



Republic of the Philippines
Department of Environment and Natural Resources
Visayas Avenue, Diliman, Quezon City
Tel. Nos. (632) 929-66-26 to 29 • (632) 929-62-52
Website: <http://www.denr.gov.ph> / E-mail: web@denrgov.ph

MEMORANDUM

FOR : **The Directors**
Biodiversity Management Bureau
Ecosystems Research and Development Bureau
Environmental Management Bureau
Forest Management Bureau
Land Management Bureau
Mines and Geosciences Bureau

FROM : **The OIC-Director**
Policy and Planning Service

SUBJECT : **DRAFT DENR ADMINISTRATIVE ORDER ON THE
GUIDELINES ON MAINSTREAMING, CASCADING AND
INSTITUTIONALIZING CLIMATE CHANGE CONCERNS IN
THE ENR PRIORITY PROGRAMS**

DATE : **04 MAR 2021**

Forwarded herewith, for your concurrence, is the draft DAO entitled "*Guidelines on Mainstreaming, Cascading and Institutionalizing Climate Change Concerns in the ENR Priority Programs*".

The policy was drafted by the Climate Change Service (CCS) in order to: (1) adopt the identified climate change responsive indicators for the DENR priority programs and projects in the annual work and financial plans of the DENR Offices; (2) identify the corresponding targets and programs, projects and activities (PAPs) for the climate change responsive indicators; (3) define the responsibilities of the bureaus, regional offices and concerned offices in mainstreaming climate change in the DENR priority programs and projects; and 4) determine the needed actions or interventions to enhance and institutionalize mainstreaming of climate change in the DENR priority programs and projects, and such other programs that may be prioritized by the Department.

This policy was deliberated by the DENR-Policy Technical Working Group (PTWG) on 30 September 2020. Based on the agreement during the said meeting, the PTWG Secretariat shall draft the Completed Staff Work (CSW) and shall forward the revised draft policy for vetting by the Bureau Directors.



Salient Features of the draft DAO

Legal Basis

Pursuant to Executive Order 192, s. 1987 or the Reorganization Act of the DENR, Republic Act No. 9729 or the Climate Change Act of 2009, and Section 2(g) of Republic Act No. 10121 or the Philippine Disaster Risk Reduction and Management Act of 2010, there is a need to integrate the disaster risk reduction and climate change in development processes such as policy formulation, socio-economic planning, budgeting and governance.

Scope and Coverage

- a. The guidelines shall cover the mainstreaming of the identified climate-responsive indicators into the DENR priority programs and the respective lead offices, in consonance with the prescribed program expenditure classification (PREXC); and
- b. It shall also cover the Risk Resiliency Programs to be implemented in the 17 climate vulnerable provinces for the period 2020-2022 and other priority areas that may be identified by the Department.

Implementation of Risk Resiliency Program (RRP) in the 17 priority climate-vulnerable provinces shall be consistent with Key Investment Areas (KIAs), and such other priority KIAs that may be identified by the Department:

1. Community Livelihood, and Enterprise Continuity Program
2. Integrated Water Resources Management Program
3. Enhancing Coastal Protection Program
4. Climate and Disaster Information Services Program
5. Seismic Resiliency Program

Action Requested

Should you concur with the proposed DAO, please notify this Office in writing **on or before 12 March 2021**. Otherwise, your lack of feedback shall be considered as your concurrence or no objection to the said proposed policy, which we shall endorse for vetting by the Undersecretaries prior to the approval by the Secretary.

Attached is the draft DAO "*Guidelines on Mainstreaming, Cascading and Institutionalizing Climate Change Concerns in the ENR Priority Programs*"

For your consideration and preferential action, please.


MELINDA C. CAPISTRANO



Republic of the Philippines
Department of Environment and Natural Resources

Visayas Avenue, Diliman, Quezon City, 1100
Tel. Nos. (632) 929-66-26 to 29 • (632) 929-62-52
929-66-20 • 929-66-33 to 35 • 929-70-41 to 43

MEMORANDUM

FOR : The OIC- Director
Policy and Planning Service

FROM : The OIC-Director
Climate Change Service

SUBJECT : DRAFT DENR ADMINISTRATIVE ORDER ON THE
GUIDELINES ON MAINSTREAMING CLIMATE CHANGE
CONCERNS IN THE ENR PRIORITY PROGRAMS

DATE : 22 January 2021

This Office respectfully submits the final version of the draft DENR Administrative Order (DAO) on the Guidelines on Institutionalizing Climate Change Concerns in the ENR Priority Programs.

The said guidelines were reviewed by the Policy Technical Working Group (PTWG) on 30 September 2020, and the comments and the recommendations raised during the meeting were considered in the final draft of the guidelines, as follows:

1. The rationale provision was deleted in the guidelines;
2. Section on "Definition of Terms" was added with the enumerated terms to define;
3. Integration/merging of Sections 8 and 9 which dealt on roles and responsibilities of the concerned offices; and
4. Prescribed provisions such as separability, repealing and effectivity clause were supplied.

Moreover, we would remain in our position of maintaining the subject title of "mainstreaming" as this is cognizant with Republic Act No. 9729.

Attached is the enhanced draft administrative order, incorporating the comments/recommendations as discussed during the said meeting.

For consideration.

ELENIDA DR. BASUG



Republic of the Philippines
Department of Environment and Natural Resources

Visayas Avenue, Diliman, Quezon City, 1100
Tel. Nos. (632) 929-66-26 to 29 • (632) 929-62-52
929-66-20 • 929-66-33 to 35 • 929-70-41 to 43

DENR Administrative Order
No. 2021-_____

SUBJECT : GUIDELINES ON MAINSTREAMING, CASCADING AND INSTITUTIONALIZING CLIMATE CHANGE CONCERNS IN THE ENR PRIORITY PROGRAMS

Pursuant to Executive Order 192, s. 1987 or the Reorganization Act of the DENR, Republic Act No. 9729, or the Climate Change Act of 2009, and Section 2(g) of Republic Act No. 10121, or the Philippine Disaster Risk Reduction and Management Act of 2010, there is a need to integrate the disaster risk reduction and climate change in development processes such as policy formulation, socio-economic planning, budgeting and governance. The following guidelines on mainstreaming, cascading and institutionalizing climate change concerns in the environment and natural resources (ENR) priority programs are hereby issued for the guidance and compliance of all concerned:

Section 1. Basic Policy

It is the policy of the State to provide the full protection and the advancement of the right of the people to a healthful ecology in accord with the rhythm and harmony of nature. As such, the State shall establish the guidelines in order to mainstream climate change concerns in the environment and natural resources (ENR) priority programs.

Section 2. Objectives

These guidelines are hereby promulgated to:

- a. adopt the identified climate change responsive indicators for the DENR priority programs and projects in the annual work and financial plans of the DENR Offices;
- b. identify the corresponding targets and programs, projects and activities (PAPs) for the climate change responsive indicators;
- c. define the responsibilities of the bureaus, regional offices and concerned offices in mainstreaming climate change in the DENR priority programs and projects; and
- d. determine the needed actions or interventions to enhance and institutionalize mainstreaming of climate change in the DENR priority programs and projects, and such other programs that may be prioritized by the Department.

Section 3. Scope and Coverage

- a. The guidelines shall cover the mainstreaming of the identified climate-responsive indicators into the following DENR priority programs and the respective lead offices, in consonance with the prescribed program expenditure classification (PREXC):

| Priority Programs | Program Title based on the PREXC Structure |
|--|---|
| 1. Enhanced National Greening Program | Forest Development, Rehabilitation & Maintenance and Protection |
| 2. Intensified Forest Protection and Anti-Illegal Logging | Natural Resources Management Arrangement/Agreement and Permit Issuance |
| 3. Enhanced Biodiversity Conservation | Protected Areas Development and Management |
| 4. Scaling -Up Coastal and Marine Ecosystem | Coastal and Marine Ecosystems Rehabilitation |
| 5. Geo-Hazard Assessment, Groundwater Resource Assessment and Responsible Mining | Natural Resources Sustainably Managed |
| 6. Improved Land Administration and Management | Land Survey, Disposition, and Records Management |
| 7. Manila Bay Clean-up | Development, Updating and Implementation of the Operational Plan for the Manila Bay Coastal Management Strategy |
| 8. Clean Air | Implementation of Clean Air Regulation |
| 9. Clean Water | Implementation of Clean Water Regulation |
| 10. Solid Waste Management | Implementation of Ecological Solid Waste Management Regulations |

- b. The guidelines shall also cover the Risk Resiliency Programs to be implemented in the following 17 climate vulnerable provinces for the period 2020-2022, and other priority areas that may be identified by the Department.

| Year | Regions | Priority Climate-Vulnerable Provinces |
|------|------------------------------|--|
| 2020 | R5 R7 R8 R12 R13 | Masbate, Sorsogon; Negros Oriental; Western Samar; Saranggani; Surigao del Norte, Surigao del Sur, Dinagat Islands |

| | | |
|------|--|---|
| 2021 | R5 R7 R8 R9 R10 R12 R13 | Masbate, Sorsogon; Negros Oriental; Western Samar, Southern Leyte, Eastern Samar; Zamboanga del Norte; Bukidnon; Saranggani, Sultan Kudarat, North Cotabato; Surigao del Norte, Surigao del Sur, Dinagat Islands |
| 2022 | R5 R7 R8 R9 R10 R12 R13 BARMM | Masbate, Sorsogon; Negros Oriental; Western Samar, Southern Leyte, Eastern Samar; Zamboanga del Norte; Bukidnon; Saranggani, North Cotabato, Sultan Kudarat; Surigao del Norte, Surigao del Sur, Dinagat Islands; Maguindanao, Sulu, Lanao del Sur |

Implementation of Risk Resiliency Program (RRP) in the 17 priority climate-vulnerable provinces shall be consistent with the Key Investment Areas (KIAs), and such other priority KIAs that may be identified by the Department:

1. Community Livelihood, and Enterprise Continuity Program
2. Integrated Water Resources Management Program
3. Enhancing Coastal Protection Program
4. Climate and Disaster Information Services Program
5. Seismic Resiliency Program

Section 4. Definition of Terms

- a. Climate Change –refers to change in climate that can be identified by changes in the mean and/or variability of its properties and that persists for an extended period typically decades or longer, whether due to natural variability or as a result of human activity (RA 9729)
- b. Disaster Risk Reduction - the concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposures to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events. (RA 10121 –NDRRMC)
- c. Ecosystem-based approach - The “ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way” and which aspires to maintain the natural structure and functioning of ecosystems. Ecosystem-based approaches address the crucial links between climate change, biodiversity and sustainable resource management and thus provide multiple benefits.

Implementing such approaches can contribute to both the reduction of greenhouse gas emissions and the enhancement of sinks as well as improve biodiversity conservation, livelihood opportunities and health and recreational benefits (CBD)

- d. Hazard - a dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihood and services, social and economic disruption, or environmental damage. (RA 10121 –NDRRMC)
- e. Mainstreaming - The integration of policies and measures that address climate change into development planning and sectoral decision-making (RA 9729).
- f. Cascading – Refers to the integration of climate responsive indicators in the bureau, regional, provincial and municipal plans /programs to guide them in the priority programs implementation at the field level.
- g. Institutional Arrangements – Generally understood as a set of agreements on the division/unit of the respective responsibilities of agencies involved in the mainstreaming of climate change concerns into ENR strategies/programs.
- h. Nature-based solutions are actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits. <https://www.iucn.org/theme/nature-based-solutions>
- i. Risk Assessment - a methodology to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services livelihood and the environment on which they depend (RA 10121).
- j. Climate-Responsiveness– are set of criteria designed to address a particular set of development goals, problems and opportunities. They are adequately thought out in the context of climate change, land use change, and other key natural and human related stressors, able to address the fundamental factors that hinder the attainment of the desired state.
- k. Climate Vulnerable Provinces - are the priority vulnerable provinces identified to be addressed by the Cabinet Cluster on Climate Change Adaptation, Mitigation and Disaster Risk Reduction Performance Roadmap.
- l. Ecosystems and Watershed Observation Networks - a platform to collect information for the continuous monitoring of changes in the ecosystems and watersheds due to climate change and human activities.
- m. Green-Development Pathways – a green economy development concepts to promote economic diversification and growth, social inclusiveness, and sustainable management of natural resources through integration, matching and

adaptation, as well as harmonization between the principle of green growth and national policy.

- n. Investment Portfolio Risk Resiliency (IPRR) Plan – planning instrument of the RRP through which CCAM-DRR will determine which investments to endorse for budget support and financing from external sources.
- o. IPCC Special Report on Global Warming of 1.5– an IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.
- p. Key Investment Areas – are focus area of the Risk Resiliency Program which are linked to the outcomes of the Cabinet Cluster on Climate Change Adaptation, Mitigation and Disaster Risk Reduction Performance Roadmap.
- q. Multi-Sectoral Process refers to deliberate collaboration among various stakeholder of the CCAM-DRR and the PCB-RRP to jointly achieve a shared outcome.
- r. Philippine Medium-Term Plan – a government’s medium-term economic development blueprint which laying out strategies and programs.
- s. Risk Resiliency Programs – is the operational program of the CCAM-DRR Cabinet Cluster Performance and Projects Roadmap. It aims to strengthen the resiliency of natural ecosystems and the adaptive capacity of vulnerable communities to short and long term risks in key Philippine landscape.

Section 5. Ensuring Climate-Responsiveness of the DENR Priority Programs

The Planning and Policy Service (PPS), Bureaus and CCS shall ensure that DENR priority programs are designed and implemented taking into account current and future climate hazards, together with their interaction to non-climatic factors.

The Bureaus and concerned offices, with the assistance of PPS and CCS, shall self-assess climate-responsiveness of their respective programs using the developed criteria and initial ratings under the study on the Implications of the IPCC Special Report on the Impact of Global Warming of 1.5°C to the DENR Plans and Programs, as follows:

- a. **Evidence-based**–it shall require a system for the management of dynamic datasets and continuing monitoring of changes in human and natural system;
- b. **Integrated and holistic** - integrated and coordinated with policies and programs of other sectors, born out of a multi-sectoral process, and maximize synergy and complementation;
- c. **Addresses interconnected risks and vulnerabilities** - comprehensively address the full chain of risks and vulnerabilities from ridge to coastal areas, and between

rural and urban areas using nature-based solutions;

- d. **Addresses multiple objectives** - facilitate adaptation and mitigation in synergy with the local and national development goals;
- e. **Flexible** - it do not require long-drawn process of amending to ensure its agility to respond to changing conditions;
- f. **Long-term in scope** - provide remedies to both the short-lived and the persistent impacts of climate change, designed within a precise temporal scale;
- g. **Stimulates migration to green-development pathways**—it shall allow gradual migration to green development pathways without sustaining crippling income and welfare losses;
- h. **Promotes public-private sector engagement** - has facilitating mechanisms to attract public and private investment in addressing climate change-related risks;
- i. **Highly acceptable to local and national government agencies** - ensure that sufficient opportunities and mechanisms are provided for the active participation of local and national government agencies in the design process and implementation;
- j. **Promotes incremental and transformational adaptation** - provide adaptive capacity building mechanisms along with mechanisms to transform mindsets and behaviours;
- k. **Has a clear governance structure** - with clear identification of lead and support implementing agencies with clearly defined individual duties and liabilities; and
- l. **Sufficiently funded** - diverse sources of funding and financing mechanisms.

The above criteria (a-l) with a four-scale rating matrix for a rapid assessment on the climate-responsiveness of ENR Priority Programs, using a scale of zero (0) to three (3) shall be used, as described in Annex C – Climate Responsive Scorecard Rating Matrix. An example of a priority program that was rated using the Climate Responsive Scorecard Rating matrix is herewith attached as Annex D. Climate Responsive Rating for Enhanced National Greening Program.

Section 6. Adoption of the Climate Responsive Outcome and Output Indicators

To ensure the climate-responsiveness of the DENR priority programs, the climate-responsive outcome and output indicators, as defined in Annex B of these guidelines, are hereby adopted. They shall be indicated in the Work and Financial Plan, as far as applicable based on the available data. Non-adoption of a specific indicator or indicators should be annotated in the work and financial and proxy indicators maybe adopted.

Section 7. Roles and Responsibilities of the Offices in Mainstreaming, Cascading and Institutionalizing Climate Change Concerns in the DENR Priority Programs and Projects

To ensure that the climate change responsive indicators are properly adopted by the implementing offices in the DENR priority programs and projects, the concerned offices shall have the following roles and responsibilities:

a. Policy and Planning Service (PPS)

- (i) Ensure that the bureaus and regional offices' targets and Programs/Activities/Projects (PAPs) for the climate responsive indicators (Annex B) are included as performance target indicators in their respective work and financial plan (WFP);
- (ii) Ensure that sufficient budget are apportioned to carry out the climate change related- PAPs;
- (iii) Coordinate and ensure that climate responsive indicators are mainstreamed in the programs under the supervision of the Foreign Assisted and Special Projects Service (FASPS);
- (iv) Coordinate and mainstream the monitoring and evaluation of the CC responsive PAPs implementation in the regular monitoring system of the Project Monitoring and Evaluation Division (PMED);
- (v) Coordinate and incorporate the climate responsive PAPs' accomplishments in the preparation of the ENR sector yearly report and other relevant reports required by other agencies;
- (vi) Facilitate and coordinate the development of effective and relevant ENR policies and programs in addressing climate risks, vulnerabilities and impacts across all sectors;
- (vii) Integrate in the updating of the Philippine Medium-Term planning the challenges, gaps and opportunities of climate change adaptation and mitigation for the ENR sector; and
- (viii) Integrate and harmonize plans and programs through multi-agency/multi-stakeholder collaboration using landscape/ecosystem, seascape or other related approaches.

b. Climate Change Service (CCS)

- i) Regularly update the set of indicators as defined in Annex B of the guidelines, in coordination with the PPS, bureaus and FASPO.
- (ii) Assist the regional offices, particularly the identified climate vulnerable provinces in the preparation/updating of their Investment Portfolio Risk Resiliency (IPRR) plan implementation;
- (iii) Facilitate improvement of self-assessment of climate-responsiveness of the programs using the developed criteria and initial ratings to capture a better understanding of the implementing offices' perspective on the climate-responsiveness of their respective programs and projects;
- (iv) Ensure enhancement of quality and appropriateness of climate change responsive output and outcome indicators, particularly on ENR priority

programs and those PAPs under the Risk Resiliency Program Convergence Budgeting;

- (v) Assess and build internal capacity of implementers to ensure that appropriate knowledge and skills are in place to make the programs more climate-responsive; and
- (vi) Strengthen the collaboration with specialized agencies like Department of Science and Technology - Philippine Atmospheric, Geophysical and Astronomical Services Administration (DOST-PAGASA), National Mapping and Resource Information Authority (NAMRIA), and other national agencies, and research and academic institutions towards a more comprehensive and localized understanding of the impacts of climate change in ecosystems.

c. Bureaus/Offices

- (i) Ensure that the Programs/Activities/Projects (PAPs) of the bureaus for climate change responsive output indicators (Annex B) with corresponding set of targets and budgetary requirements are defined in their Work and Financial Plan (WFP);
- (ii) Coordinate with concerned offices on the continuing review and evaluation on the appropriateness and/or enhancement of outcome and output indicators for better target setting of PAPs;
- (iii) Identify indicators for water resources management, toxic and hazardous waste management, solid waste management for sustainable market for recyclables and recycled products, mineral resources development, wildlife conservation and management, terrestrial and marine protected area conservation and management, carbon stock, and air quality management (monitoring stations). These indicators shall be reviewed and updated by the PPS and CCS; and
- (iv) Conduct of assessment to determine the potential contributions or impacts of programs on the attainment of desired objectives and performance of programs towards increasing resilient ecosystems and adaptive capacity of communities.

d. ERDB

- (i) Conduct baseline studies and comprehensive impact assessments on the impacts of climate change on ecosystems in order to assess and quantify the impacts of climate change at all levels and access the different ecosystems, in coordination with concerned bureaus.
- (ii) Establishment of ecosystems and watershed observation networks for the continuous monitoring of changes in the ecosystems and watersheds due to climate change and human activities, including the conduct of baseline studies.
- (iii) Development of decision support systems to assess the potential contribution or impacts of programs on the attainment of desired objectives and

performance of programs towards increasing resilient ecosystems and adaptive capacity of communities.

- (iv) Formulation of clear and simple guidelines that outline the process of conducting multiple risks and vulnerability assessments, and possible application of results to program and project development and enhancement.
- (v) Conduct of studies such as but not limited to risks and vulnerability assessments on the local impacts of climate change under various global warming scenarios.

e. Regional Offices/PENROs/CENROs

- (i) Identify appropriate targets and programs, activities/projects for climate responsive indicators aligned with established UWM for inclusion in the work and financial plan with corresponding budget allocation.
- (ii) Mainstream and institutionalize the conduct of monitoring and evaluation of climate responsive PAPs targets in the regular monitoring activity, in coordination with the Project Monitoring and Evaluation Division (PMED). Progress of PAPs implementation shall be submitted to PMED copy furnish CCS.
- (iii) Coordinate with the Regional Development Council (RDC) and concerned LGUs-Provincial and Municipal Planning and Development Offices (PPDO/MPDO) for review and approval of the IPRR plan of the priority climate vulnerable provinces.

f. Climate Change Focal Office/Persons

All the Implementing Offices shall designate their respective Climate Change Focal Office/Persons to coordinate with the Planning Service and/or concerned units of their respective offices on the following:

- (i) Facilitate the integration and endorsement of feedbacks (gaps/concerns) on the implementation of PAPs for climate change responsive from concerned CENROS, PENROS, Regional Office, LGUs (PPDO/MPDO), and RDC to the Central Office PPS, CCS and bureaus for immediate action.
- (ii) Coordinate with concerned ENR offices, LGUsRDC on the submission of the status of IPRR proposals on climate vulnerable provinces for CCS and FASPO information and action.
- (iii) Assist in the monitoring of Risk Resiliency Programs in the identified priority climate vulnerable provinces.

The concerned Bureaus, CCS and PPS shall assist the Regional Offices, PENROS, CENROS and other concerned partners in cascading the climate change responsive indicators in their respective regional, provincial and municipal plans to guide them in the priority programs implementation at the field level.

Section 8. Separability Clause

If any provision of this Order shall be held invalid or unconstitutional, the other portions or provisions hereof which are not affected shall continue in full force and effect.

Section 9. Repealing Clause

All Orders and other similar issuances inconsistent herewith are hereby revoked, amended or modified accordingly.

Section 10. Effectivity Clause

This Order shall take effect fifteen (15) days after its publication in a newspaper of national circulation and submission to the Office of the National Administrative Registry.

ROY A. CIMATU
Secretary

ANNEX A. Impact of Global Warming of 1.5°C to Key Ecosystems

- A. Forest and Terrestrial Ecosystems:** Forest and other terrestrial ecosystems and biodiversity are most vulnerable to increasing temperature, changing rainfall patterns, drought and tropical cyclones. High temperatures are pushing some species of flora and fauna out of their preferred habitat ranges which may eventually lead to the decline in their population. Climate variability and changes can lead to the reduction growth performance of trees, crops and other plants as a result of enhanced soil loss during heavy rains and decreased moisture deficiency during extended dry periods.
- B. Coastal and Marine Ecosystems:** Coastal and marine ecosystems are being threatened by rising sea levels, warming ocean surface, and increasing ocean acidity. Increasing sea levels, along with increasing heavy rainfall events and tropical cyclone (TC) frequency, may cause submergence, coastal flooding, and coastal erosion. Combined impacts of increased ocean surface temperature and ocean acidification may lead to shifts of marine species and changes in species composition, which eventually adversely affect fisheries productivity, livelihood, as well as other ecosystem services. Moreover, fish habitats will be limited due to the expansion of oxygen-minimum zones and anoxic "dead zones." Ocean acidification also causes changes in the physiology, behavior, and population dynamics of various species, from phytoplankton to marine fish species.
- C. Groundwater and freshwater resources:** Water resources are significantly affected by climate change, both on its supply side and its capacity to induce hazard. As reported by IPCC (2014), freshwater-related risks increase along with greenhouse gases. Under a warming climate, more population will be exposed to new or aggravated water shortage, increased exposure to flooding, and increased exposure to drought. Lakes, rivers, and other freshwater ecosystems in vulnerable areas are likely to be affected by excessive siltation resulting from heavy soil erosion and landslides that are induced by excessive rainfall events. Excessive rainfall could trigger debris flows and mudflows that could also destroy lakes and rivers along with the aquatic life therein.
- D. Urban and health:** In general, the impact of climate change on human health is the worsening of existing health problems. Making the situation worse is the continuously increasing urban population. It is expected that climate change will increase health challenges i.e. increase in the probability of injury, disease and death from intense heat waves and fires; increase in the probability of undernutrition due to lower food production; reduced work and labor productivity; and higher risks for food-, water-, and vector-borne diseases.
- E. Agriculture:** In terms of the agriculture sub-sector, which is the primary component of food security and food production systems, the impacts of a changing climate include reductions in food production in certain regions, as well as in food access, utilization, and price stability (IPCC, 2014). For production, the potential impacts may be different depending on the crops and the region. In some instances, productivity could increase, while for some, climate change could have detrimental consequences. In the Philippines, climate change is expected to affect agroecosystems primarily through the reduction in yield and crop productivity, effects on plant growth and development, changes in fruiting and harvesting, and impacts on production (e.g. quality, labor costs, and farm income).

| PROGRAM | CLIMATE-RESPONSIVE OUTPUT INDICATORS | CLIMATE-RESPONSIVE OUTCOME INDICATORS |
|--|--|---|
| | <ul style="list-style-type: none"> ● Priority threatened species protected and conserved ● Number of biodiversity-friendly enterprises developed/recognized | |
| Scaling-Up of Coastal and Marine Ecosystems | <ul style="list-style-type: none"> ● Coverage of marine protected areas increased (%) ● Area of marine protected areas effectively managed increased ● Number of biodiversity-friendly enterprises developed/recognized with sustainable financing mechanisms increased ● Percentage women and men benefiting from community-based ecotourism and other biodiversity-friendly livelihoods increased | <ul style="list-style-type: none"> ● Improved quality of coastal and marine ecosystems (coral reefs, seagrass beds and mangrove forests) in protected areas and other coastal and marine areas providing sustainable aquatic resources for natural resource-dependent communities ● Number of individuals/people's organizations benefiting from ecotourism and other biodiversity-friendly enterprises increased |
| Improved Land Administration and Management | <ul style="list-style-type: none"> ● Number of LGUs capacitated on climate impact and risk assessment matrix (CLIRAM) & climate and disaster risk assessment (CDRA) (c/o DILG, but vital to outcome indicators) ● Number of climate-responsive Provincial Foreshore Management and Development Plan (CRPFMDP) formulated/ approved, adopted and implemented by LGUs as a tool for regulating the use/occupation of areas exposed to climate-related hazards) ● 90%^a of 58 LGUs adopted and implemented the CRPFMDP are resilient to the adverse effects of climate change ● Number of LGUs with approved and updated CLUPs integrating LCCAP and LDRRMP | <ul style="list-style-type: none"> ● Decreased number of people and properties exposed to climate change related hazards (storm surge, sea level rise, coastal/tidal flooding) ● Decreased area of degraded lands due to misuse and abuses ● Reduced area of agricultural lands converted to residential, commercial and industrial areas |
| Responsible Mining | <ul style="list-style-type: none"> ● Number of mining permits/ contracts compliant with the tenement safety and health, environment and social (SHES) provisions in RA 7942 ● Number of illegal mining activities issued with cease and desist orders | <ul style="list-style-type: none"> ● Improved state of safety, health, environment, and social aspects of mining ● Increased disturbed area rehabilitated by mining companies |

| PROGRAM | CLIMATE-RESPONSIVE OUTPUT INDICATORS | CLIMATE-RESPONSIVE OUTCOME INDICATORS |
|-----------------------------------|--|--|
| | <ul style="list-style-type: none"> ● Disturbed area rehabilitated by mining companies | |
| Geohazard Assessment | <ul style="list-style-type: none"> ● Number of LGUs where vulnerability and risk assessment were conducted ● Number of LGUs informed of their area's susceptibility to climatic impacts and geologic hazards ● Number of LGUs where IEC campaigns on geo-hazards were conducted | <ul style="list-style-type: none"> ● Number of localized vulnerability and risk assessments incorporating climate change projections available and accessible for integration into CLUP and other local development plans |
| Groundwater Assessment | <ul style="list-style-type: none"> ● Number of LGUs (Province/ City/ Municipality) assessed for groundwater resources | <ul style="list-style-type: none"> ● Percentage increase in river basins and critical areas with science-based water allocation management system ● Availability and sustainability of surface and groundwater supply |
| Water Resources Management | <ul style="list-style-type: none"> ● Number of river basins (RBs) with comprehensive water resources assessment ● Number of water -constrained areas with Groundwater Management Plan (GMP) developed (incorporating climate change scenarios) ● Number of water -constrained areas with groundwater monitoring wells established ● Number of Integrated River Basin Management and Development Master Plan (IRBMDMP) endorsed by Regional Development Councils ● Number of River Basin Organizations (RBOs) established with legal binding instruments | <ul style="list-style-type: none"> ● Percentage increase in river basins (RBs) and critical areas with scientifically robust water information and decision support tools (for water allocation) ● Availability and sustainability of surface and groundwater supply ● All Master Plans of 18 major river basins are climate-responsive (current: 5 major river basins are responsive) ● Number of LGUs adopting/using the developed plans including the operation of the monitoring stations as basis for their groundwater protection and development program. <p>(Improved implementation of IRBMDP and river basin governance)</p> |
| Clean Air Program | <ul style="list-style-type: none"> ● Strengthened capacity of EMB Regional Offices for permitting, real time monitoring and enforcement system/s ● Improved capacity of Airshed Governing Board to ascertain attainment/non-attainment areas | <ul style="list-style-type: none"> ● Decreased levels of industrial emissions (e.g. PM, CO, NO_x, SO_x) ● Improved ambient air quality that meets the National Air Quality Guidelines Values (NAAQGV) ● Reduced/avoided emissions of potent greenhouse gases/Short-lived |

| PROGRAM | CLIMATE-RESPONSIVE OUTPUT INDICATORS | CLIMATE-RESPONSIVE OUTCOME INDICATORS |
|---------------------------------------|--|--|
| | <p>and formulate/implement action plans and strategies which include air pollution reduction programs</p> <ul style="list-style-type: none"> ● Increased % in clinker substitution in production of cement with supplementary cementitious materials including but not limited to fly ash, granulated blast, furnace slag and natural pozzolan ● Increased % in the use of low global warming potential (GWP) refrigerants in the refrigeration. The air-conditioning and foam manufacturing (RAC-F) and fire suppressant and solvent sectors ● Phase out ozone- depleting substances (ODS) ● Decreased levels of other short-lived climate pollutants (SLCPs) such as black carbon, CH₄ and HFCs | Climate Pollutants |
| Solid Waste Management Program | <ul style="list-style-type: none"> ● Decreased waste generated ● 90% of drainage canals cleared of solid wastes per municipality ● Zero occurrence of garbage landslides ● Number of LGUs compliant with RA 9003 ● Increased % in municipal solid waste digestion of organic wastes ● Increased number of households practicing composting ● Increased % in the use of eco-efficient soil cover ● Increased % in methane recovery from sanitary landfills for electricity ● Increased use of methane flaring | <ul style="list-style-type: none"> ● Improved sanitation ● Reduced occurrence of floods due to clogging of canals in urban areas ● Improved safety of communities ● Reduced methane emissions from solid waste management facilities |
| Clean Water Program | <ul style="list-style-type: none"> ● Reduced percentage in Biochemical Oxygen Demand (BOD) and increased Dissolved Oxygen (DO) concentration per year from priority water bodies ● Number of firms with reduced BOD per year from point sources | <ul style="list-style-type: none"> ● Improved water quality of water bodies e.g. rivers, esteros, wetlands and lakes in terms of DENR Water Quality Guidelines ● Reduced methane emissions from wastewater |

| PROGRAM | CLIMATE-RESPONSIVE OUTPUT INDICATORS | CLIMATE-RESPONSIVE OUTCOME INDICATORS |
|----------------------------|---|--|
| | <ul style="list-style-type: none"> ● Increased % in population connected to sewage treatment facilities | |
| Manila Bay Clean-Up | <ul style="list-style-type: none"> ● Increased % in solid waste diversion rate ● Number of relocated Informal Settler Families (ISF) [c/o of DILG] in areas delineated by DENR ● Increased % in sewerage coverage in Metro Manila and other coastal cities and municipalities c/o MWSS ● Reduced soil loss in Manila Bay Watershed area c/o BMB ● Increased % in the coverage of sewerage and septage treatment facilities – in line with the implementation of the National Sewerage and Septage Management Program (NSSMP) | <ul style="list-style-type: none"> ● Reduced number of flooded areas due to clogged waterways ● Reduced number of ISFs in areas along waterways and easement as delineated by DENR ● Reduced BOD, phosphates, and Fecal Coliform in major tributaries and in Manila Bay ● Improved Manila Bay Water Quality to Class SB ● Reduced tCO₂e from water and solid waste pollution ● Reduced sedimentation rate from the entire Manila Bay Region |