

# **Compendium of Philippine Environment Statistics and Its Link to the Global Set of Climate Change Statistics and Indicators: Assessment and Challenges**

By

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## **I. Rationale**

The Compendium of Philippine Environment Statistics (CPES) compiled by the Philippine Statistics Authority (PSA) is one of the important tools useful in monitoring our progress in achieving the country's vision of ensuring ecological integrity, and a clean, and healthy environment. The CPES is a compilation of statistics and other information that adheres to the internationally agreed Framework for the Development of Environment Statistics (FDES).

Statistics presented in CPES provide information about the state and changes in environmental conditions, the quality and availability of environmental resources, the impact of human activities and natural events on the environment, and the impact of changing environmental conditions. It also provides information on the social and economic actions that societies take to avoid or mitigate these impacts, as well as to restore and maintain the environment's capacity to provide essential services for life and human well-being.

One of the pressing global environmental concerns is climate change, characterized by the rapid increase in global temperatures and severe weather conditions such as floods and droughts. In line with this, the United Nations Statistical Commission (UNSC) encourages countries to implement and invest in the development of key initial indicators on climate change to quantify not only its impacts but also its drivers, among other information. The Philippines is one of the countries that took part in the pilot survey on the Global Set of Climate Change Statistics and Indicators (GSCCSI). The main objective of the paper is to assess the statistics compiled in the CPES and link them with the GSCCSI to be able to identify the gaps, issues, and challenges to strengthen the link between statistics and policy.

## **II. Relevant Statistical Frameworks**

### *Framework for the Development of Environment Statistics (FDES)*

The FDES is a flexible, multi-purpose conceptual and statistical framework that brings together data from various subject areas and sources to address environmental issues and aspects relevant to evidence-based policy analysis and decision making.<sup>5</sup>

Environmental information in FDES comprises quantitative information produced in the form of data, statistics, and indicators and disseminated through databases, spreadsheets, compendia, and yearbooks. However, qualitative environmental information consists of descriptions of the environment or its constituent parts that cannot be adequately represented by accurate quantitative descriptors. Environmental data, on the other hand, are large amounts of

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<sup>5</sup> United Nations Statistics Division, Framework for the Development of Environment Statistics, 2013



unprocessed observations and measurements about the environment and related processes, such as statistical surveys, and can come from administrative records, geographical databases, registers, inventories, monitoring networks, thematic mapping, remote sensing, scientific research, and field studies.

Environmental statistics are made up of environmental data that has been processed, synthesized, and aggregated using statistical methodologies, standards, and processes. The role of environment statistics is to transform environmental and other data into useful statistics that explain the state and trends of the environment, as well as the major processes that affect them. Not all environmental data are used to produce environmental statistics.

The FDES provides a framework for identifying environmental and other data within its scope and then contributing to the structuring, synthesizing, and aggregation of the data into statistical series and indicators. Environmental indicators are statistics about the environment that have been selected for their capacity to depict relevant phenomena or dynamics. It can take numerous forms, such as rates, ratios, or proportions, and can be built at various levels of aggregation. These indicators are used to analyze present and future goals and targets, evaluate and identify the impact of certain programs, monitor progress, measure changes in a given condition or situation through time, and convey messages.<sup>6</sup>

#### *Compendium of Philippine Environment Statistics (CPES)*

CPES focuses on the core set of environment statistics of the six components of FDES, namely: (1) environmental conditions and quality, (2) environmental resources and their use, (3) residuals, (4) extreme events and disasters, (5) human settlements and environmental health, and (6) environment protection, management, and engagement.<sup>7</sup>

Human societies, as well as their production and consumption patterns, influence the quality and condition of the environment, natural processes, and ability to deliver products and services. These are covered in the first component. Meanwhile, statistics on the availability, consumption, and usage of environmental resources are presented in Component 2. The third component gives information on the amount and characteristics of residuals created by human production and consumption activities, as well as their management and eventual release into the environment. The fourth component covers statistics on the occurrence of extreme events and disasters, both natural and technological, and their impact on human well-being and the infrastructure of the human subsystem. The fifth component collects statistics relevant to the management and improvement of human settlements, shelter conditions, safe water, sanitation, and health, particularly in the context of rapid urbanization, increasing pollution, environmental degradation, disasters, extreme events, and climate change. Finally, the sixth component includes societal responses and economic policies targeted at environmental protection and resource management.

#### *Global Set of Climate Change Statistics and Indicators (GSCCSI)*

At the global level, environmental statistics are becoming more integrated, albeit being produced by numerous agencies. The GSCCSI is a comprehensive statistical framework, with statistics,

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<sup>6</sup> Environment Statistics Self-Assessment Tool

<sup>7</sup> Compendium of the Philippine Environment Statistics 2010-2019



indicators, and metadata, designed to support countries in preparing their own sets of climate change statistics and indicators according to their individual concerns, priorities, and resources.<sup>8</sup>

The scope of the global set covers the climate change aspects defined by the five policy areas of the Intergovernmental Panel on Climate Change, namely drivers, impacts, vulnerability, mitigation, and adaptation. Its structure is based on those five areas and the FDES. The global set includes the biophysical indicators and statistics, as well as human activities, and social and institutional aspects related to climate change.

Changes in the concentrations of greenhouse gases (GHGs) and aerosols in the atmosphere, land cover, and solar radiation that affect the energy balance of climate systems are referred to as drivers in the global set. Meanwhile, the effects of climate change on natural and human systems are referred to as impacts.<sup>9</sup> The degree to which a system is sensitive to, or unable to cope with, the detrimental consequences of climate change, especially climatic variability and extremes, is defined as vulnerability. It is a function of the character, magnitude and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity.<sup>10</sup> Mitigation is an anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases.<sup>11</sup> There are several forms of adaptation, such as anticipatory and reactive adaptation, private and public adaptation, and autonomous and planned adaptation.<sup>12</sup>

Drivers cover the following: a) total GHG emissions; b) GHG concentrations in the atmosphere; c) energy production, supply, and consumption; d) energy consumption; e) fossil fuels; f) population; g) transportation, and h) land and agriculture.

Impacts include statistics on a) agricultural production affected by climate change; b) areas affected by climate change; c) freshwater resources; d) hazardous events and disasters; e) climate change and human health; f) climate change evidence; g) soil condition; h) distribution and status of species; i) distribution and status of ecosystems; j) production and consumption of materials; k) climate change impacts on transport and critical infrastructure, and l) climate change impacts on tourism.

Vulnerability includes statistics on a) water security, food security, and agriculture; b) vulnerable species, ecosystems, and their services; c) buildings and infrastructure vulnerable to climate change; d) vulnerable population; and e) area of the country vulnerable to climate change.

Mitigation comprises, among other things, a) renewable energy; b) climate change mitigation policies, strategies, and plans; and c) climate change mitigation technology and practice. While adaptation refers to programs and strategies that aim to reduce the vulnerability of natural and human systems to the effects of climate change.

Climate change adaptation policies, strategies, and plans include a) risk management, disaster forecasting, and early warning systems; b) risk management, disaster forecasting, and early warning systems; c) area-based adaptation to climate change; d) climate change monitoring; e) water management, and f) waste management.

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<sup>8</sup> United Nations Statistical Commission, 53<sup>rd</sup> Session March 1-4, 2022, Climate Change Statistics

<sup>9</sup> IPCC Third Assessment Report

<sup>10</sup> IPCC Third Assessment Report

<sup>11</sup> IPCC Third Assessment Report

<sup>12</sup> IPCC Climate Change 2007 Synthesis Report

### III. Data assessment

A total of 134 statistics are included in the GSCCSI, 94 of which are embedded in the FDES. Sixty-eight (68) statistics in the global set are also included in the CPES compilations.

The following tables present the linkages between the statistics in the GSCCSI, FDES, and CPES. The data sources of the statistics are also indicated. The focus of the assessment is the different thematic areas of climate change statistics.

**Table 1. GSCCSI Thematic Area: Drivers**

Global Set of Climate Change Statistics and Indicators	FDES	CPES	Data Source
<b>Drivers</b>			
<i>Total greenhouse gas emissions per year (SDG 13.2.2)</i>	3.1.1.a Total emissions of direct greenhouse gases (GHGs, excluding LULUCF)	Table 3.1 Emissions of Greenhouse Gases by Sector, 2010	2010 Philippine Greenhouse Gas Inventory Report, Climate Change Commission
	3.1.1.b Total emissions of indirect greenhouse gases (GHGs)	Table 3.1 Emissions of Greenhouse Gases by Sector, 2010	
<i>Energy consumption by households and enterprises</i>	2.2.2.c Final energy consumption	Table 2.5.10 Energy Balance Table, 2019	Department of Energy (DOE)
<i>Energy intensity measured in terms of primary energy and GDP (SDG 7.3.1)</i>	2.2.2.b Total energy supply	Table 2.5.10 Energy Balance Table, 2019	DOE
<i>Use of fossil fuels</i>	2.2.1.a.5 Fossil fuels extractions	Tables 2.4.1, 2.4.2, 2.4.3, and 2.4.4 Physical Asset Accounts for Coal, Oil, Natural Gas, and Condensate	Philippine Statistics Authority (PSA)
<i>Urban population (% of total population)</i>	5.1.1.a Population living in urban areas	Table 5.1 Total Population, Urban Population, and Level of Urbanization by Region: 2010 and 2015	PSA



<i>Number of (fossil-driven) vehicles per capita</i>	5.1.5.c Number of vehicles	Tables 5.5.1 to 5.5.10 Number of Registered Vehicles by Region, by Type of Ownership, by Type of Fuel	Land Transportation Office (LTO)
<i>Intensity of use of forest resource</i>	2.5.1.a.4 Removals of timber resources	Table 2.7.1. Roundwood Production by Product, 2010 to 2019 Table 2.7.2 Production of Processed Wood by Product, 2010 to 2019 Table 2.8.2 Export of Log and Processed Forest Products, 2010 to 2019	Forest Management Bureau, Department of Environment and Natural Resources (FMB, DENR)
<i>Deforested area as a proportion of total forest area</i>	2.3.2.a.1 Area deforested	No data	FMB, DENR
	1.2.3.1.a Forest area: Total	Table 1.17 Forest Cover of the Philippines by Forest Type, 2010 and 2015 (in hectares)	FMB, DENR
<i>Livestock number per agricultural area</i>	2.3.1.a Area under land use categories	No data	
	2.5.4.a.1 Number of live animals	Table 2.14.1 Livestock Inventory by Animal Type, Farm Type, and Geolocation	PSA
<i>Use of nitrogen fertilizers per hectare of total agricultural area (cropland and pastures)</i>	2.5.3.b.2 Chemical fertilizers	Table 2.17.1 Fertilizer Production and Sales, 2010 to 2019 Table 2.17.2 Fertilizer Importation by Major Grades Table 2.17.3 Fertilizer Exportation by Major Grades	Fertilizer and Pesticide Authority (FPA)

<i>Use of nitrogen fertilizers per hectare of total agricultural area (cropland and pastures) (cont.)</i>	2.3.1.a Area under land use categories (agriculture)	No data	
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**Table 2. GSCCSI Thematic Area: Impacts**

Global Set of Climate Change Statistics and Indicators	FDES	CPES	Data Source
<b>Impacts</b>			
<i>Crop loss due to climate extremes</i>	2.5.3.a.3 Crop yield	Table 2.11.1 Palay and Corn: Area Harvested by Ecosystem/Crop type and geolocation Table 2.11.2 Other Crops: Area Planted/Harvested by Crop and Geolocation	PSA
<i>Impact of climate change on livestock productivity</i>	2.5.4.a.1 Livestock yield	Table 2.14.1 Livestock Inventory by Animal Type, Farm Type and Geolocation, 2010-2019	PSA
<i>Forest area as a proportion of total land area (SDG 15.1.1)</i>	1.2.3.a.1 Forest area: Total	Table 1.17 Forest Cover of the Philippines by Forest Type, 2010 and 2015 (in hectares)	FMB, DENR
	1.1.1.3.a.2 Area of country or region	Table 1.7 Land Cover of the Philippines by Region and Province, as of 2015 (in hectares)	National Mapping and Resource Information Authority (NAMRIA)
<i>Reduction of surface water bodies</i>	1.2.1.a Water resources	Table 2.18.1 to 2.18.10 Physical Supply and Use Table Table 2.19 Number of Water Permits Issued and Volume of Water Allocated by Water Use, 2010-2019, (in number of permits and million cubic meters)	PSA  National Resources Water Board (NWRB)



<b><i>Reduction of surface water bodies (cont.)</i></b>	1.2.1.a Water resources (cont.)	Table 2.20 Summary of Water Permit Grants by Water Source, Type, Use, and Region as of December 2019, (in number of permits and million cubic meters)	NWRB
<b><i>Change in coasts affected by erosion</i></b>	1.1.3.d Coastal area	Table 1.8 Coastal Resource Statistics, 2013 to 2016	NAMRIA
<b><i>Renewable freshwater resources per capita</i></b>	2.6.1.a.1 Precipitation	Table 1.2 Climatological Normals of Precipitation by Month, by Monitoring Station, 1981 to 2010 Table 1.3.1 to 1.3.10 Amount of Rainfall by Monitoring Station, 2010-2019	Philippine Atmospheric, Geophysical and Astronomical Services Administration, Department of Science and Technology (PAGASA, DOST)
	2.6.1.b.1 Evapotranspiration	No data	
	2.6.1.b.2 Inflow	No data	
<b><i>Freshwater abstracted as proportion of renewable freshwater resources</i></b>	2.6.2.a Freshwater abstracted	Tables 2.18.1 to 2.18.10 Physical Supply and Use Table 2.19 Number of Water Permits Issued and Volume of Water Allocated by Water Use, 2010-2019, (in number of permits and million cubic meters) Table 2.20 Summary of Water Permit Grants by Water Source, Type, Use, and Region as of December 2019, (in number of permits and million cubic meters)	PSA  NWRB
	2.6.1.a Renewable freshwater resources	Table 2.18.1 to 2.18.10 Physical Supply and Use Table 2.19 Number of Water Permits Issued and Volume of Water Allocated by Water Use, 2010-2019,	PSA  NWRB

<b><i>Freshwater abstracted as proportion of renewable freshwater resources (cont.)</i></b>	2.6.1.a Renewable freshwater resources (cont.)	(in number of permits and million cubic meters) Table 2.20 Summary of Water Permit Grants by Water Source, Type, Use, and Region as of December 2019, (in number of permits and million cubic meters)	NWRB
<b><i>Water quality</i></b>	1.3.2.f.3 Total suspended solids	No data	
	1.3.2.f.1 pH/acidity/alkalinity	Table 1.33 Levels of pH in Laguna De Bay and Its Tributaries by Station, 2010-2019	Laguna Lake Development Authority (LLDA)
	1.3.2.f.4 Water salinity	No data	
	1.3.2.b.1 BOD of water resources	Table 1.29.1 Concentration Level of BOD in Selected Freshwater Bodies by Region, 2010 to 2019 Table 1.29.2 Concentration Level of BOD in Laguna de Bay and its Major Tributaries by station, 2010 to 2019	Environmental Management Bureau (EMB), DENR  LLDA
	1.3.2.b.2 COD of water resources	Table 1.30 Concentration Level of Chemical Oxygen Demand (COD) in Laguna De Bay and Its Tributaries by Station, 2010-2019	LLDA
<b><i>Average marine acidity (pH) measured at agreed suite of representative sampling stations (SDG 14.3.1)</i></b>	1.3.2.f.1 pH/acidity/alkalinity	No data	
<b><i>Frequency of hazardous events and disasters</i></b>	4.1.1.a Occurrence of hazardous events and disasters	Table 4.1 Occurrence of Natural Extreme Events and Disasters by Type for Minor Incidents, 2010 to 2019	Office of the Civil Defense (OCD)



<b><i>Frequency of hazardous events and disasters (cont.)</i></b>	4.1.1.a Occurrence of hazardous events and disasters (cont.)	Table 4.2 Occurrence of Human Induced Disasters by Type for Minor Incidents, 2010 to 2019 Table 4.7 Major Natural Extreme Events and Disasters, 2010 to 2019	OCD
<b><i>Direct economic loss attributed to disasters in relation to global gross domestic product (GDP) (SDG 11.5.2)</i></b>	4.1.2.b Economic losses due to natural extreme events and disasters (e.g., damage to buildings, transportation networks, loss of revenue for businesses, utility disruption)	Table 4.5 Damages due to Natural Extreme Events and Disasters by Economic Activity for Minor Incidents, 2010 to 2019 Table 4.6 Damages due to Human Induced Disasters by Economic Activity for Minor Incidents, 2010 to 2019	OCD
	4.1.1.a Occurrence of hazardous events and disasters	Table 4.1 Occurrence of Natural Extreme Events and Disasters by Type for Minor Incidents, 2010 to 2019 Table 4.2 Occurrence of Human Induced Disasters by Type for Minor Incidents, 2010 to 2019 Table 4.7 Major Natural Extreme Events and Disasters, 2010 to 2019	OCD
<b><i>Number of deaths, missing persons and directly affected persons attributed to disaster per 100,000 population</i></b>	4.1.2.a.4 Number of directly affected persons	Table 4.7 Major Natural Extreme Events and Disasters, 2010 to 2019 Table 4.8 Major Human Induced Disasters, 2010 to 2019	OCD
	4.1.2.a.1 Number of deaths	Table 4.3 Number of Deaths due to Natural Extreme Events and Disasters by Type for Minor Incidents, 2010-2019	OCD

<b>Number of deaths, missing persons and directly affected persons attributed to disaster per 100,000 population (cont.)</b>	4.1.2.a.1 Number of deaths (cont.)	Table 4.4 Number of Deaths due to Human Induced Disasters by Type for Minor Incidents, 2010 to 2019 Table 4.7 Major Natural Extreme Events and Disasters, 2010 to 2019	OCD
	4.1.1.a Occurrence of hazardous events and disasters	Table 4.1 Occurrence of Natural Extreme Events and Disasters by Type for Minor Incidents, 2010 to 2019 Table 4.2 Occurrence of Human Induced Disasters by Type for Minor Incidents, 2010 to 2019 Table 4.7 Major Natural Extreme Events and Disasters, 2010 to 2019	OCD
<b>Increase of cases of climate-related diseases</b>	5.2.1.a Incidence of climate-related airborne diseases and conditions	Tables 5.8.1a, 5.8.1b, and 5.8.1c Measles Cases and Deaths by Region, by Sex, and by Age Group, 2010 to 2019 Tables 5.8.2a, 5.8.2b, and 5.8.2c Acute Lower Respiratory Tracts Infection and Pneumonia Cases and Deaths by Region, by Sex, and by Age Group, 2010 to 2019	Number of Cases: Field Health Services Information System (FHSIS) Annual Report, Epidemiology Bureau (EB), Department of Health (DOH)  Number of deaths: Vital Statistics Division, PSA
	5.2.2.a Incidence of climate-related water-related diseases and conditions	Tables 5.6.1a, 5.6.1b, and 5.6.1c Typhoid and Paratyphoid Fever Cases and Deaths by Region, by Sex, and by Age Group, 2010-2019  Tables 5.6.2a, 5.6.2b, and 5.6.2c Acute Bloody Diarrhea Cases and Deaths by Region, by Sex, and by Age Group, 2010 to 2019	Number of Cases: FHSIS Annual Report, EB, DOH  Number of deaths: Vital Statistics Division, PSA



<b><i>Increase of cases of climate-related diseases (cont.)</i></b>	5.2.2.a Incidence of climate-related water-related diseases and conditions (cont.)	Tables 5.6.3a, 5.6.3b, and 5.6.3c Confirmed Cholera Cases and Deaths by Region, by Sex, and by Age Group, 2010-2019 Tables 5.6.4a, 5.6.4b, and 5.6.4c Viral Hepatitis Cases and Deaths by Region, by Sex, and by Age Group, 2010 to 2019 Tables 5.6.5a, 5.6.5b, and 5.6.5c Rotavirus Cases and Deaths by Region, by Sex, and by Age Group, 2010 to 2019 Tables 5.6.6a, 5.6.6b, and 5.6.6c Leptospirosis Cases and Deaths by Region, by Sex, and by Age Group, 2010 to 2019	Number of Cases: FHSIS Annual Report, EB, DOH  Number of deaths: Vital Statistics Division, PSA
	5.2.3.a Incidence of climate-related vector-borne diseases and conditions	Tables 5.7.1a, 5.7.1b, and 5.7.1c Dengue Cases and Deaths by Region, by Sex, and by Age Group, 2010 to 2019 Tables 5.7.2a, 5.7.2b, and 5.7.2c Chikungunya Cases and Deaths by Region, by Sex, and by Age Group, 2016 to 2019 Tables 5.7.3a, 5.7.3b, and 5.7.3c Malaria Cases and Deaths by Region, by Sex, and by Age Group, 2010 to 2019	Number of cases: Philippine Integrated Disease Surveillance and Response (PIDSR), EB, DOH  Number of deaths: Vital Statistics Division, PSA
<b><i>Climate induced air pollution</i></b>	1.3.1.a.3 Concentration level of tropospheric ozone (O <sub>3</sub> )	Table 1.21 Concentration Levels of Ozone (O <sub>3</sub> ) by Region, by Monitoring Station, 2013 to 2019	EMB, DENR
	1.3.1.a.2 Concentration level of particulate matter (PM <sub>2.5</sub> )	Table 1.20 Concentration Levels of Particulate Matter 2.5 (PM <sub>2.5</sub> ) by Region, by Monitoring Station, 2015 to 2019	EMB, DENR

<b>Sea level rise</b>	1.1.2.e.4 Relative sea level	No data	
<b>Mean surface temperature anomaly</b>	1.1.1.a Air temperature	Tables 1.1.1 to 1.1.10 Temperature by Monitoring Station, 2010 to 2019	PAGASA, DOST
<b>Total rainfall anomaly</b>	1.1.1.b Precipitation	Table 1.2 Climatological Normals of Precipitation by Month, by Monitoring Station, 1981 to 2010 CPES Tables 1.3.1 to 1.3.10 Amount of Rainfall by Monitoring Station, 2010 to 2019	PAGASA, DOST
<b>Precipitation record</b>	1.1.1.b Precipitation	Table 1.2 Climatological Normals of Precipitation by Month, by Monitoring Station, 1981 to 2010 CPES Tables 1.3.1 to 1.3.10 Amount of Rainfall by Monitoring Station, 2010 to 2019	PAGASA, DOST
<b>Standardized precipitation index (SPI)</b>	1.1.1.b Precipitation	Table 1.2 Climatological Normals of Precipitation by Month, by Monitoring Station, 1981 to 2010 CPES Tables 1.3.1 to 1.3.10 Amount of Rainfall by Monitoring Station, 2010 to 2019	PAGASA, DOST
<b>Change of land area affected by soil erosion</b>	1.1.4.a.1 Area by soil types	Table 1.9 Area by Soil Taxonomy	Bureau of Soils and Water Management (BSWM), Department of Agriculture (DA)
	1.1.1.b.1 Area affected by soil erosion	No data	BSWM, DA
<b>Proportion of population maintained within a species</b>	1.2.2.c.4 Species population	Table 1.14 Population of Threatened Species, 2010 to 2019	Biodiversity Management Bureau (BMB), DENR



<b>Red list index (SDG 15.5.1)</b>	1.2.2.c.1 Number of red list species	Table 1.15 Number of Threatened Wildlife Species by Taxonomic Group, 2010 to 2019	BMB, DENR
<b>Species habitat index</b>	1.2.2.a.1 Area of ecosystem	Table 1.10 Area of Ecosystem by Land Cover, as of 2019	BMB, DENR
	1.2.2.c.1 Known flora and fauna species	Table 1.11.1 Known Fauna Species by Ecosystem, as of 2019 Table 1.11.2 Known Flora and Fauna Species by Status Category, 2016 to 2019 Table 1.11.3 Know Flora and Fauna Species by Class, 2017 to 2019	BMB, DENR
<b>Invasive alien flora and fauna</b>	1.2.2.c.3 Invasive alien flora and fauna species	Table 1.13 Number of Invasive Alien Flora and Fauna Species by Taxonomic Group, as of 2019	BMB, DENR
<b>Reduction of natural and semi-natural ecosystem extent</b>	1.2.2.a.1 Area of ecosystem	Table 1.10 Area of Ecosystem by Land Cover, as of 2019	BMB, DENR
<b>Proportion of forest area affected by forest fires</b>	1.2.3.a.5 Forest affected by fires	Table 1.18 Forest Disturbance by Cause, 2010 to 2019	Forest Management Bureau (FMB), DENR
	1.2.3.a.1 Forest area: Total	Table 1.17 Forest Cover of the Philippines by Forest Type, 2010 and 2015	FMB, DENR
<b>Proportion of land that is degraded over total land area (SDG 15.3.1)</b>	1.1.1.3.a.2 Total land area	Table 1.7 Land Cover of the Philippines by Region and Province, as of 2015	NAMRIA
<b>Increase of area affected by coral bleaching (FDES 1.3.3.g.1)</b>	1.3.3.g.1 Increase of area affected by coral bleaching	No data	BMB, DENR
<b>Reduction of non-wood forest products</b>	2.5.5.f Non-wood forest products and other plants	Table 2.7.3 Production of Non-Timber Forest Products, 2010 to 2019	FMB, DENR

<b>Reduction of non-wood forest products (CONT.)</b>	2.5.5.f Non-wood forest products and other plants (CONT.)	Table 2.8.3 Exports of Selected Non-Timber Forest Products 2010 to 2019	FMB, DENR
<b>Impacts of climate change on transport</b>	5.1.5.f Extent of roadways	No data	Department of Public Works and Highway (DPWH)

**Table 3. GSCCSI Thematic Area: Vulnerability**

Global Set of Climate Change Statistics and Indicators	FDES	CPES	Data Source
<b>Vulnerability</b>			
<b>Proportion of area of biofuels (and other non-food crops) from total agricultural area</b>	2.3.1.a Area under land use categories (agriculture)	Table 1.7 Land Cover of the Philippines by Region and Province, as of 2015	NAMRIA
<b>Vulnerable species</b>	1.2.2.c.1 Number of red list species	Table 1.15 Number of Threatened Wildlife Species by Taxonomic Group, 2010 to 2019	BMB, DENR
<b>Ecosystem carbon stocks</b>	1.2.3.b.1 Total (forest biomass)	No data	DENR
<b>Infrastructure vulnerable to climate change</b>	5.1.3.d Hazard-prone areas	No data	DENR, Climate Change Commission (CCC)
<b>Buildings (settlements) vulnerable to climate change</b>	5.1.3.d Hazard-prone areas	No data	CCC
<b>Dependency on imported energy in total energy consumption</b>	2.2.2.a.5 Imports of energy	Tables 2.5.1 to 2.5.10 Energy Balance Table, 2010 to 2019	Department of Energy (DOE)
	2.2.2.c Final energy consumption		
<b>Proportion of population served by municipal waste collection</b>	5.1.2.c Population served by municipal waste collection	Table 3.4 Projection of Waste Generation by Region, 2010 to 2019 (tons per day)	EMB, DENR



<i>Proportion of population using safely managed drinking water services (SDG 6.1.1)</i>	5.1.2.a Population using an improved drinking water source	Tables 5.3.1 to 5.3.10 Number of Households with Access to Improved Water Supply by Region and by Level, 2010 to 2019	DOH
<i>Proportion of population living in coastal areas</i>	1.1.3.d Coastal area	Table 1.8 Coastal Resource Statistics, 2013 to 2016	NAMRIA
<i>Proportion of population living in other (than coastal) hazard-prone areas</i>	5.1.3.d Population living in hazard-prone areas	No data	DENR
<i>Proportion of urban population living in slums, informal settlements or inadequate housing (SDG 11.1.1)</i>	5.1.3.b Area of slums	No data	Department of Human Settlements and Urban Development (DHSUD)
<i>Coastal area vulnerable to climate change</i>	1.1.3.d Coastal area	Table 1.8 Coastal Resource Statistics, 2013 to 2016	NAMRIA
	1.1.2.e.4 Sea level rise	No data	
<i>Water bodies vulnerable to climate change impacts</i>	1.2.1.a Area under land cover categories (inland water bodies)	Table 1.7 Land Cover of the Philippines by Region and Province, as of 2015	NAMRIA
	2.6.1.c.6 Groundwater stocks	No data	Mines and Geoscience Bureau (MGB), DENR

**Table 4. GSCCSI Thematic Area: Mitigation**

Global Set of Climate Change Statistics and Indicators	FDES	CPES	Data Source
<b>Mitigation</b>			
<i>Renewable energy share in the total final energy consumption</i>	2.2.2.c Final energy consumption	Tables 2.5.1 to 2.5.10 Energy Balance Table, 2010 to 2019	DOE
<i>Production of renewable energy from total energy production</i>	2.2.2.a.3 Renewable energy production	Tables 2.5.1 to 2.5.10 Energy Balance Table, 2010 to 2019	DOE

<b><i>Production of renewable energy from total energy production (cont.)</i></b>	2.2.2.a.1 Total energy production	Tables 2.5.1 to 2.5.10 Energy Balance Table, 2010 to 2019	DOE
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**Table 5. GSCCSI Thematic Area: Adaptation**

<b>Global Set of Climate Change Statistics and Indicators</b>	<b>FDES</b>	<b>CPES</b>	<b>Data Source</b>
<b>Adaptation</b>			
<b><i>Coverage of early warning systems</i></b>	6.3.1.a.7 Existence and number of early warning systems, EWS	No data	
<b><i>Proportion of population with access to climate information</i></b>	6.4.1.a.1 Proportion of population with access to climate information	No data	CCC
<b><i>Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment (SDG 13.3.1)</i></b>	6.4.2.a.2 Number and description of environmental education programs in schools	Table 6.13 Number of Students Pursuing Environment-Related Higher Education, AY 2012-2013 to 2020-2021	Commission on Higher Education (CHED)
<b><i>Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas</i></b>	1.2.2.d.1 Protected areas	Table 1.16 List and Status of Protected Areas by Region, as of 2019	BMB, DENR
<b><i>Share of green urban areas in the total area of cities</i></b>	5.1.5.b Green urban area	No data	
	5.1.1.c Total area of cities	No data	



<b><i>Number of units dedicated to climate change in government structures</i></b>	6.2.1.a.3 Number of staff in the main environmental authority	Table 6.7.2 Number of Staff Dedicated to Enforcement of Environmental Regulations	DENR
<b><i>Proportion of agricultural area under productive and sustainable agriculture (SDG 2.4.1)</i></b>	2.3.1.b.2 Area of land under irrigation	Table 2.6.1 to 2.6.10 Service Area, Firmed-Up Service Area, and Actual Irrigated Area by Region and by Irrigation System, 2010 to 2019	National Irrigation Administration (NIA)
<b><i>Water use per capita</i></b>	2.6.1.c Total freshwater available for use	No Data	
<b><i>Municipal waste collected per capita</i></b>	3.3.2.a.1 Total amount of municipal waste collected	Table 3.4 Projection of Waste Generation by Region, 2010 to 2019	EMB, DENR
<b><i>Proportion of municipal waste treated</i></b>	3.3.2.a.1 Total amount of municipal waste collected	No data	
	3.3.2.a.2 Municipal waste managed in the country	No data	
<b><i>Proportion of domestic and industrial wastewater flows safely treated (SDG 6.3.1)</i></b>	3.2.1.a Total wastewater generated	Table 3.3.1 Amount of Wastewater Generated, Collected and Treated, West Zone of Metro Manila, 2010 to 2019 Table 3.3.2 Amount of Wastewater Generated and Treated, East Zone of Metro Manila, 2010 to 2019	Maynilad Water Services, Inc.  Manila Water Company, Inc.
	3.2.2.b Wastewater treated	Table 3.3.1 Amount of Wastewater Generated, Collected and Treated, West Zone of Metro Manila, 2010 to 2019 Table 3.3.2 Amount of Wastewater Generated and Treated, East Zone of Metro Manila, 2010 to 2019	Maynilad Water Services, Inc.  Manila Water Company, Inc.

**Table 6. GSCCSI Statistics and Indicators not included in the FDES**

Global Set of Climate Change Statistics and Indicators	Data Source
Total greenhouse gas emissions from the national economy (UN- ECE 09a, excluding indirect GHGs)	CCC
Global concentration of greenhouse gases	CCC
Primary energy production from fossil fuels	DOE
Energy supply from fossil fuels	DOE
Share of fossil-fuel subsidies per unit of GDP (production and consumption)	DOE, PSA
Population growth	PSA
Ratio of drained/degraded organic soils out of total area of organic soils	BSWM, DA
Built-up area growth	NAMRIA
Climate refugees, migrant and displaced persons by climate change associated disasters	Population Commission OCD
Increase in heat and cold related illnesses	DOH
Global mean surface temperature anomaly	PAGASA, DOST
Temperature record	PAGASA, DOST
Mean sea surface temperature anomaly	PAGASA, DOST
Ocean heat content	BMB, DENR
Temperature of freshwater bodies	BMB, DENR
Ecosystem health	BMB, DENR
Proportion of fish stocks within biologically sustainable levels	Bureau of Fisheries and Aquatic Resources (BFAR), DA
Reduction in tourist arrivals following climate-related hazardous events	Department of Tourism (DOT) OCD
Damage to sites of interest, landmarks, beaches, etc.	National Historical Commission of the Philippines DENR



Damage to sites of interest, landmarks, beaches, etc. (cont.)	OCD
Prevalence of undernourishment	DOH
Balance of food trade	DA
Population relying in subsistence and pastoral farming	DA
Vulnerable/fragile ecosystems	BMB, DENR
Vulnerable ecosystem services	BMB, DENR
Coverage of essential public health services	DOH
Dependency on imported energy in total energy consumption	DOE
Proportion of population with access to electricity	DOE
Proportion of population with access to heating/cooling	DOE
Proportion of population below the international poverty line	PSA
Proportion of urban population living in slums, informal settlements or inadequate housing	DHSUD
Indigenous population living in isolated areas	National Commission on Indigenous People PSA
Proportion of population with disability	PSA
Islands vulnerable to climate change	CCC DENR
Proportion of population with primary reliance on clean fuels and technology	DOE
Low Carbon development strategies and plans	CCC DENR
Reforming or phasing-out government support for fossil fuels, by fuel type and by type of support	DOE
Share of climate change mitigation expenditure in relation to GDP (UN ECE 30)	CCC PSA

Share of energy and transport related taxes as percentage of total taxes and social contributions	DOE Bureau of Internal Revenue (BIR)
Amounts provided and mobilized in United States dollars per year in relation to continued existing collective mobilization goal of the \$100 billion commitment through 2025	
Average trading carbon price	FMB, DENR
Climate change mitigation technology	CCC
GHG intensity of production activities (including transport)	CCC
GHG removals (Carbon sequestration)	CCC
Increase in forest area	FMB, DENR
Progress towards GHG emission reduction target	CCC
Number of sectors planning, budgeting and implementing climate change adaptation actions	CCC
Share of government adaptation expenditure in relation to GDP	Department of Budget and Management (DBM) CCC PSA
Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies	CCC
Coverage of disaster shelters per capita	OCD, NDRRMC
Climate change funds received	CCC
Average increase of insurance premiums incurred due to climate change	CCC
Number of companies publishing sustainability reports	CCC
Areas adapted to climate change (adaptation at coastal zones or river basin)	CCC
Number of reports on climate change statistics and indicators	CCC PSA



Proportion of degraded area of ecosystems which has been restored	BMB, DENR
National Integrated Coastal Zone Management (ICZM)	BMB, DENR NAMRIA
Fisheries measures in place and multilateral/bilateral fisheries management arrangements	BFAR
Buildings adapted to climate change	CCC Department of Public Works and Highway (DPWH)
Progress towards sustainable forest management	FMB, DENR
Biodiversity information monitoring index	BMB, DENR
Meteorological monitoring network	PAGASA, DOST
Air quality monitoring systems	EMB, DENR
Water monitoring systems	NWRB
Ocean monitoring	BMB, DENR

Some statistics and indicators in the GSCCSI are also linked to Sustainable Development Goal (SDG) indicators, to name:

<b>SDGs</b>	<b>Indicators</b>
1: No Poverty	1.1.1. Proportion of population below international poverty line
2: Zero Hunger	2.1.1. Prevalence of undernourishment 2.4.1. Proportion of agricultural area under productive and sustainable agriculture
3: Good Health and Well-being	3.8.1. Coverage of essential public health services
6: Clean Water and Sanitation	6.1.1. Proportion of population using safely managed drinking water service 6.2.1. Proportion of population using (a) safely managed sanitation services and (b) a hand-washing facility with soap and water 6.3.1. Proportion of domestic and industrial wastewater flows safely treated

11: Sustainable Cities and Communities	11.1.1. Proportion of urban population living in slums, informal settlements or inadequate housing 11.5.1. Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population 11.5.2. Direct economic loss attributed to disasters in relation to global gross domestic product (GDP)
12: Responsible Consumption and Production	12.6.1. Number of companies publishing sustainability reports
13: Climate Action	13.1.3. Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies 13.3.1. Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment 13.a.1. Amounts provided and mobilized in United States dollars per year in relation to continued existing collective mobilization goal of the \$100 billion commitment through 2025
14: Life below Water	14.3.1. Average marine acidity (pH) measured at agreed suite of representative sampling stations 14.4.1. Proportion of fish stocks within biological sustainable levels
15: Life on Land	15.1.1. Forest area as a proportion of total land area 15.2.1. Progress towards sustainable forest management 15.3.1. Proportion of land that is degraded over total land area 15.5.1. Red list index

#### IV. Data Gaps and Challenges

This assessment identified data gaps and challenges in integrating CPES data with climate change statistics and indicators provided in global set thematic areas. The following are the identified areas for improvement:

- a) Capacity building of the Global Set of Climate Change Statistics and Indicators from the UNSD and creating a basic assessment tool for country's compilation by offering continuous support in e.g., eLearning platform, development of training materials such as modules and best practices, and or regional workshops;
- b) Alignment of definitions and methodologies with existing compilations by strengthening environment statistics using FDES;
- c) Provision of data for thematic areas particularly those data not captured in the CPES compilations; and
- d) Strengthening coordinative mechanism for the institutionalization of the compilation and frequency of data collections.



## **References**

Compendium of the Philippine Environment Statistics 2010-2019

United Nations Statistics Division, Framework for the Development of Environment Statistics, 2013

United Nations Statistics Division, FDES, Environment Statistics Self -Assessment Tool

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