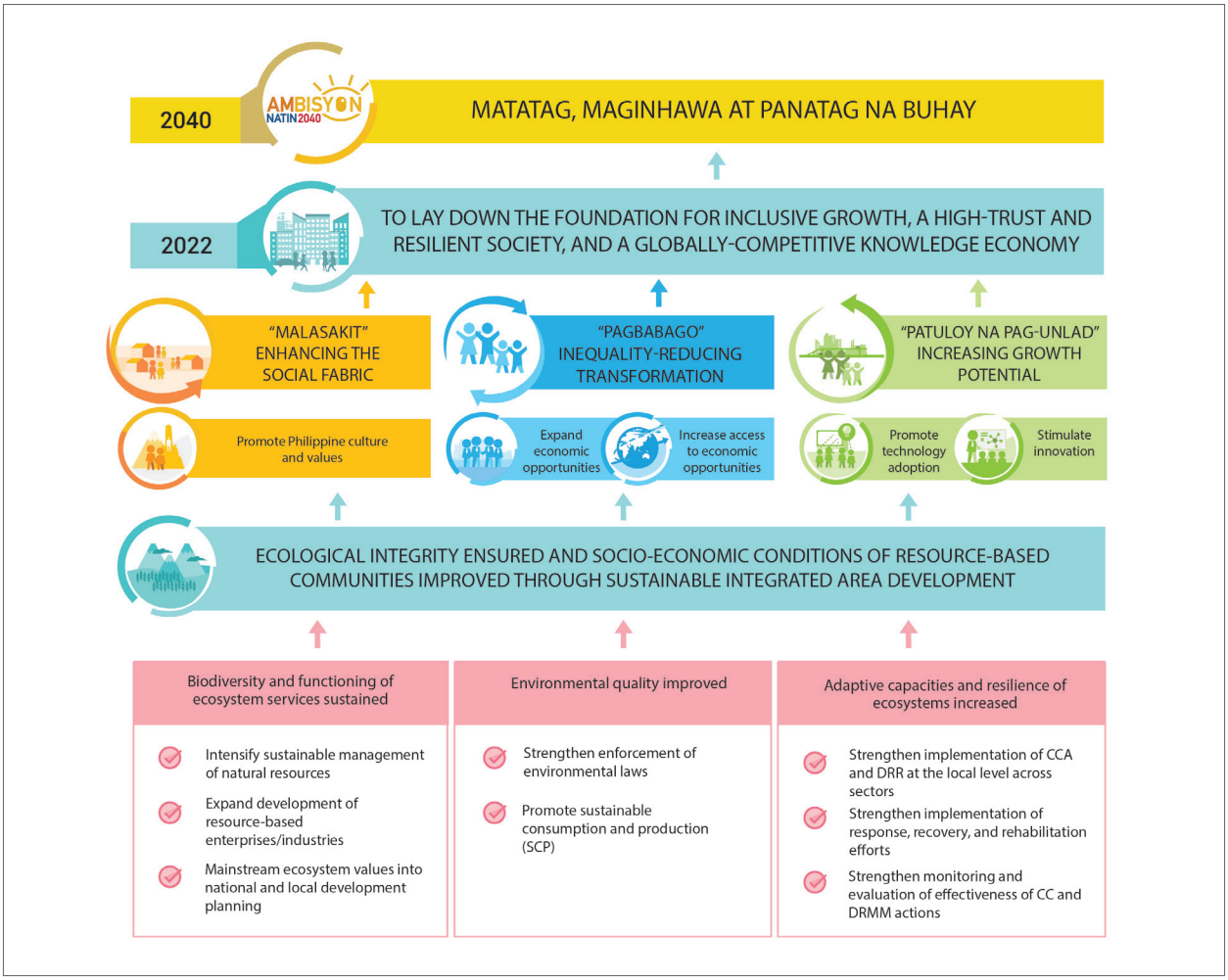
20 Ensuring Ecological Integrity, Clean and Healthy Environment

Chapter 20

Ensuring Ecological Integrity, Clean and Healthy Environment

Numerous interventions were laid down to ensure ecological integrity, clean and healthy environment, and to increase adaptive capacity and resilience of ecosystems towards improving socioeconomic conditions of resource-based communities. These include advanced efforts to manage biodiversity, covering terrestrial, coastal, and marine ecosystems, as well as income opportunities from resource-based enterprises. The local and national efforts to improve air, water, and land quality are gaining momentum. Tools for building adaptive capacity and resilience are made available, especially at the local level. However, concrete actions on climate change and disaster risk reduction (DRR), funding, capacity building, monitoring, and evaluation need to be further enhanced to address the long-standing challenges in environment and natural resources (ENR) management and implementation (*See Figure 20.1*).

Figure 20.1 Strategic Framework to Ensure Ecological Integrity, Clean and Healthy Environment



Accomplishments

Sustaining biodiversity and functioning of ecosystem services

Efforts on forest management led to a decrease in the number of degraded forestlands, while residential free patents and ancestral domain encountered challenges on documentation/classification. The implementation of the enhanced National Greening Program (e-NGP) has reduced the area of denuded and degraded forestland and mangrove forests from 7.6 million hectares in 2016 to 7.4 million hectares, surpassing the 2017 target.[1] To secure natural forest and reforested areas from further degradation, effective management have been maintained on the existing 8.2 million hectares of forestlands with the issuance of Community-based Forest Management Agreements, Protected Area Community-based Resource Management Agreements, and other appropriate management arrangements. To support the management of ancestral domains, the Ancestral Domain/Land Recognition Program Support has formulated four (4) additional Ancestral Domain Sustainable Development and Protection Plans.

However, the issuance of residential free patents and Certificates of Ancestral Domain Titles (CADTs) fell short of the 2017 targets. In particular, only 44,124 out of the 45,858 target residential free patents were issued in 2017 due to difficulties in securing zoning clearance from local government units (LGUs) and in obtaining the required documents for the application of residential free patents. For areas within ancestral domain, only 1 of the 12 targeted CADTs was not issued in 2017 due to conflict on the classification of the area as being private lands.[2]

A total of 343 Community Fish Landing Centers (CFLCs) were established and 80 municipal waters were delineated by the National Mapping and Resource Information Authority (NAMRIA) in 2017. The full operationalization of 50 units (out of 132) of CFLCs in 2016 helped reduce post-harvest losses for fisherfolk and coastal communities. Additional 211 CFLC units were established in 2017 bringing the total number of CFLCs to 343, which are expected to be operational in the succeeding years. However, these initiatives, together with interventions to manage coastal and marine resources (e.g., closed fishing season, community-based coastal resource management), are yet to be translated to a significant increase in fish production and its value to reverse the negative growth that has stressed the subsector for some time *(See also Chapter 8)*. In terms of ensuring preferential access of municipal fisherfolk to coastal and marine resources, NAMRIA has completed the delineation of municipal waters in 80 target coastal cities and municipalities for 2017. This can be attributed to NAMRIA's provision of technical and capacity-building support to the LGUs. However, due to unresolved boundary conflicts, this delineation is yet to be concurred and certified by LGUs.

Accomplishments in terms of improving the quality of coastal and marine habitats (i.e., coral reefs) through increasing coverage and management effectiveness of marine and terrestrial protected areas (PAs), caves, and inland wetlands are yet to be quantified by the Department of Environment and Natural Resources (DENR). Notwithstanding, the DENR is continuing the implementation of its Protected Area Management and Development Program, Coastal and Marine Ecosystems Management Program, and Strengthening the Marine Protected Area System to Conserve Marine Key Biodiversity Areas Project to ensure achievement of these targets. In-situ measures are also being pursued to assess the status of critical habitats and to improve conservation and management of biodiversity of protected areas. Strategies are also underway

[1] This was achieved by planting 200,544 hectares of forest lands under e-NGP and 5,208 hectares of mangrove areas as of December 31, 2017. Additional 1,295 hectares of mangroves are also planted as part of the rehabilitation efforts for the abandoned, underutilized, and undeveloped fishponds through the National Aquasilviculture Program.

[2] Per the Indigenous Peoples Rights Act (Republic Act No. 8371) and Forestry Code (Presidential Decree 705)

to sustainably manage inland wetlands as espoused in the draft National Inland Wetland Conservation Program. In addition, initiatives are also being done to ensure management of land-based activities affecting biodiversity, including the objective review of existing operating mines spearheaded by the Mining Industry Coordinating Council (MICC) that will emphasize the need to move towards more responsible mining.[3]

Employment and jobs generated from ecotourism and other resource-based enterprises are being realized and accounted for. For 2017, the employment generated in the ecotourism and other resource-based industries across 15 marine and terrestrial PAs was recorded at 1,335. People were engaged in tour-guiding and providing other ecotourism-related transport services. This can be attributed to the support from DENR's Ecotourism Development Fund for the construction of accommodation and recreational facilities and the development of resource-based products and services. An additional 417,918 jobs[4] were generated from the implementation of the e-NGP and community-based forest management programs. Initiatives are also underway in the development of Biodiversity-Friendly Enterprises (BDFEs) in priority PAs pursuant to DENR-Biodiversity Management Bureau Technical Bulletin No. 2017-11.[5]

Improving environmental quality

Implementation of air, water, and land quality management policies and programs, including promotion of sustainable consumption and production (SCP) practices, has been strengthened. The stronger compliance to emission standards by motor vehicles, adoption of Euro IV standards in the manufacture of new vehicles, and continuous implementation of anti-smoke belching campaigns have increased the percentage of highly urbanized and other major urban centers that are within the ambient air quality guideline value from 47 percent in 2015 to 63 percent in 2017. The nationwide enforcement of these policies not only covers car owners but also manufacturers, importers, and dealers of all motor vehicles from which the available supply are sourced.

With the implementation of Adopt-an-*Estero*/Waterbody Program, Water Quality Management Area Plans, coastal clean-up programs, and other water quality improvement programs and initiatives, 25 out of the 31 priority water bodies for public water supply, food (i.e., fish) production, and recreation passed the water quality standards for dissolved oxygen (DO), biochemical oxygen demand (BOD), pH, and temperature. However, under a more stringent standard (i.e., 7 water quality parameters[6]), only three of these priority water bodies passed the quality standards. Solid waste diversion rate (SWDR)[7] outside Metro Manila increased from the 2016 baseline value of 46 percent to 62 percent in 2017. On the other hand, Metro Manila is 3 percent short of meeting its 2017 SWDR target of 55 percent because of insufficient garbage collection facilities, materials recovery facilities (MRFs), and sanitary landfills.

Land degradation hotspots were reduced, while mines rehabilitation are still up for completion. Land degradation hotspots have been reduced to 2.24 million hectares, exceeding the 2017 target of 2.25 million hectares with the implementation of the National Organic Agriculture Program and Sustainable Land Management Project. Around 1.78 million hectares were also assessed and mapped for soil fertility status and its corresponding management with support from the National Soil Sampling and Testing Program. The rehabilitation of abandoned mines remains a government priority, particularly Bagacay Mines, and the

[3] Pursuant to the MICC Resolution dated February 9, 2017
[4] These include jobs related to the following activities: seedling production, site preparation, plantation establishment, and protection and maintenance, among others.
[5] Guidelines in the Identification and Recognition of BDFE
[6] Seven water quality parameters used are DO, BOD, pH, temperature, fecal coliform, phosphate, and nitrate levels.
[7] Waste diversion refers to activities that reduce or eliminate the amount of potentially recyclable material or solid wastes diverted out from the waste disposal stream and therefore do not go into the landfills. The SWDR is computed by dividing the total recovered and recycled waste by the total waste generation. (Guidebook for the Formulation of Solid Wastes Management).

interim rehabilitation activities for Palawan Quicksilver, Romblon Marble, and Silica Sand Mines.[8] Of the targeted rehabilitation of mines, Romblon Marble Mines was completed in 2017, while efforts in Bagacay Mines did not progress. Only 76.6 percent of interim activities were achieved in Palawan Quicksilver Mines because of administrative and logistical issues among concerned agencies (e.g., management arrangement between the Privatization and Management Office and DENR in Bagacay Mines; settlement of dispute in Palawan Quicksilver Mines).

Efforts on the implementation of SCP practices increased. The implementation of the Government Energy Management Program to promote energy-efficiency across all government agencies have resulted in the reduction of energy consumption by 26.28 percent or approximately ₱78 million energy savings in 2017. Under the National Ecolabelling Program-Green Choice Philippines, *Lybase LED Lighting Sdn. Bhd* was added to the list of eco-labelled products in 2017 while there are still pending applications of subscription from private companies.[9]

Increasing adaptive capacity and resilience of ecosystems

Necessary tools, processes, and facilities to address climate and disaster risks are becoming available particularly at the local level. In 2017, there were additional 281 LGUs with operating multi-hazard early warning systems (EWS) and 53 functioning Disaster Risk Reduction and Management (DRRM) Operations Centers.[10] There was also an increase in the number of LGUs with enhanced-Comprehensive Land Use Plans (603 cities/municipalities), Local DRRM Plans (1,765 provinces, cities/municipalities and barangays), and Local Climate Change Action Plans (LCCAP in 1,283 cities/municipalities). This has been facilitated by the: (a) availability and accessibility of more science-based information to LGUs; (b) continuous conduct of climate and disaster risk/vulnerability assessment; (c) increasing awareness (e.g., through roll-out of LCCAP by the League of Municipalities/Cities of the Philippines); and (d) acceptance among LGUs on the importance of integrating climate and disaster-risk considerations in local planning and programming. However, these accomplishments appear insignificant with respect to the total number of LGUs (i.e., provinces, municipalities, cities, and barangays) that are required to develop such plans. These local plans also need to undergo review and approval of concerned entities (i.e., Sanggunian, Regional Development Council, Department of the Interior and Local Government, Housing and Land Use Regulatory Board, National Disaster Risk Reduction and Management Council, and Climate Change Commission). Meanwhile, a guide to ensure that climate change adaptation and DRR considerations are incorporated in the Comprehensive Development Plan is being finalized. In 2017, the national government, through the Government Service Insurance System launched a parametric insurance program for typhoons and earthquake events which will provide assistance to the national government and an additional 25 provinces.[11] This program complements the national and local disaster risk reduction and management fund. On the other hand, the People's Survival Fund (PSF) has not been utilized due to operational issues and low approval rate as the majority of the submitted proposals did not fulfill the basic requirements of the PSF.

[8] Interim activities for the implementation of rehabilitation measures in Silica Sand Mine will commence in 2019. To date, the Notice of Award for the Risk Assessment and preparation of Environmental Management Plan was awarded to the third party consultant in December 2017. The completion of the Risk Assessment and preparation of Environmental Management Plan for the abandoned mine site of Silica Sand Mine in Roxas, Palawan will be in 2018.

[9] The implementation of the National Ecolabelling Programme-Green Choice Philippines is administered by the Philippine Center for Environmental Protection and Sustainable Development, Inc. which aims to encourage clean manufacturing practices and consumption of environmentally preferable products and services.

[10] The number of LGUs with operating multi-hazard EWS and functioning DRRM Operations Centers, out of the 1,671 that were assessed (i.e., 81 provinces, 144 cities, and 1,446 municipalities), have increased by 281 (23.81%) and 53 (3.34%), respectively, from 2016 to 2017.

[11] The 25 provinces with typhoon insurance cover include Albay, Aurora, Batanes, Cagayan, Camarines Norte, Camarines Sur, Catanduanes, Cebu, Davao del Sur, Davao Oriental, Dinagat Islands, Eastern Samar, Ilocos Norte, Ilocos Sur, Isabela, Laguna, Leyte, Northern Samar, Pampanga, Quezon, Rizal, Sorsogon, Surigao del Norte, Surigao del Sur, and Zambales. The LGUs were selected based on their exposure to typhoon and/or earthquake risk based on the catastrophe modelling by AIR Worldwide.

The issuance of Executive Order (EO) No. 174 in 2015 has resulted in greater institutionalization of the greenhouse gas (GHG) management and reporting system in national government agencies. Key agencies including the Department of Energy, Department of Transportation, Department of Agriculture (DA), and DENR as well as selected LGUs have been trained to conduct sector-specific and entity level GHG inventory, respectively. The development of thguidance document[12] and database for GHG inventory along with other climate change information is also underway.

Moving Forward

Long-standing governance issues such as lack of or limited funding, weak coordination, and poor implementation and monitoring need to be addressed to continuously improve the state of the ENR.

Policy reforms, programs, and projects need to be formulated, implemented, and strengthened to achieve the objectives of the following key strategies:

- **Review, codify, and streamline existing ENR policies, rules, and regulations.** Existing ENR laws and policies, including governance arrangements, should be assessed and reviewed in terms of overlapping and conflicting provisions to improve compliance, transparency, and accountability across all levels. This should include evaluating the Local Government Code to strengthen the LGUs and its relevant ENR devolved functions, with consideration to their differences in financial, technical, and absorptive capacities.

- **Strengthen the regulatory and monitoring functions of mandated agencies on environmental quality management, including the rehabilitation of abandoned mines.** To intensify compliance with environmental laws, the DENR should continuously (a) undertake nationwide inventory and classification of waterbodies to ensure its effective management; (b) support the installation of fully-operational water quality monitoring instruments; (c) conduct regular monitoring of effluent standards; and (d) assess the need to establish water management systems in the priority water bodies. Funding assistance or incentive mechanisms[13] should be promoted to engage the LGUs, water districts, and the private sector to participate in the implementation of waste collection and treatment facilities. The air quality compliance monitoring activities of the DENR and the vehicle emission-testing program and non-contact apprehension policy of the Land Transportation Office may be complemented with the installation of high definition cameras, public listing of violators, and establishment of more emission-testing centers.

  For solid waste management, LGUs shall (a) implement their approved ten-year solid waste management plans; (b) prioritize the closure of dumpsites; and (c) establish MRFs within or group/cluster of LGUs. The DENR needs to strengthen coordination with other government agencies and provide continuous funding for the mine rehabilitation activities.

- **Enact the National Land Use Act (NaLUA).** Passing the NaLUA will support ENR activities through its provisions on: (a) creation of institutional mechanisms to resolve land use conflicts and harmonize initiatives on land use; (b) designation of four major land use – protection, production, settlements

[12] Implementing Rules and Regulations of Executive Order (EO) No. 174 on Institutionalizing Philippine Greenhouse Gas Inventory Management and Reporting System

[13] As provided in Section 26 of the Clean Water Act

and institutional, and infrastructure; (c) delineation of forest boundaries and geo-hazard areas; and (d) specific policies on special areas of concern such as environmentally critical areas, forest lands, watershed, coastal zones, and mineral lands, among others.

- **Increase utilization of the PSF.** To enhance LGUs' access to PSF, the following should be undertaken: (a) roll-out a nationwide marketing strategy to inform LGUs and key stakeholders on eligibility requirements; (b) streamline the process for project development, appraisal, approval, negotiation, obligation/fund release, implementation, and monitoring and evaluation; and (c) provide capacity-building activities on project proposal development for LGUs and training on review and evaluation of proposals for the PSF Secretariat.

  Moreover, the annual budget allocation for the PSF under the General Appropriations Act should be restored. Also, there is a need for the government to aggressively mobilize additional resource to augment funding for PSF (e.g., counterpart funding from LGUs and the private sector).

- **Finalize and adopt a roadmap for the institutionalization of Natural Capital Accounting (NCA) and valuation of ecosystem services.** Institutionalizing NCA will address constraints in collecting, monitoring, and reporting of data from the national and local governments, including academic and research institutions. This is because an integral part of NCA is valuation, which involves the estimation of monetary values for ecosystem assets and services for proper collection of fees from use of the natural capital. Pursuing a policy to institutionalize payments for ecosystem services, as well as polluters-pay principle may be enabled, as follows: (a) develop a local ENR metrics based on international frameworks such as System of Environmental-Economic Accounting and United Nations Framework for the Development of Environment Statistics; (b) collect baseline data for regular updating (e.g., biodiversity profiling, inventory, mapping and assessment of genetic resources products, and carrying capacity study) through support programs such as the implementation of the National Program on Wealth Creation from Genetic Resources,[14] among others; and (c) develop a working and updated database system to improve accessibility and provide better evidence on ENR management activities on the ground.

- **Finalize, submit, and support the implementation of the Nationally Determined Contributions (NDCs).** Key activities to operationalize the NDCs, upon its submission to the United Nations Framework Convention on Climate Change in 2018, include: (a) completion of the GHG inventory; (b) development of the implementation plan for the target sectors (e.g., energy, waste, industry, forestry and transport); (c) establishment of monitoring, reporting, and verification systems for the mitigation targets including adaptation and capacity needs; (d) assessment of the NDCs progress and its impact to achieving national priorities; and (e) identification of policies to support the implementation of the NDCs, particularly the mitigation actions.

  Also, there is a need to implement programs/investments with the private sector to meet the country's emission reduction targets under the NDCs: (a) renewable energy, energy-efficient facilities and equipment, and environmentally sustainable transport systems and green buildings *(See also Chapter 19)*; and (b) low carbon/more efficient production practices and technologies *(See also Chapters 8, 9, and 14)*.

[14] Tracking and benefit sharing system on the access and utilization of genetic resources, to be developed under this Program, will address biopiracy and optimize the economic potential of these resources for the benefit and welfare of local and indigenous peoples communities.

- **Implement the priority programs and projects (PAPs).** The priority PAPs summarized in the Public Investment Program 2017-2022 will operationalize the aforementioned strategies. Major PAPs will be implemented by DENR, DA (BSWM and BFAR), DOST (PAGASA, PHIVOLCS, and PCAARRD), NCIP, and DILG, among others.

Recommendations

To supplement and address the gaps on ensuring ecological integrity, clean and healthy environment, the following strategies are recommended for implementation of concerned agencies:

Table 20.1 Supplemental Strategies to Ensure Ecological Integrity, Clean and Healthy Environment

CHALLENGES	RECOMMENDED STRATEGIES	IMPLEMENTING AGENCIES
• Lack of a national framework that will integrate existing SCP initiatives » This limits effective implementation, monitoring, and reporting of progress and accomplishments across activities, especially on eco-labelling, green procurement, and ecotourism, among others	• Formulate a national framework to guide the implementation of SCP initiatives across sectors. A national framework is deemed critical to ensure that such activities are guided and geared towards the country's development goals. To initiate formulation of this framework, the following are deemed necessary: » Implement a program or project to assess circular economy[15] in the Philippine context and identify mechanisms towards the transition, such as: modifying socioeconomic system (e.g., rethinking of product design and lifespan extension activities along the value chain, strengthening repair and reuse industries, etc.); and improving regulatory frameworks, among others. » Develop incentive mechanisms to create an enabling environment for SCP adoption across all sectors (e.g., households, industries, micro, small, and medium enterprises). » Establish regulatory system to certify and test products and services on their compliance to environmental standards. • Upscale programs of the government on SCP to facilitate transformative interventions (e.g., prescriptive installation of energy efficient equipment/facilities in the government).	DENR/National Economic and Development Authority (NEDA) with private sector
• Fragmented and limited engagement of private sector, given its voluntary nature	• Aggressively implement programs and projects on SCP with the private sector. There is a need to integrate sustainable production practices into core business models and processes to enable the greening of the supply and demand sides. Similarly, the private sector's contribution should have reporting mechanisms to: » Help inform evidence-based decision making and collaboration among companies, government, and other stakeholders. » Replicate and accelerate best practices that provide innovative solutions to development challenges.	DENR/NEDA with private sector

[15] A system that keeps resources in use for as long as possible, extract the maximum value from them, then recover and regenerate products and materials at the end of each service life.