

Building A Disaster-Resilient Future

Key Messages

1. Indonesia is prone to natural disasters that place considerable strain on government and public resources.
2. Building safer communities and investing in community preparedness and environmental rehabilitation, will significantly reduce Indonesia's vulnerability to and the impact of future natural disasters.
3. The main challenge is to shift away from a reactive approach, and begin to incorporate disaster risk management in mainstream development programs.

Key Actions

The government should consider the following immediate actions:

1. Ensuring that the regulations for the new Law on Disaster Management are fully developed, disseminated and implemented.
2. Devising a fiscally responsible comprehensive risk-financing strategy to ensure community financial resilience.
3. Focusing on effective investments in disaster prevention and response for local governments, communities and the private sector.
4. Investing in environmental rehabilitation and addressing informal settlements through settlement redevelopment, urban infrastructure improvement and local job creation.

Where Indonesia Stands Now

Indonesia ranks 12th globally in mortality risks from multiple hazards. It is situated on one of the most active disaster hot spots on earth, where earthquakes, tsunamis, volcanic eruptions, floods, landslides, drought and forest fires frequently occur. According to a global risk analysis by the World Bank¹, Indonesia ranks 12th among the top 35 countries, globally, to face high mortality risks from multiple hazards. Forty percent of its 230 million citizens live in at-risk areas so the potential for major humanitarian catastrophes in the future is very real.

The increasing frequency of disasters burdens public finance and the economy. According to the government's

data², there were more than 4,000 natural disasters in Indonesia between 2001 and 2007 including floods (37 percent), droughts (24 percent), landslides (11 percent), and windstorms (nine percent). The cost of replacing or restoring public infrastructure and private households, most of which are uninsured, placed an enormous burden on public expenditure. For example, the 2004 Aceh/Nias tsunami tragedy caused US\$4.5 billion in damages and losses, and the figure for the 2006 Yogyakarta earthquake was US\$3.5 billion. The government spent reconstruction budget of more than US\$7 billion for Aceh and Nias and US\$2 billion for Yogyakarta respectively³.

¹ See World Bank, Natural Disaster Hotspots, A Global Risk Analysis (Washington, DC: Disaster Risk Management Series, 2005), table 1.2

² DiBi database (Data and Information on Disaster in Indonesia), National Disaster Management Agency (BNPB). <http://dibi.bnpb.go.id>

³ Building Back Better: Disaster Risk Reduction and The Recovery Opportunity. Bakri Beck, Deputy Chief for Rehabilitation and Reconstruction, BNPB, APEC Workshop on Damage Assessment Technique, Yogyakarta, Indonesia 3-6 August 2009.

Much of the country is highly vulnerable to earthquakes and volcanic eruptions. Sumatra alone has experienced over 15 large earthquakes in the past century. Seventy of Indonesia's 129 active volcanoes are classified as dangerous. Between 2001 and 2007 alone, 26 volcanic eruptions were recorded, mostly in Java. In 1815 more 92,000 people died when the Tambora volcano on the northern coast of Sumbawa, West Nusa Tenggara, erupted. The 1883 eruption of Krakatau claimed more than 36,000 lives and created tsunamis as far away as South Africa. The islands of Java and Sumatra are also prone to landslides because of their topography and unstable soil conditions.

High rainfall in the west of the country and dry zones in some eastern provinces are subject to recurring floods and droughts. Within the past century, floods have been the most frequent disaster in Indonesia, often striking major population centers such as Jakarta (13 million), Medan (two million+), and Bandung (four million+). The government estimated that the 2007 flood that hit Jakarta caused damage and lost productivity amounting to more

than \$900 million⁴. According to the Ministry of Public Works (MoPW), annual flooding in the Bengawan Solo watershed cost the government more than \$200 million in 2007, equal to the total rehabilitation and reconstruction allocation for all disasters for the entire country for 2008⁵.

Deforestation and prolonged drought intensify and increase the occurrence of forest fires. The wildfire and smoke-haze episodes in Indonesia during the 1980s and 1990s were the first documented cases of the El Niño-Southern Oscillation (ENSO) triggering a drought. In East Kalimantan alone, nearly 3.5 million hectares of forests were affected by drought and fire. Nearly 0.8 million hectares of primary rain forest burned, though impacts were more widespread in logged-over and secondary forests (mainly in the vicinity of settlement areas)⁶. The climate anomalies associated with El Niño also resulted in billions of dollars in damages and economic losses in Indonesia and throughout the affected region.

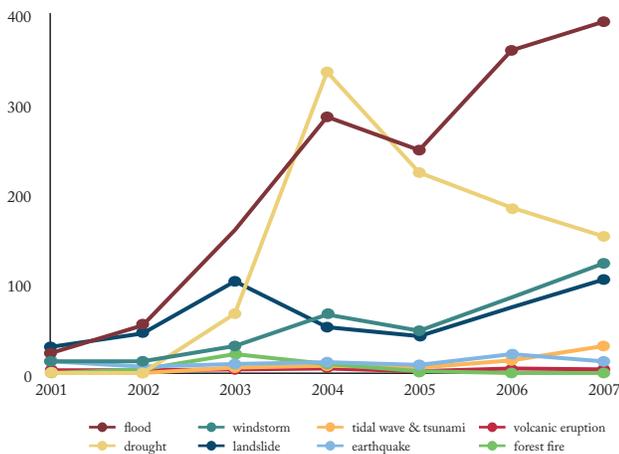
Challenges Ahead

Population growth and urbanization increase vulnerabilities. Indonesia's urban population base is growing rapidly. By 2008, at least half its citizens lived in cities, whose populations are swelling at an annual rate of 4.4 percent, well beyond that of national population growth. More than 110 million people in roughly 60 cities, mostly located in coastal areas are exposed to hazards like earthquakes, flooding and communicable diseases. The high population density and increasing wealth of the larger cities makes them more vulnerable to large-scale disasters.

Weak zoning enforcement and poorly maintained infrastructure contribute to the problem. The limited capacity of urban centers to absorb new residents has resulted in the creation of many unplanned settlements. Poor quality zoning and lax enforcement led to the occupation of many hazard-prone locations. The MoPW estimates that a quarter of the urban population (roughly 25 million people) lives in slums and informal settlements⁷.

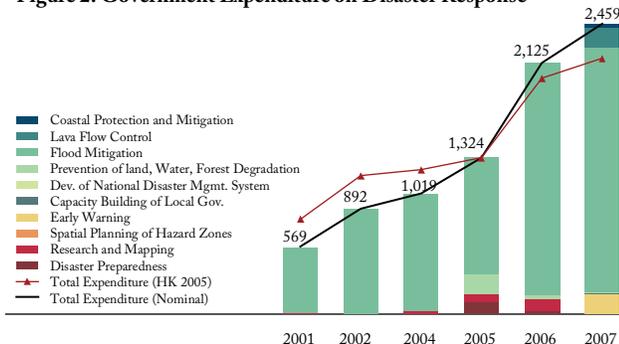
More frequent events + increased exposure + lower coping capacity = higher impacts. Indonesia's unique

Figure 1. Disaster Occurrence in Indonesia



Source: DiBi-BNPB

Figure 2. Government Expenditure on Disaster Response



Source: Budget Disbursement Database, MoF

4 Laporan Perkiraan Kerusakan dan Kerugian Pasca Bencana Banjir Awal Februari 2007 di Wilayah Jabodetabek, National Development Planning Agency (BAPPENAS) 2007.

5 Source: Center for Strategic Assessment of the Ministry of Public Works, April 2009.

6 Fire Situation in Indonesia. IFFN No. 26, January 2002, p. 37-45.

7 Toward Developing Slum Free Cities 2025 (in Bahasa Indonesia). Djoko Kirmanto, Minister of Public Works. Keynote Speech delivered on the commemoration of World Habitat Day 2008. Bali 30 October 2008.

geological setting and the complexity of its population settlements has generally led to more disasters causing greater damage (loss of life, economic impacts etc). Although hazardous natural events cannot be prevented, the severity of their consequences can be minimized or even avoided through better community preparedness, enhanced coping capacity, and hence greater resilience.

The climate factor. Climate variability and climate change increase the level of risk. In addition to higher intensity meteorological events such as floods and droughts, the climate also influences food production patterns and outputs, creating additional uncertainty in the event of a disaster that further exacerbates its impact. While there is growing awareness of the need to address the impact of climate variability and change, more evidence-based response and adaptation measures must be developed.

Where Indonesia Can Be

Enhance implementation of the existing framework for disaster risk reduction. After the 2004 Asian Tsunami, Indonesia enacted a new Law on Disaster Management (Law 24/2007) that outlines the principles, division of labor, organization and implementation of the national disaster management system, including the role of international organizations. The law was further elaborated by the issuance of numerous implementing regulations and guidelines. Laws and regulations regarding spatial planning and building- and settlement plans have also been revised to mitigate disaster risks. The creation of a legal framework is important, but the government must do more to ensure that the regulations are disseminated and implemented:

- ◆ Take immediate steps to educate the public about disaster risk management issues.
- ◆ Provide the technical resources needed to encourage voluntary compliance with new, disaster resistant residential building- and settlement codes.
- ◆ Follow up with effective outreach measures that combine consistent enforcement and the provision of incentives like land tax discounts and automatic building permit issuance for voluntary compliance.

Devise a comprehensive risk-financing strategy to ensure fiscal and community financial resilience. The Government of Indonesia (GoI) quadrupled its spending on disaster-related activities between 2001 and 2007 as a response to two major disasters in Aceh (2004) and Java

(2006). However, further analysis by BAPPENAS⁸ on sectoral budget allocations indicates that the amounts in the last three years have actually decreased, suggesting that most of the earlier spending was for emergency response and recovery efforts. The analysis also noted that despite further tracking of sectoral allocations, it was still not possible to determine if disaster risk reduction is fully mainstreamed in regular development programs. A new Government Regulation No 22/2008 on Funding and Management of Disaster Assistance stipulates three categories of funding: contingency fund, on-call budget, and a grant-based social assistance fund.

However, the financial fallout from disasters is still largely borne by individual households, as the government's commitment is restricted to an annual contribution from the development budget to a disaster-related contingency reserve.

The government can address this by creating the legal framework for the growth of the catastrophic risk insurance market for households. Providing a premium subsidy for the poor, and diversifying the government's contingency allocation by combining a smaller annual reserve with a line of credit to be activated in the event of larger-scale disasters will increase the overall financial resilience of all Indonesians. A comprehensive, forward-looking risk financing strategy should also be prepared and updated at different administrative levels.

Invest more effectively in local prevention. Systematic investment is required to build the prevention and response capacity of local actors (governments, civil society, community organizations and the private sector).

The government can nurture efforts to move away from the current reactive approach that allocates resources for disaster response and recovery by formulating policy, procedures and incentive systems that reward local government initiatives that invest in local institutions and improve the public's capacity to reduce risk. The current approach tends to reinforce the perception that the central government ought to be responsible for disaster management and mitigation, rather than supporting the continuing devolution of power to the provinces and districts.

Invest in environmental rehabilitation and address informal settlements. Inadequate attention to and investment in basic infrastructure, and a failure to address

⁸ "Planning and Budgeting for Disaster Management Plan in Indonesia". Dr. Suprayoga Hadi, presentation to UN/NGO/DONOR/Red Cross Convergence Workshop, February 2009.

environmental issues are the main contributors to greater community vulnerability to disasters. The environmental impact of urban growth has not been compensated by the proper rehabilitation of those ecosystem functions altered by development. The situation is exacerbated by the proliferation of informal and unsafe settlements in urban areas.

The government should undertake serious efforts and investment to solve the problem of informal settlements through a coordinated approach to urban development that includes settlement redevelopment and upgrading, improved public transportation systems and local job creation. It should also lead a national campaign to reduce disaster risks that encourages more investment in environmental, particularly land, rehabilitation using public funds, the private sector and community resources.

How The World Bank Can Help

The World Bank aims to be an important partner in building resilient communities by mainstreaming disaster risk reduction in key development sectors such as infrastructure, human settlements, environmental rehabilitation, and risk financing.

Current Support

The World Bank, with funding from the Global Facility for Disaster Reduction and Recovery (GFDRR), is helping the GoI to formulate a new three-year National Action Plan on Disaster Risk Reduction that will incorporate the appropriate programmatic response to disaster risk management. Capacity building within disaster management agencies (*Badan Nasional Penanggulangan Bencana-BNPB* and *Badan Penanggulangan Bencana Daerah-BPBDs*) is being supported through the creation of a training system, and the practical implementation of the tools for disaster preparedness, emergency response, and post-disaster reconstruction. The World Bank is also helping the GoI to develop a catastrophe risk insurance framework for the country.

The World Bank is deeply engaged in Aceh and Nias' rehabilitation and recovery efforts, with a focus on post-tsunami reconstruction, institution building, analytical support and the monitoring of progress. Immediately

following the December 2004 tsunami, the World Bank rapidly mobilized a multi-sectoral team to support government and other partners in the preparation of a comprehensive damage and loss assessment. An office was established in Banda Aceh, and its facilities were made available to all donors working in the province. The World Bank mobilized over US\$700 million in commitments from 15 donors in support of a Multi-Donor Fund (MDF) for Aceh and Nias (under World Bank administration), as well as leveraging additional bilateral Trust Funds and through restructured International Development Association (IDA) projects.

Lessons from Aceh were also applied successfully to Yogyakarta and Central Java's reconstruction, following the May 2006 earthquake. The government employed the World Bank's community-based approach in its own large housing program. In addition to support on donor coordination, and the damage and loss assessment exercise, at government's request, the World Bank also established the Multi-donor Java reconstruction Fund (JRF) bring together over US\$85 million in grant funds, primarily supporting home reconstruction. The closing dates of both MDF and JRF were recently extended and their scope enhanced to promote sustainable, locally centered and managed institutional and economic development.

Future Direction

As the World Bank deepens its partnership with the GoI in key development areas like infrastructure, health, education, environment, and urban and rural development, there is a strategic opportunity to incorporate both disaster risk reduction and climate adaptation in development programs and investments in these sectors. Improvements to water-, urban- and rural infrastructure, for instance, can be carried out with the aim of providing better, safer and more sustainable settlements and livelihoods.

The World Bank will scale up its support in the following areas:

- ◆ **Mainstreaming Disaster Risk Reduction (DRR) in regular development** and through post-disaster recovery programming. This would include adding DRR components to sectoral and regionally funded programs, as well those of the World Bank and other donors.

- ◆ **Capacity building of national and local Disaster Risk Management (DRM) agencies**, including the areas of risk assessment and risk response. This will include support to the establishment of local DRM agencies and to the DRR capacity development of local governments generally.
- ◆ **Support a comprehensive risk financing strategy linked to Disaster Risk Reduction actions.** This will include technical assistance for the development and implementation of a more comprehensive risk financing framework that incentivizes DRR.
- ◆ **Link DRR and Climate Change Adaptation** in a pilot initiative, and invest in climate adaptation and resilience measures in urban and rural communities, including disaster- and climate-proof building codes and micro-zoning.

The World Bank Office Jakarta
Indonesia Stock Exchange Building Tower 2, 12th floor
Jl. Jenderal Sudirman Kav. 52-53, Jakarta 12190, Indonesia
ph. + 62 21 5299 3000 | fax. + 62 21 5299 3111
<http://www.worldbank.org/id>

for more information, please contact:
Mr. Iwan Gunawan
Senior Disaster Management Adviser
igunawan@worldbank.org



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