Workshop to Improve the Compilation of Reliable Data on Disaster Occurrence and Impact

April 2-4, 2006
Bangkok , Thailand

Workshop Proceedings

The following proceedings are from a workshop to improve the compilation of reliable data on disaster occurrence and impact. The workshop was jointly organized by the Centre for Research on the Epidemiology of Disasters (CRED) and the United Nations Development Program (UNDP) in Bangkok from April 2-4, 2006.

The purpose of the workshop was to compile and synthesize experiences to date, particularly within Asia, in the development, enhancement and maintenance of historical databases on disaster losses. Participants included representatives from countries involved in disaster database development and international experts.

The workshop was an important step in the preparation of a Global Risk Identification Program (GRIP). The preparatory phase of the GRIP is being implemented by UNDP and the ProVention Consortium with funding from the Swiss Agency for Development and Cooperation. The workshop also contributes to the goals of the UNDP regional tsunami recovery project.

These proceedings are complemented by a pre-workshop global survey of existing disaster databases. The pre-workshop survey, these proceedings, including the list of participants, and the workshop presentations are available online at the following address: [http://www.emdat.net/activities/bangkokdisasterdatabaseworkshop.htm]. Combined results for the pre-workshop survey and workshop results are forthcoming. Outputs from the workshop will be used to guide the development of GRIP project proposals for strengthening the global database on disaster losses.

Background

Development and responses agencies have recognized the importance of disaster planning and preparation in protecting vulnerable populations from the effects of natural disasters. The systematic collection of information related to the frequency and impact of disasters provides an invaluable tool to governments and institutions in charge relief and recovery activities and for the integration of disaster risk analysis and reduction in development and poverty alleviation programmes

However, there is a lack of international consensus regarding best practices for collecting data on natural disasters. Along with the complexity of collecting reliable information on disasters and their impacts there also remains huge variability in definitions, methodologies, tools and sourcing.

The Workshop for Improving the Compilation of Reliable Data on Disaster Occurrence and Impact was an opportunity for agencies working in the field of disaster data compilation and analysis to share experiences in creating and maintaining disaster databases.

Participants

Participants included representatives from public and academic institutions involved in disaster database development in China, Cambodia, India, Indonesia, the Maldives, Nepal, the Philippines, Sri Lanka, Thailand and Vietnam and international experts from the United Nations Development Programme (UNDP), the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), the United Nations Office for the Coordination of

Humanitarian Affairs (UNOCHA), the ProVention Consortium, the Asian Disaster Reduction Center (ADRC), DesInventar, the Observatorio Sismologico del SurOccidente (OSSO) and the Centre for Research on Epidemiology of Disasters (CRED).The list of participants is available in Annex 2.

Workshop Proceedings

April 2, 2006

Welcome and round-table introductions

The participants to the workshop were welcomed by Kamal Kishore, Regional Disaster Reduction Advisor of the UNDP's South and South West Asia Bureau for Crisis Prevention and Recovery.

Presentation of the UNDP Regional Programme (UNDP)

Sanny Jegillos, Regional Programme Coordinator of the UNDP Regional Centre in Bangkok introduced the Regional Programme on Capacity Building for Sustainable Recovery and Risk Reduction in Tsunami Affected Countries. This programme was initiated in November 2005 in response to the needs of tsunami-affected countries for further regional recovery and risk reduction efforts.

The Programme's main objectives are to help increase the capacity of countries affected by the Indian Ocean Tsunami and to undertake post disaster recovery; and to help mitigate the risk that would ensue from any future natural disaster events. The programme has three main components to achieve its objectives: Information Management to support tsunami-affected countries to develop appropriate information management tools to assess damage at the local level; support for the development of Early Warning Systems at the national levels; and offer opportunities for training and learning to national and regional natural disaster experts.

Workshop objectives and methodology, review of agenda

Maxx Dilley, Senior Policy Advisor of the Disaster Reduction Unit of UNDP' Bureau for Crisis Prevention and Recovery introduced the objectives of the workshop and put them into context relative to the benefits of developing and maintaining disaster loss database and information systems.

Three stages in the development of disaster loss databases were identified. In the first stage, information on a disaster's humanitarian and economic impact is collected for the purposes of relief, recovery and rehabilitation. In the second stage, disaster loss databases (global, national or sub-national) document the cumulative losses to development and help assess poverty impacts. In the third phase, disaster databases provide the tools to perform risk assessments for hazard exposure, vulnerability, and historical losses. The risk assessments can then be used for contingency planning, risk reduction and risk transfer to decrease disaster impacts and associated losses.

Context and background on the workshop, including the Global Risk Identification Program

Carlos Villacis, GRIP Programme Coordinator of the Disaster Reduction and Recovery Unit of UNDP's Bureau for Crisis Prevention and Recovery, gave an overview of the Global Risk Identification Programme (GRIP).

The main objective of GRIP is an improved evidence base for disaster risk management to enable the application and prioritisation of effective disaster risk reduction strategies at the national, regional and global scales. In the context of these objectives, the expected outcomes of the workshop would feed into a better understanding of disaster data collection (methodologies, experiences, best practices and needs identification), and of the role that GRIP can play in the region (develop new project proposals, contribute to ongoing efforts, and support regional partnerships).

Presentation of pre-workshop inventory of disaster databases and discussion

David Hargitt of the Centre for Research on the Epidemiology of Disasters (CRED) of the Université catholique de Louvain presented a background paper prepared by Liz Tschoegl of CRED.

The report, entitled "*An Analytical Review of Selected Data Sets on Natural Disasters and Impacts*", summarizes the content, presentation, and accessibility of a select group of international, national, regional, and event-specific disaster loss databases. The objective was to provide as comprehensive a view as possible of the current disaster database landscape to better identify gaps in information and strengths in our individual interpretations.

Following the presentation of the report and its conclusions, a number of issues that need to be considered when compiling or analyzing disaster data were presented. These issues are as follows:

Data scope and entry criteria: It is essential to clearly define what is meant by 'disasters' (natural, technological and/or biological disasters) and to identify the criteria that will be used in compiling the data within the scope of the database's objectives.

Disaster typologies and linkages: Disaster types must be clearly defined, as well as their linkages to other disasters (e.g. earthquakes triggering tsunamis or droughts triggering forest fires).

Definitions: all disaster attributes need to be defined. Understanding what is meant by 'persons killed' by a disaster might seem simple, but can be complicated in cases of evacuation-related deaths or post-disaster epidemics. Vaguer terms such as 'affected' or 'buildings damaged' need to be defined as clearly as possible. The same is true for economic impacts from disasters, which can, for example, be direct or indirect or limited to insured losses.

Methodologies:
Temporal aspects: identifying the start and end dates of disasters can be a difficult task. This is especially true for droughts, but also for other types such as tropical depressions (is it date of

highest intensity, of landfall, of first impact?). Multi-country and multi-year disasters are especially problematic.
Geographical aspects:
Georeferencing disasters might seem simple for 'point' disasters such as earthquakes. However, the affected area will always be polygonal.
R*esolution*: Including data by the smallest sub-national administrative boundaries impacted by a disaster can be valuable for analysis. Yet, changing borders, a lack of standardized names and multi-country disasters can complicate this task.
Sourcing: The reliability of data is often dependent on its source. Real-time figures, especially those given by the news media, are not always trustworthy. Furthermore, as different sources will give different figures, a method to rank sources based on their reliability is helpful.
Updating: Data on a disaster's impact can sometimes only become available months, if not years, after its occurrence. A system to monitor data sources for updates is therefore necessary.
Validation: Before making data public, it is essential to check it for errors with a well-defined validation methodology.

Accessibility: Disaster data, with all accompanying definitions and methodologies, should be made available online. This allows users to provide feedback on the data itself, but also to perform their own analyses for their organization-specific objectives.

Inter-operability: Disaster databases should be inter-operable, in that the data from one database can be exported into another and vice-versa. This entails some common structure, as well as common definitions of disaster attributes.

Open Platforms: The use of non-open sourced proprietary software can limit the inter-operability of disaster databases. An open-source approach means that organizations can tailor the database structure to their geographical or sectoral needs. Also, using commonly used website languages can allow the automatic display of disaster data across different databases.

Outputs: It is important that disaster databases provide the ability to export data to other commonly used software (e.g. EpiInfo, SPSS), as well as use accepted standards (e.g. OpenGIS) and provide the relevant metadata to users.

Presentation of GLIDE

Masaru Arakida, Senior Researcher at the Asian Disaster Reduction Center (ADRC) presented the GLobal unique disaster IDEntifier number (GLIDE) initiative.

Accessing disaster information can be a time consuming and laborious task. Not only is data scattered, but the identification of a disaster can be confusing in countries with many disaster events. To address both of these issues, a globally common Unique ID code for disasters is generated which can be used to crosslink same disasters across different databases.

Though GLIDE numbers are currently being generated, workshop discussions identified the need for: expert reviews of criteria and methodologies; the generation of historical GLIDES; and training and workshops to encourage regional, national and sub-national institutions to use GLIDE.

Presentation economic loss estimation

Dr. Ti Le-Huu of the Environment and Sustainable Development Division of the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) made a presentation entitled "*Assessment of Socio-Economic Impacts of Hydro-meteorological Disasters: Recent Experiences & Developments*".

Using the ECLAC methodology in selected case studies, the research provided a regional perspective on disaster impacts on assets, flows and macroeconomics across the social, infrastructure and productive sectors, and globally.

This research project highlighted the need for assessment methods and their user-friendliness to be improved, systematic training programmes and standardization to facilitate application, the establishment of networks of experts, and the integration of assessments for effective implementation to the Hyogo Framework for Action and for the support of the GRIP regional programme.

April 3, 2006

This first part of this day was reserved for presentations by national-level participants, and the later part of the day for presentation by international participants.

Participants presenting their countries' experiences with national or sub-national disaster loss databases were asked to address the following points:

- Selection of information sources and the impact of the choice in the coverage, resolution, accuracy and institutional viability of the databases (i.e. the Official vs. Media data sources dilemma).
- Political issues that surround the official use of disaster databases and how to manage expectations and reservations.
- Methodology and criteria to define, homogenize and gather data about losses (i.e. disaggregation, geo-references, glossary of terms, thresholds, etc) .
- Loss estimation methodologies (mortality, sectoral, economic)
- Use of data in post-disaster situations and its role in recovery and reconstruction after large scale events.
- Data analysis methodologies (i.e how to find patterns, trends, etc) and it use determining vulnerabilities.
- Status of database development

Cambodia - Ross Sovann - Disaster Information Management and Database

Key challenges highlighted during the presentation were the need to develop a national policy and relevant legislation on disaster management, to promote and ensure commitment for disaster risk management, to advocate for reliable disaster data for decision-making, to better understand the needs of stakeholders and to improve the technical and human resource capacities.

Database status: No existing national database
Coverage: Not available at this time

Institution: National Committee for Disaster Management (NCDM)
Objectives: Disaster response and risk identification
Sourcing: Not defined at this time
URL: Not available at this time

Regina Below – Cambodian Disaster Database: a National Experience based on EM-DAT

Regina Below of the Centre for Research on the Epidemiology of Disasters presented a project that included the creation of a Cambodian Disaster Database based on the EM-DAT model at the time and a three training session for Ministry of Health and National Committee for Disaster Management personnel.

The conclusions of this project were the need to conceptualize the database as a relational model for data entry at sub-national levels, to create additional fields according to the characteristics of the disaster-affected areas in Cambodia and to link other existing databases and sources of information in Cambodia.

China – Maxx Dilley - The Establishment and Application of Natural Disaster Database of China

As Dr. Shi Peijun and Dr. Du Juan, researchers at the Key Laboratory of Environmental Change and Natural Disasters of the Beijing Normal University, were unable to attend the workshop, Maxx Dilley presented information that they had shared with him on the National Disaster Database of China (NDDC) and its structure and applications.

The NDDC consists of several sub-databases that have compiled historical disaster occurrence and impact data, but utilizing different sources and covering different regions and years. The Database of Historical Natural Disasters is still being developed, though it has already been analyzed for the Hunan Province. From the NDCC, an Atlas of Natural Disaster System of China has been created with some 488 maps and 65 statistical charts.

Database status: Still under construction
Coverage: National, 1949-2004
Institution: Beijing Normal University
Objectives: Disaster risk identification
Sourcing: Newspapers, maps, ministries
URL: Not available at this time

India – Sreeja Nair – Systematic Disaster Databases for Disaster Risk Reduction

Though a large number of disaster databases exist in India, they are often scattered and the data is non-standardized and difficult to collate for comparative analyses. However, a number of initiatives, promoted by UNDP, to build integrated, homogeneous and comparable disasters databases using the DesInventar methodology and software have been initiated in certain states. These include the state of Orissa database (30 years of data) and five additional projects in the states of Delhi, Tamil Nadu, Uttaranchal, Uttar Pradesh and Maharastra, in which the data collection has been fully institutionalized and is being made directly by the state disaster

authorities. The Goals of these projects are to collect at least 30 years of data to be used in the generation of State-level Vulnerability Reports.

The following challenges were identified during the presentation: The need to create acceptance at the state and national levels of inventories of disasters; to identify uses and users of disaster databases; to address sustainability issues for prospective data collection; to integrate diverse disaster data hosted by different ministries and/or in different languages; and to address political and administrative issues associated with, among others, disparate response and relief measures.

Database status: Various active sub-national or sectoral databases. No active national database.
Coverage: States of Orissa (1970-2002), Tamil Nadu (2004), Uttar Pradesh (2000-2006), Uttaranchal (data being collected)
Institution: Orissa – State Disaster Mitigation Authority; UP – Academy of Administration & Management; Uttarancha – Disaster Mitigation & Management Center
Objectives: Vulnerability and risk analyses
Sourcing: Media and governmental records
URL: Orissa - http://undp.desinventar.net/DesInventar/index.jsp. Other databases not available online at this time.

Indonesia – Wisnu Widjaja - Indonesia disaster management information system

B. Wisnu Widjaja, Head of the Natural Disaster Mitigation Division of the Secretariat of National Coordinating Board for Disaster Management and IDPs (BAKORNAS PBP), presented the Indonesian perspective on disaster data compilation and management.

the Secretariat of National Coordinating Board for Disaster Management and IDPs (BAKORNAS PBP) has now collected data for years 2002-2005. The database is now being converted to DesInventar format and the whole process of building a historical database is being supported and promoted by UNDP as part of the Capacity Building program for the Tsunami-affected countries.

The following challenges related to disaster data collection were identified: Varying sources of data with different formats and contents; poor reliability of media sources; rough estimates of disaster losses; inaccurate information leading to improper action; inaccurate information being deflected into political issues against the government; and the difficulties of getting reliable information from small districts that have limited communication facilities.

These challenges underlined the needs for the development of a comprehensive disaster management information system addressing issues of an intricate geography, data compatibility, competent and motivated human resources, user-friendly applications, interfaces between relevant institution and/or sectors, and the sustainability of such a system.

Database status: Tsunami database and historical database active.
Coverage: National, 2002-2005
Institution: BAKORNAS PBP
Objectives: Mainly for emergency response
Sourcing: District/municipality agencies, news media

URL: http://undp.desinventar.net/DesInventar/index.jsp (only tsunami). Historical database not available at this time

Maldives - Mohammed Imad - Improving the Compilation of Reliable Data on Disaster Occurrence and Impact

Following the Indian Ocean tsunami, data was collected on the impact of the disaster using the DesInventar methodology.

The following issues were identified as needing thoughtful consideration: Issues relative to institutional ownership and management of disaster information; the need to formulate clear policies and guidelines for disaster management; the need to develop methodologies to define, homogenize and gather data on disaster impacts; and the necessity to develop technical capacities to collect and analyze data and to use loss estimation methodologies such as ECLAC's at all administrative levels.

Database status: Tsunami database active. Historical database is under development.
Coverage: National, 2004-2005 (only tsunami impacts)
Institution: Not yet defined
Objectives: Recovery & reconstruction. Risk analysis needs creation of historical database
Sourcing: Official sources
URL: http://undp.desinventar.net/DesInventar/index.jsp (only tsunami).

Nepal – Amod Mani Dixit - Experiences with Disaster Loss Data and Database Development

The National Society for Earthquake Technology (NSET), with support from UNDP, built and currently maintains a national database covering 33 years of information - publicly available via the Internet - and has prepared and made available a Country Disaster Profile. NSET has also advanced in the process of institutionalization and the transfer of ownership to all levels of government. A pilot project in two districts is about to begin.

Other ongoing efforts in Nepal include the institutionalization of a Disaster Inventory and Information Management System (DIMS) that will feed dynamically into development planning, implementation, and monitoring, as well as disaster risk management, with an emphasis on data collection being carried out at the lowest level of governance.

The following challenges were identified: the systematic DIMS and vulnerability profiles are still in an embryonic stage and there is a wide variety of disaster data collection formats, each with differing and limited objectives and uses; and a strong inertia to limit DIMS for damage and relief assessments and only for sectoral responses.

Some of the needs that were underlined were the necessity to support more international and regional experience sharing and lessons learnt, with workshops bringing together authorities and experts from the region, Latin American countries and international organizations; and the need for financial and technical support for ongoing national efforts and their sustainability.

Database status: Active
Coverage: National, 1971-2003
Institution: Presently NSET. Future institutionalization will be with government agency.
Objectives: Damage & relief assessment.
Sourcing: Ward/Community-level Disaster Management Centres
URL: http://undp.desinventar.net/DesInventar/index.jsp

Philippines – Felino Do Castro – Managing Disaster Information

The Philippine Disaster Management Framework is a community-based, multi-hazard and multi-sectoral approach within the Natural Disaster Coordinating Council.

Within disaster loss information management, the importance of disaster data accuracy, timeliness, granularity, accessibility and security has been identified. To address data inaccuracy, limited coverage and aggregation, the National Disaster Coordination Council had developed a standard format to capture direct losses, with indirect losses being measured using the ECLAC methodology. The need to promote response coordination is one of the biggest drivers of information sharing among the different actors involved in disaster response, relief and rehabilitation.

The following challenges were identified: the difficulty of coordinating all the actors involved; the need to validate historical data by cross-referencing their data to the EM-DAT database; the need to develop analytical systems according to the objectives and needs of the users; and the importance of providing disaster database metadata to facilitate the integration of different databases.

Database status: Active
Coverage: National, 1990-2001 (for Typhoons, 1970-2003)
Institution: National Disaster Coordinating Council
Objectives: Disaster response
Sourcing: Official sources
URL: http://www.ndcc.gov.ph/Disasters1990-2001.html;
http://baseportal.com/cgi-bin/baseportal.pl?htx=/miso/typhoons&cmd=do_search (Typhoons)

Sri Lanka – P.K.S Mahanama – National/Sub-National Experiences with Disaster Loss Data and Database Development

The Historical Disaster Database project was introduced in 2004 with UNDP support after the Tsunami disaster, and implemented by the National Council for Disaster Management (NCDM) which was a unit under the Women Empowerment & Social Welfare Ministry. With full country coverage (24 Districts) the project collected historical data over 31 years (1974 – 2005) at resolution Province/District/Division, disaster data was collected on both Natural & Technological disasters.

Some of the challenges that were identified in relation to disaster loss databases in Sri Lanka were: the need to better coordinate impact assessments, lessen data duplication and improve sharing of data; the need to address issues of political interference on data; the necessity of

improving data transparency and reliability, as well as common scales and criterions; and the need to ensure that disaster policies are coherent and evidence-based.

Sri Lanka - Sisira Kumara - Critical Review of the National Perspective in Institutionalising Disaster Loss Data and Databases.

Many challenges were identified that needed to be addressed after the tsunami through the creation of the National Council for Disaster Management and the Disaster Management Center, including the need to increase data reliability and resolution; improve data collection and its use and sharing at national and sub-national levels; and the necessity of mainstreaming disaster databases in the decision process and development planning at national level.

Many of the above challenges were addressed by the "Sri Lanka Disaster Management Act No 13 of 2005", passed by the Sri Lankan Parliament, which established the National Council for Disaster Management and its mandate to direct, coordinate, monitor, and when necessary, implement or enforce activities related to disaster management. These include disaster management technology, long-term mitigation and disaster risk reduction, early warnings, post-disaster emergency operations, preparedness planning and training, education and public awareness. Also, the institutionalization of the data collection and analysis for DRM purposes using DesInventar at national and sub-national levels has now been made possible.

Database status: Active
Coverage: National, 1974-2005 (also tsunami database)
Institution: NCDM
Objectives: Disaster risk management
Sourcing: Official sources
URL: http://undp.desinventar.net/DesInventar/index.jsp

Thailand – Visit Buresawat – National Experiences with Disaster Management and Disaster Loss Databases

Having a clear legislative framework linked to key performance indicators and compensation-related issues, the Department of Disaster Prevention and Mitigation (DDPM) compiles disaster data and houses the national disaster database. The database system was developed in collaboration with a local university, with data analyses also being performed by universities and NGOs.

Several challenges were highlighted, including those linked to data sharing between institutions, the need to provide useful outputs at different administrative levels and across sectors, and the importance of developing the database compilation and analysis technology and the capacities of all users, including at the local level.

Database status: Active
Coverage: National
Institution: NCDM
Objectives: Disaster prevention, mitigation, response and rehabilitation.
Sourcing: Official sources
URL: http://www.disaster.go.th (data not yet available in English)

Vietnam – Tran Van Tuan - Developing a standard methodology for damage & needs assessment in Vietnam

Due to a lack of reliable data on disaster losses for response, rehabilitation and recovery in Vietnam and the necessity of having a database of historical disaster for the assessment of trends and future risks, an international consortium of donors supported the Central Committee of Flood and Storm Control (CCFSC) for the creation of a unified national disaster damage and needs assessment (DANA) and reporting system for Vietnam.

DANA focuses on water-related disasters and included detailed guidance for operational aspects such as data collection, storage, communications and reporting. One of the objectives was also to develop a proposal for the actual adoption and use of the system by all key stakeholders at the national and local levels.

Several recommendations were identified, including the need to consolidate and promote the system in terms of scale and content, to improve the software and ensure that can it can be used, through capacity-building, in all districts of the country, and especially in disaster-prone areas. The sustainability of the system for disaster management also needs to be addressed and adequately supported.

Database status: Active, though historical data not yet all entered
Coverage: National, 1970-2005
Institution: CCFSC
Objectives: Damage and needs assessment and trend and risk analyses.
Sourcing: Official sources
URL: www.ccfsc.org.vn (historical data not yet available)

Experiences with developing and maintaining an international database

Regina Below, Database Manager at the Centre for Research on the Epidemiology of Disasters, presented the EM-DAT database to the audience. CRED has a long experience in data collection and management and EM-DAT has become a much-used source of international disaster data.

The following strengths of EM-DAT were highlighted: The transparency of the database in terms of criteria, sources, definitions, and methodologies; the importance of updating disaster data as new information becomes available and cross-referencing it for reliability; and the necessity of validation and error-checking procedures. Also underlined were the implications of providing access to all of the data through the internet. This has stimulated interest in the database, increased international visibility and has provided CRED with invaluable feedback from users of the data. Finally, the needs to continually review and improve methodologies, user-interfaces and the software were underlined.

Regional/country experiences with DesInventar in Latin America

Cristina Rosales, Research Assistant and DesInventar Coordinator at the Observatorio Sismologico del SurOccidente (OSSO), presented regional and country experiences with DesInventar in Latin America.

DesInventar methodological aspects highlight the dependant relationship between small and large disasters in that small disaster can predict where large disasters will occur. Also, there is a need to compile data small disasters to assess their accumulated impacts, which, in some cases, can be of the same magnitude as that of single large disasters. To satisfy these concepts, there is a need for homogeneous and comparative databases needed that acquire standardized information rigorously. DesInventar is such a tool that facilitates the analysis and representation in space and time of hazards, vulnerabilities and risks in a retrospective and prospective way.

From the experiences of DesInventar in Latin America, the sustainability of databases is linked to the ability to institutionalize them, with local stakeholders needing to get involved and take responsibility for financing them.

About DesInventar

Julio Serje, International Consultant in Disaster Information Systems at UNDP Regional Centre in Bangkok, presented the DesInventar Methodology and tool.

DesInventar is a methodology and a set of software tools. The methodology essentially proposes the collection of homogeneous data about disasters of all scales, with the information being compiled, processed and referenced to a relatively small geographic unit. DesInventar provides guidelines in the selection of boundaries, for choosing the maximum resolution and the temporal limits, for selecting sources and addressing discrepancies among these, for taking into account chained and long-duration events, and what to do when disaggregated data in unavailable.

The DesInventar Tool allows for multiple applications ranging from risk assessment models to damage assessments in major disasters. The software is open-sourced and is based on the standard relational database structure. It allows users to configure the structure to adapt to institutional and geographical features and is multilingual. Interoperability, accessibility and multi-platform uses have also been addressed.

Wrap up and discussion

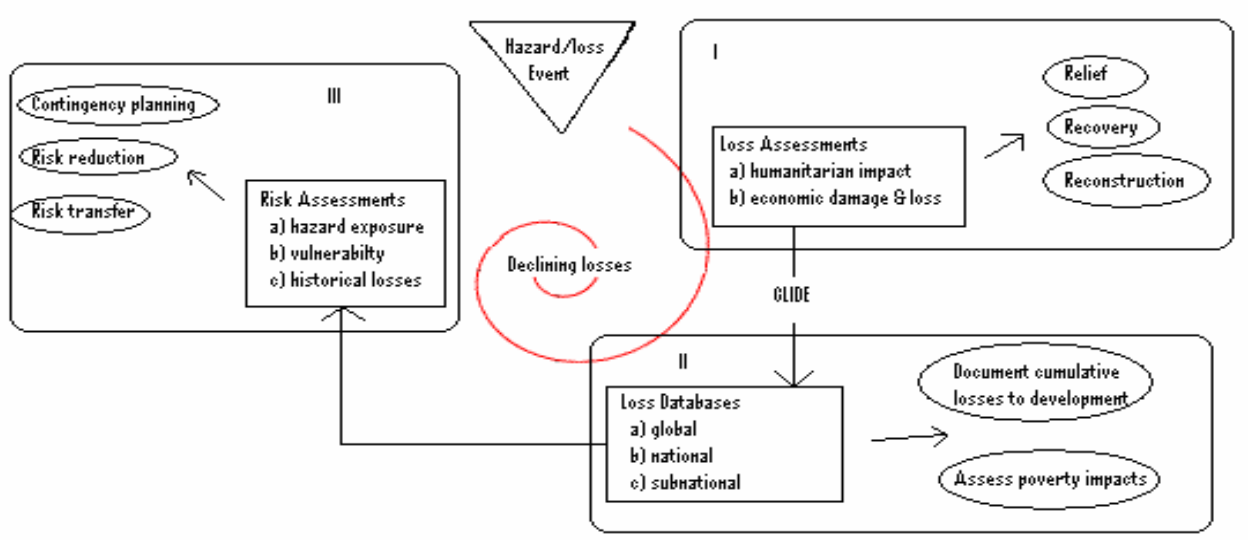
To wrap up discussion for the day, several issues were highlighted that were present in many of the national initiatives that were presented during the day.

- Costs and capacity are issues that need attention and support from the international community.
- Data collection is hard to justify unless it supports an inter-institutional structure.
- Even though there tends to be much decentralization and duplication of efforts, as well as a lack of standards and inter-operability, insisting in a single solution can encounter resistance.
- There is the need for a high degree of cooperation within countries, regionally and internationally.

- There is strong need to show the benefits of disaster loss databases to get institutional support.
- Collaborations are important between government institutions, universities and NGOs.

Finally, there is a wide range of stages of development of disaster loss databases. The Philippines is the only example of a well-run, indigenous owned, public system. Countries using DesInventar are tackling issues of institutionalization of the databases (Nepal, India, and Sri Lanka). Other nationally-owned systems are in the early planning or development stages (Vietnam, Indonesia, Maldives), are spread out over many geographical or sectoral data sets (Sri Lanka, India, Thailand) or need to be jump-started again (Cambodia).

As shown in the diagram below of the desired evolution and use of disaster datasets, we can see three main stages: Stage I, in which data collection is made only for relief and emergency purposes. Stage II, in which historical losses are collected and continuous and detailed data compilation occurs within Disaster management agencies and finally Stage III, when these datasets and consequent analysis are included institutionally within the Disaster Risk Reduction national initiatives.



Achievements and challenges in each of these stages (e.g. a historical database, an institutionalized process of reliable data collection, and use of the datasets in DRR) by the participating countries are critical to understanding and improving the compilation of reliable data on disaster occurrence and impact.

From the country presentations, the following classification can be made:

a) The Philippines is now in stage I, with a well-run, indigenous owned, public system. The system is mainly focused on post-disaster damage reporting for relief and emergency management. Historical data, and its use in risk-exposure analysis, needs to be further institutionalized and fed into the country's disaster risk reduction initiatives.

b) Countries where UNDP has been providing support in creating disaster databases are in different stages of the process:

- Nepal: it has a comprehensive data set already built and is now working towards institutionalizing continuous data collection and promoting the use of the dataset as part of the DRR process.
- Sri Lanka: It features an institutionally built historical dataset (by NDMC) and continuous data collection by the new DMC. The system is now strengthened by a legal framework that regulates the use of the dataset as part of the institution's tools to perform disaster risk management.
- India: After a first attempt in Orissa where many lessons have been learned, new historical datasets and data collection processes are now being built in five additional states, directly within the institutions in charge of Disaster Management (stage II). The use of these datasets as part of the DRR process is work in progress. The Orissa database is now used in stage III and is being used as a planning tool.

c) Other nationally-owned systems are in the early planning or development stages (Vietnam, Indonesia, Maldives).

April 4, 2006

Working group discussions

During the first part of this day, the participants were broken into three groups and asked to discuss a number of topics, identified by the workshop steering committee, and to provide the conclusions of these discussions in the afternoon session.

The Topics for discussion were as follows:

- Institutional framework

  Do you have a national policy that will allow you to develop a reliable disaster loss database? Are you in the process having one or plan to have one?
  Where do you see the most sustainable home for a multi-purpose disaster database or information system?
  Do you think data sharing is a problem in your country? If yes, what would you see as a mechanism to encourage better sharing?

- Legal Framework

  Are there legal provisions in your country for collecting disaster data and information? If so, what are they? If not, what do you think they would be?

- Financial Framework

  Do you have the financial resources to develop and maintain disaster information services? If so, what are they? If not, what needs are there?

- Capacities

Are there the technical capacities in your country for producers and users of disaster information? (Methodologies, analyses, etc. ...)
Are there the technical infrastructure capacities in your country for producers and users? (Hardware, communication, etc...)
Do you have any programmes to build those capacities in your country? If yes, what are they? If not, what are the needs?

The breakdown of the groups was as follows:

Group 1: Vietnam, Cambodia and Thailand

Group 2: Philippines, Nepal and Indonesia

Group3: India, Maldives and Sri Lanka

Working group reports

Matrices of the conclusions of the discussions on the above question are available in Annex 1.

Conclusions, next steps and wrap-up

Maxx Dilley reiterated the objectives of the workshop and highlighted the need to identify the elements of proposals to strengthen disaster data and its use in the region. Participants proposed potential contributions to this process as well as their expectations from it.

The goal is to have **accurate reliable data for disaster response**, **for documenting the cumulative impact of disasters and for identifying risks.**

One important conclusion is to recognize the different degrees of progress in the various countries represented at the workshop. It is important to define and **meet minimum capacities** in those countries with no well established disaster loss database and information systems. Furthermore, **regional cooperation and capacity building** between less and more advanced countries would be a welcome step.

The creation of a **network of disaster data experts** would strengthen individual initiatives through technical capacity building and the sharing of lessons learnt. Sharing information, however, needs to go beyond disaster data, and must also include typologies, methodologies, legal frameworks and other relevant knowledge.

There is a need to **establish incentives for data collection** and reporting, both at local, national, regional and international levels according to the needs of each. Concepts of **data accuracy and reliability** need to be integrated into **legal and institutional frameworks**. Furthermore, data needs to be incorporated in the **decision-making mechanisms** at all levels.

There is much **value in putting disaster databases online** by giving users the ability of providing feedback and identifying gap, as well as increasing the visibility of the work that goes into collecting and managing such data. Furthermore, competition between countries in the development of their disaster information systems can be positive for all those involved.

Disaster databases must be linked to **broader agendas of disaster management and disaster reduction**, and development and poverty reduction initiatives need an evidence base on disaster occurrence and impact to be successful.

Finally, data is the most powerful advocacy tool and by working together we can move towards **building a global reliable dataset with local-level resolution**.

Annex 1.

GROUP DISCUSSION CONCLUSIONS

Institutional frame work

Questions to address during discussions:
Do you have a national policy that will allow you to develop a reliable disaster loss database? Are you in the process having one or plan to have one?
Where do you see the most sustainable home for a multi-purpose disaster database or information system?
Do you think data sharing is a problem in your country? If yes, what would you see as a mechanism to encourage better sharing?

Country	Policy/Law	Institutional Mechanism	Problems
Thailand	**Yes** - Linked to key performance indicators - National policy for disaster management - E-government policies that link government entities (1st 3-year plan)	**Yes** - DDPM as the home of the database - Compilation is government run with DDPM providing data at provincial level - Clear database ToR for 14 types of hazards and relevant attributes	- Sharing of data can be problematic with national security often given as a reason - Policies are good but their application remains problematic
Vietnam	**Yes** - Ordinance of flood and storm control - Second national strategy of Disaster Management	**Yes** - CCFSC - CFCS at local levels	- Need harmonization between agencies - Data exchange is problematic - Need to develop policies that go beyond just response
Cambodia	**No** - Strong need to develop institutional framework for disaster management - First draft of DM policy: will be incorporated in national plan for emergency management	**Yes** - All offices must report to Prime Minister who regulates flow - Data will be maintained within the council of ministers as a secretariat (Information management Department)	- Strong need to develop appropriate legislation with clear guidelines to avoid problems encountered in other countries
Philippines	**Yes** - They have the mandate to manage central	**Yes** - Database home: Ministry of Civil	- Most of the databases are public documents and are shared. NGOs

	disaster loss database	Defense - The needs are identified into the plan and the priority is to improve the quality of the data and information	are not always willing to share their data
Nepal	**Yes and No** - the previous situation required the existence of the database to justify the relief expenses. - At present, they have widened their scope	**Yes** - Database home: Ministry of Home Affairs	- Because of policy changes, the home of the database may yet change
Indonesia	**Yes** - Have a mandate to formulate disaster management plans	**Yes** - Database home: National Coordinating Board for Disaster Management - The needs are identified into the national action plan - Includes the needs to develop a reliable database	- Data sharing is not a problem but because of the implication of different organizations, coordination could be more problematic
India	**Yes** - National Disaster Management Act - State DM Act - State relief Code and DM code - Techno-legal frame work - Coastal Zone Regulation Act. - Right to information act at the State and national level. - Environment Protection Act	**Yes** - NIDM - State ATIs. - NIC	- Lot of databases in different formats existing with different institutions - Credibility, reliability - Users, usability, needs, gaps etc not clear
Maldives	**No** (not yet) - Existing mandate of the Ministry of Planning and National Development (MPND) means not be expecting any issues in getting reliable disaster data good working relations with concerned government and private sector agencies	**Yes** - MPND - ideally National Disaster Management Centre will ultimately own and maintain disaster data	- MPND is the national and trusted agency for national development.

Sri Lanka	**Yes** - SL Disaster Management Act No. 13 of 2005 - "Roadmap for a Safer Sri Lanka" (10 Y Master plan) - National Policy on DM is being developed - National DM plan is being developed - National EOM is being developed	**Yes** - Disaster Management Centre (DMC), Government of SL	- Dissemination of info due to technical and institutional facts. - DMC is in establishing stage. Once DMC is fully functional, data collection, dissemination will not be a problem. - Trend of data management is improving over the last few months with the presence of DMC

Legal Framework

Questions to address during discussions:

Are there legal provisions in your country for collecting disaster data and information? If so, what are they? If not, what do you think they would be?

Country	Law / Act	Institution
Thailand	**Yes** - Compensation related - Civil Defense Act	- DDPM
Vietnam	**Yes** - Linked to ordinances of SFSC	- CCFSC
Cambodia	**No** - Need to develop legislation and policy framework for disaster management	- NCDM
Philippines	**Yes** - Embodied in the memorandum Programme of the chairman institution (Ministry of Civil Defense)	- Office of Civil Defense
Nepal	Yes - No articles on disaster databases in the current framework - Currently in transition phases	- Ministry of Home Affairs
Indonesia	**Yes** - There is an existing draft for law on disaster management but is waiting to be voted by the parliament	- Bakornas
Maldives	**No** - There is a draft Statistical Act which will give proper framework for data collection and dissemination. - It may be necessary to include disaster related data within the act to give more power.	- MPND, legal authorities

Sri Lanka	**Yes** - Sri Lankan Disaster Management Act No. 13 of 2005	- Disaster Management Centre (DMC), - Government of SL. - Data collection, analysis, research & dissemination is fully captured in the act and full authority of implementing the DM act has been given to the DMC
India	**Yes** - National Disaster Management Act - State DM Act - Coastal Zone Regulation Act. - Right to Information Act at the State and national level. - Environment Protection Act	- NDMA, - State DM Authorities. - State ATI's, - NIDM,

Financial Framework

Questions to address during discussions:

Do you have the financial resources to develop and maintain disaster information services? If so, what are they? If not, what needs are there?

Country	Availability of financial resources
Thailand	- Financial issue is a big problem. Have plan of implementation but not the resources to follow it. - Resource allocation is the issue - Government institutions cannot ask for direct financial support
Vietnam	- Received funding for development of DANA from consortium of donors (international agencies & NGOs) - To implement DANA will need funding for training (especially at local levels), for hardware and for software improvements - Presently, CCFSC is funded for N&D assessments, training and software. At the local level, funding will be needed for training and hardware - Though there is commitment from the government, it has many priorities. - funding for maintenance is there, but implementation needs support.
Cambodia	- Lack of national funds until legislation is passed. - In the meantime, indirect funding through the Council of Ministers.
Philippines	- Nationally funded. They have operational expenses and use free open-source applications but will need funds from private sector for IT competences and networks
Nepal	- No financial resources for maintenance of database. This activity is very low in governmental priorities. - Improvement of the situation with the upcoming UNDP policy - Calamity funds can also be sued for disaster databases (but not legal rules)
Indonesia	- National and sub-national funded. - Need more funds for more efficient information services (training, equipment ,etc…)
Maldives	- International: Limited. - National: limited to reconstruction programmes - Sub-national: No - Private Sector: No - NGOs: No - Non profit orgs: No

Sri Lanka	- International: Yes - National agencies: Yes - Sub national: Yes - Private Sector: Yes, though only during emergency period - NGOs: Yes - Non profits orgs: Yes
India	- International agencies: Yes - National agencies: Yes (Scope has widened). - Provision for allocating money from CRF and NCCF for DRM - Sub national: Yes - Private Sector: Yes - NGOs: Yes - Non profits orgs: Yes

Capacities

Questions to address during discussions:
Are there the technical capacities in your country for producers and users of disaster information? (Methodologies, analyses, etc. ...)
Are there the technical infrastructure capacities in your country for producers and users? (Hardware, communication, etc...)
Do you have any programmes to build those capacities in your country? If yes, what are they? If not, what are the needs?

Country	Technical Capacities	Technical infrastructures	Programs to build their capacities
Thailand	- Works closely with universities so technical capacity is available - Will need to develop software for data analysis - To provide useful results, both vertically and horizontally, will need to develop capacities - Local aspects not always supported	- Tambons (villages) have 1 PC and internet access. - DDPM has the network infrastructure	- MoI has project to provide leased lines to each province with dedicated 512kbyte bandwidth - Important to have contingency planning as disasters can make communication networks collapse. - Excel format will need to be improved to real database system - Key to success of database system is competencies at local levels - Developing a system is dependent on the development of the people.
Vietnam	- Need capacities to collect ad analyze disaster data	- Communes lack IT and telecommunication facilities, especially in highlands and islands - No permanent assigned PC for CFSC	- Pilot testing of DANA is necessary but funds fro this are lacking.
Cambodia	- Capacity building is a strategic goal. - Need to build core capacities first - Need access to disaster expert consultants - Need support for training	- Technical infrastructure needs to be developed	- Have some support from NGOs for training. - At present, outside help is necessary until government can take over initiatives.
Philippines	- Yes: For both users and providers - However there is the need to develop	- Technical infrastructure exists from public and private sectors,	- Available technologies but funding needed.

	technical capacities at local levels - Methodological guidelines exist but need to build more capacities for analyses. - Certain levels of knowledge needed for users	but there is a lack inside the agencies' mandate to improve the infrastructure. - Internet penetration is very low, but communication with cell phones is very high and efficient - Access to Advanced technology needs to be improved	
Nepal	- Generally, very limited technical capacity - Lack of capacity for data analysis	- traditional wireless network - Capacity is limited. - Need to develop capacity for hardware, software and analysis procedures - There is no mechanisms for dissemination and access to data is limited - Communications in remote areas is problematic	- The bigger challenge is to demonstrate the benefits of the database.
Indonesia	- They have their own technical capacities and when absent can use capacities from universities - Issue is the sustainability of the programme.	- Data providers: ok but there are more specific needs requested, like servers for the database - Users: lack of material and some local and remote areas - Internet communications more problematic than phones or faxes. - To be web-based, will need new infrastructure.	- Yes they have a programme to build capacities and get the support for this from other institutions. - Need a more integrated system for disaster information and more funding.
Maldives	- Limited to collection of socio-economic data. - Need technical assistance on disaster database methodologies and analysis	- Government Network connecting capital and 20 atoll capital islands expected to complete by year end. - Need to expand network to other island levels for data	- Planned programmes not yet funded.

		dissemination.	
Srilanka	- There are some individual agencies that have technical capacities up to certain level. - But technical capacities should be enhanced. - Capacity building in analyzing data and assessments should be done.	- Yes, But not enough to meet the demand - DMC is in establishing stage. So further support required in institutionalizing disaster data at the national and sub national level	- Disaster Management Centre, UNDP DRM programme and Regional Initiatives to institutionalize DesInventar and other databases. - But further support required for DMC to incorporate Risk Assessments, Vulnerability Assessments etc. into the system at the global, national and sub national levels.
India	- Technical Capacity with NIC - ISRO-NRSA etc. - Many Academic and research Institutions, Department of Science and Technology and other Institutions like NIRD, SIRD etc . - Have enhanced and tuned for DM. - BMTPC Vulnerability Atlas, - NDEM - Census of India - National Spatial Database	- NECP- Well developed /equipped - IEOC (DM/ IS) - State EOC and DEOC connecting the states / districts. - IT Kiosks developed by ISRO. - EDUSAT Programnme etc.	DRM Programme. Regional tsunami recovery programme NNRMS progrmme etc

Annex 2.

LIST OF PARTICIPANTS

Maldives

AMIR, Aaidha
Assist Planning Officer
Ministry of Planning and National Development
Address: Ameer Ahmed Magu, Male, Republic of Maldives
Tel: +9603324185 (223)
Mobile: +9607755678
Fax: +9603327351
Email: aaidha@hotmail.com

Japan

ARAKIDA, Masaru
Senior Researcher
Asian Disaster Reduction Center ADRC
Address: Hitomiraikan 5F, 1-5-2 Wakinohamakaigan- dori, Chou-ku, Kobe 651- 0073, Japan
Tel: +81 78 262 5543 (Direct), +81 78 262 5540
Fax: +81 78 262 5546
Email: arakida@adrc.or.jp
http://www.adrc.or.jp/

Belgium

BELOW, Regina
Database Manager
Center for Research on the Epidemiology of Disasters (CRED)
Address: Universite Catholique de Louvain, Ecole de Sante Publique 30.94 Clos Chapelle-aux-Champus 1200 Brussels, Belgium
Tel: (32) (2) 764 33 26
Fax: (32) (2) 764 34 41
Email: Below@esp.ucl.ac.be
http://www.cred.be

Thailand

BURESAWAT, Visit
Department of Disaster Prevention and Mitigation (DDPM)
Ministry of Interior
Address: 3/12 U-Thong Nok Rd., Dusit, BKK 10300, Thailand
Tel/ fax: 662 241 4403
Email: buresawat@yahoo.com

Philippines	**CASTRO V, Felino Do** Civil Defense Officer III Information Communications Technology Section Operations Division Office of Civil Defense, Department of National Defense Address: Camp General Emilio Aguinaldo, 1110 Quezon City, Philippines Tel: (632) 912-2373 Trunkline: (632) 911-5061 loc 104 Email: noynics@ndcc.gov.ph webmaster@ ndcc.gov.ph URL : www.ndcc.gov.ph www.ocd.gov.ph
Thailand	**COLLIER, Peter** Regional Training Programme Specialist UNDP Thailand Address: UN Service Building, 4th floor, Rajdamnern nok Avenue, BKK 10200, GPO box 618, BKK 10501, Thailand Tel: 662-288-2755 Fax: 662-288-0556 Email: peter.collier@undp.org
Switzerland	**DILLEY, Maxx** Senior Policy Advisor Disaster Reduction Unit Bureau for Crisis Prevention and Recovery UNDP Geneva Address: 11-13 Chemin des Anemones, 1219 Chatelaine, Geneva, Switzerland Tel: 4122-917-8285 Fax: 4122-917-8060 Email: maxx.dilley@undp.org http://www.undp.org
Nepal	**DIXIT, Amod M.** Executive Director National Society for Earthquake Technology-Nepal (NSET) Address: 1133 Devkota Sadak, Mahadevsthan, Baneshwor, GPO. Box 13775, Kathmandu, Nepal Tel: 977-1-4486444, 4490359, 4493233 Fax: 977-1-4490943 Email: adixit@nset.org.np/nset@nset.org.np amod.dixit@gmail.com www.nset.org.np

Belgium

GUHA-SAPIR, Debarati (Debby)
Director WHO Collaborating Center for Research on the Epidemiology of Disasters (CRED)
Address: Universite Catholique de Louvain, Ecole de Sante Publique 30.94 Clos Chapelle-aux-Champus 1200 Brussels, Belgium
Tel: 32-2-764-3327
Mobile: 32-475-617-019
Fax: 32-2-764-3441
Email: sapir@esp.ucl.ac.be
http://www.cred.be

Belgium

HARGITT, David
Research Project Officer
Centre for research on the Epidemiology of Disasters (CRED)
Address: Universite Catholique de Louvain, Ecole de Sante Publique, 30.94 Clos Chapelle-aux-Champs 1200 Brussels, Belgium
Tel: (32) (2) 764 33 65
Fax: (32) (2) 764 34 41
Email: david.hargitt@esp.ucl.ac.be
http://www.cred.be

Maldives

IMAD, Mohammed
Director, Spatial Planning
Ministry of Planning and National Development
Address: Male, Maldives
Tel: +960 332-2979
Fax: +960 327-7351
Email: imad@planning.gov.mv

Thailand

JEGILLOS, Sanny
Regional Programme Coordinator
UNDP Regional Centre Bangkok
Address: UN Service Building, 4th floor, Rajdamnern nok Avenue, BKK 10200, GPO box 618, BKK 10501, Thailand
Tel: 662-288-2536
Fax: 662-288-0556
Email: sanny.jegillos@undp.org
http://regionalcentrebangkok.undp.or.th

India

KISHORE, Kamal
Regional Disaster Reduction Advisor
South and South West Asia
UNDP - Bureau for Crisis Prevention and Recovery
Address: IIC, 40, Lodhi Estate, 2nd Floor, Max Muller Marg, New Delhi-110003 India
Tel: +91-11-24628877 Ext: 452
Mobile: +91-9810095470
Fax: +91-11-24633042
Email: kamal.kishore@undp.org
http://www.undp.org/bcpr/disred

Sri Lanka

KUMARA, Sisira
Disaster Management Associate
UNDP, Sri Lanka
Address: 202-204, Bauddhaloka Mawatha, Colombo 7, Sri Lanka
Tel: +94-11-2580691 Ext: 337
Fax: +94-11-2581116
Mobile: 0773-136112
Email: sisira.kumara@undp.org

Sri Lanka

MAHANAMA, P.K.S.
Chartered Town Planner
Head, Department of Town and Country Planning
Address: University of Moratuwa, Moratuwa, sri Lanka.
Tel: 94-11-2650921, 2563217
Mobile: 0777571284
Email: mahanama@tcp.mrt.ac.lk

Thailand

MODRO, Heidi
Regional Information Officer
UNDP Thailand
Address: UN Service Building, 4th floor, Rajdamnern nok Avenue, BKK 10200, GPO box 618, BKK 10501, Thailand
Tel: 662-288-2681
Fax: 662-288-0556
Email: rajesh.sharma@undp.org
http://regionalcentrebangkok.undp.or.th

India

NAIR, Sreeja
UNDP GOI. DRM. Programme
Based at National Institute of Disaster Management
Ipestate, New Delhi-2
Tel: +91-11-24628877
+91-11-23702443, 45 Ext :237
Mobile: 009810079551
Email: sreeja.nair@undp.org
sreejanair22@gmail.com

Vietnam

NHU, Ha Van
Head, Department of Disaster Prevention and Management
Hanoi School of Public Health
Address: 138 Giang Vo Street, Hanoi, Vietnam
Tel: +84 4 2662342
Email: hvn@hsph.edu.vn
hsph1@yahoo.com

Japan

ODAKA, Shuichi
Information Manager
Relief Web
UN, Office for the Coordination of Humanitarian Affairs
Address: Human Renovation Museum 5F, 1-5-2
Wakinohama – kaigandori, Chuo-ku, Kobe 651-0073, Japan
Tel: +81-78-262-5556
Fax: +81-78-262-5558
Email: odaka@un.org
http://www.reliefweb.int

Colombia

ROSALES, Cristina
Research Assistant
DesInventar Coordinator
Observatorio Sismologico del SurOccidente-OSSO
Address :Universidad del Valle-Melendez
A.A. 25928 Cali - Colombia
Tel: +57 (2) 330 1661
Fax : +57 (2) 331 3418
Email: crosales@osso.univalle.edu.co
cristina@desinvnetar.org
http://www.desinventar.org
http://osso.un.sale.edu.co

Indonesia

RUCHYAT, Yuanita
Urban and Regional planning Program
School of Architecture, Planning and Public Policy
Address: Institute Technology of Bandung
Disaster Mitigation Center, ITB, Jl. Ganesha No.10, Labtek IX, 5th Floor, Bandung, West Java 40132
Address: Komp. Istana Regenis I D3-2, Sukarwarna
Bandung, Jawa Barat, Indonesia
Tel: 62-22-602-0618
Mobile: 62-811-233-106
Email: ynita79@pl.itb.ac.id
ynita79@yahoo.com

Thailand

SERJE, Julio
International Consultant
UNDP Regional Centre Bangkok
Address: UN Service Building, 4th floor, Rajdamnern nok Avenue, BKK 10200, GPO box 618, BKK 10501, Thailand
Fax: 662-288-0556
Email: julio.serje@undp.org
http://regionalcentrebangkok.undp.or.th

Thailand

SHARMA, Rajesh
Regional Information Systems Specialist
UNDP Thailand
Address: UN Service Building, 4th floor, Rajdamnern nok Avenue, BKK 10200, GPO box 618, BKK 10501, Thailand
Tel: 662-288-2680
Fax: 662-288-0556
Email: rajesh.sharma@undp.org
http://regionalcentrebangkok.undp.or.th

United Kingdom

SHAW, Darren J.
Lecturer in Veterinary Clinical Epidemiology
University of Edinburgh
Address: Easter Bush Veterinary Centre, Roslin, Midlothian EH25 9RG, Scotland
Tel: +44 (0) 131 650 6059/ 6237
Fax: +44 (0) 131 650 6588
Email: Darren.Shaw@ed.ac.uk

Cambodia

SOVANN, Ross
DM Advisor to National Committee for Disaster Management, Royal Government of Cambodia
Address: No 274 Preah Monivong, Phanom Penn, Cambodia
Tel: (855) 23 211171
Mobile: (855) 12 966 8888
Fax: (855) 23 211030
Email: ross_1212@yahoo.ca
rossovann@hotmail.com

Thailand

SRIVONTNA, Thamnoon
Foreign Relations Official
Research and International Cooperation Bureau
DDPM
Address: 3/12 U-Thong Nok Rd., Dusit, BKK 10300, Thailand
Tel: 662-2430020-6 Ext: 3553
Fax: 662-2435279
Email: Lawad_on@hotmail.com

Japan

TERANISHI, Akihiro
Senior Researcher
Asian Disaster Reduction Center ADRC
Address: Hitomiraikan 5F, 1-5-2 Wakinohamakaigan- dori, Chou-ku, Kobe 651- 0073, Japan
Tel: +81 78 262 5544 (Direct), +81 78 262 5540
Fax: +81 78 262 5546
Email: teranishi@adrc.or.jp
http://www.adrc.or.jp/

BKK, Thailand

TI, Le Huu
Economic Affairs Officer
Water Resources Section
Environment and Sustainable Development Division, UNESCAP
Address: United Nations Building, Rajadamnern Nok Avenue, BKK 10200, Thailand
Tel: (662) 288-1450
Fax: (662) 288-1059
Email: ti-unescap@un.org
www.unescap.org

Japan

TSUNOZAKI, Etsuko
Senior Researcher
Asian Disaster Reduction Center ADRC
Address: Hitomiraikan 5F, 1-5-2 Wakinohamakaigan- dori, Chou-ku, Kobe 651- 0073, Japan
Tel: +81 78 262 5542 (Direct), +81 78 262 5540
Fax: +81 78 262 5546
Email: tsunozaki@adrc.or.jp
http://www.adrc.or.jp/

Vietnam

TUAN, Tran Van
Project Manager
Capacity Building for Disaster Mitigation in Vietnam, UNDP Vietnam
Address: 197 Nghi Tam, Tay Ho District, Hanoi, Vietnam
Tel: (84-4) 719 6807, (84-4) 716 1176
Mobile: 0913 552 649
Fax: (84-4) 719 6806
Email: tranvantuannga@pmail.vnn.vn

Switzerland

VILLACIS, Carlos A.
GRIP Programme Coordinator
Disaster Reduction and Recovery Unit
Bureau for Crisis Prevention and Recovery
Tel: (41 22) 917 8399
Fax: (41 22) 917 8060
Email: carlos.villacis@undp.org

Indonesia	**WIDJAJA, B. Wisnu** Head of Natural Disaster Mitigation Division Secretariat of National Coordinating Board for Disaster Management and IDPs (BAKORNAS PBP) Address: Jl. Ir. H. Djuanda 36, Jakarta 10120 Tel: +62-21-3458400, 3442734, 3442985 Ext. 501 Fax: +62-21-3505075, 3504983 Email: b.wisnu.w@bakornaspbp.go.id djojo_2001@yahoo.com

Workshop assistants

Thailand	**HOMTONG, Pairach** Disaster Inventories Associate UNDP Regional Centre Bangkok Address: UN Service Building, 4th floor, Rajdamnern nok Avenue, BKK 10200, GPO box 618, BKK 10501, Thailand Tel: 662-288-2154 Fax: 662-288-0556 Email: pairach.homtong@undp.org http://regionalcentrebangkok.undp.or.th
Thailand	**PRAPUTUM, Korapat** Practice Team Assistant UNDP Regional Centre Bangkok Address: UN Service Building, 4th floor, Rajdamnern nok Avenue, BKK 10200, GPO box 618, BKK 10501, Thailand Tel: 662-288-2752 Fax: 662-288-0556 Email: Korapat.praputum@undp.org http://regionalcentrebangkok.undp.or.th
Thailand	**SANGWANICH, Kingkarn** Workshop Assistant UNDP Regional Centre Bangkok Address: UN Service Building, 4th floor, Rajdamnern nok Avenue, BKK 10200, GPO box 618, BKK 10501, Thailand Tel: 662-288-2785 Fax: 662-288-0556 Email: Kingkarn.sangwanich@undp.org http://regionalcentrebangkok.undp.or.th