National Geohazard Assessment and Mapping Program

The Department of Environment and Natural Resources – Mines and Geosciences Bureau (DENR-MGB) has been implementing the National Geohazard Assessment and Mapping Program (NGAMP) as one of its priority programs since 2006. Its aim is to identify areas in the country that are susceptible to different geologic hazards, focusing mainly on rain-induced landslides, floods, and karst subsidence hazards as well as coastal hazards. With these, vital information has been provided to various stakeholders for the prevention and mitigation of the adverse impacts of the aforementioned events.

In 2010, the Bureau has completed the 1:50,000-scale assessment and mapping for rain-induced landslide and flood of 1,640 cities and municipalities nationwide while the more detailed 1:10,000-scale maps were completed in 2014. By 2015, the program has commenced the updating of the latter with the Vulnerability and Risk Assessment (VRA) activity and has included the coastal geohazard assessment and the 1: 10,000-scale mapping for karst subsidence hazards, which targets towns and cities that are pre-identified to be underlain by rock formations with considerable carbonate units.

Along with the mapping activities, the MGB also issues landslide, flood, and subsidence hazards threat advisories to the different barangays. These complement the Geohazard Assessment Reports that are endorsed to the Local Government Units. Moreover, the previously published 1:10,000-scale rain-induced landslide and flood susceptibility maps have been disseminated to 42,029 barangays nationwide along with the province-wide intensive Information, Education, and Communication (IEC) Campaign for geohazards. Along with the maps, corresponding IEC materials such as posters have also been distributed to promote public awareness on the mitigation, preparedness and rehabilitation of the areas affected by the said hazards up to the barangay level. Since 2018, the Bureau has been conducting municipal or city level seminar-workshops for the understanding of MGB's Risk Exposure Maps, which are outputs for VRA that are accompanied by VRA Technical Reports. These materials and workshops seek to provide the LGUs additional technical information on Risk Exposure for risk-sensitive land-use, development, and disaster management planning. Along with the VRA materials, the updated 1:10,000-scale flood and landslide susceptibility maps are provided to the corresponding LGUs. Aside from these, the Bureau also continuously provides lectures or seminar-workshops to other stakeholders including national government agencies and the private sector.

One of the components of the program is to provide technical assistance on the assessment of LGU-proposed relocation and evacuation sites as well as hazards assessment for areas affected by disasters caused by geohazards. This was demonstrated in the recovery and rehabilitation efforts after the devastation caused by Typhoon Sendong in 2011, Typhoon Pablo in 2012, and Bohol Earthquake and Typhoon Yolanda in 2013. The MGB was also involved in the quick response and recovery efforts for the Itogon Landslide in 2018 and the Cotabato Earthquakes in 2019.

Additional undertaking relevant to geologic hazards assessments are the review and approval of Engineering Geological and Geohazard Assessment Reports (EGGAR) as well as issuance of Geohazard Certifications upon the request of concerned stakeholders in the endeavor of ensuring proper land and infrastructure development. Guided by the framework of National Disaster Risk

Reduction and Management Council (NDRRMC), the DENR-MGB is also continuously and actively collaborating with other member agencies particularly the Department of Science and Technology - Philippine Institute of Volcanology and Seismology (DOST-PHIVOLCS), DOST-Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), National Mapping and Resource Information Authority (NAMRIA), and the Office of Civil Defense (OCD) in the implementation of disaster risk reduction and management projects. As part of its duties to the council, the Bureau also continually, through the Pre-Disaster Risk Assessment conferences, identifies areas that are highly susceptible to landslides and floods that may be triggered by severe hydro-meteorological conditions by providing appropriate listings for appropriate dissemination. Such information is utilized by the LGUs and other NGAs such as the Department of the Interior and Local Government (DILG) and Department of Social Work and Development (DSWD) for appropriate preparedness and response decisions and actions.

The MGB also partners with other institutions for research collaborations and future projects on geologic hazards and engineering geology. These include the University of the Philippines's (UP) Catchment Project, Project LIGTAS 2 with UPLB, SCARP and FRAMER Projects with Mapua University, the Green Climate Fund Project: Multi-Hazard Impact-Based Forecasting and Early Warning System with PAGASA and LANDBANK, and the GeoRiskPH Initiative with PHIVOLCS. These researches are aimed to enhance the current geohazard studies under the mandate of the MGB.

The NGAMP contributed to the following outcomes:

- Increased awareness and capacities of communities on geologic hazards and disaster preparedness and management activities through the provision of IEC materials, lectures or seminar-workshops, and early warning;
- Reduced loss of lives and damaged properties through utilization by LGUs of geohazard maps and reports in their community-based disaster preparedness and management plans;
- Rational formulation of development and disaster management plans complemented by effective risk-sensitive zoning ordinances guided by geohazard and risk exposure maps in the updating of their Comprehensive Land Use Plans and development plans; and
- Safer settlement sites for people affected by natural disasters through the assessment by LGU-proposed relocation and evacuation sites.