

FOREWORD

The December 26 earthquake and tsunami devastated the lives of millions of people, leaving a wake of destruction from Asia to Africa. This was the worst natural disaster in Indonesia's history, and Aceh and North Sumatra suffered the most. Over 110,000 people lost their lives, an estimated 700,000 people were displaced, and many orphaned. The scale of the damages to the local economy, infrastructure, and administration were unprecedented. In an instant, the livelihoods and security of hundreds of thousands of the survivors were ruined.

But this tragedy has galvanized the humanitarian spirit in Indonesia and throughout the world. While it is impossible to replace the losses from this truly horrific event – the Government of Indonesia, along with the support of the international community, is prepared to take on the challenges of reconstruction. Ultimately this task is less about replacing physical assets than it is about rebuilding livelihoods and communities. This can only happen by developing a credible and inclusive recovery plan, relying on a bottom-up participatory approach that truly captures the aspirations and vision of the people of Aceh and North Sumatra.

The Government of Indonesia's response to the immediate needs of the relief efforts has been swift and effective. As this critical work makes the transition to reconstruction, and the communities begin to recover from the initial shock and face the future, a comprehensive strategy is needed to help guide the reconstruction process. This report, *Indonesia: Preliminary Damage and Loss Assessment*, presents an initial assessment of the impact in terms of damages and losses to Indonesia of this huge natural disaster. Its sister report, *Indonesia: Preliminary Notes on Reconstruction* sets the groundwork by highlighting a range of possible responses based on existing domestic programs and borrowing from global best practices. In the next few months the government will develop the reconstruction strategy for Aceh and North Sumatra – one that is crafted in close consultation with the affected communities.

Indonesia's leaders have already expressed their guiding principles for reconstruction, and they can count on the full support of the international community. If adhered to, they will ensure reconstruction will be as equitable and efficient as possible – while also offering new hope and stability for Aceh, a province that has experienced its share of hardships.

The reports were prepared under the guidance of Bappenas, and in close consultation with the Government of Indonesia's line agencies and its international partners. This was an intense collaborative effort, one that strengthened the working relationships and camaraderie between all participants. We hope the findings from these reports will serve as a sound basis to make informed decisions and, more critically, help empower the people of Aceh and North Sumatra to rebuild their lives and determine their own future.

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ACKNOWLEDGEMENT

This report was a collaborative effort between the Government of Indonesia and the international donor community. The magnitude of the tragedy was an added motivation for all of those involved.

This effort was guided by Bappenas, with invaluable contributions from many government line agencies. The Government's quick mobilization in the field, its organization in Jakarta, and its rapid dissemination and analysis of data were key foundations for the preliminary assessment of damages.

The donor community, together with its partners in government, rallied its collective resources to respond to the urgent reconstruction efforts. Many bilateral and multilateral agencies participated in a two-week effort, working together with Bappenas to complete these reports. The following organizations were key contributors: ADB, AusAID, Danida, DFID, ECLAC, EU, FAO, GTZ, IFAD, IFC, ILO, IMF, JBIC, KfW Development Bank, Perpamsi, The Asia Foundation, UN Habitat, UNHCR, UNDP, UNEP, UNESCO, UNFPA, UNICEF, UNISDR, USAID, WHO, WSP and the World Bank.

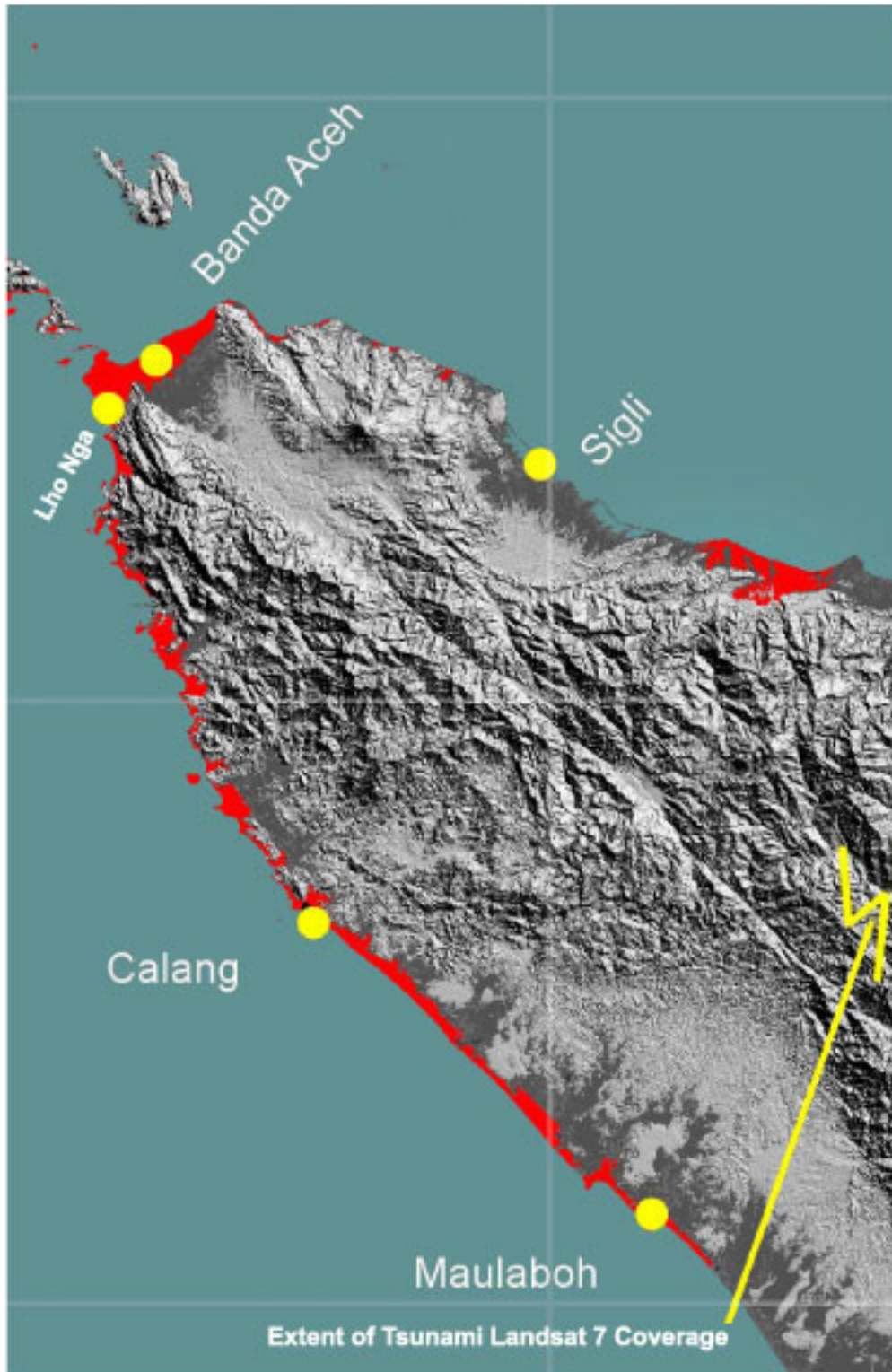
We also acknowledge the dedication of all of the local and international NGOs, relief organizations, volunteers, universities, trade unions, and the residents of Aceh – who provided invaluable information for the content of this report. We would also like to thank Jez O'hare for donating his photographs of Aceh, and to Perry Mandeville, for working around the clock to provide satellite imagery for our analysis.

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Aceh Tsunami Impact Zone



This map estimates the impacted areas on the coast of Aceh. The areas marked in red illustrate the water line and extent of penetration from the tsunami on December 26th, 2004.

The areas were defined using multispectral analysis (bands 5,4,2) of Landsat Imagery to capture the extent of water damage/loss of vegetation.

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Region Map



GLOSSARY

ADB	Asian Development Bank
ATM	Automated Teller Machine
BAPPENAS	National Development Planning Agency
BI	Bank Indonesia
BMG	Badan Meteorologi dan Geofisika
BPD	Regional Development Bank
BPDs	Village Councils
BPS	Central Statistics Bureau
BRI	Bank Rakyat Indonesia
CAMP	Coordination of Aid and Monitoring of Projects System
CBO	Community Based Organization
CCLC	Creating Learning Communities for Children Program
CDD	Community Driven Development
CHARM	Community Hazard and Risk Management Program
COFISH	Coastal Community and Fisheries Resource Management Project
CZMP	Coastal Zone Management Plan
DAK	Special Local Government Grant
DAU	Consolidated Block Grant
DGLC	Directorate-General of Land Communications
DGSC	Directorate-General of Sea Communications
DGWR	Directorate-General of Water Resources
DIP	Budget Warrants
DMI	Disaster Mitigation Institute
DPRD	Local Council
DPUP	Provincial Office of Ministry of Public Works
DRM	Disaster Risk Management
ECLAC	United Nations Economic Commission for Latin America and the Caribbean
EIA	Environment Impact Assessment
EIII	Employment-intensive Infrastructure Investment
FAO	Food and Agriculture Organization
FIRP	Financial Intermediation Revival Program
GAM	Free Aceh Movement, Gerakan Aceh Merdeka
GoI	Government of Indonesia
HCC	Housing Coordinating Committee
IDP	Internally Displaced Person
IFMS	Integrated Financial Management Systems
IPLT	Septage Treatment Plants
Kabupaten	District Government
KDP	Kecamatan Development Program
Kelurahan	Administrative Sub-district (lower level of government administrative unit in a Kota)
Kota	City District
KPKN	Central Treasury Office
MCK	Communal Sanitation Facilities

MCRMP	Marine and Coastal Resources Management Project
MMAF	Ministry of Marine Affairs and Fisheries
MOC	Ministry of Communication
MOC	Ministry of Communication
MoHa	Ministry of Home Affairs
MORA	Ministry of Religious Affairs
MP-SEI	Management Plans for Strategic Environmental Impacts
MPW	Ministry of Public Works
MUI	Indonesia Ulama Council
NAD	Nanggroe Aceh Darussalam
NGO	Non-governmental Organization
NSC	National Steering Committee
PDAM	Government-owned water enterprises
PERPAMSI	Association of Indonesian Water Supply Enterprises
pesantren	religious boarding schools
PLN	State-owned electricity company
PME	Participatory Monitoring and Evaluation
PODES	Village survey
PSRP	Payment System Restoration Program
PT PLN	the National Electricity Company
PUP	PU Pengairan, or Water Resources Service Office
RRSP	Rural Roads Sumatra Project
Satkorlak	Provincial level co-ordinating unit of Bakornas
Satlak	District or municipal level co-ordinating unit of Bakornas
SGP	National Scholarships and Grants Program
SIGP	School Improvement Grants Program
SPBU	Road Side Fuel Stations
SRRP	Sumatra Region Roads Project
SSWP	Small-scale Water Providers
SUMUT	North Sumatra
Susenas	National Household Expenditure Survey
SUSI	Survei Terintegrasi
TA	Technical Assistance
TNI	Indonesian Army
UN	United Nations
UNHCR	United Nations High Commission for Refugees
UPP	Community-driven development project
USB	Unit Sekolah Baru
USO	Universal Service Obligation
USO	Universal Service Obligation
warungs	roadside stalls
WFP	World Food Program
WHO	World Health Organization

EXECUTIVE SUMMARY

We were fishermen and lived right on the beach. I lost my entire family, all my assets, everything. . . . we need help to build houses, wherever we go. We will need capital to rebuild our businesses.

Fisherman in temporary camp Banda Aceh

INTRODUCTION

On the morning of December 26, 2004, a massive earthquake, registering 9.0 on the Richter scale hit Indonesia with its epicenter in the Indian Ocean, within 150 kilometers of Aceh Province, on the northern tip of Sumatra. The earthquake was followed by a massive tsunami that devastated the human population living on the coastline of Aceh Province, and parts of North Sumatra Province. The same tsunamis caused death and destruction throughout southern Asia and as far away as Africa.

The human toll in Indonesia due the earthquake and the tsunamis has been massive, and larger than in any other country in the region. As of January 14, 2005, 110,229 were accounted for as dead, 12,132 as missing and 703,518 as displaced. The huge natural disaster, one of the largest ever on a global scale, has triggered a massive international relief effort that continues at this moment. The immediate tasks are huge: from retrieving and sheltering and feeding the displaced; to clearing up rubble to allow even basic access and ensuring that main supply lines are open and set up for the basic logistics of relief, including food aid, water, medical supplies and the like. In addition to the Government of Indonesia and its military, thousands of Indonesians of all walks of life are contributing to the effort as are many international agencies, foreign governments and NGOs. Significant and quick assistance also came from military personnel from some 12 other countries and volunteers from all over the world.

PURPOSE AND METHODOLOGY

This document represents a preliminary assessment of damages and losses due to the natural disaster. It has been quickly produced to convey the scale of the damage to the international Consultative Group of Indonesia meeting on January 19-20, and also to provide a basis for the national and local Governments, as well as the people of Aceh and North Sumatra, to quickly start making decisions on setting priorities and considering how to develop a strategy for reconstruction.

This Preliminary Damage and Loss Assessment does not attempt to ascertain the reconstruction costs that would be implied by an eventual reconstruction strategy. Rather, it uses internationally accepted methodology to make an economic evaluation of (i) damages – e.g. destruction of public and private assets such as infrastructure, houses and boats; and (ii) losses – e.g. the loss of income streams such as personal incomes and private sector revenues during the reconstruction phase. It must be emphasized that this report estimates *replacement costs* rather than *reconstruction costs*. In other words, it estimates actual damages and losses – how much it would cost to replace all the original assets that were damaged and income lost at their original location and specifications. Reconstruction costs would eventually be calculated on the basis of a reconstruction plan that may envision rebuilding in different locations or to different specifications; and

building up more assets in order to improve services in the affected areas; or less, given the number of casualties.

This Preliminary Damage and Loss Assessment work started within one week of the disaster and was completed within three weeks of the disaster. In most disaster situations, damage and loss assessment teams do not begin work until at least three weeks after the disaster and complete assessments a month or two later. It is likely that the transition from emergency relief to reconstruction will be rapid and, thus, the process has been accelerated. The damage and loss assessment team that produced this report worked as quickly as possible to compile all possible data from a multitude of sources in a manner that did not impose on the relief effort. This has meant using information from line ministry assessments, relief, donor and NGO agencies on the ground, satellite imagery and aerial photography, and intensive use of what was known about the area before the disaster from survey data (village survey data, household survey data, satellite imagery, government data and other data compiled by the national statistical agency). The assessment work also benefited from several field trips, both by the Government core team and members of the international team. It should be emphasized, nevertheless, that given the timing, this report is a preliminary damage and loss assessment. As more information becomes available and can be compiled over time, the information base can be updated as well as the valuation of damages and losses. This Preliminary Damage and Loss Assessment is the best possible estimate of damages and losses at this point in time.

PROCESS

This damage and loss assessment was anchored by a core team of the Government of Indonesia, based in Bappenas and constituting Bappenas and line ministry staff. This core team was assisted by a significant team of international expertise. At the request of Government, the World Bank coordinated a multi-donor team that included the ADB, Japan and many other multilateral and bilateral agencies, as well as NGOs, that voluntarily lent their expertise to the effort, including the UN whose expertise and knowledge based on its role as a coordinating agency of the ongoing relief effort proved invaluable. The international team worked intensively with the government team over the course of this two week effort. Government and donors organized themselves into sub-sectoral sub-teams to undertake this work, which was then coordinated by the core team.

A strong positive outcome of this process was the development of networks and working relationships among sectoral and thematic professionals from Government, the donor community and others. People come together in a time of crisis. Going forward, it will be important to retain this momentum, as there is much to do. This report constitutes a preliminary step. An assessment of damages and losses needs to be followed by the development and implementation of a reconstruction strategy for the affected population and by the affected population. The community and process that has come together to produce this report can continue to work together to help the people of Aceh and North Sumatra recover from this natural disaster and rebuild their livelihoods.

THE PRELIMINARY DAMAGE AND LOSS ASSESSMENT

The total estimate of damages and losses from this catastrophe in Indonesia is Rp. 41.4 trillion, or \$4.45 billion. Of the total, 66% constitutes damages, while 34% constitutes losses in the terms of income flows lost to the economy. The damage provides both an idea of the destruction of assets in the country as well as a baseline for defining the program of reconstruction. The amount of losses will directly impinge on the future economic performance of the country.

Summary Table of Damages And Losses (US\$ million)

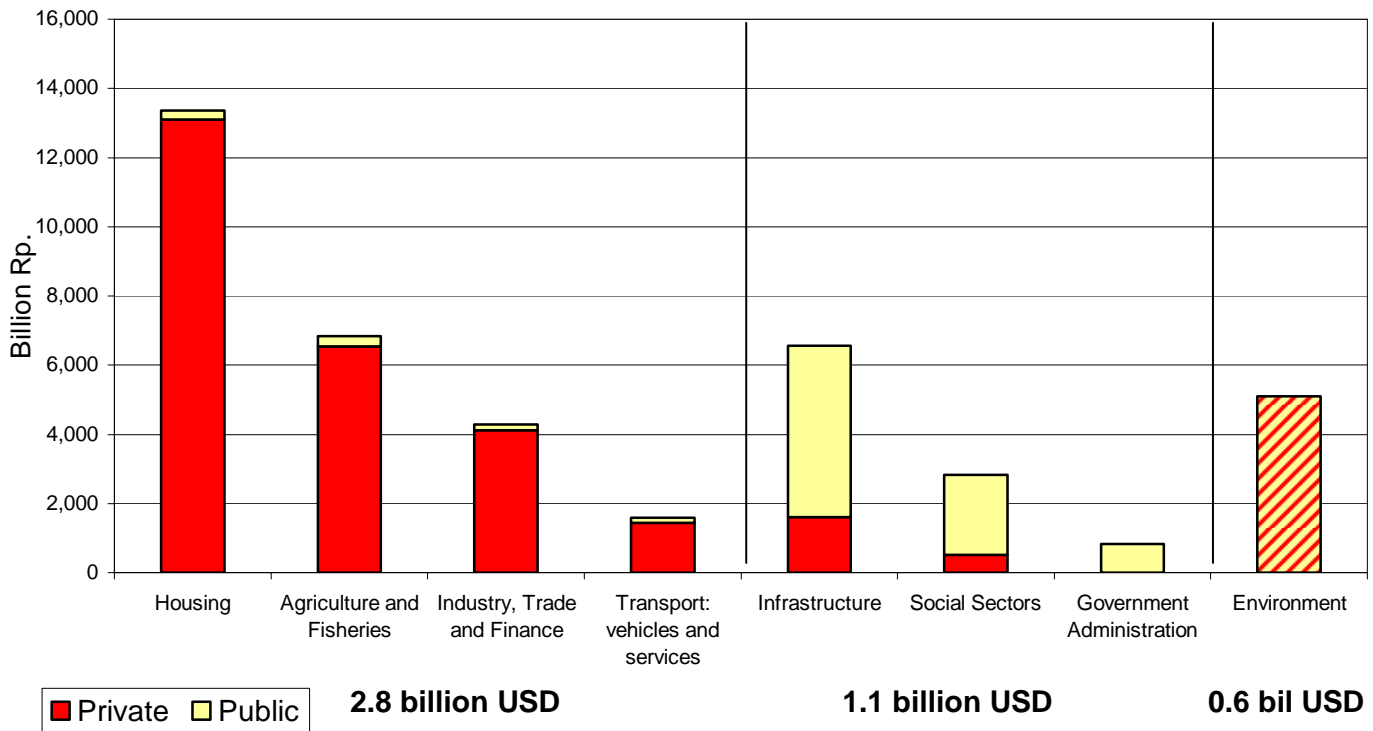
	Total Impact			Property	
	Damage	Losses	Total	Private	Public
Social Sectors	1674.9	65.8	1740.7	1440.6	300.1
Housing	1398.3	38.8	1437.1	1408.4	28.7
Education	110.8	17.6	128.4	9	119.4
Health	82.5	9.4	91.9	23.2	68.6
Culture and religion	83.4		83.4		83.4
Infrastructure	636	240.8	876.8	325.9	550.8
Transport	390.5	145.4	535.9	165.8	370.1
Communications	18.9	2.9	21.8	8.6	13.2
Energy	67.8	0.1	67.9	1.1	66.9
Water and Sanitation	26.6	3.2	29.8	18.3	11.4
Flood control, irrigation and sea protection works	132.1	89.1	221.2	132.1	89.1
Productive Sectors	351.9	830.2	1182.1	1132	50.1
Agriculture and Livestock	83.9	140.9	224.8	194.7	29.9
Fisheries	101.5	409.4	510.9	508.5	2.5
Enterprises	166.6	280	446.6	428.9	17.7
Cross sectoral	257.6	394.4	652	562.9	89.1
Environment	154.5		154.5	548.9	
Governance and administration	89.1		89.1		89.1
Bank and Finance	14		14	14	
Total Impact	2920.4	1531.2	4451.6	3461.4	990.1

There are several story-lines that emerge from this preliminary assessment that are important to understanding the disaster and its implications as well as guiding thinking on the reconstruction strategy that must follow.

The impact of the disaster on the national economy will be moderate, but it is huge for the local economy of the affected areas. National GDP growth may be lowered by 0.1 – 0.4% in 2005. In contrast, total damages and losses amount to 97% of Aceh's GDP. Considering that a large part of Aceh's GDP is from oil and gas, which was not affected, and that most people get their livelihoods primarily from other sectors such as agriculture, fisheries, and commerce, this is all the more significant. International experience shows that economies that when impact-to-GDP ratios exceed 40%, the affected economy will likely face significant difficulties in recovering and require substantial external assistance to reconstruct. To recover from this disaster, Aceh and North Sumatra will need significant help from the Government, its fellow citizens, and the rest of the world.

The disaster primarily impacted private, not public, assets and revenues. Some 78% of total damages and losses accrued to the private sector, including households, whereas about 22% of damages and losses were borne by the public sector. This has important implications and poses particular challenges for the reconstruction strategy.

Livelihoods Lost - Private sector and households bear brunt of damages and losses



The huge human toll and the preponderant brunt of the disaster to the private sector translates into lost or severely impacted livelihoods. These localized social and livelihood considerations, rather than national economic ramifications, are the biggest story to this disaster. The summary figure tells above this story: the sectors most impacted were primarily private-sector dominated assets and activities that relate directly to the personal livelihoods of the affected urban and rural communities: housing, commerce, agriculture and fisheries, and transport vehicles and services (\$2.8 billion, or 63% of total damage and losses). The biggest public sector damages were to infrastructure, the social sectors, and government administration (\$1.1 billion, or 25% of total damage and losses). Monetized environmental damages are also significant (\$0.55 billion, or 12% of total damage and losses), although they belong in a separate category as the environment will partially recover with the help of nature and time, as well as human intervention. These include damage to coral reefs and mangrove swamps, loss of land use and restoration of the coastal zone. Total damage and losses of this disaster -- net of environmental impacts -- are \$3.9 billion.

The damage and loss profile indicates that the priorities for reconstruction must lie in ways to rebuild the livelihoods and social fabric of the devastated communities.

- **Housing and shelter.** Reconstruction of homes needs to be the first step in rehabilitating livelihoods in the disaster-struck area as almost half of the total damage is due to the loss of housing. Repairing and constructing homes will be less costly when carried out at the community level and will also generate income at the local level. Local housing programs need to be based on public and participatory planning.

- **Generating enterprise, commerce, and income creation.** A local economic revival strategy should also focus on local entrepreneurship and the promotion of micro/small enterprises, enhancing their capacity to respond to emerging market opportunities and encouraging new initiatives. During the rehabilitation phase many people will turn to micro-enterprise activities to generate an income. These re-emerging entrepreneurs will need to access to ideas, micro-finance, and know-how. Strategies that reach large numbers of people using mass-media and community-based approaches are often effective in disseminating this type of information.
- **Rebuilding rural livelihoods: agriculture and fisheries.** The livelihoods of people in the agricultural sector and fisheries have been hardest hit. The loss of income in agriculture and fisheries make up more than one-third of total losses due to the disaster. In order to minimize losses in the flow of income, it is important to resuscitate these sectors as quickly as possible, possibly through extended micro-credit and grant programs.
- **Providing public services.** In many areas, local administrations no longer function. They should be re-launched as quickly as possible, through standard procedures for village elections. Village councils (BPDs) should be elected early, in order to aid in local reconstruction and to help prevent local capture of development aid.
- **Assisting the newly vulnerable.** The aid and reconstruction effort has to pay particular attention to the newly created vulnerable populations, such as single-mothers and orphans. It is estimated that 75% of children who have a surviving mother do not live in extended families. These single mothers lack any support mechanism especially as the communal networks and social capital around them have also disappeared. On a striking note, the number of children who are estimated to have lost both parents is as high as 7,700 and going forward the aid effort needs to focus particular attention on the needs of these orphans.
- **Rebuilding communities.** The reconstruction not only of houses and markets but also of social structures and communities provides an opportunity for Acehnese to participate in their own governance and society building. Revival of the social fabric after the disaster requires empowering *pesantren* leaders to take an active part in rebuilding communities.

Developing a reconstruction strategy needs vision, the focus and involvement of the communities affected, strong implementation arrangements and monitoring systems. In devising a strategy to guide the reconstruction process, decision makers should build on the damage assessment by: (i) developing a reconstruction strategy through a consultative process; (ii) rapidly mobilizing of reconstruction funds and activities; (iii) focusing on the needs of the local population; (iv) establishing the highest fiduciary standards and efficient system managing the funds, and (v) updating and monitoring needs and results. Community consultation is imperative to devising the plan for reconstructing Aceh and North Sumatra. Implementing that plan and coordinating all elements of what will be an extremely complex undertaking is just as crucial. Rebuilding the devastated provinces will involve all levels of government from national to village as well as domestic and international organizations, bilateral and multilateral institutions, donors and community groups. Coordinating all these organizations within the overall recovery and reconstruction process, while promoting the interests of the local communities, is a major task. Bappenas is well placed for the role of coordinating the recovery and reconstruction activities but whoever assumes the role will only be first among equals. All stakeholders will have valuable contributions in planning the strategy, financing that recovery and ensuring the money and reconstruction are transparent, accountable and directed at those who need it.

Introduction



INTRODUCTION

This was my kampung. My home is gone. All my family is gone. I am the only survivor. I am a driver by profession and I was in the car when the first wave came, just arriving back at the house. The road here was busy with a lot of people walking along here, lots of cars and motorcycles. I didn't manage to get to my house. Somehow I was thrown from the car and I lost consciousness. When I woke up I was clinging to a tree about 12 km away.

From the area of Ujung Punge about 2 km from the beach. It is from here that one can see the almost complete devastation stretching away into the distance in all directions.

This report is a preliminary assessment of damages and losses due to the natural disaster. It has been rapidly prepared to convey the scale of the damage to participants in the Consultative Group of Indonesia meeting on January 19-20, 2005, and also to provide a basis for the people of Aceh and North Sumatra, as well as their national and local Governments, to quickly start making decisions on setting priorities and developing a strategy for rehabilitation and reconstruction.

The document is organized in three blocks: background information on the disaster and its context; the impact of the earthquake and tsunami in human and economic terms; and consequences for follow-up. The report begins with an **Executive Summary** that presents the main findings of the analysis. It is complemented by a separate document, **Technical Annexes**, covering specific methodologies and data used to calculate the damage and losses.

The initial block of background information begins with a chapter on **The Disaster** that summarizes the latest available information on the earthquake and ensuing tsunami. Next, a chapter on **The Human Toll** provides the most recent official statistics on deaths, missing persons and internally-displaced people due to the disaster. Finally, a chapter on **The Context** consolidates a range of background information about the affected provinces of Aceh and North Sumatra.

The next block on the impact of the disaster contains the heart of the report – the **Assessment of Damage and Losses**. This assessment summarizes total damage and losses for both the private and public sectors, and then presents assessments for infrastructure, the productive sectors, the social sectors and cross-sectoral themes (regional governance and the environment). The following chapter, **Livelihoods Lost**, is a more qualitative look at the consequences of the disaster for housing and shelter, income generation, public service delivery and other cross-cutting issues, with a special emphasis on vulnerable populations. Finally, a chapter on **Economic Impacts** evaluates the macroeconomic impacts of the earthquake and tsunami on national growth, unemployment and balance of payments.

The last block seeks to draw lessons and guidance from the damage and loss assessment for the rehabilitation and reconstruction process. It begins with a chapter on **Disaster Preparedness and Mitigation** with recommendations in this area. The next chapter, **Moving Toward a Reconstruction Strategy**, reinforces key Government principles for reconstruction and recovery, and makes specific recommendations for this process.