This program intends to capacitate communities to their adaptation to geologic hazards, as well as provide them critical data on groundwater resources. The program has two components, namely, geohazard assessment and groundwater resource assessment.

Geohazard and Groundwater Assessment

Vulnerability and Risk Assessment (VRA) and Updating of 1:10,000 Scale Geohazard Maps

For 2020, VRA and updating of 1:10,000 scale geohazard maps were done in 104 cities/municipalities for a 99% accomplishment.

Figure 9.1 *Weak and loose slope materials affected several households due to excess surface run-off in Star Village in Region 2.*

Ground Subsidence Assessment (Karst Subsurface Assessment)

Ground subsidence assessment was conducted in 13 cities/municipalities and accomplished 100%, as targeted.

Karst Subsidence Mapping is aimed at identifying the sinkhole areas and the areas affected by such hazard.

Conduct of Information, Education and Communication (IEC) to LGUs

Conducted virtual and face-to-face IEC on geohazards in 118 municipalities. The Mines and Geosciences Bureau (MGB) conducts IEC Campaign on Vulnerability Risk Assessment to increase awareness and provide additional technical inputs to the LGUs regarding Risk Exposure Analysis and its importance to attain sustainable development through comprehensive land-use, development, and disaster risk management planning.

Coastal Geohazard and Impact of Climate Change

A total of 42 coastal municipalities which are earlier assessed to be moderately to highly susceptible to coastal erosion, accretion, shoreline shift and other associated hazards assessed in the 1:10,000 scale mapping under the Coastal Geohazard Assessment Project were assessed/surveyed for their exposure to coastal vulnerability. This is 95% accomplished.

Critical coastal municipalities/barangays were assessed for their vulnerability with respect to the degree of exposure, sensitivity, and adaptive capacity component particularly during the monsoon and typhoon seasons.

Groundwater Resource and Vulnerability Assessment

Fifty cities/municipalities were assessed for groundwater resource and vulnerability and attained 114% accomplishment rate. The objectives of the project are to delineate areas with groundwater resource potential in the country, and identify the availability and physical quality of groundwater in various geologic formation/rock units. Furthermore, the project aims to determine the likelihood of contaminants to reach a groundwater system from the ground surface to the aquifer.

Responsible Mining

This ensures the implementation of responsible mining practices in the minerals industry. It involves the monitoring of mining permits/contracts to determine their compliance with the Safety and Health, Environment and Social (SHES) provisions of the Mining Act of 1995, as well as the approved exploration/development/construction/operating work programs. The audit of the SHES and work program monitoring system is also a component of this strategy. To further ensure the compliance of mining permits/contracts, the operationalization of Multipartite Monitoring Teams is also undertaken.

Mineral Investment Promotion Program

Issuance of mining permits/contracts (includes areas within mineral reservations) and other mining-related permits

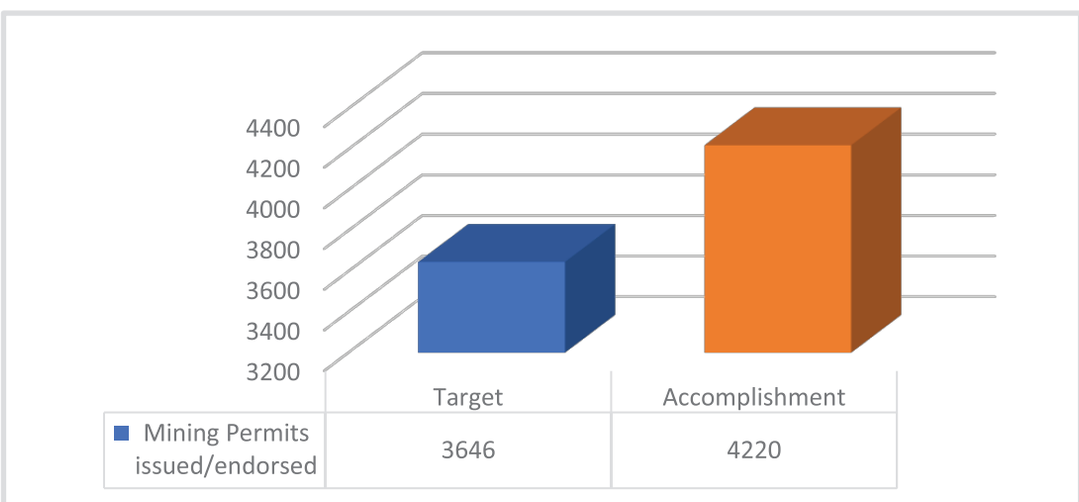

Figure 9.2 Mining Permits issued/endorsed

These mining rights/contract/permits and other mining-related permits include Exploration Permits, Industrial Sand and Gravel Permits, Mineral Processing Permits, Ore Transport Permits, Mineral Ore Export Permits, Accreditation of Traders and Dealers, and Certification of Environmental Management and Community Relations Records, among others.

Development of Small-Scale Mining – Assistance to Provincial/City Mining Regulatory Board (P/CMRB)/LGUs/Other Stakeholders

Pursuant to Republic Act No. 7076 or the "People's Small-Scale Mining Act of 1991", small-scale mining operations shall be undertaken only within the declared People's Small-Scale Mining Areas or "Minahang Bayan". The thrust now is to promote the declaration of more "Minahang Bayan" sites. Three "Minahang Bayan" sites were declared by the Provincial/City Mining Regulatory Board (P/CMRB), as follows:

- Olivia Catral in Manag, Conner, Apayao (DAO 2015-03)
- Northern Sagada Barangay Small-Scale Mining Association Inc. in Fidelisan, Sagada, Mountain Province (DAO 2015-03)
- Milad Multipurpose Cooperative in Barangay Milad, Polanco, Zamboanga del Norte (DAO 2015-03)

More "Minahang Bayan" sites are expected to be declared once the petitions/proposals got the approval/clearance of the DENR.

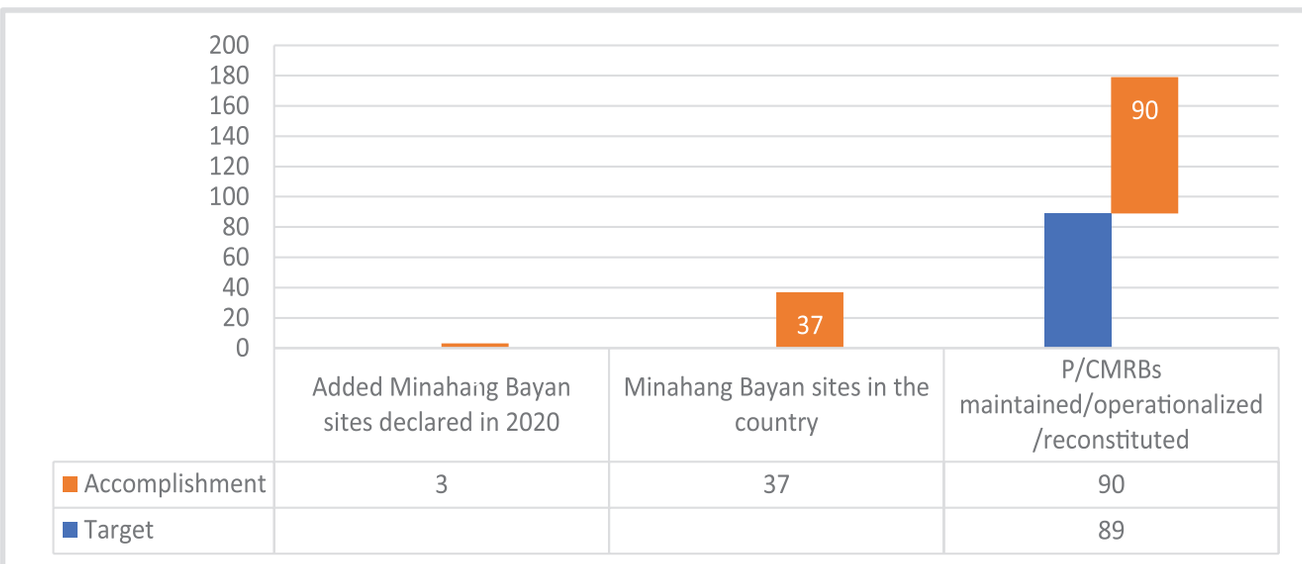

Figure 9.3 Declared "Minahang Bayan" sites

Mining Industry Development Program

The MGB conducted monitoring/audit of Mining Permits/Contracts/Leases/Claims/ JOAs (including those within Mineral Reservations) as to compliance with the Terms and Conditions/Requirements and implementation of approved Work Program/Safety, Health, Environmental and Social (SHES) Development Programs

For 2020, 518 Work Programs and 517 SHES Programs were monitored with an accomplishment of 103% and 102%, respectively.

Strengthen Multi-Partite Monitoring System

One hundred ninety-two (192) Multi-partite Monitoring Teams of mining projects (with permits issued by MGB) have been operationalized to monitor compliances of companies to their approved Annual Environmental Protection and Enhancement Programs (AEPEPs) with 104% accomplishment rate.

Mine Rehabilitation Program

As espoused under Subsector Outcome 2 (Environmental Quality Improved) of Chapter 20 (Ensuring Ecological Integrity, Clean and Healthy Environment) of the Philippine Development Plan (PDP) 2017-2022, one of the targets of the PDP is to transform abandoned mines and mined-out areas into land use that is beneficial to the communities. In lieu of the Bagacay Mine Rehabilitation Project which was terminated in 2018, the Phase II interim rehabilitation measures in the abandoned mine site of Palawan Quicksilver Mines, Inc. (PQMI) with the project entitled, "Rehabilitation Strategies for the Control and Management of Mercury Contamination in Sta. Lourdes Puerto Princesa City, Palawan" was implemented in coordination with the Ecosystems Research and Development Bureau (ERDB) of the DENR.

Despite the implementation of community quarantine measures in Puerto Princesa City, Palawan due to the COVID-19 pandemic, the ERDB was able to conduct monitoring on the status of the implementation of Phase II interim rehabilitation measures in PQMI since they employed technical personnel and staff residing in Puerto Princesa City, Palawan.

Resolution of Complaints/Cases/Conflicts

As part of our service to the public, the DENR, through the MGB, acted on mining complaints/conflicts from various sources including endorsement from DENR 8888 complaints center or requests for investigations, articles from the print and broadcast media, thru e-mail and telephone calls. Some of the complaints were referred to the LGUs concerned for appropriate actions, especially those involving small-scale mining, sand and gravel, quarry and similar operations wherein the mining permits were issued by the concerned LGUs pursuant to the devolution of MGB functions.

Figure 9.4 *Several investigations were conducted in Region 9, relative to the implementation of responsible mining in the country e.g. inspection and investigation of sand (left); mountain quarrying (middle); and use of heavy equipment in sand and gravel quarrying (right)*

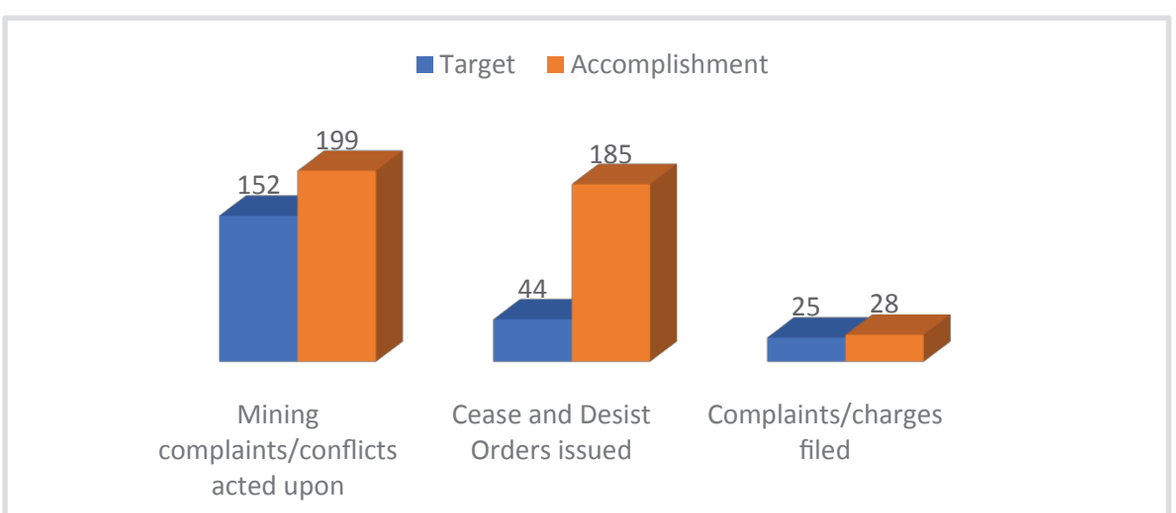

Figure 9.5 *Resolution of complaints/cases/conflicts*

Ways Forward

- The roadmap for the MRP of the MGB envisions that by 2023, all abandoned mines in the country shall have been rehabilitated, or at the very least, started the implementation of their respective EMPs.

- The MRP of the MGB aims to complete the Risk Assessment and Preparation of EMPs for the remaining abandoned mines by 2023. This includes the following:
  Zambales Base Metals, Inc. (Region IX)
  Unidos Mining Corporation (Region VI)
  Western Minolco Mining Corporation (CAR)

- Continuation of the R&D Project Recovery of Nickel, Cobalt, Iron and Rare Earth Elements from Low Grade Philippine Laterite Ores using Atmospheric Leaching with Reduction Pre-treatment until 2022.

- Information, Education and Communication with #MineResponsibility campaign to counter the negative image of mining caused by different anti-mining groups. It involves advocacy meetings and continuous stakeholder's engagements/forums on responsible mining in hotspots areas.

(Source: MGB 2020 Annual Report)