SUMMARY OF GROUP DISCUSSION

DISASTER FORECASTING, INCLUDING SIMULATION AND EARLY WARNING OF CATASTROPHIC NATURAL DISASTERS

11 June, 1999 - Workshop Discussion Group No. 1

Facilitator: Terry Jeggle, Senior Officer, IDNDR Secretariat, Geneva

Reporter: Douglas Ling, International System Advisor, UNGP-IPASD, United States

Presentations

A paper on the *Prediction of Continuous Rainstorms in the 1998 Flood Period* was made by Prof. Ding Yi-Hui, China Meteorological Administration, National Climate Center. He showed the use of snow cover data from the 1997 El Nino data and monsoon data in the prediction. He also discussed his statistical approach and modeling.

Flood prediction in 1998, was also discussed by Prof. Chen Jiu-Yi, of the China Meteorological Administration. His report discussed the study of SSTA and SOI variation over 40 years. His prediction model data correlated with actual rainfall in the Yangtze River region

The successful forecast of the 1998 Floods in South China using cloud stripe patterns from meteorological satellite images was discussed by Jean J. Chu of the United Nations Global Programme for the Integration of Public Administration and the Science of Disasters (UNGP-IPASD). She discussed Chinese databases developed over a period of 10 to 30 years of research, and on additional tools for earthquake and rainstorm prediction for mid-term forecasting (1-year). A report was submitted to the MOCA in February 1998, on 4 areas of heavy rainstorms using empirical methods. Prof. Ren Zhenqiu then provided information on the prediction of imminent disasters.

Gabriel Arduino of WMO discussed scientific resources that have been devoted to hydrological forecasting There are 6 regional working groups with international exchange of data Different time scales for forecasting are one focus of the working groups. Modeling and computing has improved greatly; there is how better convergence between simulation and forecasting models.

Iouri Oliounine, of UNESCO-IOC, discussed implementation of global, regional, and local monitoring and warning systems. One example is the Pacific Tsunami Warning System with 60 tidal and seismic stations. The Tsunami Warning System has 100 prediction sites operated by member states. Local prediction sites are in Hawaii, Alaska, Japan, and Russia looking at the South East Pacific Ocean. The Tsunami Warning System for the Philippines and for Papua New Guinea is of critical importance.

Communication links for all levels from national, to regional, to local centers, to the people are fundamental. These communication links need to be critically monitored and tested every two years, and the technology and procedures need to be updated continuously. Open and free access to data, both real-time and historical, with CDROM data made available is needed.

All of these preparedness needs to be well funded. For education, a four volume text book has been published by Chile. Human memory is short so floods are "well funded" because they are frequent; Tsunamis are not frequent and thus are not well funded.

Terry Jeggle of the IDNDR Secretariat reported on the Postdam meeting where six types of disaster early warning were discussed Observations were similar across all types of disasters Early warning must be viewed as a process, not an event needing scientific analysis of a each particular disaster. Vulnerable communities needs to take charge of their preparedness using many forms of communication including

electronic, database, and traditional media. The human dimension of "bringing early warning down to Earth" needs to be stressed Capacity to prepare is essential and must be transferred over different disciplines to link research, analysis, public administration, and public education

Group Discussion

The group discussion first focused on how can we facilitate greater influence of scientific prediction in public policy.

The human dimension is appreciated, for scientists may be too hurried to produce early warning; and government is reluctant to make decisions. Despite improvement of early warning techniques, failures still abound. False warnings have extreme economic and social cost. How to improve prediction methods is a fundamental question.

Data exchange for making predictions, and verification of models is needed. The cost of obtaining and maintaining data may be expensive for developing countries. For example, hydrological stations may not provide free data in a timely fashion

Hydro-meteorological monitoring stations need to be sustainable. The linkage between climate prediction and meteorological forecasting can converge to extend the time in which we can predict extreme events.

Any data can become disaster data. Oceanographic data from ships was available in the past; but after 1993, data have been not collected by many vessels. Fuller understanding of integration of different disciplines and international agencies is critical.

The group discussion then focused on how can we improve and foster exchange of information.

Multiple agencies participated in forecasting the Chinese Summer 1998 flooding; their findings concurred which helped make decision making easier But what if scientific findings do not coincide? How will the decision makers respond? The El Nina forecast was a similar situation. Only a few countries followed the forecast. Brazil changed their crop schedule to respond to the prediction, but the Philippines did not In China, the National Disaster Information Center may be the central agency for information synthesis. But accuracy is crucial: more efficient management and training are also important.

Sudden catastrophic disasters including storms, typhoons, and earthquakes are major challenges and it was suggested that more scientific work needs to be done; not just on internal causes but also on external triggering forces. For example, rainstorms can intensify due to tide generating forces; this method is also used in studying earthquakes.

The WMO working group on hydrology in South America is working on showing the impact of scientific information to policy makers. The CIDNDR will establish a center to integrate and synthesize information and serve as a data delivery channel both domestically and internationally. The mission of the Center is not to make recommendations, but to promote access to information. For example, the Ministry of Hydrology will be responsible for the issuance of warning Long term meteorological forecasting is difficult. Expert opinions differ greatly at annual meeting on forecasting - for both floods and drought in even one region. China has many different approaches to predict large disasters; we may need to take a holistic approach. The Jiashi example showed that the prediction was accurate. Local administrators need to make decisions: public administrators may be somewhat skeptical, but may still take the path of *better-safe-than-sorry.*

In the Philippines example, scientists went on TV to explain the threat of the most Pinatubo volcanic disaster as a bridge between scientists and the public The use of media is very important.

A third discussion theme was how can information be shared among countries? International organization such as the UN remains the ideal intermediary Information systems and scientific venues to foster new early warning research and validation of methodologies are fundamental. We need to document trials,

research procedures, and results.

Summary of the Group Discussion

1. Idea, experiences, and opportunities as they relate to increasing influence of scientific information for public administrations for disaster reduction are important.
2. Several techniques and experience that can help in exchanges between countries include:

- Presentations from scientists showing that there are many approaches to early disaster warning and forecasting, with varying accuracy and scientific basis.
- Early warning must be viewed as a process and not an event; and that different disaster warning are actually similar.
- Any data can become disaster data. There is need to manage and have open access across disciplines and national boundaries to these data.
- Data access needs to be open.
- Historic as well as current data should be equally used so that models and simulations can be refined and verified.
- Even experts agree that there may be many forecasting methods that contradict each other. Experts are looking for ways to synthesize and simplify information; but this process needs guidance from public administrators.
- The Chinese Disaster Information Center will promote data access; but issuance of early warning is still the responsibility of relevant Ministries.
- The fundamental question is who is responsible ultimately to translate the complex scientific data, when they are sometimes contradictory, into usable information and how to present them?
- Who pays for data and who benefits. The need is to articulate benefits and find sustainable ways to fund more preparedness. One example is the WMO working group on hydrology in South America that is working on showing the impact of scientific information to policy makers.
- Human dimension is "bringing early warning down to Earth" Examples such as in the Philippines where volcanic scientists went on TV so that residents and local officials could understand the disaster are a good solution to better disaster warning.
- Educating the public and public administrators is fundamental. An example is the UNESCO Pacific Tsunami Center textbook for children

Open communication between the triad of public administrators, scientists, and the public must be created. Open data access should be encouraged. Accurate forecast is important but communication is the key to effective preparedness and mitigation.

SUMMARY OF GROUP DISCUSSION
DISASTER MITIGATION THEORY AND PRACTICE

11 June, 1999 - Workshop Discussion Group No. 2

Facilitator: Mr. Ma Zongjin, Expert, Seismological Bureau of China.

Prof. Wang discussed "Disaster Mitigation Theory and Practice". He discussed problems throughout China. China has a synthetic mechanism for disaster presentation and reduction. China also has a theory of disaster prevention and reduction.

The macro practice of modern disaster prevention and reduction in China uses: CNIDNDR reports; national reports; disaster reports; national decade reports. Scientific and technological practice for disaster mitigation needs constant improvements. China has set up a workable system of disaster prevention and reduction.

Prof. Show-yong Yan discussed "Network-based Flood Quick Reporting System for Disaster Reduction". 112 reports were prepared for the 1998 flood to give government and local officials flood sattelite images including:

- Images, decision assessment, and background information.
- Flood information, services, and applications.
- Information from NOAA, radarsat, other satellites, and from aircraft.

Using images from satellites and land use information, experts were able to find out how many people were effected and to use the internet for exchange of information; accuracy is about 30 to 35% for flooding.

Discussion of remote sensing stressed the need for data access, and the need to assess measurements for both water and land.

Improved aspects of disaster mitigation theory include:

- Disaster distribution: losses in China are a large percentage of the GNP of the country
- The 1998 great flood in China provided a new engineering and mitigation system. China flood mitigation engineering and systems included all classes of people. Further, China's top leaders were all involved in the great flood
- China has a synthetic mechanism for disaster reduction. The system provides disaster information early, and forecasts in advance
- Government reaction is to organize people and to use scientific methods
- Macro activities include: Establishments; national reports; national plans; reports of the CNCIDNDR
- Science and technology activities include the China Disaster Reduction Center, and demonstration systems

Benefits from a disaster mitigation system include dyke information such as what caused the dyke to be broken; how long is the break; and how long will it take to recover.

Prof. Wang Xi-yan discussed "Storm Surge in China" with important consequences for disaster preparedness.

The Jilin flood in 1998 affected 13 cities and countries; the flood was very large. There was much relief work in Jilin but there were no deaths. This was a result of good pre-planing.

SUMMARY OF GROUP DISCUSSION

STRENGTHENING SUSTAINABILITY TO REDUCE VULNERABILITY TO NATURAL DISASTERS THROUGH TECHNICAL COOPERATION AMONG DEVELOPING COUNTRIES

11 June, 1999 - Workshop Discussion Group No. 3

Facilitator: Mr. Marshall Silver, Consultant in Disaster Management, UNDP/Hanoi; Senior Technical Advisor to Disaster Management Unit, UNDP Country Office, Vietnam.

Reporter: Dr. Jeanne-Marie Col, Senior Interregional Adviser, UNDESA/New York Coordinator, UN Global Programme for the Integration of Public Administration and the Science of Disasters, UNGP-IPASD.

Group Three recommends (1) less talk and more action, (2) launching of meaningful Technical Cooperation among Developing Countries (TCDC), with a wider range of modalities between countries in all locations, with all types of natural disasters, and at all stages of modernization and development; (3) stronger communication of information and coordination of action among scientists, public administrators, and citizens; (4) linkages between prediction, preparedness, the event(s), relief, rehabilitation and especially development; (5) promotion of administrator and community understanding of probability so that disaster preparedness relates to the probability of the event, as well as the likely impact; (6) establishment of instruments of "disaster-impact-assessment" for development projects; and (5) documentation of best practices in natural disaster mitigation worldwide.

Natural disaster mitigation is an essential ingredient for strategic development in countries that are regularly affected by natural disasters, be they annually expected, major, or catastrophic. Indeed, history shows that the development progress is often slowed or halted when huge natural disasters, such as floods, typhoons, earthquakes, or volcanic eruptions occur. Many modern trends, such as rapid population growth and urbanization, environmental degradation, and global climatic changes are amplifying the effects of natural disasters. Large disasters not only cause development funds to be shifted into relief activities, but also shift public attention to the past and away from the future The effects are physical, economic, social, psychological, and developmental.

Effective development strategies in the 21st Century require a framework for reducing vulnerability to destructive natural disasters. "Best practices" in natural disaster mitigation can be found in many countries, whose officials can learn from each other's experiences. Technical Cooperation Among Developing Countries is most effective when it involves scientists, public administrators, and citizens of communities vulnerable to natural disasters Indeed, only through integrating science, public administration, and public awareness and participation can the greatest natural disaster tragedies be avoided. When citizens, administrators, and scientists share perspectives with each other, they establish the basis for taking joint action, and create action networks throughout their communities Intensified joint action for natural disaster mitigation enhances self-reliance, well being, and orientation to the future; as well as community survival and sustainable human development.

The special message of this group is that while strengthening science, public administration, and public education, investment must also be targeted to facilitate linkages between these three pillars for development success. Thus, all three targets need to be included in technical cooperation activities; be these study tours, exchanges, cooperative projects, or linkages through the Internet.

In particular, Group 3 noted that both likely impact and likely probability characterize a natural disaster Further, the group noted that the most difficult case is the situation of a relatively unlikely disaster that is

likely to cause relatively massive destruction. A participant noted that investment in monitoring and forecasting depended upon available funds and on the relative usefulness of the several methods of natural disaster forecasting This discussion led to the conclusion that efforts should be made to the development of an instrument for evaluating the accuracy of various methods of natural disaster prediction. This instrument could assist decision makers to invest in the most effective forecasting methodologies. The linkage between forecasting, preparedness, recovery, and development illustrates a complete and integrated disaster cycle, with elaboration of each element. Pre-disaster involves defense, reduction, and preparedness; while after a disaster strikes, there are responses, reconstruction, and development. At best, these six activities are integrated so that development activities contribute to disaster mitigation.

The group also noted that at least nine systems are involved in natural disaster mitigation. (1) vulnerability assessment; (2) planning; (3) institution building; (4) information collection, management, and sharing, (5) resource mobilization; (6) warning, (7) response; (8) public education; and (9) drills or rehearsals of disaster event response. Of these systems, there are at least five administrative systems: organizational (framework of coordinating institutions), manpower (government, technical, military, and citizens); material (lifelines for water, food, displaced persons, clothing, shelter, medicines and medical care, power, and communications facilities); financial (local, regional, national and international), and technical (monitoring, forecasting, information communication and warning, and applied research, such as simulation models, geographic information systems, and risk analysis). Other participants highlighted the importance of working with the private sector, insurance companies, and NGOs. The group noted that the legal framework, including laws, regulations, plans, and management of these group frameworks are all areas to be strengthened.

The representative of Anhui Province noted that their contingency planning for flood disasters involved many government organizations (such as civil affairs, water resources, finance department, health services, and disaster relief units), as well as cooperation from the private sector and communities. Further, he noted their effort to use the relief rehabilitation resources and process to make many areas less vulnerable to future natural disasters The representative further noted that local, regional, national and international resources assisted in the preparedness and 1998 flood recovery process in Anhui Province.

Technical Cooperation among Developing Countries is an important modality for promoting and sharing of perspectives and experiences. Technical cooperation activities include study tours, exchanges, cooperative projects, or linkages, and e-mail exchanges through the Internet. Indeed, one participant suggested a "global disaster internet university" through which best practices and perspectives could be shared, with participants utilizing those concepts and methods that they find most useful in their countries. An internet-based system could facilitate the posting of, for example, materials, lectures, and documentation of best practices. Participants noted the usefulness of the IDNDR sponsored internet conferences.

The group agreed that with the advent of the "global environment", the "global economy", and the "information age" All types of technical cooperation are required, involving developing countries, developed countries, and countries affected by all types of natural disasters. Indeed, there is no limit to the variety of potential partnerships to share and assist in disaster mitigation. The group agreed that the United Nations should play a lead role in facilitating such partnerships, and especially Technical Cooperation among Developing Countries.

SUMMARY OF GROUP DISCUSSION

EMERGENCY AND RELIEF MANAGEMENT DURING SEVERE STORMS AND CATASTROPHIC FLOODS

12 June, 1999 - Workshop Discussion Group No. 1

Facilitator: Ms. Sabine Metzner-Strack, Head, Asia and Pacific Desk, Disaster Response Branch, Office for the Coordination of Humanitarian Affairs, OCHA Geneva.

Reporter: Mr. Jim Robertsen, Deputy Representative Regional Delegation of the International Federation of Red Cross and Red Crescent Societies (IFRC)

Summary of Group Discussion

The group session started with a presentation on disaster emergency relief and management delivered by Dr. Zheng Yuan-Chang, Ministry of Civil Affairs and China National Committee for IDNDR. Mr. Zheng outlined the importance of preparedness measures, including emergency evacuation to transfer people and assets to safe areas. He pointed out important resettlement principles, such as the need to resettle people as close as possible to their original homes; to ensure the security of evacuation sites; to attend to the basic needs of evacuees: to try to accommodate as many evacuees as possible with relatives and the local population; and to make use of public facilities.

Effective measures for the prevention of diseases and epidemics is also an important concern, as there is a high risk of outbreak of water-borne diseases in floods. Experience shows that the majority of flood related deaths were caused not by drowning, but by water-borne diseases.

The presentation also pointed out the need to take early measures for recovery and rehabilitation of flood affected areas. This should include the repair and reconstruction of victims' houses, provision of sustained relief assistance in accordance with predetermined requirements, repair of life-line facilities, encouraging self-help initiatives, restoration of the community management structure, complete assessment of the disaster situation, and other follow up activities.

The important role of the Government in disaster relief in terms of management (public awareness, relief materials, and human resources), coordination (local communities, military forces, central government, and other actors) and cooperation among different provinces was emphasized. The use of military forces of more than 300,000 military personnel were engaged in the 1998 flood fighting; this was of crucial importance, and military actions need to be coordinated with the civil actors. The role of non-governmental organizations and others (enterprises, insurance companies, and the public at large) was also acknowledged. International assistance can also provide useful support. Social and economic development is fundamental to improving disaster relief capacity

Mr. Xusheng Yang, Deputy Head of the Relief Division, Red Cross Society of China, made a presentation on the relief activities implemented by the China Red Cross in cooperation with the International Federation of Red Cross and Red Crescent Societies following the Summer 1999 floods The emergency programme provided basic flood, medical and sanitation support, quilts, blankets, and emergency shelters. Following an appeal launched through the IFRC, more than SF 11 million were raised for the IFRC relief program implementation. An evaluation study of the operation has just been completed. The Red Cross Representative indicated the usefulness of regional cooperation among disaster-prone countries, and mentioned initiatives implemented by the Red Cross network in this regard

During the group discussion, delegates from Bangladesh, China, the Dominican Republic, Papua New Guinea, the Philippines, OCHA, IFRC and the China Red Cross shared experiences and highlighted

important issues regarding emergency and relief management during severe storms and catastrophic floods. The speakers considered opportunities for Technical Cooperation among Developing Countries in different areas, including effective early warning and precautionary measures; training; the use of information technology; damage and needs assessment methodology; search and rescue; emergency operations management including evacuation coordination methodology; and operations centre management. The representative from the Philippines stated the importance of effective communications in disaster relief. Papua New Guinea, Bangladesh and others emphasized the need for community disaster preparedness, use of traditional coping mechanisms, and local capacity; because the first response is always carried out by the affected communities.

The primary role and responsibility of the Government in disaster response was also emphasized. In the case of the recent floods in China, the national effort covered the large majority of relief assistance needs. International assistance mobilized through the United Nations Inter-agency Appeal and through the Red Cross System provided useful support, but covered only a relatively small relief percentage as compared to the overall relief needs.

The importance of pre-evaluation of disaster threats through study of climate conditions and historic conditions was emphasized. The need to link relief with recovery and rehabilitation measures in order to allow the affected population to become self-reliant at the earliest opportunity was recognized. Disasters can often be used as an opportunity for improving systems and institutional frameworks; this was highlighted by experience in the Dominican Republic where early warning mechanisms and disaster management structures were completely re-organized using experience gained from Hurricane George. The need to expand insurance coverage to assist in recovery, and the possibility of cooperation among developing and developed countries in this regard was emphasized.

There exists many different possible modalities of Technical Cooperation among Developing Countries. TCDC often takes the form of study tours, exchange projects and programmes, participation in simulation exercises, sharing of information and expertise, and regional and sub-regional cooperation agreements. Technical cooperation through bilateral programmes and regional initiatives was encouraged. The UN system agencies as well as the Red Cross network can serve as a broker and facilitator to promote TCDC in disaster management and relief; for example through the UN Disaster Management Teams and the OCHA Regional Disaster Advisors (who OCHA intends to field in disaster-prone regions), as well as IFRC Regional Delegations.

There are a number of networks and projects of international significance which have been established by OCHA and the Red Cross which were brought to the attention of the workshop participants: the International Search and Rescue Advisory Group (INSARAG); the United Nations Disaster Assessment and Coordination (UNDAC) system, international cooperation regarding the use of Military and Civil Defense Assets in Disaster Relief (MCDA), and the SPHERE project. More information should be made available on these networks to disaster prone countries

SUMMARY OF GROUP DISCUSSION
EARLY RECOVERY AND IMMEDIATE REHABILITATION

12 June, 1999 - Workshop Discussion Group No. 2

Facilitator: Ms. Yasemin Aysan, Chief, Disaster Reduction and Recover Branch, ERD, UNDP, Geneva

Reporter: Mr. Bang Xi-ning, Ministry of Civil Affairs, China.
Mr Bang Xi-ning reported that the most important factors for early recovery are:

- Temporary arrangements for food
- Providing food, water, and clothing for immediate relief
- Use of public facilities that have not been damaged to house flood affected people
- Medical services to maintain the health for the people: there is need to send medical teams from the center to local flood affected areas.

The key question is between the choice of moving people to new locations or to rebuild in the same place.

To move from the emergency to reconstruction takes time. First, if floods come, it is necessary to quickly move people to high ground to save lives; we need to give food, water, and clothing to the local people.

Local displaced people may live with friends; this system works well.

Reconstruction of houses to enhanced standards after a disaster is an important rehabilitation decision.

In some cases, early forecast and monitoring of high water levels is possible; this allows for the most effect recovery.

Last year in China the flooding was in the middle of August, one month long. There was about 50 days of flooding. The main work was to help people to be safe for the winter, which is 6 months long.

There were about 1.56 million people affected in this large flood disaster, houses, food, wood, water, schools, medical supports were all needed.

From all over the country, the Chinese society sent clothes (from Beijing, North China); industry provided oil and coal; food was provided by people unaffected by the flood.

China has pre-plans for relief of water resource disasters, for large cities, and size middle cities for 50, 100, and 300 years events. GIS can predict different methods of coping with disasters.

Last year, a total of 270,000 reconstructed house, costing 70 million yuan were built; other support totaled about 200 million yuan

Major experience in the 1999 flood was as follows:

1. People come together to mitigate floods.
2. Use people together to combat flooding.
3. Relief and engineering system pre-plans are important.
4. Local conditions must use different methods to solve different disaster problems.
5. Reconstruction must have higher standards than original construction for longevity

Conclusion of Discussion

1. Arrangements for shelter with host families is a better solution than keeping people in emergency

shelters and on dykes. Such arrangements can even be made before a disaster; and people should be located with families in unaffected areas.

2. The public and communities need to pay a bigger role during disasters in helping each other.
3. Relief alone does not solve the humanitarian problem. We need to do water conservation, rehabilitation of dykes, and other engineering measures first; before the disaster.
4. Local characteristics including climate, topography, economic, and social condition can be very different across different provinces. Solutions including shelter, evacuation, reconstruction, and others can not be standardized. They have to be different and suitable to meet local conditions and needs:
    - After floods, houses have to be built to be more resistant to future disasters using better materials; but this solution costs more that basic reconstruction.
    - Mapping risks and knowing where it is not feasible to rebuild in the same place is a fundamental concern; relocating people from dangerous areas to safer areas is important.
    - Southern Chinese provinces are more advanced with their pre-plans for recovery. Northern Chinese provinces can improve their recovery plans by learning from the Southern provinces.

SUMMARY OF GROUP DISCUSSION

PLACING MITIGATION AND PREVENTION INTO LONG-TERM REHABILITATION AND RECONSTRUCTION FOLLOWING SEVERE STORMS AND CATASTROPHIC FLOODS

12 June, 1999 - Workshop Discussion Group No. 3

Facilitator: Mr. Liu Yanghua. Director-General, Ministry of Science and Technology, People's Republic of China

The group had a key input from the Chinese delegation through a paper presented on *Understanding and Proceeding of Recovery and Reconstruction after Floods in China* by Professor Shi Pei Jun.

The definition of recovery and reconstruction was presented and elaborated by providing the basic guidelines to be followed after a disaster. To support these guidelines, the put forward by the Central Flood Committee and the State Council was also elaborated.

A case study on post disaster recovery, with recovery recommendations for Anhui Province following a flood in 1991 was also presented and discussed. The following conclusions were presented based on the study:

- Reconstruction after floods includes reconstruction of life-lines and production facilities.
- Identification of the main rehabilitation problems and the need to restore investment is a key to successful reconstruction.
- After floods, it is important to provide flood and shelter; it is also necessary to restore the irrigation system, infrastructure, and power supply.
- Assessment of the level of risk of disaster in development plans can improve reconstruction resource efficiency.
- Study of reconstruction after floods is important in future disaster management.

Following the Chinese presentation, group discussions made the following recommendations:

1. Further discussions of long-term rehabilitation should include both successful and unsuccessful examples in applying rehabilitation measures in seismic and flood prone areas; reflecting on the sufficiency of the budget, and how effective has the reconstruction process itself.
2. Records of disaster rehabilitation should be included as an important part of the mitigation plan
3. The decision making process should be supported by scientific studies based on good data in order to avoid making wrong decisions.
4. In the next decide, the IDNDR should give more emphasis on human development in disaster reduction.
5. Bilateral and multi-lateral cooperation should be encouraged between countries and regions with support from international bodies.

International Workshop on Natural Disaster Management - Beijing China

Discussion of Final Recommendations on Technical Co - operation Between Developing Countries and the Potential Role of the United Nations

Ms. Kerstin Leitner

United Nations Resident Co-ordinator in China

UNDP Resident Representative in China

10 to 12 June, 1999

Workshop Final Recommendations

International Workshop on Natural Disaster Management - Beijing China

- ✓ Objectives of the workshop
- ✓ Why is it important to exchange disaster management information and experience between disaster-prone countries
- ✓ What is the most important disaster management issues
- ✓ How can we promote Technical Co-operation between Developing Countries-TCDC-to improve disaster management

Objectives of the Workshop

International Workshop on Natural Disaster Management - Beijing China

The workshop is designed to share practical experience - both successful and unsuccessful- to allow disaster prone countries:

1. To define effective methods to prepare for, to mitigate, and to respond to natural disasters; with a focus on windstorms and floods in particular

2. To share lessons learned among disaster prone countries in natural disaster reduction and management

— *Workshop Invitation*

Workshop Conclusions: Possible Areas of Technical Co-operation

International Workshop on Natural Disaster Management - Beijing China

- Disaster preparedness
  - Risk assessment
  - Flood mitigation
    - Structural and non-structural methods
  - Use of information management technology
  - Integration and processing of information
  - Community disaster preparedness and use of traditional coping mechanisms
  - Public information
  - Forecasting and early warning systems
  - Contingency planning

Workshop Conclusions: Possible Areas of Technical Co-operation

International Workshop on Natural Disaster Management - Beijing China

- Disaster damage and relief
  - Damage and needs assessment methodologies
  - Search and rescue
  - Co-ordinating methodology
  - Operations center management
  - Mobilisation and management of international relief aid
  - Linkage between relief and recovery

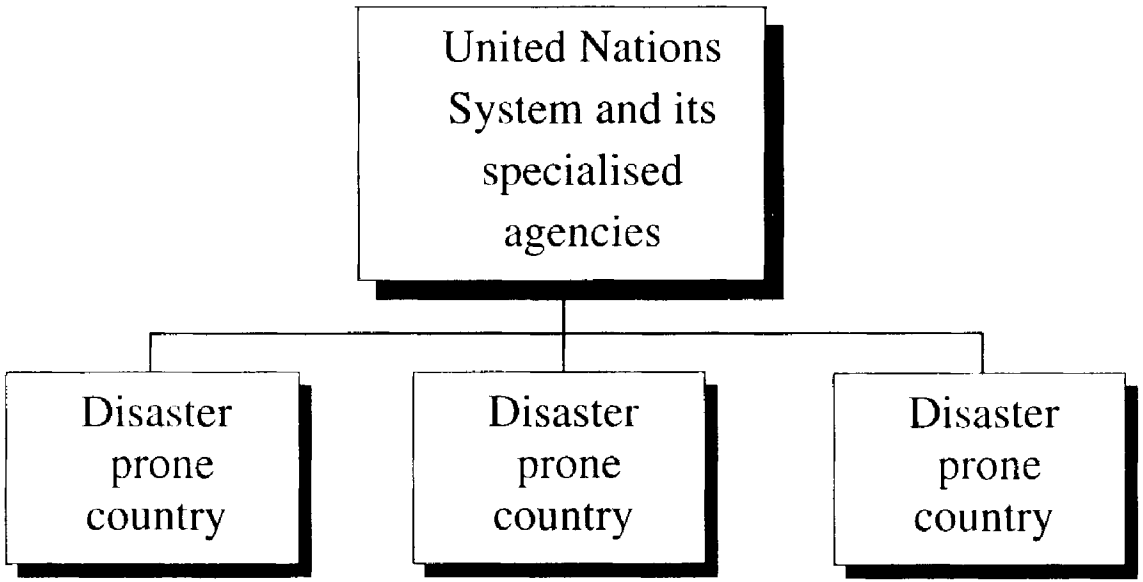
Workshop Conclusions: Possible Areas of Technical Co-operation

International Workshop on Natural Disaster Management - Beijing China

- Disaster rehabilitation and mitigation
  - Sustainable land use and environmental restoration
  - Transformation versus reconstruction
  - Self recovery - over reliance on international assistance
  - Expanding insurance coverage to assist in recovery
  - Using disasters as an opportunity for improving systems and institutional frameworks; especially in early warning and management

How To Promote Technical Co - operation Between Developing Countries - TCDC - to Improve Disaster Management

International Workshop on Natural Disaster Management - Beijing China



Sharing of data, information, and experience