

# 20

# Ensuring Ecological Integrity, Clean and Healthy Environment





# Ensuring Ecological Integrity, Clean and Healthy Environment

The COVID-19 pandemic and the mobility restrictions that were imposed have redirected our attention to the most basic needs of air, water, and food and how these relate to human health. In fact, encroachment into natural habitats caused the transmission of zoonotic diseases, such as COVID-19 from animals to humans, posing greater societal risk. The shift towards sustainable development then becomes an urgent matter of survival.

Building on the reforms and accomplishments in the past three years of Plan implementation, the government will continue to improve the state of the environment and natural resources (ENR) and increase resilience of resource-dependent and vulnerable communities against the converging risks arising from natural and biological hazards under a changing climate. The sector's goals and targets will be realized by addressing long-standing issues on governance and monitoring and evaluation (M&E).

## Assessment and Challenges

**Assessment:** For the first three years of Plan implementation, stakeholders have increasingly been participating in transformative actions toward bringing back the benefits that Filipinos enjoy from environment and natural resources while improving resilience to climate and disaster risks. The following actions and reforms in the sector were put in place: (a) demonstration effect of rehabilitation efforts (e.g., Boracay and Manila Bay rehabilitation); (b) institutionalization of sector reforms through policy issuances and implementation (e.g., National Integrated Protected Areas System [NIPAS] Act, as amended by Republic Act [RA] 11038), Guidelines on Protected Area Suitability Assessment (PASA); (c) formulation of the Philippine Action Plan for Sustainable Consumption and Production (PAP4SCP); and (d) development of local climate change adaptation and mitigation/disaster risk reduction and management (CCAM/DRRM) plans and establishment of early warning systems.

However, current experience on the COVID-19 pandemic and the consequent imposition of community quarantine resulted in both negative and positive impacts on the ENR sector, which clearly manifested the interrelationship of environment and public health. On one hand, the restrictions on the movement of people during the quarantine and pandemic response measures and protocols have (a) caused limited patrolling, policing, and ground validation activities for wildlife and habitat protection, (b) generated more waste from healthcare facilities and households, (c) increased pressure on resource extraction as raw materials for additional quarantine facilities, and (d) increased vulnerability of resource-dependent communities to the economic and social impacts of the pandemic and natural hazards, especially with the onset of rainy season, which may be exacerbated by climate variability. On the other hand, the quarantine resulted in improvement in urban air quality and allowed many ecotourism

sites to start to recover their pristine state, thus encouraging behavior towards preservation and ecological restoration.

**Challenges:** In view of the new normal state arising from the COVID-19 pandemic, managing pollution and sustainable use of natural resources vis-a-vis addressing the threat of future pandemics amid climate change become even more challenging. In particular, poor waste management and pollution control exacerbate decline in environmental quality. Inadequate waste management facilities can increase the volume of untreated healthcare wastes which pose a greater threat to public health. Also, with the digitalization of most economic activities, harmful substances from unmanaged electronic wastes will contaminate land, air, and water – aggravating pollution and health risks. A lack of air and water pollution control measures can worsen the situation and even negate the environmental gains generated during the quarantine period. Further, ineffectual ENR governance and institutional arrangements undermine the effectiveness of protection, conservation, rehabilitation, and resilience measures. The national and sub-national governments have had limited capacity to manage multi-dimensional risks arising from natural and biological hazards, including climate change. This affects our response to mitigate the impacts and implement recovery measures. The low adoption of innovative technologies for enforcement and monitoring of wildlife and habitats also limits efforts to keep biodiversity intact and minimize zoonotic disease risks. Compounding these are the following long-standing challenges in the sector that need to be addressed:

- ***Issues on zoning, boundary delineation, and overlapping claims constrain efforts on the rehabilitation of natural resources.*** The absence of zoning, unresolved boundary conflicts in many LGUs, and outdated land

records and problems in land data capture pose challenges in: (a) achieving targets on issuance of residential free patents; (b) facilitating forestry-related investments; and (c) supporting preferential access of municipal fishers to coastal and marine waters, among others. These zoning and delineation issues stem primarily from the lack of national land and sea use, and permanent forest limit policies.

- ***Weak and fragmented M&E system in the sector prevents timely and appropriate interventions.*** This stems from the lack of an integrated M&E framework and inadequate capacity for the use of appropriate methodology, particularly for the collection and robust analysis of up-to-date ENR data. In fact, concerns on insufficient data capture from environmental monitoring stations and limited habitat inventory make it difficult to evaluate the effectiveness of ENR management interventions. Moreover, the methodologies being used to generate, monitor, and report data/information, are still inadequate, such as on (a) waste management (e.g., solid waste diversion rate, wastewater production vs. treatment capacity), (b) livelihood and other economic opportunities provided by ecosystems (e.g. ecotourism and biodiversity-friendly enterprises), and (c) resilience to the impacts of climate change and disasters (e.g., risk resilience index). Furthermore, existing review tools do not yet capture whether or not local plans (i.e., Comprehensive Development Plans [CDPs], Comprehensive Land Use Plans [CLUPs], Local Climate Change Action Plans [LCCAPs], and Local Disaster Risk Reduction and Management Plans [LDDRMPs]) are risk-informed and/or responsive to the vulnerability of a given locality.

## Assessment and Challenges

Table 20.1 presents the medium-term targets corresponding to each of the major outcomes, namely: (a) biodiversity and ecosystem services sustained; (b) environmental quality improved; and (c) resilience of resource-dependent and vulnerable communities increased.

*Table 20.1 Updated Plan Targets to Ensure Ecological Integrity, Clean and Healthy Environment*

INDICATOR	BASELINE VALUE (YEAR)	TARGETS			
		2020	2021	2022	END OF PLAN
Chapter Outcome: Ecological integrity and socioeconomic resilience of resource-dependent communities improved					
Subsector Outcome: Biodiversity and ecosystem services sustained					
Forest cover increased (in million, hectares [ha])	7.01 (2015)	Increasing			
Quality of coastal and marine habitats under NIPAS marine protected areas (MPAs) and other priority coastal and marine conservation areas improved					
Percentage of hard coral cover (HCC) in MPAs (in number of MPAs):					
No baseline data	2 (2018)	0	0	0	0
Poor (0-22%)	12 (2018)	14	9	6	6
Fair (>22%- 33%)	11 (2018)	11	10	12	12
Good (>33%-44%)	4 (2018)	4	10	10	10
Excellent (>44%)	7 (2018)	7	7	8	8
Percentage of seagrass cover in MPAs (in number of MPAs)					
No baseline data	11 (2018)	0	0	0	0
Poor (0-25%)	11 (2018)	22	17	15	15
Fair (26-50%)	10 (2018)	10	12	11	11
Good (51-75%)	3 (2018)	3	5	7	7
Excellent (76-100%)	1 (2018)	1	2	3	3
Number of free patents issued	57,822 (2016)	62,000	67,000	72,000	360,000

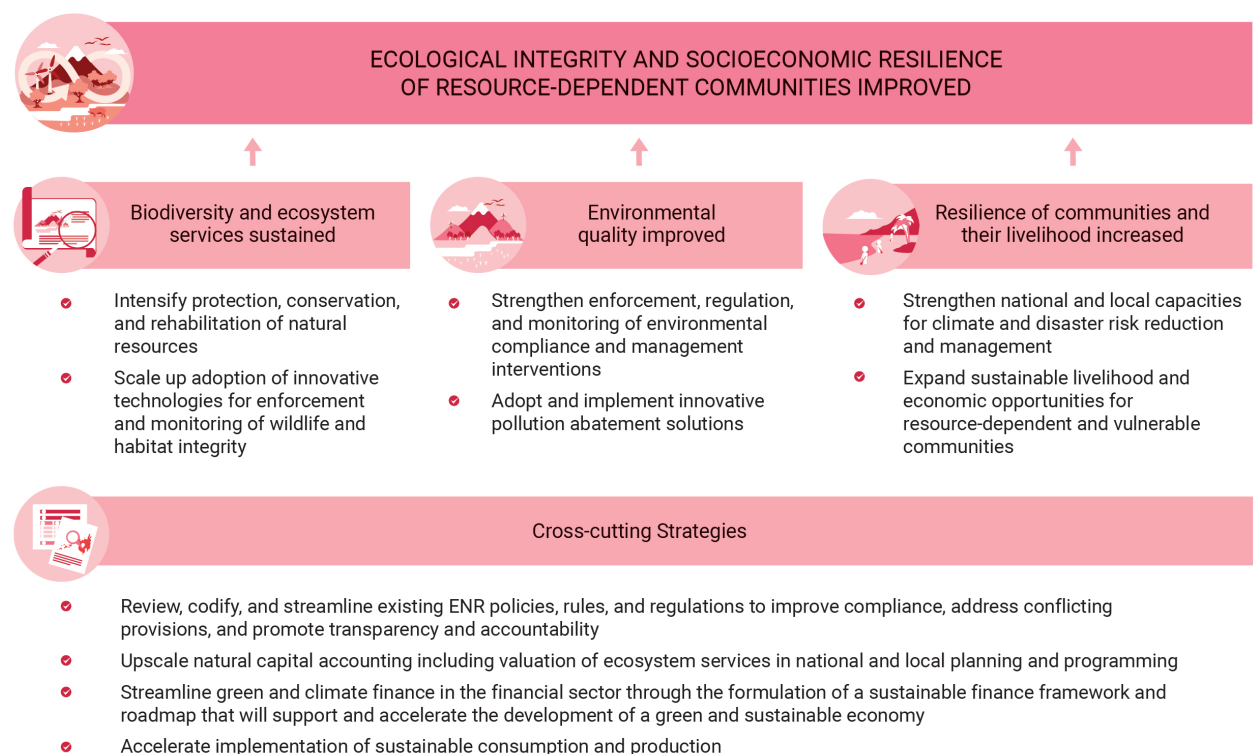
INDICATOR	BASELINE VALUE (YEAR)	TARGETS			
		2020	2021	2022	END OF PLAN
Subsector Outcome: Environmental quality improved					
Percentage of priority water bodies within water quality guidelines increased (e.g., Biochemical oxygen demand [BOD], dissolved oxygen [DO], potential of hydrogen [pH], phosphorous [P], temperature, total suspended solids [TSS], fecal coliform)					
Public water supply (%)	0 (2016)		Increasing		
Food production (%)	20 (2016)		Increasing		
Recreational (%)	87 (2016)		Increasing		
Percentage of highly urbanized and other major urban centers within ambient air quality guideline value (i.e., Particulate Matter [PM] 10 and PM 2.5) increased (%)	55 (2016)		Increasing		
Solid waste diversion rate increased (%)	Metro Manila (MM): 48; Outside MM: 46 (2015)	70	75	80	80
Percentage of healthcare waste managed (%)	66 (2016)	100	100	100	100
Area assessed and mapped for soil fertility status and soil fertility management increased (ha)	1,000,000 (2016)	450,000	450,000	450,000	2,700,000
Area of land degradation hotspots decreased (ha, cumulative)	2,300,000 (2016)	2,100,000	2,050,000	2,000,000	2,000,000
Subsector Outcome: Resilience of communities and their livelihood increased					
Percentage of local government units (LGU) with climate change and disaster risk-informed plans increased (%)	CLUP: 34 CDP: 0 (2016)		Increasing		
	LDRRMP: 0 (2016)	100	100	100	100
	LCCAP: 0 (2016)	74	75	100	100
Number of LGUs with operating early warning systems (EWS) in place increased	1,180 (2016)		Increasing		
Number of fully-functional DRRM operations centers increased	Permanent: 775 (2016)		Increasing		
	Temporary: 810 (2016)		Increasing		
Employment from biodiversity-friendly enterprises and other sustainable resource-based industries increased (cumulative)					
From NIPAS-PAs and ecotourism sites	1,484 (2016)		Increasing		
From reforestation and non-timber/agroforestry enterprises (i.e. National Greening Program [NGP], Community-based Forest Management [CBFM])	114,584 (2016)		Increasing		

# Strategic Framework

For a healthy and resilient Philippines, the government will intensify the protection, conservation, and rehabilitation of natural resources and accelerate the adoption of innovative technologies for enforcement and monitoring of wildlife and habitat. Law enforcement will be further strengthened to enhance compliance with environmental standards and safeguards and consequently improve environmental quality.

Innovative waste and pollution abatement measures will also be implemented to address the increasing waste and other pollutants generated from COVID-19 response measures, among others. The resilience of resource-dependent communities and their livelihood will be enhanced by strengthening capacities to undertake CCAM-DRRM actions and expanding sustainable economic opportunities from natural capital.

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



# Strategies

To achieve the Plan's targets, sector-specific and cross-cutting strategies will be implemented.

## Sustaining biodiversity and ecosystem services

To sustain biodiversity and the provision of ecosystem services, demonstration effects from natural resources protection, conservation, and rehabilitation efforts will be replicated and scaled up by building on the increased multi-stakeholder involvement and existing opportunities for inter-agency convergence. Capacities and competencies for data generation, assessment, and tracking of the state of natural resources, including its ecosystem services, will be enhanced. Complementing these are the necessary investments for research and development (R&D), as well as innovative monitoring technologies that will support habitat and wildlife protection and help safeguard the country from zoonotic diseases arising from unsustainable and illegal wildlife consumption and trade.

### **Intensify protection, conservation and rehabilitation of natural resources.**

Ecosystem-based actions and area-based management will continue to be prioritized to protect terrestrial and coastal and marine ecosystems while supporting the natural and assisted rehabilitation of degraded habitats. Conservation and sustainable use of natural resources will also be strengthened to ensure continuous provision of essential ecosystem goods and services to optimize their contribution to the economy, food security, and overall well-being of people.

## Terrestrial Ecosystems

### **Forest and critical watersheds including inland wetlands and caves**

- ***Prioritize interventions and investments to accelerate and improve forest protection and reforestation activities in critical watersheds.*** Integrated and science-based restoration approaches, such as forest landscape restoration, will be used to rehabilitate the remaining unproductive, denuded, and degraded forest areas, including critical watersheds. The LGUs, private sector, and communities will, once more, be engaged in community-based forest and watershed management to ensure that the remaining natural forests and reforested areas remain intact and protected. These strategies are geared towards ensuring uninterrupted supply of water to meet the country's demand for domestic, agricultural, health and sanitation, and industrial uses, and other forest ecosystem services.
- ***Enhance water conservation and efficiency measures to avert water shortage.*** Nature-based solutions, aside from hard infrastructure, will be pursued to enhance water use efficiency and conservation. Support will be given for the establishment of riparian buffer strips, restoration of natural floodplains, and aquifer recharge.
- ***Continue and scale up the conduct of comprehensive water resource assessment in groundwater critical areas and major river basins for sustainable water supply.*** This will support evidence-based planning and guide sustainable allocation of water resources, assessment, and simulation of current and potential future scenarios for surface and groundwater resources.
- ***Delineate production and protection forests.*** The areas within forestland that will be made available for development and private sector



investment (production zones) and those reserved for protection and conservation activities (protection zones) will be identified. This way, appropriate management arrangements in the forestlands can be established and protection and rehabilitation efforts for protected areas and ancestral lands can be harmonized.

- ***Optimize the implementation of the NIPAS Act, as amended, to improve the management of terrestrial protected areas.*** Specifically, the Department of Environment and Natural Resources (DENR) will (a) conduct regular monitoring of protected area management to gauge effectiveness, and (b) implement a biodiversity assessment and management system starting with determining baseline conditions of habitats and species (e.g., species richness and abundance).
- ***Improve the management and sustainable use of inland wetlands and their resources.*** The DENR will (a) conduct biophysical and sociocultural assessments of inland wetlands to determine those for conservation and rehabilitation; (b) strengthen enforcement of legal easement, hazard zones, and other environmental regulations to ensure sustainable use of inland wetlands in coordination with LGUs; and (c) continue to utilize market-based instruments to promote conservation and proper management of inland wetlands.
- ***Scale up sustainable management of caves and cave systems.*** The DENR cave survey, assessment, and classification activities will be scaled up to identify caves with high conservation value for protection. Policies to develop caves as ecotourism attractions and monitor/manage visitor impact, while ensuring compliance with safety and sanitation standards, will be formulated and implemented by the DENR, the Department of Tourism (DOT), and the LGUs.
- ***Conduct research on terrestrial ecological connectivity to support biodiversity corridors.*** Research studies that examine the ecological

needs and natural behavior of wildlife species will be pursued to inform development of biodiversity corridors. The corridors intend to link terrestrial protected areas to ensure uninterrupted areas of forest and other habitats, which support the entire life cycle of birds and other important wildlife species.

## Land and Mineral Resources

- ***Complete Rapid Land Tenure Appraisal (RLTA) to identify patentable lands and facilitate issuance of free patents (i.e., residential and agricultural).*** Partnership and coordination among land-related agencies and the LGUs will be intensified and land titling processes will be streamlined. These will hasten land survey and titling activities and address concerns on idle private lands for optimal use, such as for agriculture and forestry purposes, among others (*see Chapter 8*). The LGUs will also be encouraged to adopt their zoning ordinances based on best-use assessment of land assets and enable implementation of their CLUPs.
- ***Pursue the mapping of Indigenous Cultural Communities/Indigenous Peoples (ICCs/IPs) to facilitate the recognition of ancestral lands/domains.*** The country's various ICCs/IPs will be identified and mapped with the issuance of Certificate of Ancestral Domain Title (CADT) and Certificate of Ancestral Land Title (CALT), and provided with assistance in the preparation of their Ancestral Domain Sustainable Development and Protection Plan (ADSDPP). This will help address overlaps, particularly in forestlands, protected areas, and ancestral domains/lands.
- ***Rationalize and enhance the free, prior, and informed consent (FPIC) process for the protection of indigenous peoples' rights and interests in their ancestral domains.*** The National Commission on Indigenous Peoples (NCIP) will rationalize the process for issuance of FPIC clearances to promote genuine protection of the rights of IPs and ICCs, and ensure their active engagement in the

governance of natural resources within their ancestral domain based on their own plans and priorities.

- ***Improve compliance with environmental and social safeguards for mineral resources development.*** The DENR will:

- Strengthen regulatory enforcement, M&E, and reporting mechanisms through the:
  - Conduct of objective, science-based, and fact-finding reviews of large- and small-scale mining operations, including mineral processing plants;
  - Enhancement of the participation of the mining industry in the Extractive Industries Transparency Initiative to ensure greater transparency and accountability in the management of natural resources; and
  - Development and adoption of a more stringent monitoring instrument (e.g., scorecard) for assessing compliance of mines under exploration, production, and care and maintenance.
- Ensure that plans and programs for large-scale mining operations (e.g., Safety and Health Program, Final Mine Rehabilitation and/or Decommissioning Plan, Social Development and Management Program and Environmental Protection and Enhancement Program) and small-scale mining operations (e.g., Community Development and Management Plan and Potential Environmental Impact Management Plan) are aligned with the local land use and development plans;
- Continue research and development to determine the appropriate strategies that will address the mercury contamination of Palawan Quicksilver Mine, Inc. as part of the rehabilitation (i.e., bio-remediation), and facilitate the smooth turnover of management (i.e., protection and maintenance) to the LGU at the end of the project;
- Strengthen the *Minahang Bayan* scheme to avoid proliferation of illegal small-scale

mining activities and ensure that operations are undertaken only under legitimate contracts/permits and within legitimate/designated areas by:

- Revisiting the implementation of the People's Small-scale Mining Act of 1991 (RA 7076) particularly the definition and coverage of small-scale mining;
- Easing the application requirement of *Minahang Bayan* scheme; and
- Increasing the penalty provisions to approximate the value of environmental and health damages and intensify the anti-illegal mining efforts.

### Coastal and Marine Ecosystems

- ***Complete stocktaking of coastal and marine habitats and species diversity.*** The extent and condition of the country's coastal and marine habitats, such as coral reefs, mangroves, and seagrass beds, will be determined to support a more effective planning and programming for the sector. The species and genus diversity of these habitats will be assessed with the implementation of the Coastal and Marine Ecosystems Management Program (CMEMP) and the NIPAS Act, as amended, among others.
- ***Optimize the increased coverage of MPAs as a habitat of biologically and economically important species through MPA networking.*** In view of the declining performance of the fisheries sector (*see Chapter 8*), it is important to ensure that appropriate management measures are established in the country's MPAs, based on ecological connectivity and biophysical assessments. To scale up MPA networking, more ecological connectivity studies will be undertaken to effectively protect and conserve the entire life cycle of fish and other marine species.
- ***Pilot-test existing innovative technologies for rehabilitation of coastal habitats.*** Innovative technologies will be pilot-tested to fast-track rehabilitation of degraded coastal and marine

habitats (e.g., massive coral larval reseeded), and support replication and scaling-up.

- ***Complete delineation of municipal waters.*** Continuous support and technical assistance from the National Mapping and Resource Information Authority (NAMRIA) will be provided to LGUs to fast-track municipal water delineation, while the guidelines for delineation of municipal waters with offshore islands will be finalized by the Department of Agriculture - Bureau of Fisheries and Aquatic Resources (DA-BFAR). Spatial planning within the delineated municipal waters will also be pursued to determine the protection and multiple use zones.
- ***Enhance multi-stakeholder coordination and capacity on coastal and marine resources management aligned with the country's international commitments and related sector initiatives (e.g., coral triangle initiative on coral reefs, fisheries, and food security).*** Program convergence budgeting and cooperation among the DA, the DENR, and the Department of the Interior and Local Government (DILG), as well as between and among the LGUs, will be pursued to ensure complementary actions within national and locally-managed marine protected areas, fisheries management areas, and fish sanctuaries within municipal waters, and support ecosystem approach to fisheries management (EAFM) (see Chapter 8). Inventory and monitoring of locally-managed MPAs and other local coastal resource management (CRM) interventions will be conducted through the Fisheries Compliance Audit of the DILG.

### **Biodiversity and Genetic Resources**

To sustainably harness the economic potential of terrestrial, coastal, and marine biodiversity, and genetic resources, especially their medicinal and pharmaceutical properties for various zoonotic diseases, the following strategies will be pursued:

- ***Develop a system for access and benefit sharing (ABS) of wealth from genetic resources.*** The national policy framework on ABS will be

finalized and adopted, to enhance regulatory measures and facilitate sharing of economic benefits from the use of genetic resources and traditional knowledge. Permitting protocols on marine scientific research will also be strengthened.

- ***Develop a bioprospecting and biotechnology program to facilitate discovery and development of novel compounds and derivatives for pharmaceutical purposes.*** Priority will be given to studies on zoonosis in selected wildlife reservoirs and natural resources with potential antibacterial/antiviral properties and treatments that can be used for pharmaceutical applications.
- ***Establish a clear mechanism for encouraging private sector investment and civil society participation in biodiversity conservation and sustainable use.*** The DENR will formulate clear guidance and systems for facilitating private sector investment and promoting cohesive participation of civil society organizations (CSOs), given their vital role in raising public awareness on the benefits of keeping biodiversity intact.

### **Scale up adoption of innovative technologies for enforcement and monitoring of wildlife and habitat integrity.**

- ***Strengthen law enforcement and intensify the use of technological innovations for improved surveillance activities to combat illegal wildlife trade, and deter illegal, unreported, unregulated fishing (IUUF).*** The use of innovative technologies (e.g., unmanned aerial vehicles, Visible Infrared Imaging Radiometer Suite, satellite-based Vessel Monitoring System) will be intensified to help in patrolling and policing to protect wildlife, prevent habitat encroachment and emergence and spread of zoonotic infectious diseases, and combat IUUF. This will be complemented with stricter inspection protocols at checkpoints, airports, and seaports, to combat illegal wildlife trade.
- ***Modernize habitat monitoring and impact***

#### ***evaluation of management interventions.***

Available technologies and digital platforms (e.g., satellite image-sharing platforms, remote sensing, geospatial mapping) will be utilized for regular and real-time monitoring of terrestrial and coastal and marine habitats. This will facilitate modernized data generation and analysis for more efficient evaluation of impacts and assessment of effectiveness of various management interventions implemented.

## **Improving environmental quality**

The government, private sector, businesses, and individuals will be enjoined to take collective and concrete actions to achieve a clean and healthy environment. Strategies will focus on eliminating the long-term impact of pollution on biodiversity, the ecosystem, and public health.

#### **Strengthen enforcement, regulation, and monitoring of environmental compliance and management interventions.**

The enforcement, regulation, and monitoring of compliance with existing environmental laws and regulations will be intensified to implement the necessary operational mechanisms to address the impact of the COVID-19 pandemic, rapid urbanization, and climate change on environmental quality.

#### **Air Quality Management**

The air quality compliance monitoring activities of the DENR will be complemented by more aggressive implementation of the vehicle emission-testing program and no-contact apprehension policy of the Department of Transportation (DOTr) and the Land Transportation Office (LTO). The DENR will also designate attainment and non-attainment areas in existing airsheds and implement necessary action plans to comply with the National Ambient Air Quality Guidelines Values.

#### **• Upgrade air pollution control and emission regulatory systems**

- For mobile sources, prior to issuance of Certificate of Conformity (COC) by the DENR, the actual inspection of new imported motor vehicles will be strengthened to ensure compliance with the EURO IV Emission Limits requirement. The DENR, the DOTr, and the Department of Trade and Industry (DTI) will expedite the issuance of procedural guidelines on the National Motor Vehicle Inspection and Maintenance Program (NMVIMP) for public and private vehicles, and implement the public utility vehicle (PUV) modernization program. The Civil Aviation Authority of the Philippines (CAAP), in cooperation with the International Civil Aviation Organization (ICAO), will implement the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

- For stationary sources, the DENR will review the Emission Standards for Stationary Sources in attaining cleaner air quality in industrial and commercial areas. Streamlining the stack emission testing, installation of Continuous Emission Monitoring System (CEMS), permitting and inspection of industries, will be reinforced through the implementation of Industrial Emission Management Program (IEMP).

- For area sources, the DENR will provide support to the LGUs to strengthen the implementation of environmental local ordinances (e.g., ban on smoking in public places and open burning or *sigá*), especially within designated airsheds.

#### **• Modernize air quality monitoring systems of the DENR-EMB**

- Develop a more stringent air quality index for PM 2.5, standard for regulating and monitoring black carbon (i.e., PM1), and ambient air quality standards/guideline values for Hazardous Ambient Air Pollutants.



- Repair, upgrade, and increase the number of air quality monitoring stations and install backup systems to ensure adequate data capture, including regular preventive maintenance to lessen equipment breakdown.
- Develop and utilize digital, modelling, and remote sensing technologies for air pollution monitoring in partnership with the Department of Science and Technology (DOST).
- Develop and/or utilize locally-available technologies for ambient and indoor air pollution control.
- Strengthening marine pollution regulations and expanding shore reception facilities in seaports for the collection and disposal services of wastes generated from ships through collaboration among concerned agencies (e.g., DOTr, Philippine Coast Guard [PCG], Maritime Industry Authority [MARINA], Philippine Ports Authority [PPA], and Cebu Port Authority [CPA]).

***Accelerate the establishment of domestic wastewater treatment facilities and its conveyance system.*** The DPWH, the DENR, and the DOH will continue to enhance the institutional and technical capacities of LGUs, water districts, and concerned entities to implement sewerage and septage projects under the National Sewerage and Septage Management Program (NSSMP), and mobilize other financial support on wastewater treatment.

## Water Quality Management

Strengthen the regulation of point sources (e.g., discharges from industries and treatment plants) and nonpoint sources (e.g., agricultural farms and residential areas) of pollution by:

- Expediting the nationwide inventory and classification of waterbodies, and establishment of water management systems in priority waterbodies;
- Refining and expanding the Environmental User Fee System (EUFS) to cover all pollution sources (i.e., domestic, industrial, commercial, and agricultural), and to properly reflect the value of environmental damages;
- Designating the non-attainment areas<sup>1</sup> for waterbodies where pollutants exceed the water quality guidelines to prevent new sources of effluent concentration and discharge from adversely affecting water quality;
- Designating and operationalizing the required number of Water Quality Management Areas (WQMAs), including updating of its Action Plans; and
- ***Modernize water quality monitoring systems by:***
  - Repairing, upgrading, and increasing the number of fully-operational ambient water quality monitoring stations; and
  - Enhancing capacity for laboratory analysis and exploring the use of advanced remote sensing and unmanned aerial vehicle (UAV) technologies in monitoring water quality.

## Land Quality Management

To manage the potential increase in volume of infectious waste materials (e.g., disposable masks and PPEs) and solid wastes from single-use packaging materials in households, health care facilities, and other establishments, the LGUs will need to prioritize the (a) approval and/or implementation of their approved 10-year solid waste management (SWM) plans; (b) closure of dumpsites; and (c) clustering of waste management facilities through inter-LGU partnership.

<sup>1</sup> Pursuant to the Philippine Clean Air Act of 1999 (RA 8749), the DENR in coordination with the LGUs, shall designate these non-attainment areas of waterbodies where pollutants have exceeded water quality guidelines to prevent new effluent concentration and discharges.

***Fast-track the implementation of waste management measures for solid, toxic, and hazardous wastes, including electronic waste, especially at the local level through:***

- Engagement among SWM regulators, users, service providers, and intermediaries to ensure that cities, municipalities, and barangays have fully-functional materials recovery facilities (MRF) by conducting regular onsite maintenance and operational trainings;
- Capacity development of the LGUs to implement a proper monitoring and reporting scheme on SWM, development of methodology for estimation of waste diversion, and strengthening the monitoring and evaluation of effectiveness of SWM programs by the National Solid Waste Management Commission (NSWMC);
- Implementation of community-based composting of food wastes and other biodegradable materials and linking households to composting market/industry for commercial viability;
- Formulation of a policy on the management and monitoring of e-wastes and institutionalization of extended producer responsibility (EPR); and
- Streamlining the management of health care and infectious wastes, especially at the community and household levels by:
  - Ensuring compliance of healthcare facilities<sup>2</sup> and treatment technologies<sup>3</sup> with the standards for hazardous waste management and handling new pathogens or viruses;
  - Modernizing and increasing the number of Treatment Storage and Disposal (TSD) facilities for handling infectious

healthcare wastes. Support will be given to mobilize public-private investments in the construction and accreditation of additional TSD facilities;

- Improving disposal of healthcare wastes at the household or barangay level, especially in areas with limited access and capacity to transport to TSD facilities; and
- Establishing partnerships between and among LGUs and TSD-accredited facilities to ensure that untreated healthcare wastes do not reach MRFs and sanitary land fills (SLF).

• ***Promote sustainable land management (SLM) to arrest land degradation.***

- Integrate SLM practices into national and local development plans;
- Improve local capacities and skills for planning and management of land resources, and strengthen awareness and advocacy campaigns; and
- Scale up and promote SLM in production landscapes and within multiple-use zones, among others.

**Adopt and implement innovative pollution abatement solutions.**

- ***Support reforms on mass transport system, including the expansion of ride-sharing services*** to reduce proliferation of vehicles, and promote the production and utilization of eco-friendly vehicles, as well as the use of non-motorized transport through the establishment of bicycle lanes and replication of local bike-sharing systems (*see Chapter 19*).
- ***Encourage development of walkable cities and major urban areas*** to improve built-up systems

<sup>2</sup> Based on the DOH Health Care Waste Management Manual and the DENR Revised Procedures and Standards for the Management of Hazardous Wastes.

<sup>3</sup> New and existing technologies need to undergo Environmental Technology Verification of the DOST-Industrial Technology Development Institute and comply with the applicable environmental standards and the DOH-required level of microbial destruction or inactivation to eliminate bacteria/virus.

of urban environment, and expand green and open urban spaces and green infrastructure to improve health and well-being of people and the environment (e.g., reduce carbon emissions).

- **Support wastewater reclamation/recycling and reuse** for next intended use (e.g., indoor use and irrigation purposes) and promote other cleaner production techniques to control the discharge of pollutants (e.g., use of organic fertilizers and biopesticides).
- **Strengthen public-private partnerships (PPP)** to create opportunities for low-cost pollution-control and treatment technologies. Capacity development of the private sector and promotion of available incentive mechanisms to adopt cleaner technologies in its operations (e.g., factories and power plants) will be encouraged.
- **Establish synergies with research and development institutions** to undertake studies on technological solutions and water pollution abatement measures.

## Increasing resilience of communities and their livelihood

### Strengthen national and local capacities for climate and disaster risk reduction and management.

In partnership with research institutions and development organizations, the government will prioritize the development and adoption of appropriate baseline information and indicators to measure resilience of ecosystems and communities (i.e., resilience index), and set up a systematic database to regularly monitor sectoral emissions reduction. To ensure the implementation and effectiveness of CCAM and DRRM initiatives vis-à-vis Sustainable Development Goals (SDGs), Sendai Framework for Disaster Risk Reduction, and Paris

Agreement commitments, the following strategies will be implemented:

- **Enhance accessibility of climate and geospatial information and services by:**
  - Developing a data protocol to facilitate access and sharing of available scientific researches and studies, geospatial information, climate trends and projections, risk estimation models, gender-related variables, and disaggregated loss and damage datasets on vulnerable and affected groups. Technical support will be provided to LGUs on integrating these information in the local planning databases; and
  - Establishing integrated knowledge management systems to serve as platforms for sharing, managing, and reporting climate change/disaster risk reduction (CC/DRR)-related information.
- **Integrate CCAM-DRR considerations in public investment programming processes.** The NEDA and other concerned implementing agencies will ensure that climate and disaster risk parameters are mainstreamed in the design and ex-ante evaluation of programs and projects toward ensuring their long-term sustainability.
- **Fast-track and prioritize the development of guidelines and standard quality assurance review tools and streamline local planning and review mechanisms** (i.e., DILG for CDPs; Department of Human Settlements and Urban Development [DHSUD] for CLUPs; Office of Civil Defense - National Disaster Risk Reduction and Management Council [OCD-NDRRMC] for Local DRRM Plans; and Climate Change Commission [CCC] for LCCAPs).
- **Strengthen existing mechanisms to harmonize the monitoring of CCAM and DRRM expenditures at the national and local levels.** The Department of Budget and Management (DBM), the CCC, and the OCD-NDRRMC will prioritize and enhance climate budget

tagging to cover actual expenditures and establish a similar budget-tagging arrangement for DRRM.

- ***Enhance the capacity of the government to address the multidimensional risks arising from natural hazard events, including biological hazards by:***
  - Updating the local DRRM and LCCAPs to include public health emergencies and climate and disaster risk parameters to ensure better preparedness and response to pandemics while mitigating impacts of climate-related disasters;
  - Sustaining support to promote business and public service continuity planning and ensuring the development of climate and disaster-resilient structures and designs following established measures and standards;
  - Providing technical assistance to national government agencies (NGAs), LGUs, private sector, and community organizations to: (a) maximize access to CCAM and DRRM financing and risk transfer mechanisms; and (b) implement ecosystem-based adaptation (EbA) measures that are risk-informed, gender-responsive, and sensitive to the needs, benefits, and priorities of men and women, while taking into account indigenous knowledge systems; and
  - Undertaking gender analysis to identify gender issues related to capacity of both men and women, especially in vulnerable communities, to engage in decision-making processes, project development, implementation, and monitoring of CCAM and DRRM actions.

**Expand sustainable livelihood and economic opportunities for resource-dependent and vulnerable communities.**

As upland and coastal communities remain among the poorest sectors of society, the development of more sustainable livelihood and other economic opportunities will be pursued in cooperation with

relevant agencies (e.g., DTI, Department of Social Welfare and Development [DSWD]) to increase their socioeconomic resilience.

- ***Intensify agroforestry development and establishment of commercial forest plantations.*** Commercial forest plantations within integrated forest management agreement (IFMA), community-based forest management agreements (CBFMAs), and applicable areas in ancestral domains will be developed based on comparative advantage. There will be investment support packages to encourage diversification especially towards fast-growing native species that yield high-value timber. Community and family-based agroforestry farms, and related biodiversity-friendly enterprises will be established. Through these, traditional crop varieties will be cultivated and products using indigenous materials will be developed, such as eco-friendly personal protective equipment (PPE). To ensure sustainability and international competitiveness of the country's forest-based products, registry and forest certification systems will be institutionalized.
- ***Pursue sustainable and resilient fish- and marine-based industries for blue economy development.*** Sustainable fish- and marine-based industries<sup>4</sup> will be developed and promoted using innovative technologies and practices and with proper sanitary and safety protocols. Climate-resilient post-harvest facilities will be provided to support value-adding activities in coastal communities. Existing community fish landing centers will be operationalized by the BFAR to cater to the needs of coastal communities for cold storage and other related support services. The overall economic contribution of the blue economy will be accounted through the ocean economy satellite accounts of the Philippine Statistics Authority (PSA).
- ***Develop and promote ecotourism and cultural sites within ecological limits, and sanitary and safety standards.*** The following will be pursued: (a) replicate and scale up carrying capacity studies

<sup>4</sup> These industries include (a) sustainable fisheries and aquaculture; (b) ocean energy, offshore, and gas exploration; (c) shipping/marine transportation and shipbuilding; (d) coastal tourism; and (e) marine biotechnology, among others.



to support the implementation of ecotourism activities and development of new ecotourism sites; (b) develop ecotourism facilities and environment-friendly infrastructure, including ecotourism-related products and services to support livelihood of communities following proper safety and sanitation protocols; (c) conduct risk assessment necessary for developing health and safety plans and guidelines; and (d) finalize the methodology to account for employment generated from ecotourism.

- *Fast track adoption and implementation of green jobs assessment and certification criteria/guidelines, green jobs human resource development plan, and tools to monitor and account green jobs.*

## Cross-cutting strategies

**Review, codify, and streamline existing ENR policies, rules, and regulations to improve compliance, address conflicting provisions, and promote transparency and accountability.** A comprehensive assessment and review of existing ENR laws and policies, including governance arrangements, will be undertaken. This is deemed necessary to address the overlaps and conflict in existing policies toward improving compliance, transparency, and accountability across all levels of governance. An institutional review and assessment of the agencies' existing mandates vis-a-vis the human resources, as well as technical and financial capacity required, will be conducted. Findings from this assessment will help identify concrete recommendations to improve environmental governance and better address challenges in the sector.

**Upscale natural capital accounting (NCA) including valuation of ecosystem services in national and local planning and programming.** The NCA provides important data and information on the stock and status of the country's ecosystems and resources. It is a tool that (a) allows more systematic collection, monitoring, and reporting of

data from both the national and local governments, including academic and research institutions; (b) facilitates informed decision-making of political leaders and local communities on conservation areas; (c) assesses trade-offs and provides better alternatives; (d) enables income and employment generation in the rural areas and creates wealth for the nation; and (e) provides incentives for the management of ENR (e.g., payments for ecosystem services).

**Streamline green and climate finance in the financial sector through the formulation of a sustainable finance framework and roadmap that will support and accelerate the development of a green and sustainable economy.** This includes the issuance of guidelines on green/climate finance flows, including green finance taxonomy, and protocol/processes for implementation, regulation, transparency, and institutional arrangements. Building capacities of regulators and market participants in the financial sector on internalizing environmental and climate and disaster risks in the current government and private systems will also be prioritized.

**Accelerate implementation of sustainable consumption and production.** In the remaining Plan period, the PAP4SCP will be rolled out to guide the government and stakeholders' programmatic actions in the short term (2022-2023), medium term (2023-2030), and long term (2030-2040). The goal is to influence behavioral change at the national, community, and individual levels, especially in consuming and producing more green goods and services, and practicing more sustainable and climate-smart lifestyles. The PAP4SCP<sup>5</sup> calls for (a) the valuation of economic, social, and environmental costs and benefits of production and consumption processes by accounting the stock of natural resources and flow of ecosystem services, and (b) a set of interventions, schemes, and innovative technologies, as well as enhanced environmental education, to ensure efficient use and equitable allocation of natural resources.

<sup>5</sup> Actions are categorized into the following: (a) policy and regulation; (b) research and development, innovation, and technology; (c) infrastructure; and (d) promotion and education.

# Legislative Agenda

*Table 20.2 Legislative Agenda to Ensure Ecological Integrity, Clean and Healthy Environment*

LEGISLATIVE AGENDA	RATIONALE
National Land Use Bill	The bill aims to provide an institutional mechanism for integrating existing sector-specific land use laws and institutionalize land use planning, as basis for the rationalization, management, and development of the country's land resources.
Philippine Genetic Resources Access and Benefit-Sharing (PGRABS) Bill	The proposed measure aims to provide and institutionalize a policy framework on access and benefit sharing from the utilization of genetic resources aligned with the country's commitments to the Nagoya Protocol.
Integrated Coastal Management (ICM) Bill	This seeks to adopt ICM as a national strategy to ensure the sustainable development of the coastal and marine environment and establish supporting mechanisms for its implementation.
Amendment of the Wildlife Act	This aims to strengthen the protection of the country's wildlife resources by (a) increasing the fees and penalties for violators and (b) defining and implementing sanitary and phytosanitary measures to address possible entry of zoonotic infectious disease into the country (e.g., standards and protocols for crops, livestock, fisheries, and wildlife).
Forest Limit Bill	The proposed bill intends to delineate the specific limits of forestlands for the conservation, protection, and development of the country's forest resources.
Sustainable Forest Management Bill	This seeks to institutionalize the (a) development of sustainable forest management strategy based on the allocation of forestland uses (i.e., production and protection zones), (b) enhancement of private sector participation, and (c) forest certification, monitoring, assessment, and reporting system.
Maritime Zones Bill	This bill intends to define the limits of the different maritime zones over which the country can exercise sovereignty (i.e., territorial sea) and sovereign rights (i.e., exclusive economic zone). This will support the implementation of measures to sustainably manage fisheries and other resources in these maritime zones.
Philippine Archipelagic Sea Lanes Bill	This intends to define the limits of Archipelagic Sea Lanes. Foreign ships will have to confine their navigation within the sea-lanes to ensure that vessels will not pass through MPAs and marine habitats are protected from shipping-related activities.
Proper Management of Electronic Wastes (E-Wastes) Bill	The proposed bill intends to institutionalize mechanisms and guidelines/standards for proper collection, handling/storage, and disposal of electronic wastes.

LEGISLATIVE AGENDA	RATIONALE
Department of Disaster Resilience Bill	This bill aims to provide a clear operational framework to address the fragmented institutional functions and actions among concerned agencies on climate change and disasters by establishing a Department that will serve as the primary agency responsible for leading the coordination, implementation, monitoring, and reporting on climate change and DRRM.
Philippine Environmental Assessment System to cover Strategic Environmental Assessment (SEA) Bill	The proposed measure aims to ensure that possible environmental consequences of policies, plans, and programs are fully accounted for at the earliest stage of decision-making consistent with economic and social considerations. This will also strengthen the use of the Environmental Impact Statement System, as a planning and monitoring tool.
Amendment of the Ecological Solid Waste Management Act, Clean Water Act, Clean Air Act, and Toxic Substances, Hazardous and Nuclear Wastes Control Act	The proposed legislation seeks to provide higher penalties and stringent measures for environmental protection. It also intends to bridge the policy gap between municipal waste management and health care waste management by streamlining protocols on the management of hazardous wastes, particularly infectious wastes, at the community and household levels. These bills will also contain better enforcement against mixed waste collection and biodegradables in landfills and incentives for home composting, as well as LGU support for at-source segregation and composting.
Green Public Procurement Bill	This bill aims to strengthen green public procurement by enhancing compliance of procuring entities in integrating green criteria in the procurement guidelines, including bidding documents and technical specifications, and in setting clear LGU involvement based on market readiness.
Extended Producer Responsibility (EPR) Bill	This aims to enhance product stewardship among producers/manufacturers nationwide, who will be made responsible for the disposal and treatment of post-consumer products and help minimize pollution, especially from packaging materials of the food and beverage sector at source.
Safe Pathways Bill	The proposed bill intends to provide safe and convenient pathways for pedestrians and nonmotorized vehicles (e.g., walkways and bike lanes) and integrate these in the infrastructure development agenda. The Bill intends to create a network of pop-up bicycle lanes to connect users to essential destinations (e.g., medical facilities), designate a network of people-oriented emergency pathways, and mandate the provision of adequate parking spaces for bicycles and other non-motorized vehicles, as far as practicable, among others.
Maritime Safety, Security and Prevention of Ship-Sourced Pollution Bill	This aims to provide a Maritime Code that will implement and enforce international maritime instruments, of which the country is a state-party. These include the International Convention for the Prevention of Pollution from Ships, and its Protocols.

