USAID | ASIA
FROM THE AMERICAN PEOPLE

U.S. Contribution to the Indian Ocean Tsunami Warning System

U.S. INDIAN OCEAN TSUNAMI WARNING SYSTEM (US IOTWS) PROGRAM

REVIEW OF POLICIES AND INSTITUTIONAL CAPACITY FOR EARLY WARNING AND DISASTER MANAGEMENT IN INDONESIA

JANUARY 2007

January 2007

This publication was produced for review by the United States Agency for International Development. It was prepared by the IRG-Tetra Tech Joint Venture.

USAID FROM THE AMERICAN PEOPLE

NOAA

USGS science for a changing world

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE

U.S. TRADE AND DEVELOPMENT AGENCY

U.S. INDIAN OCEAN TSUNAMI WARNING SYSTEM (US IOTWS) PROGRAM

REVIEW OF POLICIES AND INSTITUTIONAL CAPACITY FOR EARLY WARNING AND DISASTER MANAGEMENT IN INDONESIA (OCTOBER 1-13, 2006)

JANUARY 2007

Prepared for U.S. Agency for International Development
by IRG & Tetra Tech Joint Venture under Contract No. EPP-I-02-04-00024-00

U.S. IOTWS Program Document No.14-IOTWS-06

CONTENTS

ACRONYMS

ADPC	Asian Disaster Preparedness Center
APBN	*Anggaran Pendapatan dan Belanja Negara* (Budget of National Income and Expenditure)
BAKORNAS PB	*Badan Koordinasi Nasional Penangulangan Bencana* (National Coordination Board for Disaster Management)
BAKOSURTANAL	National Mapping and Survey Coordinating Board
BAPPEDA	Provincial Development Planning Agency
BAPPENAS	National Development Planning Agency
BASARNAS	*Badan Search And Rescue Nasional* (National Search and Rescue Body)
BMG	*Badan Meteorologi & Geofisika* (Meteorological and Geophysical Agency)
BPPT,	*Badan Pengkajian dan Penerapan Teknologi* (Agency for the Assessment and Application of Technology)
BPS	*Badan Pusat Statistik* (Statistics Indonesia)
BRR	*Badan Rehabilitasi dan Rekonstruksi* (Agency of the Rehabilitation and Reconstruction for the Region and Community of Aceh)
BULOG	*Badan Urusan Logistic Nasional* (Agency for Logistic Affairs)
CRED	Center for Research in the Epidemiology of Disasters
DKI Jakarta	*Daerah Khusus Ibukota Jakarta* (Jakarta Special Capital Region)
DEPDAGRI	Ministry of Home Affairs
DEPLU	*Departemen Luar Negeri* (Ministry of Foreign Affairs)
DKP	*Departemen Kelautan dan Perikanan* (Ministry of Marine Affairs and Fisheries)
DMP	disaster management plan
DPR RI	*Dewan Perwakilan Rakyat Republik Indonesia* (People's Consultative Assembly)
DRM	disaster risk management
DAD	Development Assistance Database
ESDM	*Energi dan Sumber Daya Mineral* (Ministry of Energy and Mineral Resources)
EOC	Emergency Operations Center
IFRC	International Federation of Red Cross and Red Crescent Societies
IIDP	Indonesian Institute for Disaster Preparedness
ITB	Bandung Institute of Technology
Kalakhar	*Kepala Pelaksana Harian* (Daily Executive)
KEMENKOKESRA	Office of Coordinating Minister for People's Welfare

KLH	*Kementerian Negara Lingkungan Hidup* (Ministry of Environment)
KOGAMI	Kommunitas Siaga Tsunami (Tsunami Prepared Communities)
KOMINFO	Ministry of Communication and Information
LAPAN	National Space and Aviation Institute
LIPI	*Lembaga Ilmu Pengetahuan Indonesia* (National Institute of Sciences)
MPBI	Indonesian Society for Disaster Management
NGO	non-governmental organizations
PMI	Indonesian Red Cross Society
PEMDA	local government
PEMKOT	municipal government
PEMPROV	provincial government
PERDA	regional regulation
PERPRES	presidential regulation
PMB	Disaster Mitigation Center
PROTAP PB	Standing Operating Procedure on Disaster Management
RANPRB	National Action Plan for Disaster Reduction
RISTEK	State Ministry of Research and Technology
RUPUSDALOPS	operations control room
RUU PB	disaster management bill
SMS	Short Message Service
SATKORLAK PB	Implementing Coordination Unit for Disaster Management (provincial level)
SATLAK PB	Implementing Unit for Disaster Management (district level)
SOP	standing operating procedure
TEWS	tsunami early warning system
TNI	*Tentara Nasional Indonesia* (Indonesian Armed Forces)
UNDP	United Nations Development Programme
UN ISDR	United Nations International Strategy for Disaster Reduction
USAID	United States Agency for International Development
UNESCO-IOC	United Nations Educational, Scientific, and Cultural Organization Intergovernmental Oceanographic Commission
WALHI	*Wahana Lingkungan Hidup Indonesia* (Friends of the Earth-Indonesia)

PREFACE

This activity is conducted under the US IOTWS program area 3: "National Dissemination and Communication of Warnings" and sub-component 3a: "National Disaster Management Capacity Building". The study focuses on the capacities of the Indonesian disaster management institutional arrangements and the various factors such as policies, legislation, and institutional systems that govern disaster risk management in Indonesia. Ramraj Narasimhan and S.H.M. Fakhruddin of the Asian Disaster Preparedness Center (ADPC) and Hening Parlan, a consultant of the Indonesian Society for Disaster Management (MPBI) carried out this study over a period of two weeks on behalf of the US IOTWS Program.

This study undertook an analysis of data to inform policy to support national disaster management organization (NDMO) operations, building on the United Nations Educational, Scientific, and Cultural Organization Intergovernmental Oceanographic Commission (IOC) assessment report completed in December 2005 and including a further gap analysis. The study builds upon the premise that early warnings will only be as effective as the collective strengths of policies, laws, institutional frameworks, and the capacities of national and local agencies and officials responsible for disaster management systems. Hence this activity will clarify and advance the political mandate for disaster management responsibilities in Indonesia. It also assesses policy and regulatory frameworks that define Indonesia's approach to disaster management. As indicated in the program document, it also supports targeted national policy and regulatory interventions that strengthen overall national emergency management organizations and systems.

The methodology for the study involved the development of a comprehensive instrument using an indicator-based approach for each element that makes up Indonesia's disaster management system. All available secondary information in the form of reports, prior assessments, and others were thoroughly read and assimilated before undertaking the two-week mission to Indonesia. This visit focused on meeting with the key stakeholders with a role in disaster management in Indonesia and seeking additional information or filling gaps in available information.

The study was greatly facilitated by the excellent guidance and advice provided by the US IOTWS teams in Bangkok and Indonesia and from ADPC. Finally, the excellent cooperation received in the form of frank and constructive discussions with over 30 stakeholders in Indonesia made it possible and successful.

INTRODUCTION

This report is intended to supplement and update the many excellent assessments that have been undertaken on disaster management and early warning systems in the five tsunami-affected nations. Consequently, it does not repeat the data already available to the reader from other comprehensive reports as the one done by the United Nations Educational, Scientific, and Cultural Organization Intergovernmental Oceanographic Commission (UNESCO-IOC). Neither does this report cover geographic, demographic, nor country statistics, all of which are readily available from other sources. (See Annex E for a partial list of such reports and information sources.)

We include a disaster history for Indonesia, taken from the hazards history data base assembled at the Center for Research in the Epidemiology of Disasters (CRED) in Belgium. This disaster history indicates that Indonesia is prone to almost all disasters—earthquakes and tsunamis, volcanic eruptions, typhoons, floods, landslides, droughts, forest fires, land fires, crop diseases and pests, and epidemics (see Annex B for the full disaster history).

No nation has in place a system that could have escaped the devastation of the tsunami of December 2004. It was simply too huge, too unexpected (in countries like Sri Lanka and Thailand, which have no tsunami history), and too unpredicted to be manageable by any system in the world. This elementary and obvious fact needs to be remembered by all who are working on improving existing systems. These improvements are necessary and extremely useful, and will extend the lead time people have when a disaster is predicted, but no technology and no system can fully forestall the destruction and death of a magnitude 9 earthquake close to heavily populated shores, as happened that Sunday morning.

It is an assumption of this study that an early warning system is only as good as the nation's capacity to respond promptly to its messages. Therefore, this study looks at the disaster management systems as a whole: preparedness, mitigation and prevention, response, and recovery. These elements inevitably cross into areas covered by ministries without disaster portfolios: land use, agriculture policy, public works, and the like. It is through the awareness of these mainline ministries that actions can be taken that directly link disaster preparedness and mitigation with social and economic development. Without being embraced by the system as a whole, with all elements functioning together, early warnings are unlikely to result in significant improvements in disaster preparedness, prevention, and mitigation.

METHODOLOGY

A three-person team, all with training and experience in end-to-end disaster management, conducted this study. They undertook to develop a comprehensive instrument to measure the status of the design and development of policies, institutions, resources, and players that must come together to ensure effective and timely utilization of improved early warning. This institutional diagnostic matrix includes four levels of sophistication for each element being assessed, and concrete indicators are given for each of these four levels. The matrix can be read alone as a summary of team findings; the report explains why the team made the judgments it did, and it is laid out in the same outline as the matrix, for easy cross-referencing.

The team traveled to Indonesia, spending two weeks interviewing 33 persons in 16 institutions relating to disaster management: the government, the police and the military, as well as the civil and NGO structures. The team tried to approach all levels of government, from the center through the districts. Interview notes from all three interviewers were then cut and pasted into an outline of the matrix.

This report was thus prepared from the notes of all team members in the matrix and follows its outline. The matrix itself, with the scores the team agreed upon for each element, is attached in Annex A. Annex C contains a list of persons interviewed.

1. POLICY AND LEGISLATIVE ENVIRONMENT FOR DISASTER MANAGEMENT

1.1 LEGISLATIVE ENVIRONMENT

Indonesia was one of the first countries in the region to have a regulation on disaster management (DM), in the form of Presidential Decree No. 54 of 1961, Natural Disaster Poll Central Committee (*Panitia Pusat Penampungan Bencana Alam*). The most recent version is Presidential Decree (PD) No. 83 of 2005, resulting in the National Coordination Board for Disaster Management (*Badan Koordinasi Nasional Penanganan Bencana*). A disaster management bill was proposed in early 2004, even before the tsunami, and is now in the final stages of being enacted by the *Dewan Perwakilan Rakyat Republik Indonesia* (DPR RI, or the People's Consultative Assembly)/House of Representatives.

The Constitution of Indonesia of 1945 outlines the duties of the government, stating that it "*protects the entire people and nation of Indonesia"* and also that the "*President shall declare a state of danger*", the conditions and consequences being determined by law. After the decentralization process of 1999, the Laws of Regional Autonomous Governance and other laws governing regional autonomy also have provisions for disaster management, such as dealing with emergency funds to meet emergency needs caused by certain incidents including natural disasters.

This draft DM legislation is being developed in a very consultative manner involving the civil society and various sections of the government, with very transparent and participatory reviews and discussions in the Eighth Commission (*Komisi VIII DPR RI*) and later in a Special Committee. This draft seeks to make a paradigm shift on DM, in which protection and safety are basic rights, for which the government is accountable. It promotes disaster management that goes beyond emergency response, providing a system of planning and action for sustainable development, involving all stakeholders including the vulnerable community to manage all hazards.

The draft is almost finalized, except for some issues related to institutional arrangements, inclusion of conflict as a disaster, budget allocations, declaration of a disaster, and penalties. The government wants to retain the *Badan Koordinasi Nasional Penangulangan Bencana* (BAKORNAS PB, or the National Coordination Board for Disaster Management) or reprofile it as a new body under one department to handle all activities related to DM, while the parliament insists that any such DM agency must be independent. An agreement is likely to be reached, which would form a state agency equal to a ministry consisting of several DM-related departments. The definition of conflict as a disaster is likely to be accommodated in a separate bill. An issue regarding the declaration of disasters remains on whether the authority to declare a state of disaster emergency rests at the regional or national level (which may or may not allow international relief organizations to assist). The discussions also center on penalties that the public, private corporations, or even the state may be liable for in case they have caused a disaster or any damaging event.

In the absence of national legislation, discussions at the provincial and district levels on DM are restricted to the aftermath of a disaster. The output is a usually an action plan for better coordination among relevant departments, such as social welfare, public works, and health. After Aceh and the other recent disasters, more regional and local governments want to focus on an all-encompassing DM policy that incorporates principles of risk reduction into their mid-term development planning and budgeting. For example, Padang has established the provincial SATKORLAK PB (Implementing Coordination Unit for Disaster Management) and prepared a standard operating procedure (SOP) for DM. Only a few provincial governments, such as Central

Java and *Daerah Khusus Ibukota Jakarta* (DKI Jakarta, or the Jakarta Special Capital Region) have contemplated DM as being more than response or preparedness for response.

Enforcement of existing legislation also remains a weak point. Although there are standards meant to ensure public safety, such as regulations for building permits, utilization of surrounding land, spatial management, and so on, enforcement is lax, and thus does not contribute substantially to reducing disaster risks. Currently however, there is no policy on disaster risk reduction and all activities are isolated in a vacuum of statutes or bills with no specific guidelines for activities related to DM.

Awareness about DM in general is growing and so is the commitment to action. The situation is expected to get better in the area of legislative environment very soon, with the bill being enacted this year. Great attention needs to be devoted to ensuring that policies and regulations of other sectors that have a bearing on disaster management are also included in the new policies developed after the legislation becomes a reality.

1.2 INSTITUTIONAL ENVIRONMENT

BAKORNAS PB is the entity that is often referred to as the NDMO in Indonesia. It actually is not an agency but a coordination body comprised of various ministers, assisted by a secretariat of the same name, which is often mistaken for the former. This coordination body meets occasionally and is a council of ministers with a policy-making function. Its policies, on paper, are in theory implemented by sectoral departments. The secretariat exists for administrative support but has a complex structure with four officials of deputy minister level, 16 bureaus, 34 divisions, and 60 personnel. Many of these bureaus and divisions have mandates that overlap not only with other sectoral agencies but also within the BAKORNAS PB. The public, national and international NGOs, and sometimes even government agencies confuse the secretariat with the BAKORNAS PB.

The latest amendment in the form of Presidential Decree No. 83 of 2005 was implemented in October 2006. This resulted in the creation of an executive board, headed by an Executive Officer (Kalakhar, or Kepala Pelaksana Harian) for day-to-day operations and reporting to the Vice President, who is the Chairperson of BAKORNAS PB. This executive board is assisted by three deputies, one each for prevention and preparedness; emergency response; and recovery, along with the existing secretariat. In total the BAKORNAS PB (executive board and secretariat) is permitted to have as many as five bureaus, 12 directorates, 20 divisions, 48 sub-directorates, and 40 sub-divisions. This is expected to don the mantle of an NDMO to implement operational and technical activities in disaster management, and will be financed by the state budget.

The regional governments have similar structures for coordination called SATKORLAK PB (Coordinating and Implementation Unit for Disaster Management) at the provincial levels and SATLAK PB (Implementation Unit for Disaster Management) at the district or municipal levels. SATKORLAK PB and SATLAK PB activities are to be financed by provincial and district/municipal budgets. The institutional structures in Indonesia are designed for emergency response, with very little or no emphasis on disaster risk reduction.

The sectoral ministries in Indonesia already have a significant involvement in disaster management although they are mostly response-oriented. With BAKORNAS recently mandated, but with only coordination authority and no resources to implement, it has been in a position to ensure some level of coordination for disaster management. The Coordinating Ministry for People's Welfare, as the Deputy to the Chair of BAKORNAS, is responsible for international cooperation and coordination of cross-cutting concerns. The Ministry of Home Affairs (MoHA, or DEPDAGRI), the second Deputy of the Council of BAKORNAS, is responsible for emergency response coordination, with branches in all provinces and district-level governments (but not vertically linked with the national-level MoHA).

The Ministry of Communication and Information (KOMINFO) is mandated to disseminate warning information through all channels using mass media (i.e. television, news media, radio, etc.) and to promote public awareness on disasters through public dialog and interaction, to increase

preparedness. The State Ministry of Research and Technology (RISTEK) is a coordination agency responsible for helping to identify and introduce appropriate science and technology, and the agencies to implement new technologies. It has the overall mandate to develop and coordinate a tsunami early warning system (TEWS) for Indonesia in association with line agencies, such as *Lembaga Ilmu Pengetahuan Indonesia* (LIPI, or the National Institute of Sciences) and the *Badan Meteorologi & Geofisika* (BMG, or Meteorological and Geophysical Agency). BMG is responsible for seismic/geophysical information processing and data management and dissemination of information. The Social Affairs Ministry provides emergency relief support such as food, clothing, and other such requirements. The Ministry of Public Works provides support and services through shelters, clean water, sanitation, and repair of infrastructure and other facilities. Similarly every ministry has some role(s) that it has been traditionally performing and guards zealously.

Nevertheless, there are successful cases of multi-stakeholder involvement. An example is flood control in Jakarta province where the provincial government collaborates with the Department of Public Works for river basin management and flood control, and with the Social Department and Public Works for flood response. In addition, the Provincial Development Planning Board (BAPPEDA) is involved in supporting structures, infrastructure redesign, and other activities to prevent floods.

The current set-up may change once the DM legislation is enacted. Until that time, all DM activities will be in accordance to its provisions, and the other government stakeholders will accord the BAKORNAS PB only a transitional agency status. The government prefers that BAKORNAS be the agency mandated for all operational activities instead of only coordination, and that no new agency is created. In this regard, BAKORNAS has been allocated a budget approved by the parliament for its activities as per the presidential decree of 2005. The parliament favors the creation of a new institution or agency at the level of a state ministry, with an independent advisory board consisting of government, non-government, and technical organizations and representatives from civil society.

1.3 POLITICAL ENVIRONMENT

In the past, disaster management was definitely not a priority, as evidenced by the low financial and institutional support accorded to it, and most being response- or relief-oriented support. After the tsunami and the other severe disasters that followed, there is definitely greater political commitment. Several initiatives, such as the early warning systems, disaster management legislation, and the devolution of integrated coastal management, have been taken up at the highest level of the government administration.

While there have always been some regional and local level initiatives focusing on broader aspects of DM, the tsunamis of Aceh and Pangandaran, together with the Jogjakarta earthquake, have definitely galvanized popular support and with that greater political involvement. Consequently there are more initiatives focusing on standard operating procedures, response plans, and evacuation drills at the regional and local levels, including the creation of *Peraturan Daerah* (PERDA, or regional regulations) that will institutionalize such activities.

Despite the slow pace at which the legislation is progressing, there is far greater political commitment at the national and regional levels, and with it, the possibility of separate allocations for proactive risk reduction measures. The BAKORNAS PB budget for next year will see a three- to four-fold increase as per the National Development Planning Agency (BAPPENAS).

1.4 POLICY FORMULATION

No specific policies for disaster management currently exist. Over 120 existing laws and ministry regulations such as the Environment Law have been reviewed and provisions linked to the draft DM legislation. In the absence of a policy, the DM legislation is expected to function as an umbrella for other sectors' involvement in DM.

This lack is most evident in that the disaster management efforts are not part of the routine development activities of various sectoral agencies. In the absence of such policies or legislation, the

national development plans in Indonesia do not focus any significant attention on risk reduction and is only discussed in passing in sectors related to development planning, but without any specific allocations.

BAPPENAS has included disaster reduction as one of the nine priority areas in the national budget of 2007, and it is expected to be factored in the sectoral planning and budget allocations. But how this promotes proactive risk reduction measures by various sectors remains to be seen, especially since almost all departments include DM in their functions, but their programs are limited by the scope of the department and focus mostly on disaster response.

Policy formulation, and to an extent enforcement of existing policies or regulations, especially on spatial/physical planning is not very stringent. Consolidation of various mapping products available in different ministries is a crucial issue since different departments have various details that are not integrated nor disseminated to the communities, and thus not fully utilized in development planning. An NGO pointed out that in Jogjakarta, an area designated by the local government for industrial use was challenged because it was located in an earthquake-prone area. However, nothing changed, and the Jogjakarta earthquake this year has damaged the very same area.

With the decentralization process completed, the local regulations and policies are of much greater import, especially since most local-level activities are governed by these regulations. Significant technical support, both to the central government and from the center to provinces, will be needed to make regulations that are meaningful and that can be implemented.

1.5 POLICY SUPPORTS DISASTER MANAGEMENT AT ALL LEVELS

The Presidential Decree of 2005 currently in force provides for DM at all levels, but with a focus on coordination and response. By virtue of the autonomy regulations, regional and local governments are responsible for all local issues that impact the lives of their people, and disaster management is covered under these regulations. While there are provisions for DM structures at various levels, a pertinent issue is whether they are matched by adequate technical and financial capacities.

The involvement of various agencies at the national level is covered in the earlier section. At lower levels, decentralization brings both challenges and some opportunities such as the possibility of tailor-made localized capacities being created and utilized. In a diverse country such as Indonesia, the local issues such as landslides, El Niño problems (drought, water scarcity, and food production drops), typhoons, and others need to be addressed through localized planning and action, which a centralized system will not permit. At the same time, the central government needs to continue playing a guiding role by sharing good practices and guidelines and by providing the needed support.

All regulations make it clear that governors as heads of provinces and *bupatis* or mayors, as heads of districts are responsible for local issues. In the area of disaster management, they are assisted by the SATKORLAK PB and SATLAK PB, respectively, comprising all relevant stakeholders in the government and the Indonesian Red Cross Society (PMI). Financial resources for these bodies are available only from the provincial budget, and since other issues always catch the limelight, these bodies do not have regular budgets. As coordination or implementation units, they have little or no budgets for proactive initiatives. They also have no permanent coordination center or facilities, since they only meet occasionally or as circumstances demand. The SATKORLAK PBs are at very different levels across the country. A case where it is quite active is illustrated below.

In Padang, the secretariat of the SATKORLAK PB is the LINMAS (which is Civil Defense, but in Padang includes Social and Political Affairs) due to the close working relationship it maintains with the community. Formulation of SOPs was one of the first activities that the SATKORLAK PB was instructed to undertake. Bali and Jambi are two other districts that have an SOP. After the Presidential Decree 2001, BAKORNAS PB and every SATKORLAK PB developed their own SOP. Out of 33 provinces, 27 have already developed some SOPs.

The Padang SATKORLAK PB formulated the SOPs at provincial level as early as 2002 with downstream linkages to the city SOPs. They have already completed tsunami simulation trainings and exercises. Every year there is a meeting to review the SOP and to disseminate its provisions. The SOP provides for assistance from neighboring provinces and districts to an affected district. The process of its preparation was very consultative where inputs were collected from many departments of the province and a draft was prepared. Universities, schools, and agencies were involved in discussions that were taken to district SATLAK PBs, and the final draft was given to Governor. Roles and responsibilities of the members are provided in the SOP.

In light of the tsunami, the Padang mayor (heading the SATLAK PB) has proposed a few local regulations: promoting awareness on tsunamis through the school curriculum (elementary to junior high) by combining tsunami education with sports classes; using the second, third, or upper floors in multi-storied buildings for emergencies and enabling their use as evacuation centers; and taking over control of the local media such as radio and TV channels in an emergency to ensure that the warning information or messages are passed on without delay.

While the national DM legislation is essential for defining coordination or implementation functions at the national level, local regulations are equally or more important. It has been often reported that technical capacities exist at various levels, but not the conceptual framework to link development and disasters (e.g. land use policies that address vulnerabilities). At the local level, since DM responsibilities are devolved to different sectors, governors and *bupatis* or mayors have the power to integrate these policies, regulations, and activities through the budget planning exercises. The provincial development planning agency (BAPPEDA) can help in this process.

Although there are no specific regulations on DM, the regulations providing autonomy have a bearing on disaster reduction at the local levels. This enabled Jakarta's Special Capital Region government to adopt a contingency scheme in 2003 of transferring funds to the district, sub-district, and village levels. This was necessitated by the bitter experience of the 2002 floods in Jakarta, which resulted in damages of over USD 2 billion, when budget allocations made by the provincial government of Jakarta to the districts and sub-districts would have to be spent by December, and any unspent funds had to be returned. However, with the next allocation actually available for spending only in March or April, there was a gap of three to four months when no resources were available at the local levels. Jakarta province has now managed to overcome this problem by transferring some of its own funds as contingency, with the province reporting on the use of these funds.

This scheme was implemented in 2003 on an experimental basis in which one million rupiah (approximately USD 1,000) was provided to each village headman (*kelurahan*) for activities, such as preparation of flood evacuation sites, marking the areas, allocation of tasks for the public kitchen, welfare, and so on through responsible people. In 2005, the scheme expanded, and up to USD 15,000 was allocated to each village for disaster prevention issues relating to cleanliness, hygiene, garbage clearance, environmental security, public health, and dengue prevention. Thus there is a provision for a contingency budget and the local parliament holds the province responsible on use of the funds. This has now been adopted as a practice in the Jakarta provincial government.

1.6 INVOLVEMENT OF OTHER GOVERNMENT STAKEHOLDERS

The DM legislation is evolving in a very consultative process with the initial draft drawing heavily upon inputs from NGOs and civil society. A special committee was formed to discuss and develop the bill with 50 members. The People's Consultative Assembly set up a working committee with 15 members from the Special Committee and 15 people from the government to review the draft. Various stakeholders participated in the committee while experts were called to make presentations. Civil society was involved, and transcripts of discussions were made public. However, it remains to be seen how extensively the stakeholders' input will be incorporated in the final policy on DM.

1.7 LINKAGES WITH OTHER GOVERNMENT POLICIES

It is difficult to anticipate how well the policy, once prepared, will link to other policies and legislation. The DM legislation has clearly identified 121 laws and regulations that have a bearing on disaster management, and linkages are made in the current draft.

Currently, this subject has not been given much attention, and modifications to existing policies or drafting of new policies will have to be undertaken in the near future to clearly link risk reduction activities across various sectors. On the whole, the policy/legislation formulation process is very participatory and with the full involvement of stakeholders both from within and outside the government.

2. NATIONAL DISASTER MANAGEMENT OFFICE OR EQUIVALENT

2.1 MANDATE

2.1.1 GOALS AND OBJECTIVES OF NDMO

BAKORNAS PB, until very recently, was very different from a typical NDMO, in that it had its tasks limited to coordination only, without any operational or implementation capacity. As discussed earlier, with the Presidential Decree 83 of 2005, BAKORNAS PB has been given both the mandate and resources for implementation. Seen in that light, the goals are to comprehensively plan, coordinate, and implement DM activities before, during, and after a disaster situation, addressing prevention, preparedness, emergency response, and recovery measures.

Its functions are to formulate national policies and to coordinate multi-sectoral activities and budgets for all related DM work. This entails providing support to all sectors such as social affairs, health, infrastructure, information and communication, transportation, security, and other areas related to DM and emergency response. It should also provide guidance and direction in general.

2.1.2 MANDATE IS RECOGNIZED AND ACCEPTED BY OTHERS

BAKORNAS PB, as discussed, is not a typical government agency but a coordination body comprising of a council of ministers, headed by the Vice President, and assisted by a secretariat. As such, its coordination role cannot be entirely ignored, but in the absence of matching financial resources, it has not been able to marshal wholehearted support either. Before the new PD was enforced, the secretariat had more than 60 personnel spread over 16 bureaus and 34 divisions, dealing with overlapping subjects. For example, there is a bureau for the rescue of disaster victims and another for the rescue and protection of internally displaced persons (IDPs). Most of the functions are response-oriented and some exist on paper only, without adequate human or technical resources required to perform mandated tasks. This is complicated further by the fact that these subjects overlap with the core mandates of other sectoral agencies that closely guard their turfs. Even the coordination task, for example, is a mandate of the Coordinating Ministry of People's Welfare, thus providing substance for a turf battle.

As such, the BAKORNAS PB is seen more as performing secretarial tasks, and not as much a coordination body. As yet, the technical and human resources within BAKORNAS PB are not able to provide adequate guidance and support to the other ministries to enable a shift from response to preparedness or risk reduction. A similar situation prevails at the provincial and district levels, where the SATKORLAK/SATLAK PBs also lack resources, authority, and technical capacity to coordinate activities of various sectoral ministries.

2.1.3 INSTITUTIONAL STRUCTURES

Since 1961, various regulations, mostly through Presidential Decrees, have defined disaster management and BAKORNAS functions; the most recent one being No. 83/2005, which has brought about some changes in the membership of the BAKORNAS PB and also resulted in establishment of an additional layer within the structure, in the form of an executive board.

The chairperson of the policy-making BAKORNAS PB (which can be likened to a council) continues to remain the Vice President, but two Vice Chairs are the ministers of the Coordinating Ministry of People's Welfare and the Ministry of Home Affairs. The Minister for Energy and Mineral Resources

is an additional member, as is the Chairman of the Indonesian Red Cross Society (PMI). The duties of members are as per their mandates (e.g. the Minister of Home Affairs has to assist coordination with provinces and districts/municipalities in the areas of disaster management and emergency response, and the Minister of Social Affairs provides support and services regarding foodstuffs, clothing, and other social needs). Their own financial resources will be used to perform these duties, and the council meets once every year or more to decide on important policies. The secretary of this body used to be the Secretary to the Vice President, but is now a newly appointed Executive Officer.

This Executive Officer constitutes the executive board for day-to-day operations and reports to the Vice President. The executive board is assisted by three deputies, one each for prevention and preparedness; emergency response, and recovery, in addition to the existing secretariat. In total, the BAKORNAS PB (executive board and secretariat) is permitted to have as many as five bureaus, 12 directorates, 20 divisions, 48 sub-directorates, and 40 sub-divisions. With state finances already released to it, BAKORNAS PB is expected to perform the role of an NDMO, which includes both coordinating and implementing activities in the area of DM. As per this regulation, Major General Syamsul Maarif from *Tentara Nasional Indonesia* (TNI, or the Indonesian Armed Forces) was very recently appointed the Chief Executive Officer of the BAKORNAS PB. Staff expect that it will take another six months for the new structure to be fully operational.

SATKORLAK PB and SATLAK PB constitute similar mechanisms for DM activities at the provincial and district/municipality levels. They are chaired by the governor and *bupati*, respectively, and seek guidance from the BAKORNAS PB, while finances are from the provincial and district/municipal budgets.

At the national level almost every ministry has a department or unit with DM functions, such as the Directorate of Disaster Prevention and Management for Home Affairs, *Badan SAR Nasional* (BASARNAS, or National Search and Rescue Body of the Ministry of Transportation), and similar units for social affairs, health, and other ministries. MoHA's Directorate of Disaster Prevention and Management has developed guidelines for DM activities for MoHA at the district and provincial levels. This department has about 30 personnel split into four divisions: hazard identification, institutionalization, rehabilitation, and city and forest fires, with a sub-division for mitigation under hazard identification.

The Ministry of Communication and Information (KOMINFO) is mandated to inform people, promote public dialogue and interaction, and increase preparedness and understanding of tsunamis and other disasters. KOMINFO disseminates information through all channels using mass media (i.e. television, news media, radio, etc). In normal times, KOMINFO disseminates information regarding government policies and activities. Before 1999, its reach extended to the villages. Since regional autonomy, there are provincial offices for information and communication under the governors, mayors, and *bupati*, but which are not vertically linked to KOMINFO. For example, regarding bird flu, KOMINFO prepared materials on bird flu, and then gave them to the regions for onward dissemination. At the same time, regional offices can also carry out preparedness activities on their own.

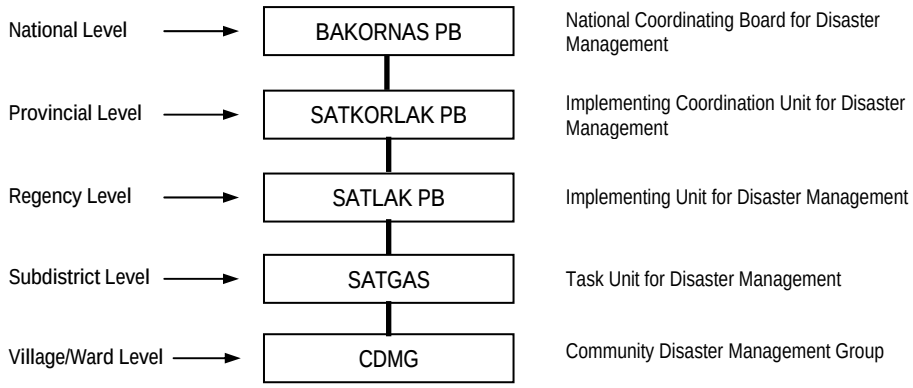
Similarly, the Ministry of Marine Affairs and Fisheries has a department of coastal disaster mitigation dealing with coastal disasters. The problems addressed through this ministry include: coastal erosion; sea level rise; tsunamis; structural or physical features such as mangroves, sand dunes, and stage houses; and non-structural measures such as tsunami zoning and hazard mapping.

Thus at the national level there are many departments dedicated to disaster management spread across various sectoral ministries. BAKORNAS is expected to play a coordination role in integrating their activities, but its structure on paper continues to duplicate some of these other units.

2.1.4 ADMINISTRATIVE STRUCTURES

Administratively, the role of DM institutions in Indonesia, such as BAKORNAS PB at the national level and SATKORLAK PB at the provincial levels, is limited to coordination only, with implementation being carried out by each of the departments with their own resources, but under BAKORNAS PB /SATKORLAK PB coordination.

As discussed, this arrangement presents some problems in that cross-sectoral coordination is actually very difficult, especially since BAKORNAS PB and SATKORLAK PB have no resources of their own. So when a disaster occurs, each department deploys its own teams and performs functions based on their mandates and expertise, sometimes resulting in overlapping of responsibilities, redundancy, and lack of good coverage on the disaster site.



Many of the people interviewed feel that regional autonomy provides an opportunity for creating much better localized DM arrangements and programs. At the provincial levels, the governors are in charge of all preparedness and response activities, while in the districts and municipalities, the *bupatis* (regents) or mayors are responsible.

Political interest has increased in this subject, and there appears to be greater commitment at both the national and regional levels.

2.2 DISASTER MANAGEMENT CAPACITIES

2.2.1 TECHNICAL AND HUMAN RESOURCES

Considering the high degree of Indonesia's vulnerability to almost all hazards, the human and technical resources available have to be built upon as a priority. At the national level, since BAKORNAS PB comprises more administrative officials drawn from the national secretariat (*Sekretariat Negara*), its technical capacities will need to be built up rapidly according to the newly assigned implementation responsibilities.

The organizational structure of the BAKORNAS PB will also have to be revised to provide for acquisition of technical resources and setting up a well-resourced National Operations Center that can operate 24 hours a day, seven days a week (24/7). Only a shell exists currently at the national level. Some feel that the BAKORNAS PB staff should be able to contribute substantially to the work, in addition to their administrative and coordination skills. For instance, the area of hazard or risk mapping is replete with cases of different institutions using maps at different scales with information to suit their internal requirements, but there is no attempt or capacity to integrate information from such maps for wider use. The right mix of administrative and technical staff that are proficient in their areas of work may be the short-term solution.

Some departments such as health, public works, marine affairs, and fisheries have their own specific areas of competence and technical expertise to match, but since there is no comprehensive program yet, it is difficult for such resources and agencies to work together. At the provincial levels, a similar situation prevails, and is complicated by the fact that technical resources are available only for the well-endowed provinces such as DKI Jakarta, Surabaya, and others.

2.2.2 RESOURCES AND PLAN FOR COMMUNICATION OF EARLY WARNING

There have been mechanisms for early warning on floods (in DKI Jakarta), volcanoes, typhoons, and other severe weather hazards, where the lead time is much more than for a local tsunami. The mechanism of communication followed the administrative structures described earlier. The tsunamis have forced a review of the situation to improve the system. This is leading to the establishment of an EWS team comprised of 15 agencies:

- BMG, Meteorological and Geophysical Agency
- DEPDAGRI, Ministry of Home Affairs
- DEPLU, Ministry of Foreign Affairs
- ESDM, Ministry of Energy and Mineral Resources
- BPPT, Agency for the Assessment and Application of Technology
- KOMINFO, Ministry of Communication and Information
- BAKORNAS PB, National Coordination Board for Disaster Management
- RISTEK, State Ministry of Research and Technology
- KLH, Ministry of Environment
- LAPAN, National Space and Aviation Institute
- LIPI, National Institute of Sciences
- DKP, Agency of Marine and Fisheries Research
- ITB, Bandung Institute of Technology
- BAPPENAS, National Development Planning Agency
- BAKOSURTANAL, National Mapping and Survey Coordinating Board

BMG is responsible for dissemination of information for meteorological and geophysical hazards. As per a recent decision of the Coordinating Ministry of People's Welfare (MENKOKASRA), the BMG has also been given the responsibility of issuing tsunami warnings. Eleven Tsunami Warning Information Centers will comprise the TEWS for Indonesia. These include 10 regional centers and the national center in Jakarta.

BMG plans to issue warnings through interface institutions such as the police, armed forces, governors (of the 33 provinces through the Ministry of Home Affairs, who already have the budgets and some communication links to the *bupatis* and mayors), BAKORNAS PB, mass media (TV, radio), the harbor radio, and mobile telephone service providers. Standard operating procedures (SOPs) are being prepared so that each of the interface institutions can act appropriately in conveying the warnings. BMG connects to the interface institutions through telephone, internet, and Short Message Service (SMS). Thus, many departments at the national level are part of the EWS chain, ensuring that the information reaches the community. MoHA is part of this chain and passes on warning information to the governors through telephone, fax, SMS, radio, and radiogram, for example.

At the provincial levels, through the SATKORLAK PBs, contact details of relevant officials and agencies are available for further dissemination and also through the SATLAK PBs. *Radio Antar Penduduk Indonesia* (RAPI, or Indonesian Inter-Citizen Radio) networks are utilized as another form of communication. BMG plans to link to the communities directly through FM radio, SMS, and "RAdio and InterNET for the Communication of Hydro-Meteorological and Climate Related Information", or RANET (in proposal stage). Furthermore, siren towers are planned for installation in the most vulnerable locations, which would also be linked to the provincial administration. Currently BMG takes between 5 to 10 minutes to issue the warning, whereas with the proposed scheme of alerts and warnings, the first information would reach communities within 2 to 10 minutes.

2.2.3 PUBLIC AWARENESS OF EARLY WARNING SYSTEMS

The public is not fully aware of the early warning mechanisms or the response actions they should initiate. However, the situation is changing as awareness programs are being implemented with great enthusiasm through various departments at national, provincial, and local levels in collaboration with NGOs and civil society.

KOMINFO is the focal point for the media campaign for the 26 December 2006 tsunami drill in Bali, and for future drills in 17 other tsunami-vulnerable locations. KOMINFO disseminates information

on how to prepare for a tsunami through TV, radio, print media, and also through the traditional channels such as religious places, leaders, and local cultural events to spread the message. KOMINFO works closely with its provincial counterpart offices for information and communication, and prepares information, education, and communication materials for dissemination.

The Indonesian Institute of Sciences (LIPI), a research agency under the State Ministry of Research and Technology (RISTEK), is also responsible for community preparedness and some aspects of building a warning system. LIPI focuses on activities such as hazard mapping, paleotsunami studies, and socio-economic research, among others.

At the local levels, the NGOs, e.g. Tsunami Prepared Communities (KOGAMI) and RAPI, are playing an important role in creating awareness on the early warning systems. The NGOs firmly believe that evacuation drills are important due to the process itself and the awareness it creates.

Training and awareness activities have been carried out for the some parts of the hotel industry, which has been advised to put up signage and instruction pamphlets. But in the absence of any regulations these are not practiced, as many hoteliers feel that these steps will scare away guests and hurt their businesses.

2.2.4 RESOURCES AND PLAN FOR COORDINATION OF RELIEF EFFORTS

In a local or regional disaster, the local or provincial government is wholly in charge of the relief and response, and the governor coordinates all activities. Some provinces through their SATKORLAK and SATLAK PBs have developed SOPs for response and relief coordination. Response coordination only exists in concept though, with some planning for deployment. For example, the Padang SATKOLAK PB SOPs on response and relief coordination for the province, and some SATLAK such as the Padang municipality, have also based their SOPs on the SATKORLAK SOPs and linked to it The SOP there provides for assistance from other nearby districts.

Once a national disaster is declared by the President, the BAKORNAS PB is in charge of the relief and response coordination. While there is no specific national plan for response or relief coordination, the members of BAKORNAS PB have defined mandates, e.g. the armed forces mobilize personnel and equipment for search and rescue and response activities; Ministry of Transportation for transportation facilities and to support rescue and evacuation; Indonesian Red Cross Society for first aid and related assistance to disaster victims; Ministry of Health for medical workers, medicine supplies, other healthcare services, and sanitation; Ministry of Social Affairs provides foodstuffs, clothing, and other social needs; and Ministry of Public Works prepares shelters, provides clean water, sanitation, and repair of infrastructure and facilities. Individual departments have their own SOPs in accordance with their mandates, e.g. the Ministry of Home Affairs is responsible for response coordination vertically through SATKORLAK PB and SATLAK PB, and it has some guidelines and an SOP for the same.

In theory, the national Emergency Operations Center is located in BAKORNAS PB, but it is very basic. In the provinces, SATKORLAK PBs have information centers (operating 24/7), which are manned by the LINMAS unit in the case of Padang, but these are again very rudimentary. In Padang, the command center (PUSDALOP) is based in the fire department to provide all logistics support for the response or relief operations.

2.2.5 RESOURCES AND PLAN FOR COORDINATION OF RECOVERY EFFORTS

Recovery like other aspects of disaster management is also a provincial government responsibility. However in case of a significant disaster, the central government comes into the picture, e.g. housing reconstruction after the Jogjakarta earthquake was taken up by the central government, but other activities such as livelihoods restoration and home industries remained a local government responsibility. In Aceh, because of the scale of disaster, the case was a bit different and the *Badan Rehabilitasi dan Rekonstruksi* (BRR, or Agency of the Rehabilitation and Reconstruction for the Region and Community of Aceh) was established for post-tsunami and earthquake recovery. This is a powerful agency and even traditionally strong line ministries cannot bypass BRR.

Financial resources at the provincial level are supplemented by the national *Anggaran Pendapatan dan Belanja Negara* (APBN, or Budget of National Income and Expenditure) if the situation demands. There are many technical resources in Indonesia such as the universities and national and international agencies that also contribute to the recovery efforts. Spatial planning is one of the priority areas as efforts are still sectoral and not centralized. For example, South Nias is seen as a case study to get around the stumbling blocks associated with too many agencies developing hazard/risk maps, inconsistencies in those maps, and constraints in sharing information. In Padang, UNESCO carries out risk mapping through KOGAMI and other NGOs, while MoHA does the same. In total there are over ten risk mapping programs, some in collaboration with the Department of Volcanology for landslides. Programs with some American universities are supporting a web portal that will house all such products.

Capacities are aplenty but there is not much coordination or sharing of available knowledge and resources. As early as 1976, the Balinese government had come up with a publication on earthquake resistant housing, with some easy to understand guidelines for safer houses.

2.2.6 ENSURE RECOVERY SUPPORTS DEVELOPMENT GOALS

The association between recovery and development is well understood, and opportunities should be utilized to ensure that recovery contributes to conditions that are better than they were before the disaster. This said, the massive scale of reconstruction and the frequent disasters throughout Indonesia in the past couple of years continue to pose a major challenge.

2.3 FINANCIAL RESOURCES

2.3.1 ALLOCATION OF RESOURCES

At the national level, the parliament has already approved a new budget for BAKORNAS PB with a three- to four-fold increase to perform the duties expected of it under the Presidential Decree 83 of 2005. In earlier days, its finances were drawn from the Vice President's office, and now as an operational agency its finances come directly from the national budget (APBN).

The provincial administrations sanction SATKORLAK PBs' budgets. In Padang for instance, the budget is up to 2 billion rupiah (USD 200,000) for response activities and a similar amount for post-disaster activities. During emergencies these funds can be used without any restrictions, while in general the district government budget is for response and not for preparedness or mitigation. There is financial support for the district-level LINMAS officials working for SATKORLAK PB, and the officials' costs are borne by SATKORLAK PB's own funds. As per the regional autonomy laws, emergency funds can include the state budget (central government) assistance to the regional government to finance emergency needs that cannot be covered by the regional budget. This is at the discretion of the national government.

The last two years of the current national medium-term development plan (2005-2007) had provisions only for Aceh-specific interventions, but for the next year, there is a proposal to include DM as a separate item by itself. DM will be one of the nine priorities according to BAPPENAS, which has been trying to incorporate DM into their annual plans since 2004. There is some understanding now, after disasters in Aceh, Nias, Jogjakarta, and Panganderan, that for the past few years the focus has been on response and there has to be a shift of focus to preparedness and mitigation in the new development plans.

In addition to the reconstruction of recently affected areas mentioned above, the priority DM activities under the next budget include capacity development of local governments and communities in disaster preparedness and spatial planning. This will help prevent future disasters through zoning, hazard mapping, planning, and others, and help reduce disaster risks through community empowerment. In 2007, BAPPENAS also expects to make special allocations for TEWS equipment and develop SOPs for EWS at national and local levels. The budget for these activities will be allocated after a final discussion in the parliament, but BAPPENAS foresees a very significant increase for DM.

2.3.2 EMERGENCY NATIONAL FUND

Indonesia has the reserve fund allocation for DM, mostly for disaster response programs. Some departments also receive allocations as reserves from the annual state budget. For 2007, BAPPENAS has initiated inclusion of DM funds in the national development budgeting and planning

2.3.3 EMERGENCY FOOD RESERVES

While there are no food reserves specific to disasters, TNI has stockpiles of rice, medicines, and other essential supplies at provincial or regional levels. Indonesia also has *Badan Urusan Logistic Nasional* (BULOG, or Agency for Logistic Affairs) to handle rice stocks (and other food articles) for nation-wide supply. In case of a disaster, BULOG works with the Department of Social Affairs to supply emergency needs.

2.3.4 UPKEEP OF EMERGENCY EQUIPMENT

As discussed, there is no centralized operational capacity for emergencies other than coordination. The armed forces, police, and fire brigades at the provincial and district levels, and some national-level departments, are the only entities with access to emergency equipment. Both the capital costs and the budget for maintenance and upkeep are funded by the budgets sanctioned to these agencies—from the state budget for national entities, and from the provincial budgets for regional or local agencies. However, some feel that the allocation for maintenance is not entirely adequate.

2.3.5 PROCUREMENT PROCEDURES

During an emergency, funds available with the SATKORLAK PB and SATLAK PB can be used without any restrictions.

2.4 OTHER CRITERIA: WORK CULTURE AND INTEGRATION OF GOVERNMENT LEVELS

The commitment and involvement of the professional cadre cannot be doubted, and the work culture is able to integrate diverse cultural and ethnic backgrounds; nevertheless, sectoral and agency divides are still a dominant influence. The Jakarta provincial administration has had a tough time trying to integrate the necessary information from various hazard maps—even as a government agency, information was not freely available.

DM functions are integrated through the BAKORNAS PB, SATKORLAK PB, and SATLAK PB, but in reality there is not much of a vertical linkage between these levels. Due to autonomy, sectoral functions are very distinctly divided across the national, provincial, and district levels. For example, previously KOMINFO reached down to local levels through the central administration, but now there are provincial offices for information and communication under the governors, mayors, and *bupatis*, which are not vertically linked to KOMINFO.

3. MILITARY AND POLICE

The *Tentara Nasional Indonesia* (TNI, or Indonesian Armed Forces) and police force are members of the BAKORNAS PB and so are closely involved in disaster response operations. Furthermore, they have the resources and capabilities for massive operations, such as SAR skills, heavy machinery, emergency shelters, and public kitchens, and are usually the first outside agencies to respond to an emergency. Due to Indonesia's archipelagic structure with over 17,000 islands, the mobility offered by TNI's airborne capabilities and logistics support to remote areas is of vital significance.

The draft DM Bill provides for TNI to take command and control in an emergency situation because of the involvement of multiple stakeholders, especially in cases of foreign military assistance. Within two weeks after the initial response, TNI withdraws and the civil administration, supported by NGOs and civil society, takes over the situation. Any support requested after this stage is provided by the TNI.

TNI has its own regional airbases, airports, and standard procedures. Provincial governors and mayors can request help directly from the Military Area Commands (KODAM), consisting of provincial and district commands with all facilities and engineering corps. If necessary, such response is augmented by neighboring units or the national level. Their regional commander coordinates with the governor for any emergency, and they meet regularly for coordination.

The reform process of the military is still ongoing, and Law 34 of 2004 clearly indicates that armed forces have roles in addition to military operations of war. Accordingly, TNI is preparing its facilities and skilled personnel to manage all emergencies. Training on emergency response, search and rescue, and fire fighting is integrated for all levels of the armed forces. Joint drills are conducted once or twice a year, as well as separate drills for each of the forces, during which response times are monitored. However, military personnel do not yet receive any special or comprehensive training for natural disasters.

TNI has Defense Cooperation Agreements with Malaysia, Singapore, and Australia. There are joint trainings and drills. As of now, standard procedures governing such bilateral agreements and foreign military assistance in an emergency are in place.

For communication links in an emergency situation the existing TNI Communication System is used and additional mobile units are sent as required, with satellite phones as backup. Each emergency response team has mobile communication units, medical teams, engineers, and standard plans that are shared with others. In an emergency, there is very good collaboration in the response with the Red Cross (PMI) through meetings and discussions.

While the BAKORNAS PB secretariat maintains no stockpiles, TNI has stockpiles of rice, medicines, and other essential items at the provincial or regional level, but they do not have regulations yet governing their use. Evacuation routes and safe sites in vulnerable areas are also not planned yet. For better response, TNI and BAKORNAS PB need to develop a database of the resources and capacities available across various agencies, such as airports, ports, landing strips, types of aircraft that can use them, and so on, in all 33 provinces.

During recent disasters such as the tsunamis and Jogjakarta earthquake, the President instructed TNI to form units to assist in coordination and operational concepts developed to deal with the situation in a phased manner. First, units dealt with search and rescue, evacuation of the injured, clearing dead bodies, medical support, and logistics for relief distribution. In the second phase, they provided emergency access to affected areas through alternative transportation routes, relocated survivors, provided further medical assistance, and began reconstruction of damaged infrastructure such as streets and bridges.

There were various problems associated with the TNI tsunami response activities, such as difficulty in coordinating with local officials, lack of communication facilities, restricted mobility, and inadequate information about foreign military assistance. But seen against the magnitude of the operations in which over 200 UN agencies, international agencies and NGOs, 40 local NGOs, and military personnel from over 16 countries participated, the response is very admirable.

The military feel that in future, prior to the arrival of any foreign military assistance for emergencies, details such as the composition of the mission team and their technical and material capabilities should be shared, so that coordination becomes easier. Further they prefer that international agreements could be made that would govern such assistance in terms of procedures, joint operational safety, coordination, and duration of their operation.

4. NGOS AND CIVIL SOCIETY

There are reports that at one point there were more international NGOs than national and local NGOs involved in the response operations in the tsunami-affected areas. While this may certainly have been the case, NGOs in Indonesia are very active and operate across the country on various issues such human rights, the environment, and development. There were already a handful of NGOs involved in disaster management prior to the tsunami, and now there are many more newcomers in this priority area.

The local population, religious organizations, and community-based organizations were the first to reach the affected communities, sometimes even before the military. Almost every NGO, irrespective of its core competencies, got involved in the massive relief and response operations. A few such as WALHI (Friends of the Earth-Indonesia, an NGO) also brought up issues to help the sustainability of recovery efforts. For example, they pointed out that some building materials for the reconstruction efforts were inadequate, which would create problems later, but corrective actions could be taken up early in the process. Issues related to response that came up in Indonesia were similar to those encountered in other countries, such as international NGOs not recognizing local capacities, registration of new NGOs, and competition among different sections of civil society.

Some organizations are building up their capacities to be able to play a more active role in response operations. The richness and texture of the NGO involvement in disaster management and the future possibilities can be seen from a quick glance at a cross section of those involved at the national level (MPBI, PMI, etc.), all levels (WALHI), and local levels (KOGAMI).

MPBI facilitated civil society participation and involvement in an effort to fill in the void due to absence of a legislation to guide disaster management and came up with a draft DM bill. This draft and other technical papers were provided to the parliament as inputs for enactment of Indonesia's first legislation on DM. MPBI is also playing an active role in the integration of disaster management in all government departments through BAPPENAS. Other agencies involved in this effort are the UN, Oxfam GB, CARE, and GTZ.

PMI was formally recognized for their sterling services after the tsunami by being named as the only non-governmental organization member of BAKORNAS PB. PMI, with assistance from the Red Cross and Red Crescent Movement, is building up its network of warehouses and stockpiles, volunteers, and communication systems to better support local level activities.

PMI has been involved in DM since independence but mostly on response. They are a member of the BAKORNAS/SATLAK/SATKORLAK PBs with 33 chapter offices and 379 district branches. The provincial chapters coordinate and branches implement activities as per PMI's strategic plan. DM is its core activity, and it assists BAKORNAS with policy support. To date, PMI has made four presentations on the draft bill in the parliament and is the only organization mandated officially to complement the government in DM.

PMI has been involved in community-based disaster management (CBDM) only from 2002 and now promotes a concept called integrated community-based risk reduction (ICBRR). Twenty people in each village where it has activities are trained as volunteers in Red Cross skill sets using a standard curriculum, and they function as the community's first responder teams, or Community-based Action Teams. There are many kinds of volunteers within PMI: PMR (*Palang Merah Remaja* or Youth Red Cross drawn from school students), KSR (*Korps Sukarela* or Volunteer Corps drawn from universities), TSR (*Tenaga Sukarela* literally meaning manpower referring to technical volunteers). In 2002, SATGANA (PMI Field Action Team) was formed as an action-ready response group, but the teams were used in all phases of pre-, during, and post-disaster. SATGANA operates within the SATLAK and has teams of up to 30 members in 80 of the most vulnerable areas. They provide rescue, evacuation, and first aid; field kitchens; assessment and relief; and training and monitoring

services. Recently a set of elite volunteers called KHUSUS were formed from the best team in SATGANAS for deployment in large-scale emergencies.

PMI has communal storehouses and logistic hubs with pre-positioned stocks at two central warehouses at the community level in Jakarta and Surabaya, as well as several regional warehouses. Since communities still rely on traditional communication, PMI sees its role as a bridge in the end-to-end warning system through VHF and HF radio networks and in reinforcing warnings from BMG. PMI has its own action plans and contingency plans at national level.

KOGAMI, a relatively new local NGO, carries out preparedness activities in the community through socialization to anticipate and prepare them for disasters, in collaboration with the local government officials. KOGAMI supports hazard mapping and preparation of an SOP, which involved collaboration between 25 agencies. It also creates awareness through community workshops, involving women's organizations, youth organizations, and teachers through the preparation of maps, evacuation routes, identification of safe areas, and a simulation to check the communities' understanding and review the plans. KOGAMI also provides necessary assistance to communities to prepare proposals that might reduce their risks and places a priority on raising awareness in schools. They partner with UNESCO, ISDR, Mercy Corps, and MPBI on these issues.

WALHI, an environmental forum with 430 NGO and CBO members, works closely with BAPPEDAL (Indonesia's environmental agency) and shares information among the members, for example on preparing for floods. In addition to its involvement in policy advocacy, critiquing government policies on spatial planning, mining, forestry, and other environment-related issues, it also supports activities that encourage accountability and responsibility—by filing a citizen law suit, as one recent example.

Mercy Corps, usually involved in humanitarian and health activities, provided relief assistance and found disaster preparedness, although a new concept, more enticing after the Jogjakarta quake and the Aceh tsunami. It collaborates with the interagency working group in Padang on these issues and focuses on DRR through nine village-level pilot projects in Padang, adopting community-based disaster management approaches. They found that *bupatis* understand the need for and the importance of DRR, but not so much awareness and action is seen at the lower level. There is no budget with them for physical risk reduction activities.

NGOs feel the lack of a strong coordination mechanism for actors involved in DM and believe that more local NGOS should be getting involved.

5. CURRENT SYSTEM CAPACITY

DM in Indonesia is still seen as emergency response, not as a capacity building, awareness raising, or development issue. More than two years after the tsunami, many ongoing activities are still misguided and will not be sustainable.

Private sector corporate social responsibility efforts are also response-oriented. Preparedness is not as attractive because it is difficult to measure. Also, disasters and hazards in Indonesia are seen as divine acts and thus people believe they cannot really prepare for them. This is a universal trait of societies everywhere but is more pronounced in lesser developed countries where the education system has not addressed the root of these beliefs.

After the Jogjakarta earthquake, the provincial administration has DM as one of its priorities. Decentralization is both a problem and a solution in that better tailoring for localized capacities can be created and utilized. In a culture as diverse as Indonesia's, the local hazards (landslides, drought, water scarcity, food production drops, typhoons, etc.) can be addressed in a way that a centralized system will not permit. But the central government needs to play a guiding role by providing guidance, sharing practices, and funding critical needs.

CARE helps in capacity development at district levels for forest fires so that technical capacities exist and in its work has found that the conceptual framework that links development and disasters and landuse policies that address vulnerabilities is lacking. Currently, at the local levels, DM responsibilities are devolved to different sectors and the *bupati* has the power to change these arrangements governing DM within the districts; BAPPEDA (provincial) as part of its development planning has the mandate to help put programs together and support the *bupatis* to forge linkages between their development activities and disaster reduction.

5.1 EARLY WARNING

BMG is responsible for dissemination of warnings and information for meteorological and geophysical hazards, now including tsunamis. Over 15 government organizations are involved in the tsunami early warning system. BMG has identified interface institutions for a collaborative approach to send warnings down to the communities. These institutions include mobile telephone service providers and six other institutions, such as the governors' offices. BMG has signed memorandums of understanding with two mobile service providers for their networks to carry any warning issued by BMG.

Currently BMG takes between 5 to 10 minutes to issue any warning, whereas with the proposed scheme of alerts and warnings, the first information would reach communities within 2 to 10 minutes. The following warnings will be provided:

- *Alert (First Warning)*, indicating time of warning, earthquake, and the possibility of a tsunami;
- *Second Warning*, with some parameters regarding the quake and the time and height of a possible tsunami;
- *Third Warning*, with the actual occurrence of the tsunami and height of the waves reported based on observation; and
- *Final Report*, which is either a cancellation or confirmation of warnings.

BMG plans to link to the communities directly through the siren networks, FM radio, SMS, and RANET. Information is passed down to the provincial and district administrations, which have the responsibility of disseminating the same to the communities. There are proposals to install siren towers in areas of high vulnerability such as tourist destinations, but as of now, none exist. There is also discussion about the usefulness of these sirens given the cost and difficulty of maintenance. Some districts are preparing SOPs to ensure the dissemination of warnings from the province or district down to communities and that everyone understands their roles and responsibilities.

Evacuation routes have been identified and marked in some cities by local NGOs involving the SATKORLAK and SATLAK PBs. The Citizens Band Network (RAPI) is active in some parts of the country and they collaborate very closely with the local authorities in providing strong communication links to the communities. The operation centers at the district and provincial levels exist but are not fully equipped in terms of human or technical resources. There is a proposal from the French through the French Red Cross, to support a multi-hazard crisis center (with facilities such as TVs, maps, communication equipment, etc.) at the governor's office in Padang with 25 staff on stand-by and open 24/7.

Some awareness programs have commenced in several vulnerable communities through NGOs and organizations like LIPI, which although not extensive in coverage, have started to get public attention. Some NGOs work on school-based disaster risk reduction programs, especially for earthquakes, but these have still not been institutionalized into the school curriculum. A large number of NGOs and civil society organizations suggested the incorporation of "dos and don'ts" and risk reduction into the school curriculum as one of the priorities at a seminar on the occasion of the International Day for Risk Reduction this year.

5.2 OVERALL DISASTER READINESS

5.2.1 THE NATIONAL DISASTER MANAGEMENT ORGANIZATION(S)

BAKORNAS PB is looking more like an NDMO with the addition of mandates for implementation, budgets, and hopefully, corresponding capacities very soon. Currently its emergency operations center is not fully equipped and operational. Its access to financial resources has increased and it will receive its requirements from the state budget starting next year.

The DM Bill is yet to be enacted, and it may either lead to further consolidation of BAKORNAS PB, the creation of a new agency, or at the very least, some changes at the top. BAKORNAS PB will need further capacities if it has to support the SATKORLAK PBs or SATLKAK PBs and collaborate with BAPPENAS in bringing in sectoral agencies and ministries to incorporate risk reduction into their development activities and budgets.

5.2.2 OTHER MINISTRIES

The nine ministries that are members of the BAKORNAS PB are closely involved with its activities. Most of these ministries have very distinct units or divisions dealing with DM activities, such as the Ministries of Health, Home Affairs, Social Affairs, and others. Other ministries do recognize its role and involve it in their DM-related activities, but for a few such as the Ministry of Marine Affairs and Fisheries and the Ministry of Public Works, disaster response and preparedness for response continue to remain the major focus.

5.2.3 MILITARY

The military in Indonesia has an important role in handling disasters and emergency situations and is part of the national and regional systems. The armed forces' role is also being incorporated into the draft DM Bill. It is clear that currently their involvement through command and control lasts up to two weeks following a disaster, and then they turn over the situation to civilian authorities. Their further involvement afterwards is based on the ground situation. The governor remains in charge through the military involvement in response, and they collaborate in coordinating the other actors.

5.2.4 NGOS AND CIVIL SOCIETY

NGOs, donors, and national and international agencies all have their own significant roles in disaster management. UN agencies, as in other places, have very close working relationship and good coordination with the Government of Indonesia, unlike many of the national and international NGOs who have had rather uneasy relations from the beginning. Usually civil society and the NGOs are very vocal when government agencies are slow to respond to a crisis, and they consider it with good intentions as a freedom of their expression, which they take seriously.

As well as criticizing the formal government activities, NGOs have performed their tasks in the tsunami response—in some cases, reaching out to the affected population earlier than others. Civil society is very active and enjoys a vibrant atmosphere, and government officials will also spare time to join in causes to make a difference. The DM Bill draft currently under review in the parliament has been significantly strengthened from such strong civil society participation and initiative.

Civil society is becoming more organized nationally compared to the situation before the tsunami. At one stage international NGOs may have outnumbered national NGOs (a TEC report indicates that in Banda Aceh, within 3 weeks of the Tsunami the number of INGOs went up from 50 to 100 and may have been as high as 400 at some stage, compared to around 100 local NGOs at the time of the tsunami). Many new NGOs are starting to work in the area of awareness creation, community preparedness, and disaster management.

The Indonesian Red Cross Society is working very closely with the government administration at all levels, and it is the only non-governmental member of BAKORNAS PB. PMI, with assistance from IFRC, is ensuring that they are able to reinforce warnings issued from the national, provincial, and district levels through communication systems at their chapters and branch offices.

5.3 RECOVERY AND RECONSTRUCTION

5.3.1 DATA COLLECTION ON DAMAGE AND NEEDS

Through their provincial counterparts, sectoral ministries have managed to collect all the necessary data on the damages due to the tsunami. The sheer magnitude of the disaster in some places where not a trace of the existing settlement is left has not made the task easy. Advanced satellite imagery has been used to reconstruct the settlements in some cases.

BAPPENAS and the World Bank came up with the first preliminary assessment of the damages and needs for Indonesia three weeks after the tsunami. The *Badan Pusat Statistik* (BPS, or Statistics Indonesia) at both the national and the regional levels has supported the process of data collection after the tsunami. BRR set up a database called Recovery Aceh Nias (RAN) that captures the proposed and ongoing programs conducted with the assistance of national and international agencies. The common problem of a lack of data disaggregated by age and gender was experienced in Indonesia too.

5.3.2 STAKEHOLDER INVOLVEMENT AND PARTICIPATION

An organized effort to increase community participation and involvement in recovery was initiated for the first time after the tsunami in Aceh. The World Bank supported the engagement of local people from the affected areas, some of whom were survivors themselves, to act as facilitators. These facilitators not only provided a clear picture of the impact as seen from the community perspective, but also facilitated a bottom-up approach of planning by mobilizing the affected populace. Other efforts took the form of community involvement for programs such as cash for work etc.

Sectoral departments and local and international NGOs are all involved in the reconstruction process through the BRR. Although beneficiaries and the affected communities are also involved in BRR planning, their wishes and aspirations have not always come to fruition.

5.3.3 COASTAL COMMUNITY RESILIENCE

Community involvement in environmental development, local-level development, forestry development, and coastal development has been practiced for many years, through various NGOs. Since 2001 the newly established Department of Coastal Disaster Management (DCDM) under the Ministry of Marine Affairs and Fisheries has been addressing coastal issues such as coastal erosion, sea level rise, and tsunamis.

This department developed a guideline for coastal disaster mitigation based on integrated coastal zone management (ICZM), in which all levels of the government, community, and civil society were

involved in various programs. The entire process was spread over three years and completed in September 2004. The department has proposed both structural and non-structural components. Mangroves, sand dunes, and stage houses (a type of disaster-resilient house) comprise some measures planned by them to enhance coastal resilience, while tsunami zoning, hazard mapping, and coastal zone management regulations are the non-structural approaches.

A strategic plan through 2009 has been developed for the ministry, in which DCDM proposes to replicate planning actions down to provincial levels in at least four vulnerable provinces. The CZM bill was initiated in 2001 and was expected to be enacted by the end of 2006 while some provincial and district authorities have already taken up local regulations on the issue. They strongly feel that CZM, once enacted, can serve to regulate all coastal activities and integrate all existing regulations spread over various departments and across sectors, including the relevant polices enacted through the disaster management bill.

5.3.4 BUILDING BACK BETTER

As discussed, Indonesia does not lack technical capacities for DM. Some local governments, for example, prepared simple, easy to use safer building guidelines for earthquakes more than three decades ago. So it is not a surprise that efforts are being made to ensure that reconstruction in the wake of the three or four major disasters in the last two years incorporates an element of building back better. However, faced with enormous pressure to complete the reconstruction rapidly, and due to the massive scale of reconstruction, there are fears that the "better than existing" principle could, and is, taking a back seat.

Compounding this is the necessity to bridge the ideal of relocating the affected to safer areas inland with communities' actual preference to remain closer to their livelihoods and thus the vulnerable areas. In the absence of any enforcing legislation or regulations, and despite the existence of the concept, its practical implementation is very complex and often contrary to local custom.

5.3.5 TRANSPARENCY IN BENEFITS AND ENTITLEMENTS

Other than setting up special bodies at the BRR to monitor irregularities in the reconstruction processes, no special initiatives were undertaken at the community levels. Awareness on entitlements and compensation packages to the affected was provided through the usual government channels.

6. SUMMARY AND RECOMMENDATIONS

6.1 STRENGTHS

1. Though legislation and associated policies are still on the drawing board, the recent disasters have brought about a strong commitment and motivation across all sectors of the government and society in general to develop a robust and effective disaster management system in the country. There is also a conscious shift from response-oriented mechanisms to a more pro-active and preventive system.
2. Participation, consultation, and stakeholder involvement are not mere words in Indonesia. These are actively practiced and respected. The development of the draft DM legislation is a very good example. If these continued to be followed for other initiatives under the DM program, then the path to reducing disaster impacts in Indonesia will be easier.
3. One of the most often quoted weaknesses is that BAKORNAS PB is only a coordination body with no mandate and no capacity (financial or technical) to implement activities. This is being rectified with the appointment of an executive officer and allocation of funds for operational activities.
4. Civil society and the NGO sector are very rich and actively involved. Their range of activities is very diverse, from policy-level initiatives to local community- and village-level initiatives. There are some very good examples of successful cooperation between the government and the non-governmental sectors. This will be strengthened in the future since PMI has a strong relationship with the government in disaster preparedness and response. PMI is further enhancing its capacity to provide timely and effective warnings and assistance to victims of disasters and conflicts. It is also promoting community-based preparedness activities.
5. The Strategic National Action Plan for Disaster Reduction Planning (2006-2010), undertaken in Indonesia as per the Hyogo Framework, is a very good attempt to integrate all relevant government institutions, international agencies, and NGOs working in the field of disaster management, and has been developed in a collaborative manner.

6.2 WEAKNESSES

1. Indonesia is prone to almost all natural disasters and is most vulnerable to tsunamis, volcanoes, and earthquakes on account of its location in some of the world's most active fault zones. Its archipelagic structure makes it all the more challenging to reduce risks from tsunamis.
2. A preponderant belief that disaster management is only response, and that disasters are pre-ordained and cannot be prevented, limits the scope of activities people and agencies are willing to undertake.
3. As a coordinating body, BAKORNAS PB's roles and responsibilities are all-encompassing, but its capacities are not commensurate to its responsibilities. There is further scope to fully integrate activities and plans of the various stakeholders in DM, and the need to build capacity within responsible agencies is very large.
4. The direct involvement of various ministries and departments in DM is both a strength and a weakness. Since their DM activities are funded by different ministry funds independent of BAKORNAS PB, it remains a challenge to meaningfully coordinate and influence them.

5. Different agencies have been involved in hazard and risk mapping without adequate collaboration on basic standards, including the scale of maps and compatibility issues, resulting in difficulties in integrating them to prepare a comprehensive set of disaster risk or vulnerability maps.
6. In the absence of an overriding policy or legislative environment, it is a challenge for the government to make adequate use of the current public and official interest as well as the external resources currently available to achieve significant progress in DM.
7. Community participation, perceptions, and understanding of disaster risk reduction are still at a rudimentary level. This is surprising considering the great vulnerability of many areas of Indonesia and especially the coastal areas facing the Indian Ocean.

6.3 RECOMMENDATIONS

1. The National Mapping and Survey Coordinating Board (BAKOSURTANAL) and the National Aviation and Aerospace Institute (LAPAN) has the capacity to map hazards or risk areas, integrate all available information needs, and further develop maps to be taken down to the districts, cities, and sub-districts. This can involve updating base maps, surveys, and further consultation with the local population.
2. Indonesia needs emergency operation centers at the national, provincial, and local levels in line with the draft DM legislation and discussions in the parliament.
3. Though SATLAK, SATKORLAK PB, and BAKORNAS PB have their standard operating procedures (SOPs), they need to be revised to reflect the current institutional capacities and arrangements with greater focus on holistic DM.
4. While the national legislation is under review, a regional, provincial, or district-specific guideline or regulation can be drawn up for review and adoption at the local levels. This will help in ensuring that activities at the local levels integrate risk reduction, which is important because of the decentralized structure.
5. Significant budget allocation for DM functions is foreseen in the next fiscal year, and already several ministries' budgets include allocations for disaster management activities, although they are mostly response-oriented. This is a golden opportunity to promote a culture of risk reduction by supporting budget allocations for activities that build in risk reduction, as opposed to only disaster preparedness or response capacity enhancement. BAPPENAS is the key agency that is involved in the budget process and should play a very significant role. Successful practices and practical strategies for incorporating risk reduction into development planning of some key sectoral ministries will greatly assist in this process.
6. Indonesia is located near the largest seismic fault in the Indian Ocean, and its structure to communicate warnings is complex. Defining the roles and responsibilities for disseminating warnings in less than 30 minutes through all levels of government is a challenging proposition. Since existing technology cannot receive the data, process the information, formulate a warning, and disseminate information to the beaches, there is a great need to develop and implement a massive grassroots education strategy using a train-the-trainer approach. Training local responders to be sensitive to local signals of disasters, such as strong earthquakes, water receding, and other signs, will provide some insurance against being totally dependent on a potentially slow national warning system. A one- or two-day training that covers the basics of evacuation routes, safety zones, use of simple slogans, and other IEC materials could provide significant response capability to local communities. A systematic training program could ensure that thousands of Indonesian trainers could fan out in a systemized fashion to saturate the tsunami-prone coasts of Indonesia. Public service ads on TV and radio would reinforce the message, and these media are also effective in raising public awareness on disasters.
7. The strengthening of local government capacity and its awareness in the context of policies and disaster management plans is essential. Such awareness raising should be focused on locally relevant disaster risks and vulnerabilities. In addition, school teachers and children need to be

prepared through disaster education that is also locally relevant through a modified curriculum and extra-curricular activities.

ANNEX A: MATRIX FOR INDONESIA

1. Policy, Legislative and Institutional Environment

Criteria	Development Stage Indicators			
	1	2	3	4
Legislative Environment for DM	Does not exist	Based on cabinet paper or circular or directive	Legislation under development	Approved legislation exists
Institutional Environment	No formal institutions	Formal institutional framework only on paper	Institutional framework present but insufficient	Roles and responsibilities of each institution involved in DM vis-à-vis others is written down, well understood and used
Political environment	No observable political will	Political commitment vocal but no actions yet	Strong political will and some but insufficient action.	Significant political support and commitment to DM available
Policies relating to Disaster Management(DM)	No or outdated DM policies	New policies prepared but not yet comprehensive or approved	Comprehensive policies exist but not yet fully exercised	Approved policy exists; adequately covers a broad spectrum of activities from response to recovery to mitigation and encourages incorporation of DM concerns into normal development
Policy Formulation	By fiat or not undertaken	Several but not all government stakeholders involved	Inclusive of government entities; insufficient in civil society and/or military involvement and acceptance	Thoroughly consultative; adequate opportunities for involvement of all stakeholders; feedback sought and received
Policy supports disaster management at all government levels	Only central government involved	Central and province level government involved	Full authority granted at all levels except community	Provides for and supports decentralization of DM, to all levels
Involvement of various other government stakeholders	Only one central entity involved	Only main line ministries involved	Includes some the other necessary Ministries: health, agriculture, local government	Actively encourages comprehensive involvement; addresses cross-cutting concerns of DM within various sectors
Linkages with other government policies	No official methods of linking	Linkages on paper only	Links in place but not fully utilized	Explicitly identifies links to DM in existing policies and ordinances

2. National Disaster Management Office (NDMO) — Indonesia

Criteria	Development Stage Indicators			
	1	2	3	4
A. Mandate				
NDMO goals and objective statements	No statements exist	Written goal statements but inadequate/outdated	Goals clear to government only; not comprehensive	Covers all aspects of disaster management including incorporation of DRR in development
NDMO mandate recognized and accepted by others in and outside of government	Nobody recognizes mandate/authority outside NDMO	Recognized only in mainline ministries/not fully accepted	Recognized by essential ministries but not known to public/local governments	Mandate of NDMO well-recognized and accepted by all other stakeholders, who agree to its coordinating role.
Institutional Structures	Not considered	Systems in place only for mainline ministries	Systems operative throughout central government; weak elsewhere; (roles and responsibilities unclear)	Operational roles/responsibilities with other DM organizations well laid-out and effective
Administrative Structures—for decision making	No such structures yet in place; timely response unlikely	Beginning to address issues; timely response still uncertain	Reporting/decision lines unclear and/or waivers not adequately stated.	Administrative structures, waivers, etc. exist to provide rapid response and support to cut through bureaucracy
Administrative Structures—for coordination	-do-	-do-	-do-	-do-
Administrative Structures—for delegation of authority	-do-	-do-	-do-	Direct reporting to the highest level
Administrative Structures—for timely response	System contains too many lag points; not responsive	Warnings timely at HQ, next steps unclear	Warnings reach provinces in timely fashion but forwarding warnings to users is slow	Warnings delivered and received at all levels; no lag time in response
Political environment	Does not exist	Much political jockeying slows things down	Necessary support generally but not always available	All necessary support available
B. Disaster Management Capacities				
i. Technical and Human Resources				
Staffing	Inadequate: untrained and/or high turnover; duties unclear	Marginally adequate: few trained/experienced professionals; high turnover	Keep trained staff but need more training and support staff	Fully staffed with plans and resources for skills development through training etc.
Resources and plan for communication of early warnings	Not thought through nor purchased	Plans, but inadequate. Equipment inadequate. No public awareness	Both plans and equipment in place but untested. Insufficient public awareness	Redundant communications gear to ensure rapid dispersal of early warning information
Public awareness of early warning systems	Need not recognized	Education planned but not done	Some public education	Widespread understanding

Criteria	Development Stage Indicators			
	1	2	3	4
Resources and plan for response coordination at all levels	Not in place	On paper but under staffed/untrained	Somewhat operative at national level; other levels lack adequate training and equipment.	Fully functional command /operations center, with necessary technical skills and human resources exists- 24x7; good surge capacity at anytime.
Resources and plan for coordination of relief efforts	Not yet undertaken	Plan exists but excludes donors, entities	Well planned and resourced but no coordination capacity with civil/private sector (NGOs, etc)	Procedures, plans and resources available for coordination; well understood, accepted, and used by all stakeholders
Resources and plan for coordination of recovery efforts	Not in place; recovery efforts uncoordinated and unequally applied	In place; does not include all ministries (agriculture, health, etc) in planning recovery	All requisite host government agencies in place but foreign recovery programs not aligned	Full recovery effort, including all players, planned and coordinated to ensure adequate coverage of disaster area and appropriate use of materials, labor, etc.
Resources and plan to ensure recovery efforts support development goals of nation	Not yet considered	Exists only in mainline ministries; no civil society input planned.	Includes all relevant government ministries but excludes non-government responders	All recovery efforts are weighed and approved against long-term development effects; private sector responders in complete accord.
ii. Financial Resources				
Allocation of resources	All resources donor-dependent	Budget funded but insufficient	Funding remains subject to political/economic pressures on government	Commensurate with mandate and covers all phases of the DM Cycle, including development
National Disaster Fund	Does not exist	N/A	Exists but not adequate nor protected	Fund put aside to be used in the event of a disaster; established procedures for compensation, relief support exists
Emergency food reserves	-do-	-do-	-do-	-do-
Allocation for maintenance and routine upkeep of all emergency/relief equipment	Does not exist	Being put in place but money is scarce; donors do not provide	Some donors provide; inadequately protected or misused	Exists; donors expect to provide along with donated equipment
Procurement procedures	Chaotic	Work only with high-level involvement	Work in normal (but not extreme) disaster situations	Crisis procedures exist which can fast-track any necessary procurement of services or goods

Criteria	Development Stage Indicators			
	1	2	3	4
C. Other Criteria				
DM functions exist at all levels of government	Exist only at the Center	Exist only at the Center and Provinces (districts)	Exist but does not function at all levels	Branches of NDMO/DM institutions exist and function at all decentralized administrative levels
Work Culture	Information not shared; secretive and competitive environment (NDMO shares, not others)	Clear lines of authority but too high level and authoritarian	Culture adapts to emergency response readily and efficiently; other facets of DM still too non-collaborative.	Participatory, consultative to authoritative, appropriate to the phase of disaster management

3. Related Ministries/Departments/Institutions

Criteria	Development Stage Indicators			
	1	2	3	4
Development Activities	Risks not considered in other ministry planning	Only 1-2 ministries consider risk in development planning	All ministries are cognizant of risk in their planning	Development activities take into consideration disaster risks
Enforcement of guidelines, policies and legislation	Not enforced	Some enforcement, but erratic	Good enforcement but limited by lack of funds/staff	Enforce existing policies/guidelines/regulations that address disaster risk concerns
Collaboration	Do not work with NDMO	Meet very rarely with NDMO	Regular meetings held but not decision-making	Collaboration with DM agencies is well established
Recovery & Reconstruction	No concept	Concept exists but not backed by capacity	Concept, skills and capacity exists but not backed by resources	Building back better is ingrained in work culture; necessary knowledge, resources and skills available
Disaster Preparedness	No plans or procedures exist	Some plans and procedures in place but rarely updated	Plans, procedures exist but cannot be applied due to some constraints	Contingency plans and operating procedures exist, guide actions after a disaster, and are reviewed and updated regularly

4. Military/Police

Criteria	Development Stage Indicators			
	1	2	3	4
Involvement in disaster management planning	Have their own plan, uncoordinated	Basic MOU on planning responsibilities, no follow-up	NDMO and military coordinate disaster planning; do not include other responders	Full range of responders involved in planning.
Involvement in disaster response	Ad hoc, involves only military	Roles and responsibilities beginning to be spelled out with NDMO	NDMO and military roles clear; other responders not informed	Full range of responders are involved in or aware of disaster plans.
Clarity of coordination	None	Military coordination limited to military	NDMO and military coordinate; others excluded	Full range of responders coordinate frequently and actively
Clarity of command/control functions	Clear only in military	Clear in military and NDMO, but not vis-à-vis each other	Joint understanding of command control between NDMO and military only	Full range of responders understands and is trained in command and control scenario
Resources, including relief goods, transport, communications	No stockpiles	NDMO stockpiles some relief goods, as does military	NDMO/military share electronic inventory of goods and equipment but NGO/donors not included	Assets brought by each player fully understood and stockpiled with electronic records
Training	None other than normal military	Officers trained	Wide military training in response	All training coordinated with NDMO
Response Time	Unknown; no (joint) drills held	Some players drilled and response time slow	Joint response training; drills show good response	Response training offered to all players and at all levels; rapid response time (72 hours)
Capacity	No resources or trained personnel available for disaster response	Inadequate resources or trained personnel available for disaster response	Resources or trained personnel available for disaster response but delays in deployment	Adequate resources and trained personnel available for deployment at short notice
Foreign assistance (if permitted)	No procedures for dealing with foreign military			Procedures exist for coordinating with foreign military personnel deployed for humanitarian disaster response activities
Early warning communication	Communication systems are restricted to military/police use	Communications systems used but do not link with other civilian systems	Procedures and plans for use of communication systems for disseminating warnings are in place but do not dovetail with national/local preparedness & response plans	Procedures and plans for use of communication systems for disseminating warnings are in place and dovetail with national/local preparedness & response plans

5. NGOs/IOs/Civil Society

Criteria	Development Stage Indicators			
	1	2	3	4
Involvement in disaster management planning	Have their own plans, uncoordinated with government or other NGOs	Some civil society organizations coordinate with each other	Some civil society organizations and government coordinate disaster planning; do not include other responders	Full range of responders involved in planning.
Involvement in disaster response	Ad hoc, depending on donors	Organization mandates relief work but not specific skillsets	Organizational mandate supported by trained personnel and resources are insufficient	Organizational mandate supported by trained personnel and required resources
Clarity of coordination in disaster response	Have their own plans, uncoordinated with government or other NGOs	Some civil society organizations coordinate with each other	Some civil society organizations and government coordinate disaster planning; do not include other responders	Full range of responders coordinate frequently and actively
Resources, including relief goods, transport, communications	No stockpiles	Some civil society organizations stockpiles relief goods	NGO/donors share inventory but not coordinated with the government	Assets brought by each player fully understood and stockpiled with electronic records

6. Current System Capacity

Criteria	Development Stage Indicators			
	1	2	3	4
A. Early Warning *				
End-to-End Warning	Warning is held up at the central level	Warnings reach the sub-national level with some delay	Warnings reach users at local level but not promptly	Message gets from Center to village level rapidly
Warning Dissemination Systems	Basic; numerous equipment shortcomings	Developed beyond basic; but equipment shortcomings remain	Advanced, state-of-the-art in some areas; some equipment shortcomings evident	Advanced, state-of-the-art in most areas, no major equipment shortcomings; inter-operability of systems ensured
Comprehension and legitimacy of warnings	Warnings not trusted or understood	Warnings understood but not trusted	Warnings understood and trusted but do not know how to respond	Warning understood and seen as legitimate by local actors and community; response actions are fully comprehended
When warning are issued – clarity of decision making	Basic; no lead from government; no consistency	Intermediate level with lead from government; partly consistent; partly inconsistent	Higher level with lead from government; higher levels of consistency	Advanced, with lead from government, low levels of inconsistency
Extent of EW communication with other stakeholders	Virtually non-existent	Partially developed; many links; much room for improvement.	Well developed, many links exist; dialogue developing well	Fully developed, links with all stakeholders, frequent dialogue
Public awareness raising about warnings	Non-existent or virtually so	Efforts are apparent to develop awareness programs	Programs exist; rely on narrow range of methods; significant shortcomings; not evaluated	Comprehensive; regular awareness raising, using combination of methods; evaluated
Public education about hazard and hazard warnings	Non-existent or virtually so	Efforts to include material in the school curriculum are apparent; other methods are ad-hoc	Embedded in school curriculum; linked to some exposure in audio-visual and printed media; either unevaluated, or special needs and ethnic minorities are distinguished	Integrated approach employing school and college curriculum; audio-visual and printed media; effectiveness formally evaluated; ethnic minority and special-need groups given special attention
Judgment of warning effectiveness by agencies	Denial of failings and limitations; no evaluation	Some recognition of failings and limitations; efforts to identify improvements but little achieved; irregular evaluation	Wider recognition of failing and limitations; some improvements made; evidence of some stakeholder involvement; regular evaluation	Full recognition of failings and limitations in past; improvements demonstrable; regular evaluation involving full range of stakeholders

* Parker, 1999 (Adapted and extracted)

Criteria	Development Stage Indicators			
	1	2	3	4
B. Overall Disaster Readiness				
NDMO	Overall procedures not in place below national level	Center to province in place, untested	Apparent connection top to bottom but untested; some questionable communications gear	Established procedures for passing on EW and declaring state of emergency at both national and sub-national levels exist
	No written system in place	Written system covers only NDMO and military at Center and provinces	Complete written system but not all stakeholders involved	Response measures to be undertaken by all actors upon declaration of an emergency are written down and understood
	No stockpile/inventory exists	Inventory of stockpiles not automated	Inventory of stockpiles automated, but not updated nor accessible at all levels	Fully automated inventories regularly updated and are accessible at different levels of the administrative structure for deployment in a response
Other Ministries	Have no sense of their role in a disaster	Aware that disasters affect their work but have no sense of mitigation	Some mitigation in their plans but no written role in disaster	Roles clear and practiced, written out
Military	Act separately from NDMO; own chain of command	At cabinet level there is coordination, but not at field level	NDMO and military in full accord up and down levels; insufficient NGO and civil society understanding of mil. role	Fully integrated in government EW and response systems
	Military role unclear, ad hoc	Military has own system in place but not coordinated with NDMO	NDMO and military coordinated, but no public education/NGO understanding	Clear and in legislation and military doctrine
NGOs and Civil Society	Act entirely independently; not part of government planning	Some coordination among private agencies; most not disaster-focused	Clear coordination of disaster-related NGOs, meet with government	Clear roles and responsibilities identified; procedures for registration of new/international NGOs clear and understood and easy
	Government does not register foreign entities	NGOs are registered; not donor nations; no interface with government on hazards/needs	Relief agencies and government know each other; some joint planning	Established procedures for foreign donor assistance exist along with mechanisms to communicate actual needs

Criteria	Development Stage Indicators			
	1	2	3	4
C. Recovery & Reconstruction				
Data Collection-damages; needs	No coherence in data collection or needs assessment	Some sharing of systems and needs assessments	Coherent system in place, but not used fully to direct reconstruction efforts	Sectoral departments have procedures in place to collect and pass on estimates of damages and needs to NDMO/agency in charge of recovery and reconstruction
Stakeholders involvement & participation	No involvement	Limited participation	Stakeholders participate but cannot influence decisions	Procedures to consult involve survivors in the recovery and reconstruction efforts are in place; sectoral agencies continue to play important roles with NDMO involved in coordination
Coastal Community Resilience (CCR)	Recovery programs do not consider CCR	NGOs aware and use CCR approach in village level planning	Government and civil society aware and practice CCR in recovery planning	CCR well understood and practiced in all recovery efforts among the coastal communities
Building back better	No concept	Concept exists but not backed by capacity	Concept, skills and capacity exists but not backed by resources	Recovery and reconstruction activities are strongly guided by disaster risk considerations and building back better
Transparency in benefits and entitlements	No transparency	Benefits and compensation packages are known but not the procedures to get at them	Benefits, compensation packages procedures to access them are known but cannot seek redress of grievances (limited redress only)	Affected/beneficiary lists are transparent; benefits, compensation, and entitlement criteria are in public domain; grievance redress procedures are in place

ANNEX B: INDONESIA DISASTER HISTORY (1907-2006)

Dates: Start, End date	Location:	Disaster: Type, Subtype, name	Numbers affected:
4-Feb-07	Aceh coast (North Sumatra)	Wave /Surge	400 Killed
1909		Epidemic	40 killed
1909	Java	Volcano	5,500 Killed
26-Jun-14	Kepahyang, Bengkulu	Earthquake	20 killed 20 injured
21-Jan-17	Bali	Earthquake	15,000 Killed
May-19	Small Island between Java and Sumatra	Volcano	5,000 Killed
2-Dec-24	Wonosobo (Central Java)	Earthquake	727 killed 11,250 homeless
1-Dec-27	Sulawesi, Donggala	Earthquake	50 killed 50 injured
4-Aug-28	Flores sea	Wave /Surge Tsunami	128 Killed
1930		Volcano	1,369 Killed
13-Dec-31		Volcano	1,300 Killed
14-May-32	Tondano (North Sulawesi)	Earthquake	6 killed 115 injured 2,960 homeless
23-Aug-36	Banda Aceh, Lhok Sukon, Lhoksemawe	Earthquake	9 killed 20 injured
9-Sep-36	Tapanuli (North Sumatera)	Earthquake	17 Killed
20-May-38	Tomini Gulf (Central Sulawesi)	Earthquake	17 killed 4,710 homeless
23-Jul-43	Jogyakarta (Central Java)	Earthquake	213 killed 2,096 injured 14,000 affected
1951		Volcano	1,300 Killed
Feb-53		Flood	114 Killed
Jan-54		Volcano	37 Killed
Apr-55		Slides	405 Killed
Dec-56		Wind Storm	300 Killed
20-Oct-58	Malang (East Java)	Earthquake	8 Killed
May-63		Volcano	106 Killed
3-Jan-63	Bali	Volcano	1,584 Killed
Feb-65		Earthquake	71 Killed
Jan-65		Earthquake	40 Killed
Jan-66 1966	Lombok, South	Drought	8,000 killed 204,000 affected

Dates: Start, End date	Location:	Disaster: Type, Subtype, name	Numbers affected:
14-Mar-66	Central, East Java	Flood	176 killed 100 injured 524,000 affected US$ 33,000 '000 damage
12-Aug-66	Sangi Talaud	Volcano Explosive Eruption Mount Awu	88 killed 2,000 injured 40,000 affected
25-Apr-66	Margomlujo (East Java)	Volcano Mount Kelud	1,000 killed 60 injured 5,000 affected
19-Feb-67	Malang (East Java)	Earthquake	54 killed 121 injured 8,290 homeless
11-Apr-67	Tinambung (South Sulawesi)	Earthquake	71 killed 100 injured
30-Nov-67	Central Java	Flood	160 Killed
Jun-67	Ambon	Flood	7,000 Affected
9-Jan-67	Jakarta	Flood	40,000 homeless 102,000 affected
Jan-67	East Java	Flood	55,000 Affected
1-Jan-68	Bojalali (Central Java)	Epidemic Plague	40 killed 94 affected
Apr-68	East Java	Flood	12 killed 150,000 affected US$ 7,831 '000 damage
15-Aug-68	Donggala	Wave /Surge Tsunami	200 Killed
1969	Flores, Timor, Sulawe	Volcano	250,000 affected US$ 200 '000 damage
23-Feb-69	Majene (Celebes Is)	Wave /Surge Tsunami	64 killed 97 injured
Dec-70		Flood	82 Killed
1972 1973	Central Java	Drought	3,500,000 Affected
Jun-73	Flores	Wind Storm	1,650 Killed
Jan-74	Situbondo (West Java)	Wind Storm Storm	10 killed 2,000 affected
29-Oct-76	West Irian	Earthquake	133 killed 7,000 affected
14-Jul-76	Bali	Earthquake	573 killed 4,755 injured 450,000 affected US$ 195,000 '000 damage
26-Jun-76	Wanena Region (Irian Jaya)	Earthquake	420 killed 15,000 affected
13-Nov-76	East Java, Lumajang	Flood	163 killed 20 injured 20,000 affected

Dates: Start, End date	Location:	Disaster: Type, Subtype, name	Numbers affected:	
1976		Volcano	40	Killed
Dec-76		Wind Storm	25	Killed
27-Aug-77	East Timor	Earthquake	2	killed
			25	injured
19-Aug-77	Sumbaya, Lombok, Sumba (Nusa Tengarra Is.)	Earthquake	185	killed
			75	injured
			3,900	affected
			US$ 1,200	'000 damage
Dec-77	East Java	Epidemic Diarrhoeal/Enteric Cholera	80	Killed
1-Jan-77	Jakarta	Epidemic Diarrhoeal/Enteric Cholera	37	killed
			29,942	affected
Mar-77	Bandung district, Java	Flood	12	killed
			5,000	affected
Feb-77	Central Java	Flood	25,000	Affected
Jan-77	Jakarta, East Java	Flood	10	killed
			260,000	affected
30-Jul-77	Central Java	Wind Storm Cyclone	1	killed
			60	injured
			3,000	affected
Apr-78 1978	Flores (Tilor Isl.)	Drought	63	killed
			17,220	affected
Jul-78	Jakarta	Epidemic Diarrhoeal/Enteric Cholera	11	killed
			70	affected
Mar-78	Simelu Island	Epidemic Diarrhoeal/Enteric Cholera	82	killed
17-Dec-78	Aceh	Flood	8	killed
			15,000	homeless
			51,600	affected
Dec-78	Sumatra	Flood	200,000	Affected
May-78	West Achem, North Sumatra	Flood	21	killed
			8,000	affected
Jan-78	East Java	Flood	41	killed
			7,000	affected
18-Dec-79	Bali, Lombok	Earthquake	32	killed
			619	injured
15-Dec-79	South Sumatra	Earthquake	5	killed
			1,500	affected
2-Nov-79	West Java	Earthquake	26	killed
			43,000	affected
			US$ 16,000	'000 damage
12-Sep-79	Yapen, Jobi (Irian Jaja)	Earthquake	2	killed
			5	injured
			5,000	affected

Dates: Start, End date	Location:	Disaster: Type, Subtype, name	Numbers affected:
30-May-79	Lombok Island	Earthquake	34 killed 48 injured 18,000 homeless 18,000 affected US$ 4,150 '000 damage
Jun-79	Borneo	Flood	13 killed 6,000 affected
May-79	West Java	Flood	23 killed 4,500 affected
27-Feb-79	Flores Island	Flood	128 killed 350 injured 4,000 homeless 20,000 affected US$ 3,200 '000 damage
29-May-79	Ciherang	Slides	23 killed
May-79	Merapi (Ouest Sumatra)	Volcano	82 killed
20-Feb-79	Dieng plain (Central Java)	Volcano Mount Sinila	175 killed 1,000 injured 10,000 homeless 17,000 affected
18-Jul-79	Lomblen Island	Wave /Surge Tidal wave	539 killed 23 injured
16-Apr-80	Tasikmalaja (Java)	Earthquake	
5-Sep-80	Ternate (Moluccas)	Earthquake	20,000 affected
26-Dec-80	Central Java	Flood	153 killed 2,946 affected 3,400 '000 damage
Dec-80	Talaga	Slides Landslide	100 killed 10 injured 3,000 homeless
4-Sep-80	Ternate Isl.	Volcano	52,235 affected
15-Feb-80	West Java	Wind Storm	800 homeless
22-Jan-81	Solo Valley (Irian Jaya)	Earthquake	306 killed 2,682 affected
22-Jan-81	Central Java	Flood	140,000 affected
25-Dec-81	Jarkarta	Flood	9 killed 6,000 homeless 206,000 affected
6-Nov-81	Jogjakarta	Flood	6,000 affected
14-May-81	Mont Semeru	Flood	500 killed US$ 2,200 '000 damage
2-Mar-81	East of Java	Volcano Mount Semeru	192 killed 5,000 homeless
Jan-82 Dec-82	Irian Jaya, East Timor	Drought	280 killed

Dates: Start, End date	Location:	Disaster: Type, Subtype, name	Numbers affected:
25-Dec-82	Larantuka (Flores Isl.)	Earthquake	13 killed 417 injured 2,000 homeless 6,400 affected US$ 1,450 '000 damage
24-Feb-82	Sukabumi (Java)	Earthquake	15,000 affected US$ 3,500 '000 damage
Oct-82	Central Java	Epidemic Diarrhoeal/Enteric Cholera	39 killed 200 affected
26-Dec-82	Central Sumatra	Flood	3 killed 1,500 affected
Jun-82	South Sumatra	Flood	225 killed 3,000 affected
28-May-82	Irian Jaya	Flood	12,500 affected
Mar-82	South Borneo	Flood	25,000 affected
10-Jan-82	North Sumatra	Slides	50 killed
26-Aug-82	Sulawesi	Volcano	30,000 affected
5-Apr-82	Java	Volcano Mount Galunggung	30 killed 300,000 affected US$ 160,000 '000 damage
Jan-82	Slemen (Central Java)	Wind Storm Cyclone	2 killed 123 injured
3-Apr-83	Banda Aceh (North Sumatra)	Earthquake	100 injured US$ 1,000 '000 damage
Mar-83	Lampung Province	Epidemic Malaria	120 killed
Dec-83	Java, Jogjakarta	Flood	7 killed 17 injured 410,480 affected US$ 7,007 '000 damage
Oct-83	Aceh, Sumatra	Flood	2 killed 5,000 affected
Jul-83	Banggai	Flood	11 killed 2,000 affected
1983		Slides	21 killed
9-Sep-83		Volcano Mount Gamalama	6,334 affected US$ 149,690 '000 damage
14-Jul-83	Unauna Isl. (central Sulawesi)	Volcano Mont Colo	7,101 affected US$ 25,500 '000 damage
28-Jun-83	Halmahera Island	Volcano	2,500 affected
1984	Kyrim, Irian Jaya	Drought	230 killed 2,000 affected
27-Aug-84	Pahae Jae sub-district (North Sumatra)	Earthquake	108 injured 1,750 affected US$ 1,000 '000 damage
10-Jan-84	Mamuju (Central Sulawesi)	Earthquake	2 killed 89 injured

Dates: Start, End date	Location:	Disaster: Type, Subtype, name	Numbers affected:
Dec-84	Cilicap district (Central Java)	Epidemic Malaria	105 killed 4,000 affected
3-Feb-84	Central, East, West Java, Jogyakarta, North Sumatar	Flood	26 killed 20,000 homeless 300,000 affected
3-Dec-84	Bandung Region (West Java)	Flood	37,500 affected
27-Apr-84	West Java	Flood	2,700 affected US$ 1,500 '000 damage
15-Jun-84	Dukuh, Srumbung, Sawangan districts (Central Java)	Volcano	5,000 affected
5-Sep-84	Siau Isl (North Sulawesi)	Volcano	17,000 affected
25-May-84	North Surawasi province	Volcano	6,000 affected
15-Sep-85	Paniai District (Eastern Irian Jaya)	Earthquake	10 killed 7 injured
19-Feb-85	Central and East Java, Eastern Isl.	Flood	10 killed 2,000 affected
4-Feb-85	Northern Sulawesi	Flood	21 killed 300 affected
30-Jul-85	Ntb Prov.	Volcano	1,078 affected
30-Jun-85	West coast of Sumatra	Wave /Surge Tidal wave	11 killed 2,000 affected
Feb-85	Bandung region	Wind Storm	10,000 affected
1986	Kurima (Irian Jaya)	Drought	84 killed 1,000 affected
Aug-86	West Sumatra	Epidemic Diarrhoeal/Enteric Cholera	59 killed 700 affected
1-Jan-86	Sulawesi	Epidemic Malaria	500,000 affected
6-Mar-86		Flood	50,000 homeless
16-Jan-86	Timor province (Java)	Flood	77 killed 19,000 affected
24-Oct-86	Bengkulu, Lampung provinces (South Sumatra)	Flood	96 killed 20,000 affected
15-Apr-86	West Java	Flood	2 killed 38,000 affected
1987	Java, Bali, Nusa Tenggara Timor, S. Sumtra, E. Kalimatan	Drought	
26-Nov-87	South Pantar Isl.(Timor)	Earthquake	125 killed 100 injured 1,000 homeless 16,000 affected US$ 5,000 '000 damage
26-Apr-87	Tarutung (North Sumatra)	Earthquake	2 killed 1 injured 15,000 affected
Nov-87	Aceh province (North Sumatra)	Flood	4 killed 2,000 affected

Dates: Start, End date	Location:	Disaster: Type, Subtype, name	Numbers affected:
25-Dec-87	Esp. Polmas, Pinrang (Sulawesi)	Flood	119 killed US$ 60,000 '000 damage
14-Dec-87	West Sumatra	Flood	38 killed 84 injured 800 homeless
May-87	Bengkulu (South Sumatra)	Flood	37 killed US$ 4,000 '000 damage
23-Feb-87	Esatern Java	Flood	3 killed 26,000 affected US$ 1,700 '000 damage
4-May-87	Padang Panjang (West Sumatra)	Slides Landslide	131 killed 50 injured 651 affected US$ 1,000 '000 damage
28-Dec-87	Flores Isl.	Volcano	13,000 affected
6-Nov-88	Flores IsL.	Flood	21 killed
20-Dec-88	Central & West Java, Sumatra, Kalimantan	Flood	158 killed 100,000 affected US$ 4,600 '000 damage
6-Feb-88	Java	Slides	43 killed
17-Jul-88	Makian Isl.	Volcano	1,570 affected
9-May-88	Moluccas	Volcano Banda Api	7 killed 2,500 homeless 7,500 affected
14-Jul-89	Alor (Timor)	Earthquake	7 injured 190 affected
1-Aug-89	Irian Jaya, Jayawijaya districts	Earthquake	120 killed 196 injured 17,000 affected
8-Mar-89	Molucca passage	Earthquake	5,500 homeless
20-Jun-89	Ambon (Malucu Isl.)	Flood	18 killed 32,500 affected
3-Jun-89	Madiun Regency (East Java)	Flood	29,000 affected
16-Jan-89	Solok, Sawahlunto Sijunjung (Riau province, West Sumatra)	Slides Landslide	6 killed 6 injured 11,595 affected US$ 341 '000 damage
23-Apr-89	Noongan	Volcano	3,000 affected
6-Jul-90	Kuningan, Majalenga, Sumedang area (Java)	Earthquake	103 injured
15-Nov-90	Bangkejeren, Kutacane, Medan area (North Sumatra)	Earthquake	1 killed 32 injured 2,140 affected US$ 2,100 '000 damage
18-Apr-90	Minahassa Peninsula (Sulawesi Isl.)	Earthquake	5 killed 36 injured 7,000 affected

Dates: Start, End date	Location:	Disaster: Type, Subtype, name	Numbers affected:
Dec-90	Moluccan Isl.	Epidemic Diarrhoeal/Enteric Cholera	50 killed
4-Apr-90	Bogor (Jakarta)	Flood	22 killed
26-Jan-90 1-Feb-90	Semarang, Temanggung, Batang, Kendal, Pati, Sragen, Grobongan, Cilacap, Demak, Rembang, Banyumas municipalities (Central Java)	Flood	169 killed 21,000 affected 4,800 '000 damage
10-Feb-90 12-Feb-90	East Java	Volcano Explosive Eruption Mount Kelud	33 killed 10,265 affected US$ 8,000 '000 damage
4-Jul-91	Kalabahi (Alors district, Timor)	Earthquake	28 killed 191 injured 1,000 homeless 15,000 affected US$ 18,000 '000 damage
20-Jun-91	Gorontalo area (Minahassa Peninsula)	Earthquake	1,000 affected
Aug-91	Sumatra Centrale	Epidemic Diarrhoeal/Enteric Cholera	35 killed
15-Jan-91	Java	Epidemic Arbovirus Dengue fever	41 killed
Jan-91		Epidemic Diarrhoeal/Enteric Cholera	48 killed
Apr-91	Aceh province (North Sumatra), Kalimatan	Epidemic Diarrhoeal/Enteric	115 killed 9,000 affected
Mar-91	Aceh province (North Sumatra)	Epidemic Diarrhoeal/Enteric Cholera	55 killed 6,000 affected
16-Dec-91 19-Dec-91	Riau, Jambi, Lampung provinces (Sumatra)	Flood	15 killed 240,000 affected US$ 14,800 '000 damage
6-Jun-91	Kalimatan province	Flood	97 killed
16-Jan-91	Java	Slides	33 killed
24-Oct-91	Minahasa (Tomohon district, North Sulawesi)	Volcano Mount Lokon	7,679 affected US$ 1,000 '000 damage
1-Aug-91 27-Oct-91	Borneo, Sumatra Isl., Kalimatan, java, Sulawesi	Wild Fires Forest	57 killed 8 injured US$ 13,200 '000 damage
4-Feb-92	Brebes area (Java, Sulawesi)	Earthquake	1 injured 7,500 homeless
12-Dec-92	Sikka, East Flores, Ende, Ngada (Flores Isl.)	Earthquake	2,500 killed 2,103 injured 90,000 homeless US$ 100,000 '000 damage

Dates: Start, End date	Location:	Disaster: Type, Subtype, name	Numbers affected:	
Aug-92	Trenggalek (East Java)	Flood	57	killed
			249,378	injured
			6,845	homeless
			9,330	affected
8-Oct-92	Tasikmalaya, Ciamis, Garut districts (West Java)	Slides	75	killed
		Landslide	37,000	affected
			US$ 5,400	'000 damage
26-Dec-93	Tanggerang, Serang and Lebak districts (West Java Province)	Flood	72	killed
27-Dec-93			8,000	affected
2-Feb-93	Northern coast from Indramayu District in West Java to Gresik District in East Java	Flood	59	killed
5-Feb-93			259,553	affected
			US$ 19,301	'000 damage
25-Jan-93	Sangir Talaud Island	Volcano	2	killed
		Karangetang	452	affected
21-Jan-93	Maluku Province	Volcano	1	killed
		Damar	12	injured
			3,000	affected
20-Nov-94	Maluki, Irian Jaya, North Sumatra, Denpasar	Earthquake	28	injured
			39	affected
9-Oct-94	North Maluku (Obi Isl.)	Earthquake	1	killed
			52	injured
			2,385	affected
2-Jun-94	Purwoharjo, Sarongan, Tegaldlimo, Banyuwangi (South Java)	Earthquake	239	killed
3-Jun-94			440	injured
			8,280	affected
			US$ 2,200	'000 damage
16-Feb-94	Liwa, Lampung Province (South Sumatra), Balikbukit, Belalau, Sumberjaya	Earthquake	207	killed
			1,449	injured
			10,330	homeless
			37,620	affected
			US$ 170,476	'000 damage
21-Jan-94	(1) Irian Jaya region(2) Halmahera	Earthquake	7	killed
			40	injured
			200,000	affected
23-Mar-94	Ngawi, Tuban, Bojonegoro, Gresick, Lamongan (Java)	Flood	33	killed
26-Mar-94			187,131	affected
			US$ 18,145	,000 US$
12-Oct-94	Riau Province	Flood	3	killed
			60,000	affected
23-Apr-94	Simalungun District	Flood	8	killed
			1,000	homeless
12-Jan-94	City of Bandung (West Java)	Flood	4	killed
22-Jan-94			30,000	affected
22-Nov-94	Java Isl.	Volcano	58	killed
Dec-94		Merapi	22	injured
			2,700	affected
3-Nov-94	Lombok (West Nusa Tenggara province)	Volcano	31	killed
3-Feb-94	Eastern Java	Volcano	7	killed
		Mount Semeru	2,000	affected

Dates: Start, End date	Location:	Disaster: Type, Subtype, name	Numbers affected:
Oct-94		Wild Fires	3,000,000 affected
7-Oct-95	Airhangat, Danaukerinci, Gunungkerinci, Gunungraya, Sitinjau Laut, Sungaipenuh (Jambi province)	Earthquake	84 killed 1,868 injured 35,685 homeless 52,665 affected
19-May-95	Parigi, Palu, Poso (Sulawesi)	Earthquake	38 injured 1,500 affected
14-May-95	Dili, Maliana, Mauraba (East Timor)	Earthquake	15 killed 26 injured 150 affected
28-Dec-95 2-Jan-96	North Aceh Provinces	Flood	18 killed 472 injured 201,000 affected US$ 50,000 '000 damage
7-May-95	Bengkulu (Northern Sumatra)	Flood	27 killed 2,200 affected
1-May-95	Tapanuli, Labuhan districts (Northern Sumatra Province)	Flood	45 killed 17,500 affected
3-Feb-95 17-Feb-95	Java, Sumatra	Flood	47 killed 10,000 homeless 26,000 affected
11-Jan-95	Riau	Flood	3 killed 3,000 affected
17-Feb-96	Biak (Iran Jaya)	Earthquake	166 killed 423 injured 5,090 homeless 20,125 affected US$ 4,200 '000 damage
1-Jan-96	North of Palu (Sulawesi Isl)	Earthquake	9 killed 13,000 homeless US$ 1,200 '000 damage
Jan-96	Java Isl.	Epidemic Arbovirus Dengue/dengue haemorrhagic fever	117 killed 5,373 affected
13-Dec-96	Piddie, Utara & Blora Districts	Flood	14 killed 10,000 affected
20-Oct-96 22-Oct-96	Banyumas, Cilacap, Kebumen, Semarang (Central Java province)	Flood Flash Flood	13 killed 7 injured
27-Mar-96 31-Mar-96	SUlu Musi district, Lahat Regency (South Sumatra)	Flood	34 killed 21 injured
9-Feb-96 13-Feb-96	Jakarta	Flood	20 killed 556,000 affected US$ 434,800 '000 damage
3-Oct-96	Batam Isl.	Slides Landslide	23 killed 4 injured
Sep-97 1998	Irian Jaya Province	Drought	460 killed 1,065,000 affected US$ 88,000 '000 damage

Dates: Start, End date	Location:	Disaster: Type, Subtype, name	Numbers affected:
28-Sep-97	Parepare (city) Level 1 = Sulawesi Selatan	Earthquake	20 killed 300 injured 2,805 affected US$ 1,100 '000 damage
5-Nov-97	Irian Jaya	Epidemic Diarrhoeal/Enteric Cholera	150 killed
4-Jun-97	Kalimatan	Epidemic Arbovirus Dengue fever	47 killed
17-Jan-97	Boyolali, Klaten, Magelang - Level 1 = Jawa Tengah and Jogjakarta	Volcano Merapi	1 killed 3,000 affected
Sep-97	Sumatra & Kalimantan	Wild Fires Forest	6 killed 32,000 affected US$ 17,000,000 '000 damage
28-Sep-98	Malang area (Jawa)	Earthquake	1 killed 190 homeless 310 Affected
29-Nov-98	Halmahera Tengah (Sula Isl., Maluku)	Earthquake	33 killed 88 injured 2,560 homeless 3,800 affected US$ 200,000 '000 damage
13-May-98	N.A. on the source	Epidemic Arbovirus Dengue fever	777 killed 32,665 affected
Jan-98	Irian Java, Maluku	Epidemic Unknown	672 killed
2-Aug-98	East Kalamatan = Kalimantan Timur	Flood	4 killed 100,000 affected
11-Jul-98	Jawa Tengah and Jogjakarta	Volcano	6,000 affected
Feb-98	Kalimatan Province (Borneo Isl.)	Wild Fires Forest	2,000 affected US$ 220,000 '000 damage
21-Dec-99	Karyasari, Pandelang District (Southwest Jakarta, Java Island)	Earthquake	5 killed 220 injured 2,700 homeless 14,000 affected US$ 3,900 '000 damage
1999		Epidemic Arbovirus Dengue fever	45 killed 3,751 affected
Mar-99	South central Timor, Talahar Regency; Level 1 = Nusa Tenggara Timur	Epidemic Diarrhoeal/Enteric Acute diarrhoeal syndrome	10 killed 627 affected
2-Mar-99	Flores Island; Level 1 = Nusa Tenggara Timur	Epidemic Anthrax	1 killed 267 Affected
5-Jan-99	Sulawesi, Java	Flood	12 killed 16,000 affected

Dates: Start, End date	Location:	Disaster: Type, Subtype, name	Numbers affected:
9-Dec-99	Dberang Pallinggam (Sumatra)	Slides	56 killed
7-Jan-99	Bali Isl.	Slides Landslide	33 killed 2 injured
Jun-99	Sumatra, Kalimantan	Wild Fires	US$ 1,800 '000 damage
7-Jun-00	Southern Sumatra	Earthquake	1 killed 3,000 affected
25-Oct-00	Pandelang, Lebak, Serang	Earthquake	5,500 affected
12-Jul-00	Ciranggon (West Java Isl.)	Earthquake	124 injured 4,000 homeless US$ 2,000 '000 damage
4-Jun-00	Bengkulu province (Sumatra Isl.), Enggano Isl.	Earthquake	103 killed 2,714 injured 2,000 homeless 200,000 affected US$ 6,000 '000 damage
4-May-00	Banggaï, Totikum, Tinangkung, Liang	Earthquake	45 killed 270 injured 52,500 homeless US$ 30,000 '000 damage
May-00	Ngada district (Flores Isl.)	Epidemic Rabies	15 killed 203 affected
Jan-00	Jakarta	Epidemic Arbovirus Dengue fever	10 killed 1,516 affected
3-Dec-00 6-Dec-00	Bitung, Bolang Mongondow, Minahasa, Manado (North Sulawesi Isl.), Taliwan, Lunyuk districts (Sumbawa Isl.), Kulonprogo (Central Java)	Flood Flash Flood	38 killed 39,852 affected
Sep-00	Phetchabun	Flood	9 killed 12,500 affected 506 '000 damage
28-Nov-00 4-Dec-00	Aceh, Riau, Jambi (Tanah Datar, Pesisir Selatan, Taratak Teleng districts, Sumatra Isl.)	Flood	100 killed 21 injured 386,000 affected 40,000 '000 damage
16-May-00 24-May-00	Malaka Tengah, Malaka Barat sub-districts (Belu District, West Timor), East Timor	Flood Flash Flood	126 killed 50,000 affected US$ 79,000 '000 damage
5-Nov-00 7-Nov-00	Purworejo, Purbalingga, Kebumen	Slides Landslide	52 killed 19 injured
29-Oct-00 1-Nov-00	Cilacap, Banyumas (Central Java)	Slides Landslide	40 killed 2,125 homeless 54,085 affected US$ 43,000 '000 damage
24-Jun-00	Banngai	Slides	520 homeless
22-Feb-00 24-Feb-00	Brebes District (Java Island)	Slides Landslide	34 killed US$ 11,600 '000 damage
Feb-00	Riau Province (East coast of Sumatra), West Kalimatan, Central Kalimatan Provinces	Wild Fires	

Dates: Start, End date	Location:	Disaster: Type, Subtype, name	Numbers affected:
14-Feb-01	Bengkulu (Sumatra)	Earthquake	
28-Jun-01	Jawa Barat province	Earthquake	12 injured 12,500 affected
28-Dec-01 1-Jan-02	Sumatra Isl., Sulawesi provinces	Flood	15 killed 2,000 homeless
17-Dec-01	Sentani (Papua province)	Flood	
31-Jul-01 1-Apr-01	Nias Isl. (North Sumatra province)	Flood	257 killed 4 injured 3,690 homeless
4-Feb-01	Jember (East Java province, North Sulawesi), West Java Province, Banten province	Flood	10,000 affected
23-Oct-01	Ayah district	Slides	600 homeless
30-Oct-01	Seling village (Sadang district)	Slides	310 homeless
22-Jan-01	North Sulawesi province	Slides	63 killed
8-Feb-01 12-Feb-01	Cipinas, Lebak district (West Java province)	Slides Landslide	122 killed 23,000 homeless US$ 10,000 '000 damage
2-Nov-02	Simeulue Isl.	Earthquake	3 killed 60 injured
20-Sep-02	Ransiki (Irian Jaya region)	Earthquake	155 affected
10-Oct-02	Manokwari, Ransiki, Oransbari, Prafi, Bintuni, Windesi, Anggi, Warmare, Wasior sub-districts (Manokwari district, Papua province)	Earthquake	8 killed 632 injured 8,450 affected
15-Aug-02	Poso region (Sulawesi)	Earthquake	48 injured 2,500 affected
6-Apr-03 17-Apr-03		Epidemic Respiratory Acute respiratory syndrome (SARS)	2 affected
10-Jan-02	Alor, Manggarai, Sikka, Belu	Epidemic Diarrhoeal/Enteric Shigella suspected	17 killed 757 affected
19-Nov-02 3-Dec-02	South Aceh, Southwest Aceh, Nagan Raya, Aceh Dingkil (Nanggroe Aceh Darussallam province), Central Tapanuli, Nias Isl. (North Sumatra province)	Flood	13 killed 87,000 affected US$ 1,600 '000 damage
May-02	Kolaka district (Sulawesi province)	Flood	1,000 affected
17-Apr-02 20-Apr-02	Sumba Isl. (East Nusa Tenggara)	Flood	19 killed
27-Mar-02 30-Mar-02	Gomo and Amandraya sub-districts (Nias Island)	Flood	14 killed 780 affected
27-Jan-02 12-Feb-02	Bondowoso, Sampang, Surabaya, Majokerto, Lumajang, Sidoarjo (East Java), South Sulawasi, East Nusa Tenggara, Greater Jakarta	Flood	150 killed 750 injured 42,400 homeless US$ 200,000 '000 damage
13-Jan-02 18-Jan-02	Medan city (Sumatra Isl.)	Flood	13 killed 2,000 affected

Dates: Start, End date	Location:	Disaster: Type, Subtype, name	Numbers affected:
8-Jan-02 12-Jan-02	Dempo Utara (Southern Sumatra Isl.)	Flood	21 killed 40 affected
11-Dec-02	Pacet (Java Isl.)	Slides Landslide	32 killed 5 injured
11-Nov-02	Garut (near Bandoung, Java Isl.)	Volcano	5,000 affected
Aug-02	West, Central Kalimentan (Borneo), Riau (Sumatra)	Wild Fires	200 injured
Aug-03 Sep-03	West Timor	Drought	15,000 affected 1,000 ,000 US$
11-Aug-03	Wasile area (Halmahera Isl., Maluku province)	Earthquake	500 affected
27-May-03	Morotai Isl.	Earthquake	1 killed 7 injured 140 homeless 100 affected
23-Jan-03	Dompu area	Earthquake	2 injured 2,500 affected
30-Nov-03 6-Dec-03	Muraro, Jambi, Tanjab Timur, Batanghari (Jambi province), Indragiri Hulu, Pelalawan districts (Riau province) - Sumatra	Flood	8 killed 25,000 affected
2-Nov-03 3-Nov-03	Hahorok sub-district (Langkat district, North Sumatra), Banyumas, Cilacap, Kebumen districts (Central Java)	Flood Flash Flood	241 killed 30 injured 1,468 affected
13-Feb-03 14-Feb-03	Jakarta area	Flood	3 killed 33,000 affected
28-Jan-03	Cilacap district (Central Java)	Flood Flash Flood	1 killed 15,000 affected
10-Jan-03	Solok, Kapai Tabu Karambia, Sinipa Piliang, Sembilan Korong, Aro Empat Korong, Pasar Pandan Air Mati, Kel Koto Panjang	Flood	10 killed 3,700 affected
8-Jan-03	Batulayrar village (West Lombok)	Flood	230 affected
Jan-03	Java, Sulawesi islands	Flood	3 killed 10,000 affected
31-Mar-03 2-Apr-03	Ende, Sikka, East Flores districts (East Nusa Tengarra province), East Kupang (Kupang district (West Timor)	Slides Landslide	76 killed 248 injured 229,300 affected US$ 3,961 '000 damage
18-Mar-03	Makale, Sa'dan Balusu areas (Tanah district, South Sulawesi province)	Slides	12 killed
31-Jan-03	Cantilan village, Kuningan (Java province)	Slides Landslide	10 killed 20 affected
29-Jan-03	Garut, Nenggeng, Budi Aten, Bojong Jambu (Kadungora region, Java Isl.)	Slides Landslide	21 killed 74 injured 1,686 affected
26-Nov-04	Nabire (Papouasie Occidentale)	Earthquake	32 killed 213 injured 12,620 affected US$ 55,000 '000 damage

Dates: Start, End date	Location:	Disaster: Type, Subtype, name	Numbers affected:
12-Nov-04	Alor district (Nusa Tenggara Timur province)	Earthquake	33 killed 311 injured 83,070 affected
16-Feb-04	Padangpanjang area (Sumatra)	Earthquake	5 killed 7 injured 500 affected
6-Feb-04 7-Feb-04	Nabire (Papua province, Irian Jaya)	Earthquake	37 killed 682 injured 13,390 affected US$ 1,000 '000 damage
1-Jan-04	Lombock Strait (Bali and Lombock Islands)	Earthquake	1 killed 40 injured 30,000 affected US$ 11,943 '000 damage
1-Jan-05 19-Apr-06	Banten, Jakarta, West Java, Lampung	Epidemic Respiratory Avion Influenza H5N1	11 killed
1-Jan-04 30-Apr-04	Aceh, Jambi, Banten, West Java, Central Java, Jogjakarta, East Java, South Kalimatan, Bali, West Nusa Tenggara, East Nusa Tenggara (Java, Sumatra)	Epidemic Arbovirus Dengue	658 killed 58,301 affected
18-Feb-04 23-Feb-04	Jakarta area	Flood	5 killed 13,000 affected US$ 60,000 '000 damage
23-Apr-04	Pasaman region (Sumatra Isl.)	Slides Landslide	44 killed 11 injured
22-Apr-04	Kidang Pananjung, near Bandung (Java Isl.)	Slides Landslide	13 killed 7 injured
27-Mar-04	Manimbahoi sub-district, Gowa district (Sulawesi province)	Slides Landslide	33 killed 5,000 affected
23-Jan-04	Central Java province	Slides	29 killed
4-Sep-04	Sikka district (East Nusa Tenggara)	Volcano	2,100 affected
8-Jun-04	Java Isl.	Volcano Explosive Eruption Mont Bromo	2 killed 5 injured 20,000 affected
1-Jun-04 7-Jun-04	Tahuna, Kendahe, Tabukan Utara sub-districts (Sangihe Isl., North Sulawesi)	Volcano Explosive Eruption	100 Injured 16,728 Affected
29-Jan-04	Siika district (East Nusa Tengarra)	Volcano	4,000 Affected
26-Dec-04	Aceh province (Sumatra)	Wave /Surge Tsunami	165,708 Killed 532,898 homeless US$ 4,451,600 '000 damage
30-Mar-04	Cijeruk, Cipelang, Warung Menteng (Cijerik sub-district, Bogor Regency, West Java)	Wind Storm	1,315 Affected
3-Feb-04 5-Feb-04	East Java, West Nusa Tengarra provinces, Bali Isl.	Wind Storm Storm	4 Killed 2,400 Affected
28-Mar-05	Simeule, Nias, Banyak Islands, West Coast	Earthquake	915 Killed 1,146 injured 104,167 affected

Dates: Start, End date	Location:	Disaster: Type, Subtype, name	Numbers affected:
24-Jan-05	Célèbes (Sulawesi)	Earthquake	1 Killed 4 injured 680 affected
Jun-05 31-Jan-05	Banten, Lampung (West, east and Central Java), DKI Jakarta, Sumatra (North and South), Aceh (NAD), Riau, Madura Isl., Probolinggo district	Epidemic Poliomyelitis	329 affected
31-Dec-05 3-Jan-06	Panti, Tanggul, Arjasa, Rambipuji, Kaliwates, Wuluhan, Patrang, Balung, Puger sub-districts (Jember district, Java Isl.)	Flood Flash Flood	79 killed 30 injured 7,781 affected
18-Oct-05 19-Oct-05	Seumadam/Semadam districts (Aceh province)	Flood Flash Flood	28 killed 211 injured 12,000 affected
26-Apr-05 27-Apr-05	Sumatra - Aceh Tenggara District, Badar Sub-District. Villages: Jongar, Lawe Mengkudu, Lawe Penanggalan and Jambur Lak Lak.	Flood Flash Flood	47 killed 18 injured 750 affected
2-Sep-05	Bukit Gaung (Padang, West Sumatra)	Slides Landslide	25 killed 10 injured
21-Feb-05	Bandung	Slides Landslide	143 killed US$ 5,000 '000 damage
12-Apr-05	Sumatra Isl.	Volcano	26,000 Affected
9-Aug-05	Sintang, Sanggau, Ketapang (West Kalimatan province), Kotawaringin Timur, Katingan, Seruyan, Kapuas (Central Kalimantan province), Kotabaru, Tapin, Hulu Sungai Selatan, Banjar, Tanah Laut (South Kakimantan province) - Sumatra	Wild Fires	
27-May-06	Jogjakarta, Central Java	Earthquake	5,778 killed 137,883 injured 699,295 homeless 2,340,745 affected US$ 3,100,000 '000 damage
14-Mar-06	Seram	Earthquake	4 killed 1 injured 580 affected
23-Jun-06 27-Jun-06	North Sulawesi province	Flood	5,000 affected
25-Jun-06 29-Jun-06	Tanh Laut, Tanah Bumbu, Kotaburu (South Kalimantan province)	Flood Flash Flood	52 killed 18,250 affected
24-Jun-06 26-Jun-06	South Borneo Island	Flood	41 killed
19-Jun-06 20-Jun-06	Sinjai, Jeneponto, Bulukumba, Bantaeng, Luwu Utara, Bone, Gowa, Sidrap, Selayar, Wajo, SOPpeng (Sulawesi province)	Flood Flash Flood	236 killed 56 injured 670 homeless 28,505 affected US$ 55,200 '000 damage
19-Apr-06 23-Apr-06	Bendungan, Trenggalek, Ogalan, Karangan, Tugu, Durenan, Gandu Sari (Java Isl.)	Flood	22 Killed 2 injured 400 affected

Dates: Start, End date	Location:	Disaster: Type, Subtype, name	Numbers affected:
13-Feb-06 23-Feb-06	Manado city (North Sulawesi province)	Flood Flash Flood	39 Killed 39 injured 17,500 affected US$ 27,600 '000 damage
26-Jan-06 5-Feb-06	Rembang, Demak, Semarang, Lasem, Pamotan, Sedan (Central Java), Jakarta, Kampung Melayu, Indramayu district (West Java)	Flood	19 Killed 10,000 affected US$ 27,100 '000 damage
23-Jan-06	Bali, Lombok, Timor Islands	Flood	11 Killed
22-Jan-06 27-Jan-06	Bali, Lombok	Slides Landslide	11 Killed 3,000 Affected
5-Jan-06	Sijeruk (Banjarnegara district, Java Isl.)	Slides Landslide	75 Killed 523 Affected
18-Apr-06	Boyolali, Magelang, Klaten, Sleman (Central Java province)	Volcano	11,000 Affected
17-Jul-06	Tasikmalaya, Ciamis, Sukabumi, Garut (West Java province), Cilacap, Kebumen, Banyumas (Central Java province), Gunung Kidul, Bantul (Jogjakarta province)	Wave /Surge Tsunami	802 Killed 543 injured 35,000 affected
Aug-06	South Sumatera, West Kalimantan, Central Kalimantan provinces	Wild Fires	200 Injured

Source: EM-DAT: The OFDA/CRED International Disaster Database, www.em-dat.net, Université Catholique de Louvain, Brussels, Belgium

ANNEX C: LIST OF PERSONS/ORGANIZATIONS INTERVIEWED

Interview List—Indonesia Visit (October 1-13, 2006)

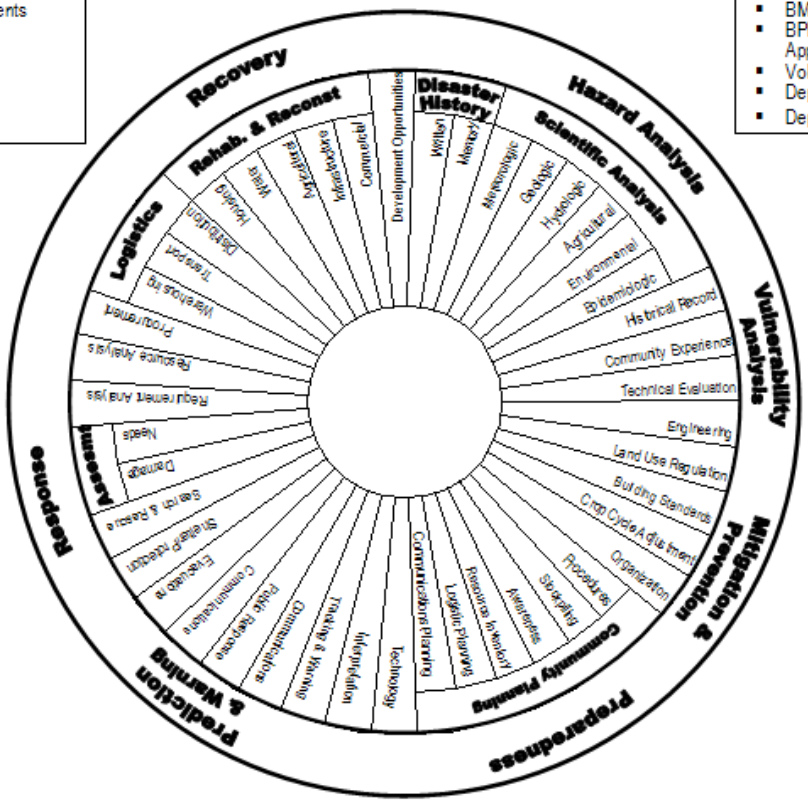
Organizations	Persons Met
Action Contre la Faim (ACF)	Mr. Edward Turvill, Disaster Preparedness Program Manager
BAKORNAS PB	Mr. Sugeng Triutomo, Director
BAPPENAS	Dr. Suprayoga Hadi, Director for Regional II, Deputy for Regional Development and Local Autonomy
BMG	Mr. Suhardjono, Head of Earthquake Division
Care International Indonesia	Mr. Johan Kieft, Emergency Manager
Dr. Soetomo Press Institute	Mr. Warief Djajanto Basorie, Instructor
Indonesian Institute for Disaster Preparedness (IIDP)	Ms. Chandra Lukitasari, Executive Director
International Federation of Red Cross and Red Crescent Societies (IFRC) PMI	Mr. Latifur Rahman, Disaster Management Delegate Mr. Irawan Kharie, CBDP Manager
IOTWS Program, USAID Asia,	Dr. Stacey A Tighe, Indonesian Program Coordinator
ITB ITB	Dr. Krishna Pribadi, Professor Yuanita Ruchyat, Research Assistant
KOGAMI, Padang	Ms. Patra Rina Dewi Ir. Fibrin A Ismail
Masyarakat Penangulangan Bencana, Indonesia (MPBI) or Indonesian Society for Disaster Management	Ms. Hening Parlan, Program Manager
Mercy Corps	Mr. Helmi, Emergency Manager
Ministry of Communication and Information (KOMINFO)	Mr. Subagio MS, Director
Ministry of Home Affairs	Mohammed Roem, Director of DM
Ministry of Marine Affairs and Fisheries	Dr. Ir. Subandono Diposaptono, Deputy Director for Coastal Disaster Mitigation
Office of the Mayor, Padang	Mr. Hendri Agung, Personal Staff to Mayor
Provincial Government of Jakarta	Ms. Erni Widianty Rahardjo, BAPPEDA Jakarta DKI
RAPI – Padang	Mr. H Aim Zein SH
SATKORLAK PB, Padang	Mr. Syofyan SH, Secretary to Satkorlak PB
South Sumatra Forest Fire Management Project, GTZ	Ir. Rusdi Z Ramon, NGO Development Specialist
Special Taskforce for DM Bill of the Parliament DPR RI	Mrs. Aisyah H. Baidlowi, Member of Parliament, Vice Chairperson
TNI, Indonesian Armed Forces Coordinating Ministry for Political, Legal and Security Affairs	Ms. Cristina Rantetana

UN Technical Working Group	Ms.Titi Moektijasih Mr. Kristanto Sinandang Dr. Jenn Ms. Lina Sofiani
United Nations Development Program	Mr. David Hollister, Technical Advisor for Disaster Management
Universitas Pembangunan Nasional Veteran Jogjakartas	Mr. Eko Teguh, Pusat Studi Manajemen Bencana
WALHI	Mr. Sofyan
Walhikota, Padang Walhikota, Padang	Mr. Indira Citra, Assistant 2 Coordination Economic Welfare and Development Mr. Fifin Zudis, Commander District Military

ANNEX D: SCHEMATIC OF GOVERNMENT STRUCTURE FOR DISASTER MANAGEMENT

RECOVERY
- BAKORNAS PB
- BAPPENAS
- BAPPEDA
- BAPEDAL
- Provincial, district and local administration
- All line ministries and departments
- NGOs & CBOs

HAZARD ANALYSIS
- BAKORNAS PB/ SATKORLAK PB/ SATLAK PB
- BAKOSURTANAL, LAPAN
- ESDM
- LIPI
- BMG
- BPPT (Agency for Assessment and Application of Technology)
- Volcanological Survey of Indonesia
- Department of Agriculture
- Dept. of Health



RESPONSE
- BAKORNAS PB/ SATKORLAK PB/ SATLAK PB
- BASARNAS
- Home Affairs
- Social Services
- Provincial, district and local administration
- TNI, Police
- NGOs & CBOs
- All other line departments

VULNERABILITY ANALYSIS
- BAKORNAS PB/ SATKORLAK PB/ SATLAK PB
- BAPEDAL
- BAPPENAS
- BAKOSURTANAL
- ESDM
- Department of Health
- Department of Public Works
- BPS-Indonesia
- Department of Agriculture
- BMG

PREDICTION & EARLY WARNING
- BMG
- RISTEK
- BPPT
- BAKOSURTANAL, LAPAN
- BAKORNAS PB
- ESDM
- Volcanological Survey of Indonesia
- Home Affairs
- Public Works
- KOMINFO
- TNI, Police
- TV, Radio, Press

MITIGATION
- BAPPENAS
- BAPPEDA
- BAKORNAS PB/ SATKORLAK PB/ SATLAK PB
- Department of Public Works
- Department of Agriculture
- Provincial administration, District and local administration
- All line departments
- NGOs & CBOs

PREPAREDNESS
- BAKORNAS PB/ SATKORLAK PB/ SATLAK PB
- Home Affairs ; Social Services; all other line departments
- Provincial, district and local administration
- NGOs & CBOs

TRAINING & AWARENESS
- BAKORNAS PB/ SATKORLAK PB/ SATLAK PB
- Department of Education, Universities;
- LIPI
- KOMINFO
- NGOs & CBOs

ANNEX E: INFORMATION SOURCES

Assessments	
1. Assessment of Capacity Building Requirements for an Effective and Durable Tsunami Warning and Mitigation System in the Indian Ocean http://ioc3.unesco.org/indotsunami/nationalassessments.htm	Contains summary of presentations made by the IOC Assessment Mission members and the national experts; proposals submitted to IOC; recommendations; and general observations and conclusions related to EWS in Indonesia. The IOC questionnaire has also been filled in.
Studies and Relevant Background	
2. Indonesia National Report for Kobe World Conference on Disaster Reduction, 2005	Prepared in October 2004 by BAKORNAS PBP (focal point for DM). Status paper of DRM in Indonesia for the World Conference on Disaster Reduction (Kobe)
3. Inter-agency report on Indonesian forest and land fires and proposals for risk reduction in human settlements, published by United Nations Centre For Human Settlements (Habitat)	Prepared by UNCHS and ADPC. It provides an overview of the forest fires confronting Indonesia, measures being taken, and the disaster management setup. Published in 2000, the information is a bit dated, but provides useful background.
Data Sources: Disasters, Demography and others	
4. Statistics Indonesia www.bps.go.id	Provides statistical information by sector or by regions.
5. Natural Disaster Profiles for Indian Ocean Countries: Indonesia; Center for Hazards and Risk Research, Columbia University http://www.ldeo.columbia.edu/chrr/research/profiles/pdfs/indonesia_profile1.pdf	Profiles provide information on sub-national areas at risk from natural hazards including cyclones, droughts, earthquakes, volcanoes, floods, and landslides. In addition to basic geographic and socio-economic facts, the profiles include maps