okushiri Town which had catastrophic tsunami damage in 1993 Hokkaido-Nansei-Oki Earthquake was held in 1994. Residents of Omisaki district who participated in the lecture felt uneasy after hearing the lecture concerning damages of Okushiri Town which is topographically similar to Omisaki. In addition, they heard “Damage came off with a small level since many evacuation pathways had been provided.”

It took about 15 minutes for taking shelter if they use the evacuation pathway to the upland so far designated by the town, and they were driven by necessity to build a new evacuation pathway that enables evacuation in much shorter time. They continued to request the town to construct the evacuation pathway, and in 1999, they established the Executive Committee for Evacuation Pathway Construction and made further continued request. However, a JR railway existed on the shortest-distance route connecting the district and the upland, which became a large bottleneck for construction of the evacuation pathway. The town accepted the request and had discussions with JR many times, but things would hardly advance toward construction. In addition, in 2000, many residents participated in the “Training for Developing Leaders of Voluntary Disaster Reduction Organization” organized by Wakayama Prefecture and they had an opportunity to confirm necessity of evacuation pathway again by performing Disaster Imagination Game (DIG).



Each required time is of actually measured value.

Under such circumstances, residents volunteered to construct a bridge over the marshland spending two years. The town mayor, being affected by passions of residents after making inspection of the bridge, decided to construct the footsteps over the slope and pathway beyond the bridge at the cost of the town. Thus, respective zones constructed by residents and the town were integrated to complete the new evacuation pathway.

This is a good example showing that improvement in disaster reduction capability of the district through mutual understanding and cooperation between residents and administration.

Completed Evacuation Pathway

- Background

In July 1993, Hokkaido-Nansei-Oki Earthquake occurred, and tsunami attacked Okushiri Island and various areas of the Oshima Peninsula causing catastrophic damages. Since Kushimoto Town has the land form similar to the Island, many residents thought as if the disaster was their own, and, in December next year, the Kushimoto Town Junior Chamber held a lecture for reporting the disaster inviting the Okushiri Town Mayor.

Being triggered by this lecture, residents acknowledged that they had no pathway to the upland allowing them to take shelter within a short period of time, despite that most parts of their habitation

area are 3m below the sea level and could be damaged directly by tsunami and they also had strong sense of danger. As a result, due to opinion raising and energy of the residents, it was decided to construct an evacuation pathway.

- Objective

To secure an evacuation pathway that allows residents to take shelter within a short period of time.

- Term/Time Frame

Section to be voluntarily constructed:	2000 to 2001
Section to be constructed by the town:	2002
	3 years in total

- Activities undertaken

- Lecture for reporting the disaster held by Kushimoto Town Junior Chamber inviting the Mayor of Okushiri Town which sustained damages from Hokkaido-Nansei-Oki Earthquake
- Review of improvement in resident awareness/sense of danger of disaster reduction, and existing evacuation pathways.
- Establishment of the Executive Committee for Construction of Evacuation Pathway by residents and their activities
- Discussions with entities involved (Town, JR)
- Construction of evacuation pathway by volunteers
- Inspection by the town mayor and cooperative supports by the town

- Major achievements

Completion of a new evacuation pathway that allows residents to take shelter within six minutes
(In 2003, the "Award of Minister of Public Management, Home Affairs, Posts and Telecommunications of Disaster Prevention Town Building Grand Prize" was awarded)
(In 2004, the "Commendation of Persons of Merit for Disaster Prevention by Prime Minister" was received)

- Total Budget

Section to be constructed by volunteers	: 500,000 yen
Section to be constructed by the town	: 4,990,000 yen
Total	: 5,490,000 yen

- Contact details

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Information for the "Good Skills" Journal Qostonay Fire Department

Kazakhstan I

The province of Qostonay has a total area of 196,000 square kilometers, of which 445,800 hectares are dedicated as forest fund land, and of these 216,700 hectares are covered by forests. The region of Qostonay has 11 government-owned silviculture facilities, 1 national nature preserve (Naurzum),vast steppes, and grasslands, and each year a large area of land is cultivated. There are 5 dedicated forest fire zones in the province. In these zones, the fire danger period is long, extending over 202 - 218 days per year, and the fire occurrence rate ranges from 23.4 to 485.2 fires per 1,000,000 hectares.

To effectively fight fires in forests and steppes (mountain fires and grass fires), the Qostonay Fire Department fire brigade modified the MT-LB type multi-purpose light-armored tractor head bequeathed by the Defense Ministry of the Republic of Kazakhstan. The first modification (changing military specifications to firefighting specifications and attaching a front plow) occurred in 2003. In 2006, the water cannon was moved from the side of the vehicle to the top of the cab to protect it from falling trees, heat, and soot, and the water cannon control unit was moved to the vehicle interior. Two nozzles were also mounted on the vehicle to hook up hoses.

Fighting steppe and forest fires often requires, besides a fire truck, a tire type tractor with plow (a caterpillar tractor is too slow). It also requires a vehicle that can clear a path in a forest and create a fire prevention zone. In our case, a tire type tractor with plow is not needed because of the modified MT-LB vehicle. The ram wedge mounted on the tractor head itself can be used to open up a fire prevention zone in the forest, and the water in the vehicle tank (2.6 m3) or the trailer tank (7.5 m3) can be used to fight fires. For fighting fires, this vehicle has displayed remarkable capabilities; namely, it combines proficient speed, water capacity, handling, and suspension performance. The total cost of the modification of the MT-LB vehicle was about 1.2 million tange.

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Fax: 534269
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Explanation of photos: Actual movement of MT-LB type multi-purpose light-armored tractor head


МТТ-ЛБ

Wildfire Prevention and Countermeasures

Kazakhstan II

The province of West Kazakhstan, which covers an area of 151,300 square kilometers and has a population of 650,000 people, is located in the flatlands in the steppes of western Kazakhstan.

This province is bordered by the Kazakhstan provinces of Atyrau and Aqtobe and the Russian provinces of Astrakhan, Volgograd, Saratov, and Orenburg.

Most of the forests in the province were planted for protection against the wind (windbreak forests). In other words, these are protected forests within environmentally protected areas of the province in the Ural River flood plain, along motorways, around reservoirs in the Ural-Kushum irrigation system, and around the city of Ural'sk. The total area of protected forests is 3,000 hectares. The forest with the highest risk of fire is the protected forest zone along the Ural River. It is especially difficult to fight fires in this area because of the oil and gas pipelines that pass through Zelenov, Taskala, Dzhangala, and Akzhaik. Summer temperatures that climb to 40 - 45°C and low rainfall make July and August prone to forest and steppe fires.

Analyses of the occurrence of natural fires in the past point to the occurrence of large-scale natural disasters due to delays in discovering and reporting fires and the lack of nearby fire stations.

To successfully deal with natural wildfires in West Kazakhstan, the West Kazakhstan Fire Department has been involved in certain activities in collaboration with the Forest and Animal Protection and Revitalization Bureau.

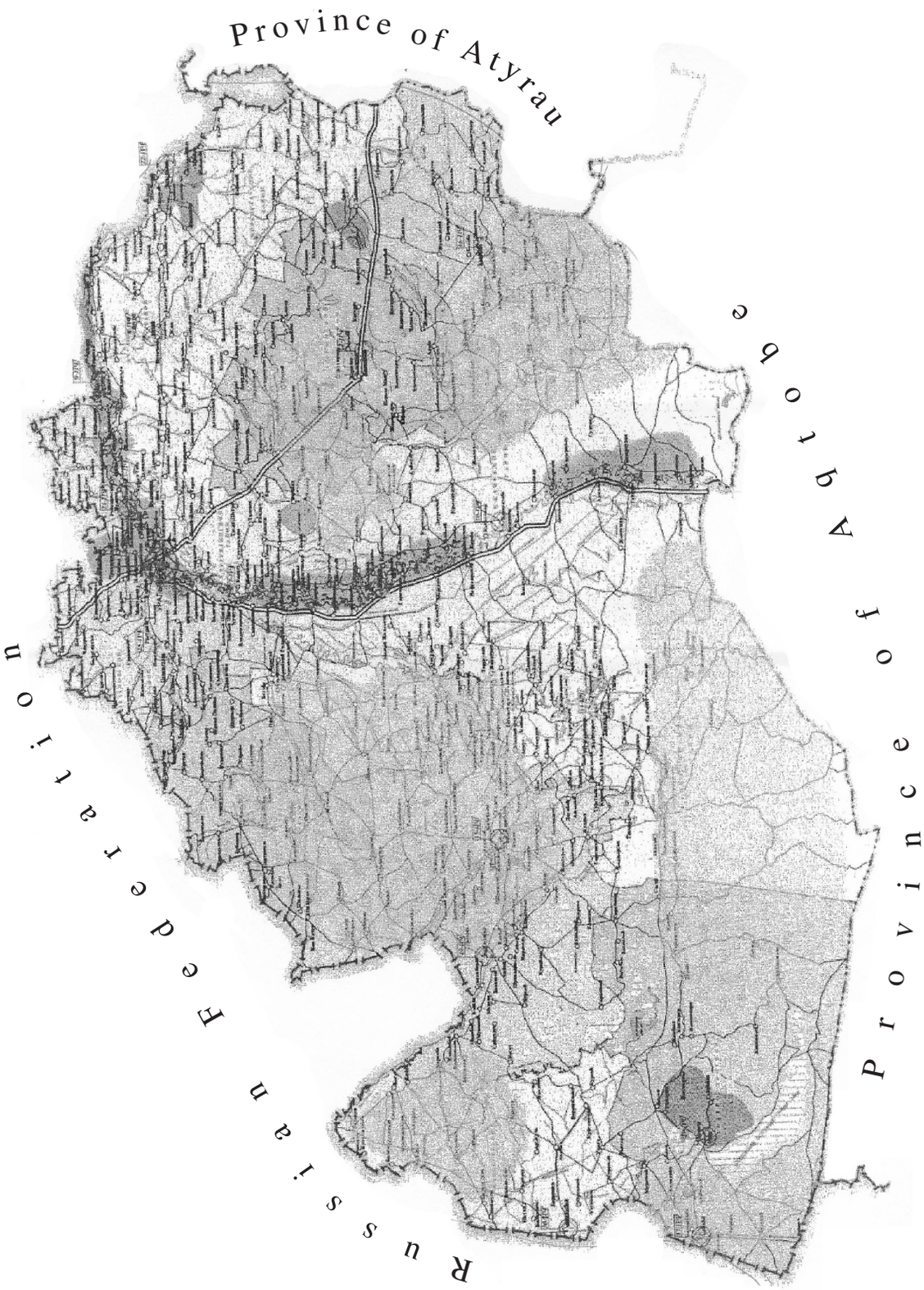
The government of West Kazakhstan approved the "Provincial Agencies Joint Action Plan for Combating Forest Fires in West Kazakhstan in 2006." The contents of this plan reflect issues related to preventing and fighting natural wildfires and the basic problems confronting joint action between local government agencies and the federal agencies of the Fire Department, Interior Ministry, and Defense Ministry.

The province's personnel/equipment mobilization plan for fighting large-scale fires has been revised.

In 2006, a series of forest fire prevention measures was devised by the province's Forest and Animal Protection and Revitalization Bureau. Fire prevention zones were created and have been preserved and managed. Warning signs and posters have been hung inside and around forested areas. In the high-risk fire season, chemical fire stations will be established in all the subsidiary sections of the Forest and Animal Protection and Revitalization Bureau. The staff for these stations will be conscripted from the forest protection staff.

To successfully deal with wildfires in national border areas, a joint action plan was prepared and approved for cooperation between a stage agency branch (Fire Emergency Rescue Bureau) and the Russian Federal Fire Department.

Because of analyses of fires that have occurred in the past, the location of national forest and animal protection agencies and areas prone to natural wildfires have been marked on the provincial map of West Kazakhstan. In the high-risk fire season, the fire brigades in every part of the province will shift into high-vigilance status and prepare additional auxiliary equipment (tractor with plow, etc.), and in rural communities, volunteer firefighting teams will be formed and fire conditions will be monitored by satellite.



Map: Map of Province of West Kazakhstan

Utilization of Satellite Surveillance System for Natural (Steppe) Wildfires in the Province of Qaraghandy

Kazakhstan III

In 2004, the Republic of Kazakhstan Emergency Response Agency sent a letter to the provincial government of Qaraghandy urging the province to study the feasibility of applying a flood/fire conditions satellite surveillance system within the province. The Qaraghandy Emergency Response Bureau drew up a plan in response to the letter and signed a contract with the Space Research Institute of the Kazakhstan Ministry of Education, Culture, Sports, Science and Technology to monitor trends in flood conditions, high-temperature fire sources, and total area destroyed by fire. Under this contract, the total budget of 21 million tange is scheduled to grow each year (including 2007).

This fire satellite surveillance system was designed to discover fires and pinpoint their source at an early stage, predict the fire development route, evaluate the latent dangers of fire, specify the area affected by fire, and evaluate the extent of injury and damage. Based on NOAA AVHRR nighttime infrared photos (resolution of 1.1km) and EOS-AM Tegga MODIS nighttime photos (resolution of 250 - 1000m), this system contains a fire source early detection GIS (Ground Information System) based on remote detection data (Figure 1).

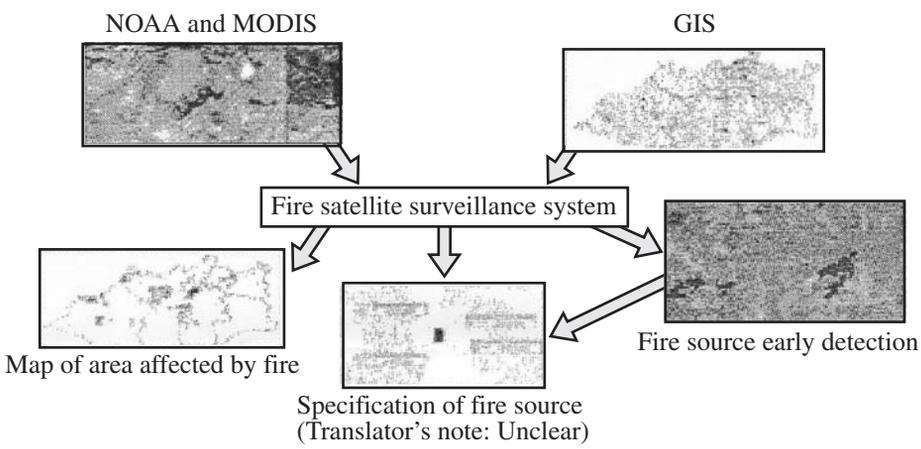


Figure 1 Block Diagram of Fire Satellite Surveillance System

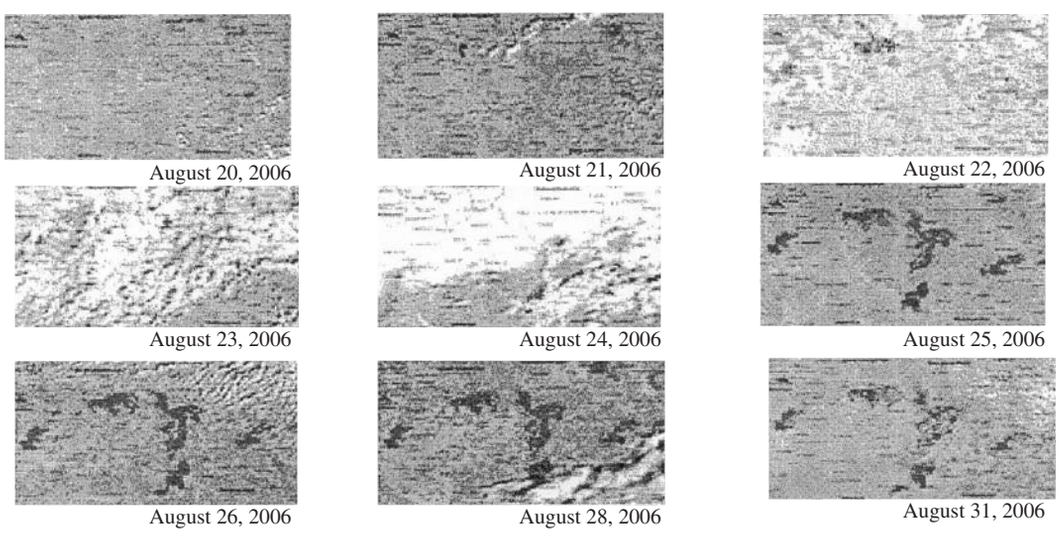
The features of the province of Qaraghandy are not only its large size (428,000 square kilometers) and large rice cultivation area, but also its numerous coniferous forest zones, which are unique, environmentally protected areas. As a result, measures will have to be devised to combat steppe fires as well as emergency measures that will provide maximum reduction of risk to forests and agricultural fields from steppe fires.

In connection with this, a Qaraghandy provincial government ordinance entitled "Measures for Securing Safety and Fighting Natural Wildfires in the Province of Qaraghandy" has recently moved into the implementation stage, with the aim of preventing steppe fires within the province. What is more, the province has implemented the provincial emergency response committee chairman's message for the introduction of various action organizations that will operate the province's emergency situation prevention/response system during the high-risk fire season. According to this system, the Space Research Institute of the Kazakhstan Ministry of Education, Culture, Sports, Science and Technology will send out data regarding high-temperature fire sources twice a day, and the Emergency Response Bureau will analyze these data and advise rural government offices and fire departments regarding its findings. The rural government office will then notify the nearest farming community in the pertinent region, and the fire information will be confirmed regarding whether it is correct or not. If fire is confirmed, a volunteer firefighting team will be immediately dispatched and the source of the fire pinpointed, and if

the community does not have the means to fight a fire, the help of the nearest Kazakhstan Emergency Response Ministry Fire Department will be enlisted.

Actual cases have demonstrated that steppe fires have many sources. Fire sources can be in either mountainous regions or plains. The main cause of fires during the satellite surveillance period is the hot, dry weather of August and September (a long period without rain). The number of fires during this period increases dramatically. And the terrain, which is a complex topography of mountains and hills, makes it even more difficult to fight fires. Even extinguished fires often flare up again. This is due not only to the burning of dry vegetation on the ground but also to long periods of scorching heat and strong winds, which stoke the latent heat in roots and composted material. And because the locations are far from villages and have no early reporting systems, they lack the ability to suitably monitor fire conditions and respond quickly. As shown by many past occurrences, steppe fires grow very quickly in a short time, and they jump into forested areas and inflict irreparable harm on natural parks. Thanks to the satellite surveillance system, however, at present the source of fires is detected early, the required data are reported to the related control agencies, decisions to mobilize personnel and equipment are handed down in a timely manner, developments are observed around the clock, data from satellites are constantly studied and compared, and a complete picture of the state of fires and response measures can be obtained.

Trends in Steppe Fires (Grass Fires) in Rural Areas



Analysis results of natural wildfires based on satellite surveillance data of fire sources show that in 2006, at the start of the high-risk fire season, there were about 1,000 fires blazing in the steppes (1,200 fires in 2004 and 1,100 fires in 2005), and that the total area damaged by fire dropped to 2,436,600 hectares (from 4,500,000 hectares in 2004 and 4,334,900 hectares in 2005).

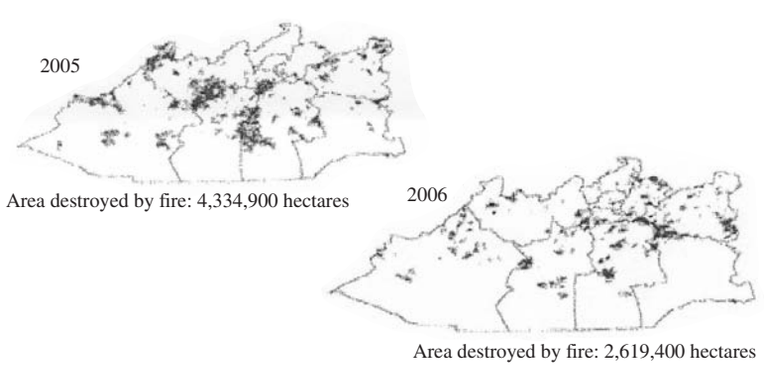


Figure 2 Trends in Area Damaged by Fire in the Province of Qaraghandy from 2005 to 2006

As shown by analysis results of area destroyed by fire in the province of Qaraghandy, utilization of the satellite surveillance system played a large role in reducing the total area of damage due to fire in the province of Qaraghandy, and this lead to other benefits, such as the preservation of pastureland and corn crops and reduced soil erosion.
In addition, certain fire occurrence principles emerged from analyses of areas that were not damaged by fire last year; namely, the main area not damaged by fire was in central Kazakhstan, where new plant growth had a high water content, so fewer fires flared up in withered grass.

Contact: Republic of Kazakhstan Emergency Response Ministry, Qaraghandy Provincial Emergency Response Bureau, 100027
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E-mail: dchs_krg@mail.ru

One-Stop Service for Rapid and Easy Recovery Support

Republic of Korea

The Answer was in the Problem!

The Korean government is supporting 10 to 50 thousand sufferers from various disasters such as typhoons, torrential rains, and heavy snows every year. The recovery support system, however, has not been changed since for the last 40 years. The effectiveness was questioned because the sufferers could not know how much money they were entitled to receive before they actually get it and the waiting period was not short. Local governments also had problems in rapid recovery activities because of the hard-to-predict support system.

Firstly, the main difficulties delayed payments due to the itemized support system composed of 283 categorized items such as relief fund and living expenses, secondly, delayed budget dissemination due to a decentralized support system by 12 divisions in 7 central agencies, thirdly, delayed damage estimation due to hand calculation, and finally possible duplicated support problems due to a lack of by the coordinating agency.

The answer was in the problem. The key point was to integrate the supporting processes scattered in throughout the various agencies, based on the classified support scheme using comprehensive disaster indices. Also, one coordinating agency is designated with utilizing a computer database system to accomplish the "disaster fund One-Stop support service."

After 6 month of inter-agency endeavor the final agreement has been finalized followed by the establishment of a computer network. To support sufferers as with a One-Stop service, individual damage for each sufferer needed to be compiled and managed in one system. Korea has a comprehensive disaster database system connecting local governments and the central government called as the National Disaster Management System (NDMS). The computer system for the One-Stop service was possible with the support by the current NDMS.

The next obstacle was to find out the most rapidly available budget right after disasters. Part of the central reserved fund was identified to be available to support local governments and plans for the emergency use were also prepared in advance.

In July 2006 the Disaster Management System Improved Again!

Even though a perfect policy can be planned on the desk, the policy is useless when it can not be applied in the field. To make sure that the planned new scheme is feasible, three simulated exercises were performed and education and training was also carried out before July 2006 with continuous system check-ups.

In July 2006 Typhoon EWINIAR, followed by concentrated heavy rains, devastated the southeastern part of South Korea killing 59 persons and causing US$ 2.1 billion property damage.

Right after the disaster in July 2006, the One-Stop support service was executed for the damaged areas and the recovery fund was directly transferred to individual

Flood Damage by Torrential Rain in 2006

sufferers in 20 days, which normally took about 90 days.

This kind of rapid money transfer helped the people focus on the recovery works and only 8 petitions were reported during the recovery period. This number is surprisingly small compared to the 116 petitions after Typhoon Maemi in 2003.

Presidential Innovation Award
for One-Stop Recovery Support Service

There was no criticism in the press and this was also surprising because there were 21 serious criticisms in 2003 by nationwide press and broadcasting services. Also, there was no incidence of duplicated money transfers and tasks of field officers were also minimized saving US$ 13 million. This result is only one small step towards customer-oriented recovery service and new challenges will emerge since disasters keep changing their faces.

- Background

There had been numerous criticisms from the people who suffered from natural disasters complaining that the support process was not simple and fast enough.

- Objective

To increase the effectiveness of the disaster recovery support process through the establishment of a customer-oriented rapid and precise system

- Term/Time Frame

From March 2004 to June 2006

- Activities undertaken

Setting up of a comprehensive operation system by designating competent agencies improving previously decentralized support process

From the itemized support scheme such as houses, vessels, farms, etc. to a classified support scheme using comprehensive disaster indices with 350 classes

Setting up of a disaster support computer database network from county level to central level

- Major achievements

Shortened disaster fund dissemination: from 90 days to within 20 days

Decreased civil petitions: 116 cases in 2003 whilst 0 case in 2006

No news report criticizing delayed recovery support: 21 reports in 2003 whilst none in 2006

Database setup of private property damages which can be used for various purposes

- Total Budget

Only about US$ 580 thousand

- Contact details

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Kyrgyz Republic Ministry of Emergency Response

Kyrgyz

Striving for Excellence

The threat of natural disasters and technical accidents that put undue burden on public entities is growing. Local governments need to link up with the Kyrgyz Republic Ministry of Emergency Response and conceive of a substantially new approach to preserving the safety of citizens and properties from emergency situations, based on the success stories of countries from all parts of the world. One way to solve this problem is to obtain the participation of a wide range of citizens and local communities and maintain the knowledge and skills needed to prevent natural disasters and effectively eliminate damage. In 2006, as part of its efforts to beef up emergency response readiness, the Kyrgyz Republic Ministry of Emergency Response enlisted the support of the Asian Disaster Prevention Center and distributed training materials for the following objectives:

1. Monitor and predict areas at risk and danger phenomena, and be ready to respond in the case of emergency, within the Republic of Kyrgyz and the border areas with its neighbor countries in Central Asia. Collect information on--and have the intention to accept--protective measures implemented by the federal government, provincial governments, municipal and regional governments, local communities, citizens, and all concerned government ministries and agencies.
2. Prepare small books of maps aimed at reducing risk by predicting emergency situations that may arise within the Republic of Kyrgyz and in the 7 regions with provincial governments, the 40 administrative districts, and the special cities of Bishkek and Osh.
3. Prepare large-format color electronic maps for predicting emergency situations that may arise in the 40 administrative districts.
4. Prepare an "emergency response readiness guide for citizens, local communities, children and students" with the aim of providing systematic support for the 7 provincial governments, 8 most densely populated cities, 40 administrative districts, and 430 regional authorities.
5. Draw up a program to prepare for emergency situations and respond to natural disasters (earthquakes, mudslides, floods, landslides, rising lake levels, and radioactive environments) in border areas with Kyrgyzstan. The purpose of this program is to research investment.

Scientists of the Kyrgyz Republic, the Asia Disaster Prevention Center (Kobe, Japan), and the Central Asian Earth Research Institute in Bishkek have accumulated a lot of experience to date, and they have used that experience to organize disaster experts, technical experts, geologists, structures responsible for the prevention and management of emergency situations, workers, designers, and builders in order to give shape to investment projects and seek the cooperation of supporting countries. In addition, they have instituted drills and exercises so that local governments and agencies, students, and children will be able to respond correctly when an emergency situation occurs.

The Asian Disaster Prevention Center has distributed materials describing supervisory and training methods to seminar participants. If these materials are used, they will play a huge role in preventing all kinds of emergency situations, saving lives, and maintaining health. In the most vulnerable communities, no-charge rescue and support operations based on prescribed surveys have been started. Needed now is research on monitoring dangerous natural phenomena, as well as the development and utilization of modern technology-based research methods and a ground information system (GIS) based on the latest computer programs and computer technology. Within the scope of the World Bank Project "Prevention of Emergency Situations" in Japan, Turkey, and Germany, top experts have acquired the latest programs, namely, Arkingo, Arkcis, ERDAS, and Mapinfo, and having prepared a database for each type of emergency situation, they are now capable of analyzing and monitoring the development of high-level prediction techniques. The introduction of such technologies has made it possible to reach decisions in an orderly fashion regarding the prediction and organization of emergency situations.

Total Disaster Risk Management - Public Education and Community Outreach Programmes by the Singapore Civil Defence Force

Singapore

Introduction

1. The Singapore Civil Defence Force (SCDF), whose mission is to protect and save lives and property for a safe and secure Singapore, recognizes the need to increase its effort in strengthening the nation's resilience and preparedness through proactive engagement and partnership with the community. SCDF takes a holistic and long-term view of preparing the nation for emergencies; it recognizes that even the best of plans will fail unless each citizen is familiar with emergency procedures and pitches in to do his or her part. It is around this belief that the SCDF's community involvement and education efforts are built.

2. To engage and involve the community in preparing for emergencies, SCDF has adopted a multi-pronged approach aimed at different target groups – the residential sector, the commercial and industrial workplace community, and the school population. In addition, SCDF partners the National Fire Prevention Council (NFPC) and Civil Defence Executive Committee (CDEC) to promote greater fire safety and prevention awareness among the public.

Public Education and Community Outreach Programmes

3. In order to sensitize the population to the new security environment, 72 community exercises, termed Emergency Preparedness (EP) Days, are held annually in both the residential estates and commercial / industrial workplaces. The participants prepare against unconventional threats such as practising In-Place Protection (IPP) measures to safeguard oneself and families / co-workers against chemical incidents.

In-Place Protection

4. The sustained drive to educate the public on emergency preparedness skills was further reinforced through the Community Emergency Preparedness Programme (CEPP) available 7 days a week. The CEPP packages essential Civil Defence skills and knowledge such as First Aid, Cardio-Pulmonary Resuscitation (CPR), Fire Safety and Casualty Evacuation, Emergency Preparedness for War and Unconventional Threats into five individual training modules. Conducted by the four CD Divisions of SCDF, each module comprises both theory and practical lessons aimed at equipping residents and workplace employees in essential life-saving knowledge and skills.

5. Going one step further, SCDF embarked on a systematic effort to reach out to the pool of regular officers and national servicemen serving full-time in the Singapore Armed Forces and Singapore Police

Force. Through this training programme, the SCDF will train intakes of about 25,000 SAF and SPF officers on an annual basis. The components of CEPP will be taught to these regular officers and national servicemen as part of their Basic Military Training at Basic Military Training Centre, Basic Police Training at Home Team Academy and on-going in-service training at various SAF and Police units. A total of 220,590 participants have benefited from this programme since it was launched on 22 September 2003.

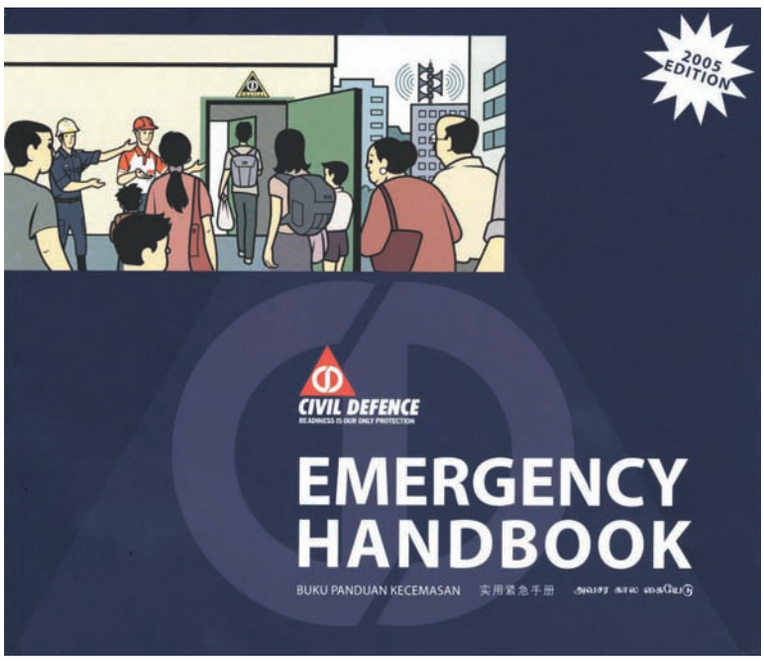
CEPP Training on First Aid

6. SCDF has also reached out to commercial and industrial workplace communities through national-level organizations representing specific interest groups such as the National Fire Prevention Council (NFPC), Singapore Hotel Association (SHA), Singapore Manufacturers' Federation (SMa) and the Fire Safety Managers Association of Singapore (FSMAS). In particular, the SCDF works closely with FSMs in individual companies as well as Safety & Security Watch Groups (SSWGs) in various Business and Industrial Parks to enhance their ability to attend to emergencies before the arrival of emergency responders. This is done through the formation of Company Emergency Response Teams (CERTs). Made up of key staff of the companies, the members of the CERTs are trained by SCDF and are ready to deal with initial emergencies such as incipient fires and chemical incidents, evacuation, identification of hazards and recognition of suspicious items amongst others. To overcome scarce resources, companies within Business and Industrial Parks are also encouraged to pool their resources and expertise to complement that of the SCDF. These efforts are exemplified through the various industrial / commercial mutual-aid schemes such as the Jurong Island mutual-aid scheme, which sectorises the island into various clusters to facilitate the sharing of resources and expertise in tackling chemical incidents.

7. In recent years, SCDF has also expanded its roles in strengthening of measures to heighten the emergency preparedness of commercial buildings in the fight against terrorism. Many commercial buildings, in particular, highrise premises have put in place the Arson Prevention Plan (APP) and In-Place Protection (IPP) to enhance the building management's resilience against any sabotage on the fire safety systems or in dealing with external chemical incidents. The frequency of the conduct of fire drills to help the building managements and occupants to practise the emergency plans and procedures have also been intensified; highrise premises are required to have two fire drills being conducted per year to assist in preparing occupants for fire emergency so that their evacuation and movements within or outside a building can be accomplished in a safe, rapid and orderly manner.

8. To provide the population with basic preparedness information, SCDF released the 5th edition of its Civil Defence Emergency Handbook in April 2005. This Handbook incorporated new emergency preparedness measures such as how the public should behave in the event of a non-conventional attack and when undergoing decontamination. A softcopy of the Handbook is also available for download in the SCDF Internet website. In order to provide the public with the knowledge to recognize unconventional

threats and carry out proper self-help measures during emergencies, SCDF's Emergency Advisories were included in the community pages of the Yellow Pages Buying Guides 06/07 which were distributed door-to-door to approximately 1.4 million homes and business in 2006. SCDF is also leveraging on technology to enhance readiness through the launch of the "Ready Mobile" in February 2007. Members of public will be able to download bite-sized public education animation clips or text midlets into their mobile phones. This will provide users with easy access to the information for learning on the go.



9. The student population is also not neglected in the effort to prepare them for emergencies. Dedicated Liaison Officers from nearby fire stations are assigned to 177 primary schools to conduct awareness talks, support exhibitions and demonstrations, facilitate visits to fire stations, as well as assist in school emergency planning and exercises. As part of SCDF's collaboration with the NFPC in promoting fire safety education in schools, the Fire Safety Puppet Show for primary students and Fire Safety Drama for secondary students are held in addition to providing CD-ROM on fire safety and large-size picture story-book to be used during story-telling time at the school library. About 35,000 Secondary 3 students are also trained in CEPP every year. Since the introduction of the National Civil Defence Cadet Corp (NCDCC), 25 secondary schools have participated in the scheme. Students in uniformed groups such as the Boys' Brigade, St John's Ambulance Brigade, Red Cross etc are also taught emergency procedures.

Fire Safety Puppet Show

10. In April 2006, the Civil Defence Auxiliary Unit (CDAU) scheme was officially launched to provide another avenue for the public to be involved in civil defence. Donning SCDF uniforms and possessing the same status and powers of SCDF regulars, CDAU members perform frontline duties alongside regular officers. They contribute in the areas of fire, rescue, emergency ambulance service, community involvement, public education and other specialist subject matters. There are currently 79 CDAU members and the aim is to achieve the target of 300 by 2009.

Conclusion

11. SCDF is pro-actively coming up with new public education programmes in emergency preparedness and procedures for selected target groups as well as the general public with respect to the new security landscape in Singapore. The challenge for SCDF is to strategise and make the PE programmes interesting and yet meet the needs of the community. In this way, we can engage and equip them with the knowledge and tools that they will need to survive an emergency.

Contact details

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Strengthening and Enhancing People's Involvement and Preparedness at the Grassroot Level: A Case of "Mr. Warning" a Village-Based Disaster Warning Volunteer, Thailand

Thailand

1. Background:

Like many of other countries worldwide, the trend of natural disasters in Thailand is on the rise both in terms of severity and frequency due to the rapid urbanization, degradation of the environment and the increasing population density. Whenever these natural hazards occur, they will leave in their wake a tremendous damage and destruction. Despite its negative impact, their calamities have shed a light on weaknesses of our disaster management system and have provided us with invaluable lessons that can be applied in addressing the existing weaknesses. Besides, they have served as the wake up call for all parties concerned to be more aware of and to be more well prepared for future disaster.

Furthermore, we have experienced that though the occurrences of disasters are inevitable, the minimization of their impacts are possible through disaster risk reduction strategy. As the consequence, Thailand has shifted its traditional "response approach" to "total disaster risk management approach" which encompasses holistic disaster management activities including risk reduction, creation of the awareness and preparedness among all stakeholders, and encouraging the involvement of the community at risk.

In this context, the Department of Disaster Prevention and Mitigation (DDPM) and the Ministry of Interior has initiated various training courses for the people in the community at risk in order to create the awareness and preparedness among them, and to mobilize their involvement in holistic disaster management. The most recent initiative is a "Community-Based Disaster Volunteer Training Course, "Mr. Warning", which the DDPM has launched in conjunction with the Department of Provincial Administration, the Department of Local Administration, the Meteorological Department, the National Park, Wildlife and Plant Conservation Department and the National Disaster Warning Center."



This training course aims at creating a disaster warning network for villages in flashfloods and mudslides by designating the trained villages as "Mr. Warning."

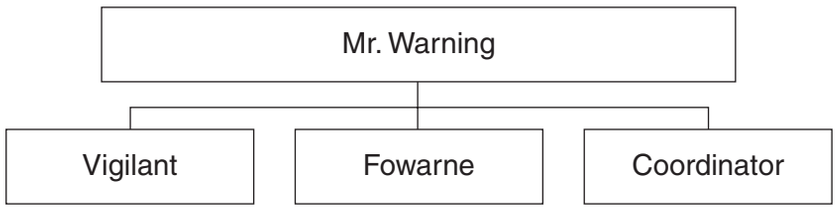
2. Qualifications of "Mr. Warning"

The villagers selected to attend the training course are required to meet the following qualifications

- Age between 18-25 years
- Able to read and write
- Decent manner, self-sacrifice and recognizable
- Trainees of Civil Defence Volunteer, Community Development Volunteer, Village Public Health Volunteer and Training Courses will have priority

3. Role of "Mr. Warning"

The following role structure will facilitate and a better understanding of the roles played by "Mr. Warning"



Upon the completion of the training course and being designated, "Mr. Warning" will be assigned tasks to shoulder the responsibility as "vigilant", "forewarner", and "coordinator" in non-emergency, pre-disaster, during, and in post-disaster phases.

(1) Non-emergency phase: At this phase "Mr. Warning" will perform the following functions.
- (1.1) Listens to the weather forecast and warnings from radio.
- (1.2) Checks and records the amount of rainfalls in a simple raingauge installed in the village at a daily basis.
- (1.3) Educates other villagers about floods and landslides and what to do in case of emergency.
- (1.4) Coordinates with village authorities and villagers to formulate community evacuation plan.
- (1.5) Inspects natural waterways within the village and reports any blockages to the authorities.

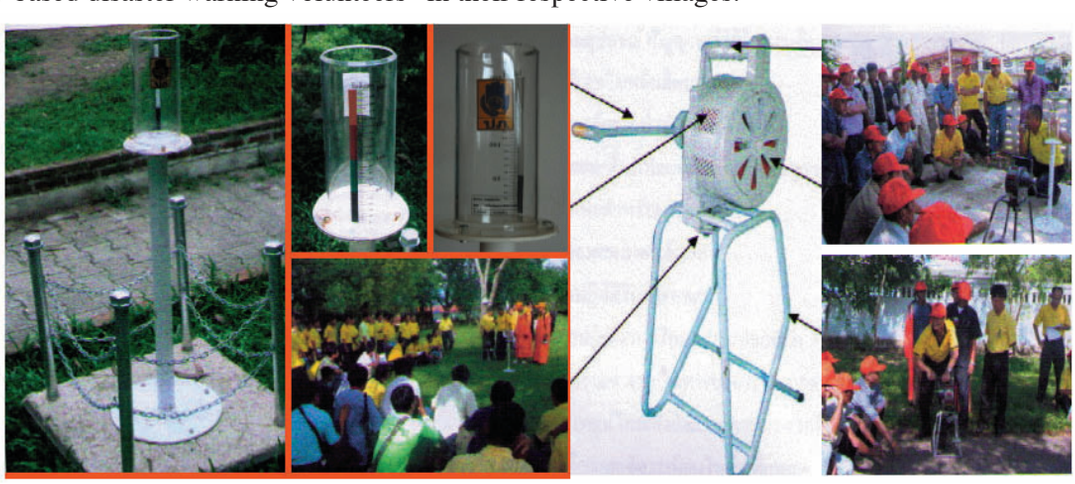
(2) Pre-disaster phase: The main functions during the on-set of disaster are to:
- (2.1) Listen to the weather forecast and warning information from the radio.
- (2.2) Check and record the amount of rainfalls in the simple raingauge and daily report the results to the village headman.
- (2.3) Observe the weather condition if the heavy downpour continues for days, and keeps a close watch for potential flashfloods and landslides in the risk areas, and be ready to warn the villagers.
- (2.4) Inform other villagers to be well-prepared and what to do.

(3) During disaster: During this phase, "Mr. Warning" mostly acts as the intermediary or coordinator and:
- (3.1) Reports the numbers of evacuees, injured, and missing to the ad-hoc directing center.
- (3.2) Coordinates with village headman and leads the evacuees to evacuation center.
- (3.3) Coordinates with authorities to report the relief items needed.
- (3.4) Coordinates with village headman to report the setbacks to authorities

(4) Post-disaster: During this phase "Mr. Warning" fulfills the following activities:
- (4.1) Assisting the injured to the medical care center.
- (4.2) Coordinating with the village headman and other authorities, particularly medical personnel.
- (4.3) Coordinating with authorities concerned to mobilize the evacuees homes.
- (4.4) Following up and coordinating the agencies concerned for humanitarian assistance.
- (4.5) Coordinating with the village headman and local authorities for rehabilitation of the damaged infrastructures, schools, temples etc. in the village.

4. Achievements:

Since the inception in August 2006, DDPM in collaboration with the earlier mentioned government agencies, has launched this training course in floods and landslides in villages of 51 provinces (out of 76 provinces) nationwide. A total number of 6,455 "Mr. Warning" have been designated and appointed as the "village-based disaster warning volunteers" in their respective villages.



Simple Rainguage, Manual Siren and "Mr. Warning" Training Course

One of the most effective performance that can be cited as the best practice of "Mr. Warning" is the case of Mr. Suthep Sae Pan, "Mr. Warning" of village 6, in Tambon Mae Ngon, Phang district, Chiang Mai province. It was reported that on October 8, 2006, the flashfloods and mudslides triggered by continuous heavy downpours had ravaged the Phang district. This hydrological disaster devastated the villagers' houses, infrastructures, and disrupted public utilities, 7 villagers were reported dead. Whereas in village 6, Mr.Suthep Sae Pan had kept the close watch at the weather condition and kept checking the amount of rainfalls in the simple raingauge. Besides, he had noticed that the water level of the canal in the village was rising and the colour of the water had changed and hinted to potential flashfloods. Immediately he reported the situation to the Tambon Administration Organization Committees, the chief of Tambon, and the village headman. Based on Mr.Suthep Sae Pan's information, the authorities then decided to evacuate approximately 100 villagers of village 6 to the high grounds. Mr. Suthep Sae Pan, "Mr. Warning" of village 6, Tambon Mae Ngon, Phang district, Chiang Mai province, has efficiently and effectively interpreted his knowledge passed on by the training and ultimately saved the lives of his fellow villagers.

5. Conclusion :

This project attempts to prepare the villages prone to floods and mudslides by using participatory approach to get the people in those villages involved.

The DDPM and the Ministry of Interior has realized that the traditional top-to-down disaster management bypasses the potential of local resources and capacities, and in some cases has increased the community's vulnerability. The successful experience of Mr.Suthep Sae Pan, "Mr. Warning" of village 6, is another evidence of the advantage of people's involvement.

6. Contact details :

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More to lose – reducing family vulnerability to floods and storms in Central Vietnam

Viet Nam

Events such as hurricane Katrina that hit and largely destroyed New Orleans, the 2004 Tsunami in the Indian Ocean and the 2005 Pakistan earthquake have once again raised public awareness of the threat and impact of natural hazards. The media also highlights the probability that climate change will increase the risk and violence of some types of natural disaster. What does not get so much attention is the issue of vulnerability – the degree of susceptibility to a natural hazard (Lewis1999)[i] . We should in effect not really be so concerned with the hazard itself as in the impact of hazards on human settlements and on the people that live in them. And vulnerability – the degree of susceptibility to damage, destruction and death and the impact that any of these events has on families and individual and on communities as a whole – is in turn conditioned by the decisions and actions of society over time (Lewis 1999). Whether or not the frequency and violence of natural hazards is changing, and for whatever reason, it is unquestionable that human vulnerability is evolving and paradoxically, in contexts as far apart is New Orleans and Vietnam, vulnerability is increasing. In other words, people are often not only more exposed to the immediate impact of a hazard, but also to the longer term impact through the effects of losses sustained. This article considers the increase in vulnerability to material and economic loss caused by natural hazards that has occurred in Central Vietnam in the last twenty years, and the steps that have been taken by the NGO Development Workshop to reduce this vulnerability through preventive action to strengthen houses.

Central Vietnam is hit annually by major floods and typhoons. Smaller windstorms are a regular event. The population is used to living with disaster, but the impact of these events has been changing. Prior to 1985 the majority of people living in central Vietnam in houses built with very local and essentially gathered materials. These houses were easily destroyed by floods, storms and typhoons. But within a matter of days with the help of neighbours the houses were rebuilt using local resources and at almost no cost. People had very few belongings, and thus not much to lose. Whilst losses of life and injury were often very high, vulnerability in terms of loss of the home and belongings was in practice very low, because recovery was easy.

However in1986 as part of the Dôi mói (renewal)[ii] process the Vietnamese government began introducing social and economic reforms that were to have far reaching on the lives of individual families. One of these was that families could keep a greater proportion of the profit from their farming or other activities. With their new savings, families began to replace their traditional shelter with new houses using more durable materials – cement blocks, fired bricks, ceramic roof tiles and corrugated sheeting, all of which had to be partially or totally paid for. These new houses have an economic value. They also represent a new and two fold source of vulnerability. Firstly, more than 70%[iii] of these new houses are badly built or unfinished, with the result that they do not incorporate typhoon or flood resistant features in their design and construction, including a range of defects such as roofs that are too flat, tiles and roof sheets that are inadequately fixed, a lack of bracing in the structure. This means that even in a small storm, the roof is quickly destroyed and the structure damaged. In a typhoon, destruction is widespread. Secondly, with an average reconstruction cost of $ 750 - $ 1 000, when disaster strikes, the family has to find a considerable sum of money to rebuild their home. Many families tell of rebuilding their house four or five times, and each time, this is a major setback, reversing the improvement of living conditions and family health and productivity. With greater investment in the home and a shift to modern building techniques and styles, the effect is that vulnerability has

increased as there is more to lose.

Building on earlier experience in Vietnam[iv] since the 1999 Development Workshop has promoted the preventive strengthening of existing houses in Central Vietnam with the initial support from Canada (CIDA), and since 2003 from the European Union (ECHO)[v]. Preventive strengthening is based on the application of ten key generic principles of typhoon and flood resistant design and construction that can be applied to almost all types of construction. DW encourages preventive strengthening through rapid training of artisans and community leaders, through the application of the ten key points on individual homes with family participation and on public buildings, and through awareness raising events in schools and in public places using 'media' ranging from theatre to boat races, traditional community communication methods through to TV to get across the message that prevention is easy, cheap and durable. Although every house has different strengthening needs, on average the cost of strengthening is about 25% of the value of the house. DW has supported preventive strengthening with the promotion of access to credit for preventive strengthening and explores other ways that families can get financial support and encouragement to protect their home.

In 1999, community leaders thought the DW idea of strengthening houses was laughable. In October 2006; after Typhoon Xangsane[vi] hit central Vietnam, the provincial authorities issued an edict to all the population and authorities stating that the DW ten key principles had to be applied to houses and public building to avoid further damage from future disasters. The effect of having strengthened hundreds of buildings, and the fact that these withstood the impact of a major typhoon have gone a very long way in convincing families and leaders alike that investing in prevention is cheaper than waiting till a storm comes and paying the high price of reconstruction. Just as people accept that vaccination can reduce the risk of disease, the idea that you can vaccinate your home against the storm is becoming popular.

DW France, March 2007

- Background
Regular natural disasters and socio-economic change in recent years have combined to increase the vulnerability of families to economic loss.

- Objective
- To reduce vulnerability and risk at community level in the face of floods and storms;
- To demonstrate that communities are important partners in the DRR process;
- To show that preventive strengthening is viable;
- To create the institutional environment in which community based prevention can be sustained

- Term/Time Frame
Started in 2000, ongoing in 2007; Overall 10 - 12 years to achieve national impact.

- Activities undertaken
Support preventive strengthening of buildings; develop local institutional environment for prevention; skills developed; community DRR action planning, wide range of communication and animation events to convey popular messages.

- Major achievements
Convincing families, community and provincial leaders that preventive strengthening techniques to houses and public buildings is cost effective in reducing the risk of damage and loss caused by floods and typhoons.

- Total Budget
1 500 000 US$ over 8 years

- Contact details
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web: http://www.dwf.org;
http://www.vietnamdisasterprevention.org

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[i] James Lewis, 'Development in Disaster-prone Places – studies of vulnerability' ITDG London 1999.
[ii] This overview of *Dôi mói draws on Economic Renovation In Vietnam* by Tim Thompson and Joel Prater of California State University, Chico, California, USA, and made available on www.csuchico.edu.
[iii] Survey undertaken by Development Workshop, and statistics from communes in Thua Thien Hué, Central Vietnam
[iv] UNCHS Project VIE/85/019 on the 'Disaster preparedness and rehabilitation in Binh Tri Thien province Vietnam', designed and implemented by DW (in consortium with GRET, Groupe d'échange et de recherche technologiques, France).
[vi] CIDA - Canadian International Development Agency; ECHO - European Commission / Directorate General for Humanitarian Aid) - Disaster prevention programme DIPECHO
20 000 houses destroyed, 250 000 houses unroofed in 3 central provinces