



THE STATE COORDINATING MINISTER FOR
PEOPLE'S WELFARE AND POVERTY ALLEVIATION
REPUBLIC OF INDONESIA

**NATURAL DISASTER REDUCTION
ACTIVITIES IN INDONESIA**

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1. INTRODUCTION

Indonesia is subject to many different natural hazards such as earthquakes, tsunami, volcanic eruptions as well as man-made disasters such as forest fires, floods, and technological failures.

Three earthquakes belts run through Indonesia subjecting the areas of Sumatera, Java, Bali, Nusa Tenggara, Maluku, Sulawesi and Irian Jaya to seismic activity. In Sumatera, shallow and most damaging earthquakes with a magnitude of greater than 5.0 occurred about 15 times during the last 100 years. In some coastal areas, the earthquakes are usually followed by tsunami causing people died or missing.

Human settlements are often in, or close to, hazard areas. This is partly due to high population densities in some areas for instance in the case of volcanoes because of high fertility of the soil. Indonesia has 129 active volcanoes, 70 are classified as dangerous, and 500 inactive ones.

Flood annually happen in some areas of Indonesia primarily in areas where precipitation is high likely in western and central parts of the country. The effect of heavy monsoon exacerbated by land use mismanagement in several areas. High precipitation also affected soft and unstable areas of Sumatera and Java islands causing landslide regularly.

Fires remain the most frequent disaster as indicated in 1977, Indonesia experiencing a wide and uncontrolled forest and land fires. The resulting haze affected almost 20 millions people on the island of Kalimantan and Sumatera and in the neighboring countries of Singapore, Malaysia and Brunei Darussalam.

The following Table shows the recapitulation of victims and damages caused by disasters during 1993 to 1998.

| NO | DISASTER TYPE, LOSSAND VICTIMS | YEARS | | | | |
|----|--|-----------|-----------|-----------|-----------|-----------|
| | | 1993/1994 | 1994/1995 | 1995/1996 | 1996/1997 | 1997/1998 |
| | A. Disaster Type (times) | | | | | |
| 1. | Tsunami | 4 | 1 | 9 | 1 | 1 |
| 2. | Landslides | 76 | 25 | 23 | 9 | - |
| 3. | Earthquake | 10 | 18 | 19 | 24 | 10 |
| 4. | Volcanic eruption | 3 | 4 | 8 | 2 | - |
| 5. | Floods | 101 | 83 | 38 | - | - |
| 6. | Lava | 1 | 2 | - | - | - |
| 7. | Strong wind | 171 | 70 | 27 | 22 | - |
| 8. | Drought | 8 | 27 | - | 2 | 4 |
| 9. | Fires : - Settlement - Forest/land (locations) | 468 | 275 | 218 | 48 | 28 |
| | | - | - | - | - | 23 |
| | B. Impact | | | | | |
| | I. Human | | | | | |
| 1. | Suffering | 707,326 | 2,018,172 | 767,740 | 126,530 | 3,050 |
| 2. | Injured | 1,830 | 888 | 2,705 | 210 | 126 |
| 3. | Died | 498 | 500 | 842 | 193 | 144 |
| | II. Damage | | | | | |
| 1. | Housing | 53,433 | 57,570 | 25,587 | 23,594 | 1,34 |
| 2. | School | 517 | 692 | 335 | 44 | 6 |
| 3. | Hospital | 30 | 22 | 93 | - | 3 |
| 4. | Govt building | 15 | 747 | 230 | 27 | 14 |
| 5. | Infrastructure | | | | | |
| | a. Road (km) | 28 | 3,818 | 303 | 7 | - |
| | b. Bridge | 50 | - | 268 | - | - |
| 6. | Public facilities | 559 | 1,720 | 11,222 | 2,305 | 73 |
| 7. | Agricultural land (ha) | 26,451 | 112,663 | 40,980 | 15,105 | - |
| 8. | Forest/land (ha) | - | - | - | - | 159,206 |
| | III. Financial lost | | | | | |
| | (in million rupiah) | 471,921 | 157,215 | 427,276 | 33,6 | 173,183 |

2. COORDINATION FOR DISASTER MANAGEMENT

National coordinated arrangement for natural disasters was initiated in 1966 by the establishment of Advisory Board for Natural Disaster Management, its activities were still focused on emergency relief for disaster victims. In 1979, the National Natural Disaster Management Coordinating Board known as Bakornas PB was established to replace Advisory Board for Natural Disaster.

This unstructured organization directly responsible to the President and chaired by the Coordinating Minister for People Welfare. Its membership comprises four ministers and 17 officials appointed by related ministers and heads of agencies. The 1979 Decree also includes the establishment of similar arrangement in provincial as well as in district levels.

The tasks of Bakornas PB are :

- Formulates policy and provides guidelines/directives on policy and coordinates integrated natural disaster management.
- Controls the implementation of its programs in the context of general policy as determined by government.
- Provides guidelines on policy outlines to be implemented by the provincial and district levels in preventive, repressive, and rehabilitative management activities.

The Decree was revised in 1990, the one which is in effect presently, with the following major considerations :

- that the management should also include man-made disaster and not only provide assistance during and after disaster;
- that natural as well as man-made disasters must be managed before, during, and after their occurrences, covering aspects of prevention, mitigation, rescue, rehabilitation and reconstruction.

Bakornas PB is assigned with the following tasks :

1. formulates disaster management policy and provides guidelines or directives and coordinates disaster management in either before, during, and after disaster in integrated manner;
2. provides guidelines and directives on policy outlines in disaster management activities covering prevention, mitigation, rescue, rehabilitation, and reconstruction.

The membership of Bakornas PB comprise of Minister of Social Affairs; Minister of Home Affairs; Minister of Health; Minister of Public Works; Minister of Transportation; Commander of the Armed Forces; the Governor whose province struck by disaster; Director General for Social Assistance Development, Department of Social Affairs. In carrying out its tasks Bakornas PB can involve ministers or officials or parties in disaster management and can establish the working groups as needed.

The Decree also emphasize the role of district level as the front line organization to manage disaster at the local level. The district level responsible directly to the Chairman of Bakornas PB through respective Governor, so its activities will be in integrated manner and in accordance with the national policy outlined by the board.

In 1995, Chairman of Bakornas PB expanded the decree by issued Decision No. 17 on Organization, Tasks, Function and Job Description of the board. The functions of the board are as follows:

- formulates planning of integrated, coordinated and sustained disaster management general policy and action programs;
- coordinates the planning of disaster management efforts, either before, during and after disaster, covering prevention, mitigation, rescue, rehabilitation and reconstruction;
- prepares and formulates guidelines on the implementation of integrated and coordinated disaster management;
- coordinates disaster management supervision, control, monitoring, and evaluation;

- coordinates the cooperation among governmental as well as non-governmental organizations in the field of disaster management, either nationally or internationally;
- coordinates the receipt, distribution, and use of assistance for disaster management;
- writes report on the implementation of disaster management activities to the President;
- other disaster management tasks as directed by the President.

2.1. Disaster Management Policy

In the Sixth National Development Plan (1993/1994-1998/1999) specific issues has been addressed by promoting community awareness, human resources development, promotion of science and technology, and formulation of standardized operation procedure.

Promotion of community awareness and preparedness specifically in disaster prone areas has to be prioritized. Mapping of disaster prone's areas, therefore should be intensified and most important thing is further dissemination to the community and development agencies dealing with spatial planning.

Capability of community members and officials in search, rescue, and the provision of prompt emergency medical services to the disaster victims have to be promoted. So community protection against disaster hazards will be promoted through training and education.

Provision of sufficient equipment in accordance with human resources development is important in promoting science and technological capabilities for detection of disaster hazards. Other capabilities include early warning systems and information systems technology. Sufficient equipment has also to be provided for search and rescue as well as emergency medical services. In emergency situations, the Armed Forces and their equipment will

also be utilized to assist the affected area including rehabilitation purposes.

The formulation of standardized operation procedures for different disaster hazards and its respective guidelines will be expedited, covering all cycles of disaster. Further regulations on disaster prevention and management will be formulated such as for land use management.

The Sixth National Development Plan also clearly indicate the following programs :

- Disaster preparedness and mitigation through research and mapping of disaster prone areas and application of appropriate science and technology.
- Emergency response by strengthening the coping capabilities and provision of equipment.
- Rehabilitation and reconstruction of infrastructures and relevant means required for the community ensuring their function back to normal and able to cope with any disaster threat on self-reliant basis. Resettlement of the disaster victims will be made as required.

It is clearly mention above that government policy and programs toward the end of this decade is moving the pendulum from relief approach to more actively manage the disaster by mitigation efforts. Mitigation followed by preparedness implemented by a series of efforts such as risk mapping; early warning systems, awareness and training, disaster information systems, integration of disaster information in spatial planning, local government legislation, and law enforcement.

2.2. Implementing Unit

The establishment of Bakornas PB followed by the establishment of similar non-structural institution to cope with disaster in provincial as well as district level namely Satkortak PB (Provincial Disaster Management Coordination Unit) and Satlak PB (District Disaster Management Implementing Unit). District

Unit as the front line organization can mobilize all related agencies at their respective districts, sub-districts, and villages as well as involved local communities organizations.

2.3. Current Issue

Bakornas PB chaired by the Coordinating Minister for People's Welfare and Poverty Alleviation who reports directly to the President. Main function of Bakornas PB is coordination, consultation, and information.

Disaster Management, Human Resources development and Poverty Alleviation are the main focus of the State Coordinating Minister. The Coordinating Minister issued Decision No. 22 on Organization, task, Function and Job Description within the office and establish one Assistant who are solely responsible for Disaster Management.

Disaster management issue is one of major issues discussed regularly during Monthly Limited Cabinet Meeting on People's Welfare chaired by the President. One week prior to the Cabinet Meeting, a Coordination Cabinet Meeting on People's Welfare and Poverty Alleviation is held and chaired by the Coordinating Minister himself. Related Ministers report on disaster management activities undertaken within respective Departments. One week before the Coordination Cabinet Meeting, a meeting of Permanent Working Group Committee, comprising Echelon I of related Departments, is held and chaired by Secretary of the Coordinating Minister for People's Welfare and Poverty Alleviation.

3. ACCOMPLISHMENT IN DISASTER REDUCTION

3.1. Official Workshop of Satlak PB

Official Workshops of Satlak PB were conducted with the objective to strengthening the capabilities of each Satlak PB.

Activities during the workshops included disaster management field exercises, define standard operational procedure for disaster management, and Quick Response Team exercises.

3.2. Official Workshop of Satkorlak PB

Official Workshops of Satkorlak PB were intended to improve capabilities of respected Provincial Quick Response Team. It also to endorsed the Provincial Government in allocating enough budget for disaster management.

3.3. Training

Training were also conducted at national level included Training of Trainers in the aspect of Quick Response Team and also training for young generations in disaster management.

3.4. Disaster Reduction Campaign

On October 14, 1998, Bakornas PB conducted a One-Day Seminar on Natural Disaster Prevention and the Media. The participants mostly come from mass media representatives in line with the theme of the seminar namely Prevention Begins with Information. The aims of the seminar is to build partnerships with national media.

4. CURRENT ACTIVITIES IN DISASTER REDUCTION

4.1. Improvement of Disaster Management Information System

Indonesian Disaster Management Information System (SIPBI = Sistem Informasi Penanggulangan Bencana Indonesia) to enhance

decision making capability of Bakornas PB by ensuring flows of reliable and up to date information on various disaster events and related disaster management measures. This information is acquired either vertically (from Satlak and Satkorlak to Bakornas PB) or horizontally to related national level departments and agencies. The brief information on SIPBI is available in poster season.

Indonesia is home to the third largest tropical rain forest in the world. As such, forest resources are the backbone of the Indonesian economy as they provide income for local communities across the country. The forests and lands are however under the threat of fires that have increased both in intensity and frequency in the last fifteen years. One main area related to forest fires is management of information. Supported by UNDP, Bakornas PB currently developing Forest Fires Disaster Management Information System (FFDMIS) since forest fires has not been included in the SIPBI. The introduction of FFDMIS is thought to apply widen the coverage of the system and appropriately fulfill the need for a coordinated information management in the area of forest fires.

4.2. Understanding Extreme Climate Events

In 1997-1998 El Nino related dry conditions led to large scale damage of Indonesian natural resources mainly due to uncontrolled forest fires in Sumatera and Kalimantan. At present, the wet season (a possibility of La Nina) may also causing damage due to floods. Apart from disaster that we frequently experienced, both La Nina and El Nino, extreme climate phenomenon, may have significant implications for agriculture and food security sector in Indonesia. This is very important issue for Indonesian government which still struggling to overcome the economic crisis.

ADPC and collaboration with NOAA and USAID/OFDA and Bakornas PB has started a 15-months program on understanding the Extreme Climate Events and their impacts on society and

environment in Indonesia, Philippines and Vietnam. It is expected that this programme will prepare ground for a longer-term comprehensive application of climate forecast for disaster preparedness and mitigation.

4.3. Risk Mapping

Risk mapping basically is a supporting tool to assist disaster risk assessment for a specific area. Risk mapping activities include data gathering and analysis before the results put together into one map. This map will be useful especially for decision makers in charge of spatial and regional planning.

The approach for risk mapping consists of hazard identification; vulnerability assessment, and risk analysis. Hazard identification includes man-made disaster, while vulnerability assessment covers potential loss of human, material, and economic aspects. Risk analysis is a probability of loss if measure is taken before disaster compared to if mitigation effort is ignored.

Hazard identification compiles secondary as well as primary data : type of hazard in that area, frequency and intensity and duration. Data can be collected from various sources such as results of previous studies, existing data, and field surveys.

Vulnerability analysis is a scenario how if a disaster strikes and what will be the impacts by calculating the potential loss of human and material, and also damage to environment.

Risk analysis can be simply calculated by differences between hazard to vulnerability and mitigation efforts. How much budget will be needed to mitigate the impact of disaster compare to how much loss will be occur.

Sunda Strait as a Case Study. Sunda Strait is located between western part of Java island and southern part of Sumatera island. Therefore, Sunda Strait is an important strait connecting Java and Sumatera. Cilegon. One of the fastest growing region in the coast of Java is a center of heavy industries comprises from iron to chemical industries. To the south is a tourism resort with beautiful

beach and hotels, while the southern part of western Java is a natural conservation area. In the southern part of Sumatera island there is a naval base, which will be the biggest base in the region. So Sunda Strait represents a region of busy transportation and a dynamic economic development.

As a consequence of heavy activities, this region potentially has an impact for man-made disaster. Spill or fires from industrial accident can seriously damage environment as well as loss of human and material. Not to mention the accumulation of pollutant to coastal waters, air and ecosystems. Besides man-made disasters, this region is also prone to natural disaster such as volcanic eruption, tsunami and earthquake as occurred in 1883.

Output of risk mapping is a map showing the level zone according to potential risk and should be follow up by mitigation efforts either structural and non-structural mitigation. Traditionally, mitigation focused only on land use and settlement but lately also covers a wider aspects including economic and insurance. Passive implementation of mitigation covers land use, building code, and town planning. Whilst active mitigation needs proactive approach with people such as persuasive settlement relocation.

1. Non-structural mitigation includes :

- formulate regulations and its law enforcement
- motivate mitigation efforts through incentives
- educate and train the community
- increase social awareness
- strengthen or empowering institutions dealing with disaster management
- improve early warning systems

2. Structural mitigation includes :

- building construction based on engineered structures
- Rehabilitate and relocate building which are non-engineered structures

5. FUTURE REQUIREMENT FOR DISASTER REDUCTION

Economic crisis has badly affected the country, there is a need to integrate poverty alleviation programme to disaster management especially in disaster's prone areas. Regional and international cooperation related to natural disaster reduction should be strengthened with the main focus on community empowerment.

Current situation as a result of monetary and economic crisis since the middle of 1997 has affected the whole country. The impacts has greatly increased the extent and magnitude of social problems. The grave situation has been aggravated by the occurrence of El Nino causing large scale forest and land fires, drought, and even famine. Economic and environmental losses have undoubtedly drained the country's natural resources making more difficult to sustain it development. Currently Indonesia is also preparing for the incoming La Nina that may cause floods and landslides in disaster prone areas of the country.

To deal with the impacts and related problems, strategic approach is to apply principles of the social safety net to disaster management.

Promotion of community awareness particularly those who live in disaster threat. Empowering communities is conducted by optimising their own resources and potentialities, and by providing initial limited incentives to enable them to help themselves. Bakornas PB encourages public for active participation, and launches public campaign in line with IDNDR program. These activities constitute anticipation for the possible incoming La Nina phenomena and forest & land fires.

6. CONCLUSION

Bakornas PB puts high priority to improve its performance and role, it also encourages international cooperation for better

management of disaster. In the mean time, community empowerment approach will be improved as a part of Social Safety Net program particularly for those people living in disaster prone areas and enable them to know the types and risks as well adapt and cope with disaster threat.

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