4-2-5. Urban Search-and-Rescue Training in Singapore

1) **Basic concept**

Singapore government conducts training courses every year for personnel in charge of search and rescue activities. The seminar has been accepting trainees from outside Singapore for the past 4 years and providing training on search-and-rescue skills in urban disaster situations. The training facility of the Civil Defence Academy (CDA) of Singapore Civil Defence Force (SCDF) is one of the top-notch facilities in Asia. In an effort to utilize these resources, ADRC called for member countries to participate in the training, starting last year. As a result, search and rescue officers from Cambodia, Sri Lanka, Thailand, the Philippines, Malaysia and Myanmar have participated in the training.

2) **Dates**

January 12 to 23, 2004 (2 weeks)

3) **Details**

(1) Participants

Total 9 search and rescue officers (6 countries : 1 person from Cambodia, Sri Lanka and Myanmar, 2 persons from Malaysia, the Philippines and Thailand)

(2) Lecturers

Staff from Singapore Civil Defence Force (SCDF)

Fig.4-2-1-1 Simulation Facility at Singapore Civil Defence Academy
(Left: Fire Rescue, Right: Rescue from the rubble)

(3) Example of training program

a) Lecture

Evaluate damages
Search and rescue in confined spaces
Knots & lines
Rescue operations
Type of collapsed building
Rescue equipment
Mass/single casualities management
Rescue dogs

b) Practical training

Search training in the confined spaces
Search training in a crop storage tank (simulation facility)
Search training in a collapsed building (simulation facility)
Search training underground (simulation facility)
Rescue exercise at a ruined military facility
High angle rescue training

4) **Explanation**

The search and rescue training facility in Singapore is equipped with simulation facilities including a 10-story fire building, chemical plant, oil refinery, debris area, confined space, and also with lecture rooms, accommodation, canteen, and administration.

The first week of the training is centered on lectures and training, and the second week on practical exercise for search and rescue at the simulation facilities.

Fig.4-2-1-2 Training for how to use rescue materials

The Civil Defence Academy provides about 20 training courses a year for various objectives. For trainees from abroad, search-and-rescue training courses are available for 2 types of disasters - fire and urban disaster. Urban disaster search-and-rescue training is further divided into courses for ASEAN personnel, for personnel from specially designated countries and for personnel from other non-designated countries. All these courses are held every year, and trainers all have solid experiences.

ADRC sent trainees to the course for non-designated countries. Although the training course consisted of trainees with different skill levels and needs, all the trainees achieved satisfactory results thanks to the effective coordination of the trainers with full experience (see questionnaire survey in Table.4-2-1-1).

Table.4-2-5-1 Survey Results on the Program (Including 9 from ADRC and 7 from other scheme)

Course Evaluation For 17th International USAR Course 2003

1 Course Objective

Very well achieved	5	31.25%
Well achieved	9	56.25%
Adequately achieved	2	12.50%
Not well achieved	—	—
Not all achieved	—	—

2 Learning Objective

Very well achieved	4	25.00%
Well achieved	8	50.00%
Adequately achieved	4	25.00%
Not well achieved	—	—
Not all achieved	—	—

3 Course Structure and Content

a. Relevance of the topics

Very relevant	5	31.25%
Relevant	7	43.75%
Adequately relevant	3	18.75%
Less relevant	1	6.25%
Not relevant	—	—

b. Overall planing and prepareration

Excellent	3	18.75%
Very good	7	43.75%
Good	6	37.50%
Satisfactory	—	—
Poor	—	—

c. Course duration

Too long	—	—
Just right	9	56.25%
Too short	7	43.75%

d. Overall pace of the course

Too fast	4	25.00%
Just right	12	75.00%
Too slow	—	—

e. Quality of the handouts in the terms of readability and clarity

Excellent	3	18.75%
Very good	8	50.00%
Good	4	25.00%
Satisfactory	1	6.25%
Poor	—	—

f. Usefulness of the course materials as a learning aid

Extremely useful	4	25.00%
Very good	9	56.25%
Adequately useful	3	18.75%
Less useful	—	—
Not at all useful	—	—

4 Trainer Effectiveness

a. Effectiveness in delivering the lesson

Excellent	5	31.25%
Very good	4	25.00%
Good	5	31.25%
Satisfactory	2	12.50%
Poor	—	—

b. Effectiveness in using practical examples and demonstration

Excellent	9	56.25%
Very good	5	31.25%
Good	1	6.25%
Satisfactory	1	6.25%
Poor	—	—

c. Interactions between the participants and the trainer(s)

Excellent	9	56.25%
Very good	5	31.25%
Good	1	6.25%
Satisfactory	1	6.25%
Poor	—	—

e. Overall presentation of the trainer(s)

Excellent	6	37.50%
Very good	5	31.25%
Good	5	31.25%
Satisfactory	—	—
Poor	—	—

The survey demonstrated clearly that Singapore has the appropriate human resources as well as facilities for search and rescue training. The objective of this program is to utilize the resources owned by member countries to meet the needs of other member countries. ADRC is determined to continue to promote this type of project in the future.

4-2-6. Earthquake Disaster Management Seminar in Mongolia

1) **Seminar Title**

"Vulnerability and Risk Assessment of the Possible Earthquake and Measures to Prevent Earthquake Disaster in Urban City"

2) **Organizers (Co-organizers)**

ADRC,

International Cooperation Department, Strategic Planning and Management Department, Ministry of Nature and Environment of Mongolia, and

National Agency for Disaster Management of Mongolia

3) **Period**

March 20th to 23rd, 2004

4) **Location**

Conference Hall, Continental Hotel (Ulaanbaatar, Mongolia)

5) **Main Objective**

Located at the center of the Eurasian Continent, Mongolia experienced four magnitude 8-class inland earthquakes during the 20th century alone. The country has suffered no catastrophic damages so far, thanks to its sparse population density and the traditional nomad-style housing structures (tent-like mobile housing called "ger"). Therefore, the country has low awareness of earthquake risk. With the transition from nomadic to settled lifestyle, and the rapid population growth, urbanization and industrialization, however, Mongolia should promote urban earthquake disaster preparedness immediately. Under these circumstances, an urban disaster management seminar was held that was intended mainly for disaster management personnels of the country's central and local governments to get a clear image of urban disaster preparedness.

6) **Details**

(1) Course Schedule

A two-day course was repeated for March 20th - 21st, and for March 22nd - 23rd (same contents for both occasions).

(2) Participants

The seminar participants consisted of disaster management personnel of the central government ministries and agencies of Mongolia (Depts. of International Cooperation and Strategic Planning, the Ministry of Nature and Environment, the National Agency of Disaster Management, the Ministry of Infrastructure, the Ministry of Health, etc) and their counterparts in local governments (prefectural governors, Ulaanbaatar Urban Planning Bureau, etc). The first two-day course participants were mainly decision-makerlevel officials such as department directors of the central government ministries and agencies and prefectural governors, while the second course participants consisted of working-level officials.

Each course had an attendance of approximately 30 persons. The total number of seminar participants for four days reached approximately 60 persons.

(3) Instructors

Mongolian instructors (nine persons)

Two from Research Center for Astronomy and Geophysics (RCAG), four from the National Agency for Disaster Management of Mongolia, one each from the Mongolian Society of Civil Engineers, the Ministry of Infrastructure of Mongolia, and Mongolian Institute of Technology

Japanese instructors (three persons)

Tomohiko Hatori (Senior Researcher, ADRC), Satoru Ohya (World Seismic Safety Initiative (WSSI), Advisor to OYO Corporation)、Yasuhiro Hayashi (Associate Prof, Disaster Prevention Research Institute, Kyoto University (DPRI-KU))

(4) Duration of One Class

Japanese instructors taught 60 minute classes, each followed by a 10 minute question-answer session. Mongolian taught 30 -45 minute classes, each followed by a 10 minutes question-answer session.

(5) Languages

Japanese instructors used English for PowerPoint presentations. Explanations and interlocutions during lectures were consecutively interpreted from Japanese into Mongolian. Mongolian versions of English abstracts prepared beforehand were supplied to the participants.

Mongolian instructors used Mongolian for both lectures and materials

(6) Lecture Themes

① "Present State of Research Work and Environment on Mongolian Earthquake and Future Developments", Dr Demberel (Research Center for Astronomy and Geophysics (RCAG))
② "Seismic Micro Zonation Map of Ulaanbaatar City", Mrs. Ankhtsetseg (RCAG)
③ "Lessons from the Great Hanshin-Awaji Earthquake Disaster." Dr. Tomohiko Hatori (ADRC)
④ "Earthquake Disaster Risk Management - Impact of Seismic Tremors on the Ground Geology," Mr. Satoru Ohya (World Seismic Safety Initiative (WSSI), OYO Corporation)
⑤ "For the Improvement of Seismic-resistance Performances of Urban Architectural Structures," Mr. Yasuhiro Hayashi (DPRI-KU)
⑥ "Proposals for Earthquake Disaster Management in Mongolia - Lessons from WSSI Activities." Mr. Satoru Ohya (WSSI, OYO Corporation)
⑦ "Risk and Vulnerability Assessment of Urban Area", Dr Ganzorig (President, Civil Engineering Association of Mongolia)
⑧ "Measures to Prevent Earthquake Disaster in Urban Development", G. Tulga, Director (Seismic Engineering Investigation Bureau, Department of Construction, Urban Development and Public Utilities, Ministry of Infrastructure)
⑨ "To improve earthquake warning and search and rescue work", Colonel Ch. Batchuluun (Chief, Operative Management and Coordination Division, NADM)
⑩ "Medical Supply in case of Earthquake Disaster", Lieutenant Colonel A Enkhbat (Officer, Operative Management and Coordination Division, NADM)
⑪ "Collaboration and Cooperation of State Services for Disaster Protection in Earthquake Disaster Reduction", Dr. Mayor General, O. Urjin (Deputy Chairman, NADM)/Colonel Ch Batchuluun (Chief, Operative Management and Coordination Division, NADM)
⑫ "Active faults of Central Asia", A. Bayasgalan (Director, School of Geology, Mongolian University of Science and Technology)

7) Evaluations by Seminar Participants

All the participants were asked to fill in the evaluation sheets for the seminar. The results are as follows:

(1) 90% of the participants had not previously attended urban earthquake disaster prevention seminars of this kind.

(2) Lecture contents found to be particularly helpful and informative include:

- All lectures
- Explanations on building seismic-resistance enhancement methods

- Explanations on the backgrounds to the establishment of the Earthquake-resistant Building Standards Law, and the mechanism for its enforcement
- Explanations on the strengthening of disaster management researches and activities
- Explanations on earthquake disaster prevention and mitigation awareness raising activities targeting citizenry
- Presentations on examples of past earthquake disasters and lessons learnt from them
- Lectures delivered by Japanese instructors

(3) Topics to be elaborated include:
- Disaster preparedness awareness campaigns targeting local populations
- Lessons from past earthquake experiences

(4) Most of the participants responded that all the lecture were well-organized and easy to follow Meanwhile, some said that it was difficult to absorb diverse information at a time.

(5) Contents to be included into future seminars include.
- Countermeasures for natural disasters other than earthquakes
- Experiences and knowledge obtained from earthquakes in the rest of the world
- More specialist training

(6) To the question on what information they would like to share with their work colleagues, all the participants unanimously said the entire contents of the seminar.

(7) All the participants answered that seminars of this kind would be helpful and informative for the rest of disaster management personnel in Mongolia. Moreover, some answered that it is important to create and distribute disaster preparedness awareness campaign materials, such as leaflets, targeting citizenry, and to provide disaster management education to a wider spectrum of people, including teaching staffs and students of universities and colleges.

(8) Other responses are as follows:
- A mechanism for registration and control of building and construction sites is necessary.
- A Building Standards Act should be established.
- Construction companies should have their employees trained for earthquake resistant construction methods.

8) Follow-up Activities

(1) CD-Rs containing presentation materials used in the seminar to be delivered to related parties.

(2) Suggestions and proposals presented by seminar participants for government disaster reduction policy were summarized and compiled into a report.

(3) In cooperation with related UN organizations, WSSI, JICA, and other related organizations, ADRC will continue its support to the Mongolian government's commitment to disaster reduction.

4-3. Promotion of Business-Sector Commitment to Disaster Reduction

4-3-1. Trends in Business-Sector Commitment to Disaster Reduction in Japan

Recently, there has been a growing awareness of Corporate Social Responsibility (CSR) in the Japanese private sector, in response to the globalization of economic activities, spread of IT technology, and changes in consumer awareness. There is no internationally agreed definition of CSR, but it is generally understood that the term refers to corporate accountability for the whole range of corporate activities including economic, environmental, social aspects, and CSR is considered an effective tool for enhancing competitiveness and brand value of an enterprise. The issue of disaster reduction has become one of the significant CSR activities enterprises are supposed to commit themselves to. This section describes the general trends in the commitment of the Japanese private enterprises to disaster prevention.

1) Council for Private Enterprises and Disaster Prevention

Traditionally, the priority in corporate disaster reduction activities was given to protecting enterprises themselves from disasters. Private-sector disaster reduction activities not only include in-house disaster reduction measures of individual enterprises, but also carry an important role in the enhancement of community disaster reduction capabilities. Therefore, in December 2002, the "Deliberative Council on the Corporate Involvement in Disaster Prevention" chaired by the Minister for Disaster Management was established to consider how private enterprises should commit themselves to disaster reduction activities. After three sessions of discussion, the Council compiled a report in April 2003. The report is outlined as follows:

Outline of the "Deliberative Council on the Corporate Involvement in Disaster Reduction" Report

Ⅰ. Community Disaster Management and Private Enterprises
- (1) Contribution to local communities during disasters
- (2) Cooperation with local governments in disaster response

Ⅱ. Corporate Involvement in the Creation of Disaster-Resistant Neighborhoods
- (1) Enhancement of community disaster management capabilities through cooperation among enterprises in the same vicinity
- (2) Promotion of active participation of enterprises in the creation of disaster-resistant neighborhoods

Ⅲ. Application of the Market Power to the Enhancement of Disaster Management Capabilities
- (1) Promotion of "disaster reduction mark labels" and disaster-resilient designs
- (2) Proposals for the introduction of "Disaster Accounting System"

Ⅳ. Corporate Disaster Risk Management
- (1) Groundworking for establishment of Business Continuity Programs (BCP)
- (2) Proposals for a Japan-originated international standards for disaster risk management

It is one of the important responsibilities of private enterprises to ensure the safety of their employees and customers, to maintain and continue their business activities, and to contribute to social and economic stabilization. Private enterprises are expected to use their organizational resources to support local disaster prevention activities. Also are desired development of disaster reduction goods and systems as well as establishment and implementation of disaster reduction capability assessment standards and incentives to promote such efforts. In addition, enterprises are expected to transform themselves and become able to cope with a wider range of risks through development of disaster reduc-

tion-centered risk management techniques and introduction of disaster risk management systems.

2) **Statement of the Japan Federation of Economic Organizations: "Toward Construction of a Disaster-Resilient Society"**

In July 2002, The Japan Federation of Economic Organizations compiled and published a written opinion report titled "Toward Construction of a Disaster-Resilient Society," the basic ideas of which are that one of the top priority issues of Japan is to make it earthquake-resilient, and that natural disaster risk management provides the foundation of the "Attractive-Japan Initiative" described in "New Vision" of the Japan Federation of Economic Organizations (released in May 2002). The report stressed the importance of the cooperation among private enterprises, the government, NGOs and so on to minimize damages from natural disasters such as large-scale earthquakes, and emphasized that the top management should take the lead in efforts of corporate involvement in disaster reduction activities. The outline of the report is as follows:

Written Opinion Report from the Japan Federation of Economic Organizations
"Toward the Creation of a Disaster-Resilient Society – Agendas for Private Enterprises"

Ⅰ. Expectations for Private Enterprises
Enterprises should support the enhancement of disaster reduction capabilities of local communities in addition to in-house disaster reduction efforts

Ⅱ. In-house Efforts
(1) Enterprises should introduce practical measures based on damage estimates.
(2) Enterprises should study strategies for quick recovery of economic activities.

Ⅲ. Contribution to Society
Enterprises should strengthen their mutual ties and their relationships with local governments, and community organizations. Enterprises should use their human and material resources to contribute to the enhancement of disaster reduction capabilities of local communities.

There are also remarks on "Requests to the Government," "Construction of Collaborative and Complementary Relationship with NPOs," and "Inter-Economic Federation Cooperation in Support to Disaster-Struck Areas."

This written opinion report is a proposal for private enterprises' commitment to CSR at home. However, it is considered necessary that Japanese companies abroad should contribute to local communities on similar principles. Support to community activities and social contribution are naturally expected of Japanese companies abroad as part of their corporate social responsibility.

4-3-2. Japanese Enterprises in Asian Countries and their Commitment to Local Disaster Reduction Activities

It is considered that Japanese enterprises operating overseas should carry their share of responsibility in disaster reduction as they do at home. Commitment to disaster reduction is an expected part of corporate social responsibility overseas as well.

Currently, approximately 400 Japanese enterprises consisting mainly of large-size corporations are operating in Asian countries. It is assumed that these companies are involved in wide ranges of local social contribution activities.

After a temporary hiatus in the expansion of Japanese companies into overseas markets following the collapse of Bubble Economy, the number of Japanese companies operating overseas peaked during the China investment boom from 1994 to 1996. Then, however,

the Asian Monetary Crisis in 1997 deteriorated the profitability of foreign investment and caused a mass pullout of Japanese companies - a trend still ensuing. The ongoing restructuring of business operations triggered by the deterioration of balance sheets due to the slow domestic economy and intensifying international competition is also responsible for the pullout of Japanese enterprises. A size-based analysis of Japanese companies that withdrew during the last three years reveals that approximately 85 % of them were locally incorporated subsidiaries of large-size companies with capitals exceeding 1 billion. The fact that many large enterprises that can supposedly afford local and social contribution have pulled out and most of the remaining enterprises are small- or medium-size companies suggest that not many Japanese companies abroad can afford involvement in disaster reduction activities as part of their contribution to local communities. However, this does not necessarily mean that Japanese enterprises operating abroad are reluctant to contribute to the promotion of disaster reduction activities. Many overseas subsidiaries of Japanese companies provide financial and material support through the parent companies to overseas disasters. For example, when the Southwest Iran Earthquake occurred in December 2003, the Japan Federation of Economic Organizations led its member companies to make donations for the affected areas

The current domestic and overseas economic environments are quite hostile to Japanese enterprises, and it is obvious that these circumstances still make it difficult for Japanese enterprises to make social contribution including disaster reduction activities. Fewer large companies stay and operate at the same location for a long time. This situation is considered to be a factor that stalls contributory activities of Japanese enterprises abroad.

To promote business-sector involvement in disaster reduction activities in future, it is necessary that enterprises will enhance their own financial prowess to the degree that they can afford commitment to such activities. While individual enterprises are supposed to participate in disaster reduction activities as part of their CSR on their own initiative, it is also true that the current economic situation makes it impossible to count on enterprises for voluntary efforts. It may be necessary to introduce incentive measures to encourage corporate involvement in disaster reduction activities.

4-3-3. Model Cases of Business Sector Commitment to Disaster Reduction Activities in Asia

This section outlines several presentations on cases of corporate involvement in disaster reduction activities from the "International Conference on Total Disaster Risk Management 2003" held on December 2 -4, 2003.

1) A Case in the Philippines

Mr. Albert Aldeba Lim (President of the Corporate Network for Disaster Response)

~ The role of Private Sector in Disaster Preparedness and Response ~

○The Formation of the Corporate Network for Disaster Response
(The 1990 Luzon Earthquake and Private Sector Commitment)

The July 16, 1990 Magnitude 7.2 Luzon earthquake was a catalyst for the deeper involvement of the private-business sector in disaster management. There were 1,666 deaths, about 1,000 persons were reported missing, and over 3,000 were injured. Most casualties occurred in Baguio City and surroundings. The rainy season, which began soon after the tremor, produced new casualties

The business sector mobilized relief and rehabilitation resources. The resources mobilized went beyond cash, medicine, blankets, and old clothes. Corporate aircraft as well as ten-wheelers and communication facilities were deployed free of charge Search and rescue groups from among the mining companies were pressed into service. Teams of psychiatrist-trained groups were organized to handle psycho-social needs. In the succeeding months, after an assessment of the economic and infrastructural damages, the private

sector again dug into its collective pocket to fund rehabilitation activities

Two months after the earthquake, the Philippine Business for Social Progress (PBSP), a leading social development NGO whose members are philanthropic corporations, organized a meeting of several companies who had responded to review the lessons from the earthquake which include:

- the value of an effective relief delivery system,
- the proper role of the media, and
- the importance of timeliness and appropriateness of response

These learnings laid the foundation for the creation of the Corporate Network for Disaster Response (CNDR). CNDR is today a formal voluntary alliance of private corporations, business associations, and corporate foundations operating in the Philippines. Since its creation, the business sector's involvement in mobilization of relief and response resources has been institutionalized. Disaster response is now regarded as an extension of its corporate philanthropy. CNDR is a regular member of the Technical Working Group and Relief and Rehabilitation Committee of the National Disaster Coordinating Council of the Philippines (or NDCC) NDCC has made the following proposals to CNDR:

- Provision of telecommunications equipment during disasters,
- Utilization of aircraft for emergency response and rapid damage assessment,
- Provision of warning advisories, bulletin boards, and other signboards in pre-identified hazardous areas,
- Designation of fund raising and donation centers in banks, and shopping malls.
- Extension of rehabilitation efforts to include income generating projects and household livelihood programs, and
- Production and dissemination of advocacy messages on emergency preparedness and public safety

○Lessons from CNDR's Experiences

The Corporate Network for Disaster Response believes that the business sector should assume a risk management posture as an extension of their business strategy, which also includes corporate social responsibility CNDR has thus been involved in roles which are considered pioneering in this part of the world. These are:

- Testing New Approaches: The Bayanihan Program of Prevention, Mitigation, Preparedness ("Bayanihan" means "Philippinos working together.")

  The business sector constantly seeks opportunities for innovation. The four year Bayanihan Program implemented by CNDR with support from USAID is a successful prototype on prevention-mitigation and preparedness where various sectors (government, NGOs, business sector, the academe, and local communities) are involved.

- Stakeholders Networking and Advocacy

  As an extension of its corporate practices, the business sector is adept at networking, alliance building, lobbying, and advocacy. In the Philippines, CNDR has established partnership with non-government organizations, local government units, the leagues of local governments (municipalities, cities, and provinces) and the National Disaster Coordinating Council. One important role that the private sector performs is advocating improvements on disaster management policies and actions. Happily, the receptiveness of policy makers to proposed reforms has been gratifying.

- Public Education: Support to Hazard Awareness

  The Corporate Network For Disaster Response also performs a public education role through the media, some of whom are also members of CNDR. It had worked with the Philippine Institute of Volcanology and Seismology (PHIVOLCS), PAGASA and the National Disaster Coordinating Council in several public awareness programs such as the Science and Technology Caravan and various seminars on earthquake preparedness.

· Building Disaster Resistant Communities

Encouraged by the success of the Bayanihan PMP, CNDR would like to be engaged in new programs to build disaster resistant communities. CNDR and its partner NGOs and local government units have agreed to continue working at the village level. This time the focus would be reducing vulnerability of livelihood on which the community depends. The business sector will provide the technical advisory role on livelihood risk management. It is envisioned that approaches would be tested and documented and when successful, the experiences could be replicated.

○Conclusion: Risk management makes money and sense.

The uncertainty of predicting the occurrence of large earthquakes should not be taken as an excuse for inaction. The growing involvement of the business sector in disaster response is a measure of the broadening areas of pursuit of corporate social responsibility. As we have attempted to prove, to any effective business leader, risk management makes money and sense.

2) A Case in India

Mr. Pawan D. Kant (Hindustan Construction Company Ltd.)

~ Partnership with the Private Sector in Promotion of Total Disaster Risk Management (TDRM)

○Background

It was during the Gujarat Earthquake on January 26, 2001 that a request came to the corporate office of Hindustan Construction Company Ltd. The request was from the project office of one of its construction projects located in Gujarat. The request was to rush in additional resources for rescue works. At that very moment, the Chairman of HCC was participating in the annual World Economic Forum's Engineering & Construction Governors meet. It was the first attempt for networking and mobilizing resources for response functions. Disaster Resource Network was conceived During the relief operations, HCC and other contacting companies had deployed heavy engineering equipment, skilled manpower, and engineers to facilitate the efforts. Besides, the entire cadre of its officers and employees donated a minimal days wage as a token of support. DRN-India was formally established in November 2002.

○The concept of DRN

DRN is a network of companies committed to assist Government & humanitarian organizations in their disaster management efforts by providing infrastructure related engineering, construction, transportation, and logistics services. The objective is not to compete with or replicate existing services, but rather to complement, support and enhance the efforts of Government and NGOs.

○Is there SPACE for the corporate to participate?

To enable any stakeholder to willfully contribute in disaster management, it is necessary to detail out with clarity the role expected of them. This clarity is necessary for the stakeholder (here the corporate) as well as organizations that intend to collaborate them. With this intention, DRN-India embarked on conducting a study across various states of India (especially Orissa and Gujarat) across a broad spectrum of stakeholders from Government (central, state as well as the community level), NGO. International Organizations, Corporate companies, individual volunteers as well as the affected victims of disasters. Responses obtained thru interviews and field studies on ways the corporate sector can contribute in Disaster Management. The study helped in identifying which of the thirty-four categories of disaster (as detailed in the National Disaster Plan of the

High Powered Committee in India) the private sector could participate with its resources. The study went on to detail out resources (both tangibles as well as intangibles), which Construction & Logistics industry can offer in a disaster response function.

Corporate from these industries can volunteer skilled resources viz.:

- Engineers (structural, civil, mechanical, electrical, water and sanitation, telecommunications)
- Technicians
- Operators
- Skilled workers (masons, carpenters, welders, cutters)

A few core functions where the resources are most useful:

- Damage assessment of infrastructure (e.g. advising on bracing/barricading a damaged structure)
- Emergency establishment of infrastructure (e.g. setting up of camps, sanitary block, water treatment plants, DG power sets, etc)
- Supply chain management (e.g. inventory management of humanitarian assistance received)
- Logistics management (establish warehouses, fleet management, obtaining necessary clearances between inter-states for rapid deployment of resources)
- The resources could play crucial role in supplementing the efforts of damage assessment
- Project Management & Project planning assistance to the local Government NGO's· Project Managers have an intricate skill of working under harsh terrains. This skill could be effectively utilized in providing assistance to effectively plan and monitor the mobilization of resources at the requisite areas

〇The way forward

The corporate sector is an equally important stakeholder in disaster management efforts They need to be encouraged to participate. However, it is important to recognize their priorities and within this ambit encourage participation.

<Reference>

For details of Disaster Resource Network India (DRN-India), visit the following website: http://www.hccindia.com/flash/drnindiainitiative.htm

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The common theme of the two cases above is that private enterprises made efforts to establish a network for collective action rather than make individual commitment. In the Philippines, involvement of enterprises in various industries allows each enterprise to participate in activities in its own specialized field. In India, construction companies took the initiative in the establishment of the network, which is characterized by the fact that the key players of its activities are volunteers who are specialist employees of enterprises. It is often the case that involvement of private enterprises in disaster recovery activities is inefficient with no coordination among them. In both Philippines' and India's cases above, the secretariat of the network coordinates activities of different organizations in order to facilitate efficient recovery These cases would serve as a model for private-sector involvement in recovery support activities.

In addition, the World Economic Forum (WEF), which is well-known as Davos Forum, also plays an important role in disaster reduction activities. Founded in 1971, WEF is an independent organization institutionalized as a Swiss NPO with more than 1,200 corporate and organizational members Every year, from the end of January through the beginning of February, WEF convenes the annual general assembly (a.k.a "Davos Forum") in Davos village, Graubunden Canton, Switzerland. The distinction of this forum is that it has participation not only from top managements of private enterprises around the world but also from senior government and international organization officials With occasional head-of-state level participants, the forum has great international influence In 2001, it happened that Davos Forum was held when an earthquake

hit the Gujarat state of India. The participants of the Forum provided humanitarian relief support to India This event served as a catalyst for the creation of Disaster Resource Network (DRN). Since then, every time a large-scale disaster happens, DRN provided human and material support from its corporate and organizational members to affected areas. DRN is a WEF's executive organization for disaster reduction, whose international corporate network consists of corporate members in engineering, construction, logistics, and transportation industries DRN was founded in order to support humanitarian relief organizations at the time of emergency. The main activities of DRN include:

- Setting up collection and distribution centers for relief supplies in affected areas to facilitate smooth delivery of material supplies,
- Establishing and maintaining human networks with people influential in routine local disaster prevention activities to make arrangements for effective relief delivery during disasters,
- Preparing manuals and providing training programs to enable employees of member enterprises to work efficiently as relief volunteers, and
- Regularly compiling databases of regulatory information and proper procedures to eliminate the possibility that laws, regulations, and contracts may delay disaster responses.

To give a recent example, in December 2003 when an earthquake occurred in the Bam region in Iran, DRN sent as much as 75 tons of relief supplies, dispatched coordinators specialized in emergency relief activities in affected areas, and let emergency relief organizations use its satellite communications equipment. At the request from DRN, the Indian disaster resource network mentioned above (DNR-India) took advantage of its geographical location and dispatched a search-and-rescue specialist team to Iran as soon as several hours after the earthquake occurred. This can be said to be a case where an international corporate disaster reduction network functioned organically and efficiently. (World Economic Forum website on DRN:
http //www.weforum.org/site/homepublic.nsf/Content/Disaster+Resource–Network)

In February 2004, a conference of the International Emergency Management Society (TIEMS) was held in South Korea. TIEMS is an NPO founded in the United States in 1993 in order to apply modern risk management techniques and cutting-edge technologies to reduce disaster damages. Of its activities, TIEMS places a particular focus on Business Continuity Program (BCP), which was discussed by Japan's "Deliberative Council on the Corporate Involvement in Disaster Prevention" discussed and is to be further discussed as part of risk management Japanese enterprises should work on. The conference was co-hosted by the ROK National Institute for Disaster Prevention (NIDP), and the BCP Forum, TIEMS' proxy in South Korean. The conference discussed a diverse and wide range of issues including systems, measures, and methods to help disaster-struck governments or enterprises to pull themselves together for early resumption of their activities, emergency information and telecommunications systems using satellites, and warning systems incorporating latest technologies. As a bridge between the Government and the business sector, the BCP Forum, which co-hosted the conference, takes the initiative for business continuity programs in disasters
(BCP Forum website http://www.bcp.or.kr/)

4-3-4. Business Sector Commitment to Disaster Reduction and Risk Management

1) Global Trend in Risk Management

Most types of disasters are rare phenomena that only occur infrequently. This is the main factor that makes it difficult to learn much about them. In other words, the scarcity of opportunities to learn through experiences leads to ambiguous or biased awareness of disaster risks. Under such circumstances, introduction of risk management techniques is an effective means for promoting business-sector involvement in disaster prevention.

Private enterprises are now facing the globalization of the world economy, and the emergence of a borderless market. In order to cope with these circumstances, it has become necessary for private enterprises to introduce international risk management systems.

In order to promote international trade, ISO has already started to consider creating international standards as a means of removing obstacles to trade activities. It was agreed to start with the preparation of documents on risk management terminology, and Japan took the lead in the compilation of "ISO/IEC Guide73: Risk management - Vocabulary - Guidelines for use in standards."

The global trend in risk management is summarized below.

Table.4-3-4-1 Major Risk Management Standards in the World

Australia & New Zealand	AS/NZS 4360:1999	Provides specifications on risk management, consisting of the following components: ・A system that executes risk management, ・Background to the introduction of a risk management system, ・Identification of risks that can be significant for an organization, ・Analysis and assessment of identified risks, ・Deliberations on measures for risks, ・A mechanism for monitoring risks, ・A mechanism for reviewing risk management programs, and ・Measures for raising awareness among members of the organization, education and training, and enhancement of risk management capabilities.	・The world's first risk management system developed in 1995 Revised in 1999 ・Regarded as indispensable for risk management in strategic planning by organizations and enterprise management. ・There is a move to globalize this standard.
Canada	CAN/CSA-Q850-97	Was established as "guidelines for decision-makers," whose purposes are: ・Identification of risks of all types by the decision-maker, ・Application to analysis, assessment and control, and ・Provision of a comprehensive decision- making process	・A risk management system developed in 1997 ・These guidelines define the purpose of risk management as "identifying great risks and taking appropriate measures to minimize the risks to the reasonably achievable extent.
United Kingdom	PD 6668.2000	"Risk management for corporate governance." Explains how strategic risk management should be implemented Introduces a procedural flow consisting of "risk investigation" → "identification of risks" → "implementation and continuation of necessary meas ures" and the final "reporting."	・Developed by British Standard Institution in 2000 ・Regarded as a preliminary standard used during the development of a full-fledged risk management system

Country	Name	Outline	Characteristics
Japan	JIS Q 2001	"Guidelines for constructing risk management systems," whose purpose is protecting private enterprises from incidents and accidents to reduce their impacts on society These guidelines include · Framework (Creation of an organization) · Policies (action guidelines, basic objectives) · Planning (risk analysis, assessment, goal-setting, measures) · Implementation (operation and management) · Correction and improvement of the system · Review by the CEO of the organization, and · Scheme and mechanism for maintaining the system	· Established as a JIS standard in 2001. · Applicable not only to private enterprises, but also to public and private organizations · Helps to construct risk management systems on the basis of the same management system as ISO 9000 and ISO 14000
United States	NFPA 1600	Regarded as "Standards for disaster reduction and business continuation programs" for public organizations and the private sector. Broadly divided into three sections: "Outline," "Program management," and "Program components" The third section "Program components" include: · Identification of disasters, · Disaster analysis, · Risk assessment, · Communications and warnings, · Procedures, logistics, and equipment for emergency activities, · Risk communication · Education and Training	· Developed in 1995 by the National Fire Prevention Association (NFPA) of the United States, and approved as an American standard in 2000 · The one and only risk management system (program) specifically for disaster prevention · Views disaster prevention not just as countermeasures against disaster but also as a means of ensuring business continuity · To be revised in 2004 with the inclusion of another article "Mutual Assistance"

2) Remaining Tasks

The time has come that private enterprises must consider risk management as part of business management. It may not be too much to say that risk management is business management *per se*. In particular, introduction of a risk management approach to disaster reduction is considered very effective not only for earthquake-proofing of building and equipment, establishment of disaster response organizations, preparation of manuals, and enhancement of other tangible measures, but also for raising disaster reduction awareness in the entire workforce from the top management down to the rank and file employees Moreover, it will be more necessary for enterprises to develop and maintain partnership and cooperation with a wide spectrum of stakeholders outside the business sector, including local populations, municipalities, customers, stockholders, and NGOs. Risk management techniques will provide an effective tool for establishing such relationships. In actual application of risk management techniques, however, costs occur. This makes it difficult for the business sector to integrate disaster risk management into its culture overnight. To promote introduction of disaster risk management in the business sector, it will be necessary to create a framework that encourages enterprises to take disaster reduction measures to win social respect, and introduce incentive measures, such as state support and subsidy systems, should be introduced.

Risk management standards such as JIS Q 2001 do not include articles specifically relating to disaster reduction. It is desired to develop a risk management standard dedicated to disaster reduction

JIS Q 2001 is no more than a local standard of Japan, not an international standard. From now onwards, Japan should make efforts to develop and turn excellent standards into global standards comparable to ISO 9000 or ISO 14000. Currently, AS/NZS 4360 developed by Australia and New Zealand is gradually winning a wider international

recognition. While it is true that Australia and New Zealand suffer natural disasters such as droughts, wind and flood damages, and earthquakes (only in New Zealand), neither of them has experienced even a single disaster of extreme magnitude. Japan has experienced more devastating damages from larger-scale disasters than either of the two countries, and applied lessons from these experiences to post-disaster reconstructions and rehabilitations. This would give a good reason to globalize a Japan-originated risk management standard. It is desired that all the stakeholders will take the lead in winning international recognition of a Japanese risk management standard