



TECHNICAL NOTES

Compendium of Philippine Environment Statistics 2012 – 2021

Component 2: Environmental Resources and their Use

I. Conceptual Framework

Compendium of Philippine Environment Statistics (CPES)

The compendium covers a core set of environment statistics which is grouped into six components 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.

As described in the Framework for the Development of Environment Statistics (FDES), the Basic Set of Environment Statistics has been set up following a progression of three tiers based on the level of relevance, availability, and methodological development of the statistics. Tier 1 is the core set of environment statistics that serve as an agreed and limited set of environment statistics that are of high priority and relevance to most countries. Tier 2 includes environment statistics which are of priority and relevance to most countries but require a greater investment of time, resources, or methodological development. It is recommended that countries consider producing them in the medium term. Tier 3 includes environment statistics which are either of lower priority or require significant methodological development. It is recommended that countries consider producing them in the long term.

Component 2: Environmental Resources and Their Use

Environmental resources and their use is a compilation of statistics on environmental resources, defined by the System of Environmental- Economic Accounting (SEEA) 2012 Central Framework as “the naturally living and nonliving components of the Earth, together constituting the biophysical environment, which may provide benefits to humanity”. This component has six subcomponents: mineral resources, energy resources, land, soil resources, biological resources, and water resources. Statistics under this component focus on measuring the availability, consumption, and use of environmental resources.

Subcomponent 2.1: Mineral Resources

Mineral resources are the elements or compounds composed of a concentration of naturally occurring solid, liquid, or gaseous materials in or on the earth's crust (FDES, 2013). Minerals may be metallic or non-metallic in nature. Moreover, these resources are non-renewable and do not regenerate in any human timescale. There are two topics under this subcomponent: 1) stocks and changes of mineral resources and 2) production and trade of minerals. The statistics on stocks and changes are required to assist in the sustainable management of these resources. Meanwhile, the statistics on the amounts of extraction and the imports and exports are important to measure the pressure on mineral resources.

Subcomponent 2.2: Energy Resources

Energy can be produced through non-renewable and renewable sources. Similar to mineral resources, non-renewable energy resources such as coal and petroleum cannot be renewed in any human timescale. Once extracted and used, the resource is considered depleted. Meanwhile, renewable energy is captured from sources that replenish themselves. These include solar, hydropower, geothermal, and biomass. There are two topics under this subcomponent. The first topic is stocks and changes in stocks of non-renewable energy resources which can provide insights on the sustainable management of these resources. The second topic is on the production, trade, and consumption of energy which highlights the production from non-renewable and renewable sources as well as the energy consumers.

Subcomponent 2.3: Land

Land is a unique environmental resource that delineates the space in which economic activities and environmental processes take place and within which environmental resources and economic assets are located (FDES, 2013). There are two topics under this subcomponent: 1) land use and 2) use of forest land. Statistics on land use cover both land in use and land not in use. Not all forest land is used primarily to produce wood, thus, statistics on forest land should be broken down according to its primary designated function. The primary designated functions of forests are production, protection of soil and water, conservation of biodiversity, social services, multiple use, and other (FDES, 2013).

Subcomponent 2.4: Soil Resources

Soil resources comprise the top layers (horizons) of soil that form a biological system (FDES, 2013). The changing volume of soil must be measured to assess the extent of soil erosion, the impact of natural disasters, and soil depletion due to economic activities. Although conceptually included in FDES, the development of the necessary statistics for soil resources is subject to further research.

Subcomponent 2.5: Biological Resources

Biological resources are renewable resources capable of regeneration through natural (non-managed or managed) processes. These resources include timber, aquatic resources, a range of other animal and plant resources (such as livestock, orchards, crops and wild animals), fungi, and bacteria. Biological resources may be non-cultivated or cultivated. Statistics on this component support formation of programs that aim to promote sustained economic growth, ensure sustainable consumption and production patterns, sustainable use of oceans, seas and marine resources, and lastly, protect and restore terrestrial ecosystems.

There are five topics under this subcomponent. The first topic is timber resources, defined by the volume of trees, living and dead, which can still be used for timber or fuel. Second is aquatic resources. This includes fish, crustaceans, mollusks, shellfish, aquatic mammals and other aquatic organisms that are considered to live within the boundaries of the exclusive economic zone (EEZ) of a country throughout their life cycles, including both coastal and inland fisheries. Next, crops refer to plants or agricultural produce grown for food or other economic purposes, such as clothes or livestock fodder. Then, livestock which covers animal species raised by humans for commercial purposes, consumption, or labour. Lastly, other non-cultivated biological resources refer to a range of naturally occurring biological resources that provide inputs to the economy and form an important part of biodiversity.

Subcomponent 2.6: Water Resources

Water resources is comprised of freshwater and brackish water. Policymakers need statistics on water resources, their abstraction, use, and returns for many reasons, including to estimate the amount of available water resources; monitor abstraction from key water bodies to prevent overutilization; ensure equitable usage of abstracted water; and track the volume of water returned to the environment. Statistics on this subcomponent are essential in the compilation of the water asset and flow

accounts. There are two topics under this subcomponent; namely 1) water resources and 2) abstraction, use and returns of water. The former is measured in terms of flows to and out of the inland water resources during a period of time. The latter measures the flows of water between the environment and the human subsystem and within the human subsystem.

II. Data Sources

The data on mineral, energy, land and soil, biological, and water resources of component 2 were obtained from the following:

Data Item	Source
Mineral Resources	
Metallic Minerals Resource and Reserve Inventory of the Philippines	Mines and Geosciences Bureau, Department of Environment and Natural Resources (MGB, DENR)
Non-Metallic Minerals Resource and Reserve Inventory of the Philippines	
Mineral Production	
Mineral Accounts of the Philippines	Environment and Natural Resources Accounts Division, Philippine Statistics Authority (ENRAD, PSA)
Energy Resources	
Energy Balance Tables	Department of Energy (DOE)
Energy Accounts of the Philippines	ENRAD, PSA
Land	
Area Under Irrigation	National Irrigation Administration (NIA)
Area Reforested	Forest Management Bureau (FMB), DENR
Biological Resources	
Roundwood Forest Production	FMB, DENR
Production of Processed Wood	
Production of Non-Timber Forest Products	FMB, DENR
Imports and Exports of Fish and Fishery Products	Trade Statistics Division, PSA
Imports and Exports of Crops Products	

Data Item	Source
Imports and Exports of Livestock Products	Trade Statistics Division, PSA
Imports and Exports of Minerals Products	
Imports and Exports of Forest Products	
Volume of Production (Commercial, Inland Municipal, Marine Municipal, and Aquaculture)	Fisheries Statistics Division, PSA
Area Planted and Area Harvested: Palay, Corn, and Other Crops	Crops Statistics Division, PSA
Volume of Production: Palay, Corn, and Other Crops	
Estimated Inorganic Fertilizer Use of Palay and Corn	
Annual Production of Organic Soil Amendments	Department of Agriculture (DA)
Total Area of Land Under Organic Farming	
Livestock and Poultry Inventory	Livestock and Poultry Statistics Division, PSA
Animals Slaughtered in Slaughter Houses	
Chickens Dressed in Dressing Plants	
Number of CITES Imports, Exports, and Re-Export Permits Issued	Biodiversity Management Bureau (BMB), DENR
Water Resources	
Number of Water Permits Issued and Volume of Water Allocated	National Water Resources Board (NWRB)
Water Accounts of the Philippines	ENRAD, PSA

III. Compilation Methodology

Following the structure and statistics listed in FDES 2013, data available within the national statistical system were identified and requested from data source agencies, gathered from statistical publications, or collected from official websites. The collected data are checked for consistency and formatted into statistical tables.

IV. Definition of Terms

- a. Aquaculture - Farming of aquatic organisms, including fish, mollusks, crustaceans and aquatic plants. Farming implies some form of intervention in the rearing process to enhance production, such as regular stocking, feeding, protection from predators, etc. (*FDES Glossary, 2013*).
- b. Aquatic resources - Comprise fish, crustaceans, mollusks, shellfish, aquatic mammals and other aquatic organisms that are considered to live within the boundaries of the Exclusive Economic Zone (EEZ) of a country throughout their life cycles, including both coastal and inland fisheries. Migrating and straddling fish stocks are considered to belong to a given country during the period when those stocks inhabit its EEZ (*FDES Glossary, 2013*).
- c. Biological resources - Renewable resources that are capable of regeneration through natural (non-managed or managed) processes. Biological resources include timber, aquatic resources, a range of other animal and plant resources (such as livestock, orchards, crops, and wild animals), fungi, and bacteria (*FDES Glossary, 2013*).
- d. Crops - Plants or agricultural produce grown for food or other economic purposes, such as clothes or livestock fodder (*FDES Glossary, 2013*).
- e. Cultivated biological resources - Cover animal resources yielding repeat products and tree, crop and plant resources yielding repeat products whose natural growth and regeneration are under the direct control, responsibility and management of an institutional unit (*FDES Glossary, 2013*).
- f. Environmental resources (assets) - Naturally occurring living and non-living components of the Earth, together constituting the biophysical environment, which may provide benefits to humanity. Environmental resources include natural resources (such as sub-soil resources (mineral and energy), soil resources, biological resources and water resources) and land. They may be naturally renewable (e.g., fish, timber or water) or non-renewable (e.g., minerals) (*FDES Glossary, 2013*).

- g. Forest - Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 per cent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use (*FDES Glossary, 2013*).
- h. Land - Provides space for natural ecosystems, human habitats and human activities. As this space is finite, the expansion of human activities can reduce the space occupied by natural ecosystems, thus reducing ecosystems' capacity to yield ecosystem goods and services for all living beings. From the resource perspective, land is a unique environmental resource that delineates the space in which economic activities and environmental processes take place and within which environmental resources and economic assets are located (*FDES Glossary, 2013*).
- i. Land cover - The observed (bio) physical cover on the earth's surface (*FDES Glossary, 2013*).
- j. Land use - Reflects both the activities undertaken and the institutional arrangements put in place for a given area for the purposes of economic production, or the maintenance and restoration of environmental functions. Land being "used" means the existence of some kind of human activity or management. Consequently, there are areas of land that are "not in use" by human activities (*FDES Glossary, 2013*).
- k. Livestock - Animal species that are raised by humans for commercial purposes, consumption or labour (ISIC Rev. 4, Section A, Division 01) (*FDES Glossary, 2013*).
- l. Natural biological resources - Consist of animals, birds, fish and plants that yield both once only and repeat products for which natural growth and/or regeneration is not under the direct control, responsibility and management of institutional units (*FDES Glossary, 2013*).
- m. Other non-cultivated biological resources - These resources may include wild berries, fungi, bacteria, fruits, sap and other plant resources that are harvested (ISIC Rev. 4, Section A, class 0230), as well as wild animals that are trapped or killed for production,

consumption and trade (ISIC Rev. 4, Section A, class 0170)
(*FDES Glossary, 2013*).

- n. Renewable energy - Captured from sources that replenish themselves. It includes solar (photovoltaic and thermal), hydroelectric, geothermal, tidal action, wave action, marine (non-tidal currents, temperature differences and salinity gradients), wind and biomass energy, all of which are naturally replenished, although their flow may be limited (*FDES Glossary, 2013*).
- o. Soil resources - Comprise the top layers (horizons) of soil that form a biological system (*FDES Glossary, 2013*).
- p. Stocks of non-renewable energy resources - Amount of known deposits of mineral energy resources (*FDES Glossary, 2013*).
- q. Stocks of mineral resources - Amount of known deposits of non-metallic and metallic mineral resources (*FDES Glossary, 2013*).
- r. Timber resources - Defined by the volume of trees, living and dead, which can still be used for timber or fuel (*FDES Glossary, 2013*).
- s. Water abstraction - Amount of water that is removed from any source, either permanently or temporarily, in a given period of time. Water is abstracted from surface water and groundwater resources by economic activities and households. Water can be abstracted for own use or for distribution to other users (*FDES Glossary, 2013*).
- t. Water resources - Consist of freshwater and brackish water, regardless of their quality, in inland water bodies, including surface water, groundwater, and soil water (*FDES Glossary, 2013*).

V. Dissemination of Results and Revision

The Compendium of Philippine Environment Statistics is published biennially with three (3) components released and posted on the PSA website every year. The web release materials include press release, statistical tables, infographics, and social cards.

List of Statistical Tables

Table 2.1.1	Metallic Minerals Resource and Reserve Inventory of the Philippines, as of 2020
Table 2.1.2	Non-Metallic Minerals Resource and Reserve Inventory of the Philippines, as of 2020
Table 2.2	Mineral Production by Mineral, 2012 to 2021
Table 2.3	Physical Asset Accounts for Mineral Resources, 2013 to 2021
Table 2.4	Imports of Minerals, 2012 to 2021
Table 2.5	Exports of Minerals, 2012 to 2021
Table 2.6	Physical Asset Accounts for Energy Resources, 2012 to 2020
Table 2.7	Energy Balance Table, 2012 to 2020
Table 2.8	Area Under Irrigation, 2012 to 2020
Table 2.9	Area Reforested by Sector, 2012 to 2020
Table 2.10	Log Production by Region, 2012 to 2020
Table 2.11.1	Roundwood Forest Production by Product, 2012 to 2020
Table 2.11.2	Production of Non-Timber Forest Products by Product, 2012 to 2020
Table 2.12	Production of Processed Wood by Product, 2012 to 2020
Table 2.13	Imports of Forest Products, 2012 to 2021
Table 2.14	Exports of Forest Products, 2012 to 2021
Table 2.15.1	Commercial Fisheries Volume of Production by Species and by Geolocation, 2012 to 2021
Table 2.15.2	Inland Municipal Fisheries Volume of Production by Species and by Geolocation, 2012 to 2021
Table 2.15.3	Marine Municipal Fisheries Volume of Production by Species and by Geolocation, 2012 to 2021
Table 2.16.1	Aquaculture Brackishwater Fish Pond Volume of Production by Species and Geolocation, 2012 to 2021
Table 2.16.2	Aquaculture Brackishwater Fish Pen Volume of Production by Species and by Geolocation, 2012 to 2021

Table 2.16.3	Aquaculture Brackishwater Fish Cage Volume of Production by Species and by Geolocation, 2012 to 2021
Table 2.16.4	Aquaculture Freshwater Fish Pond Volume of Production by Species and Geolocation, 2012 to 2021
Table 2.16.5	Aquaculture Freshwater Fish Pen Volume of Production by Species and Geolocation, 2012 to 2021
Table 2.16.6	Aquaculture Freshwater Fish Cage Volume of Production by Species and Geolocation, 2012 to 2021
Table 2.16.7	Aquaculture Marine Pen Volume of Production by Species and Geolocation, 2012 to 2021
Table 2.16.8	Aquaculture Marine Cage Volume of Production by Species and Geolocation, 2012 to 2021
Table 2.16.9	Aquaculture Oyster, Mussel, Seaweed Volume of Production by Species and Geolocation, 2012 to 2021
Table 2.16.10	Aquaculture, Rice Fish Volume of Production by Species and by Geolocation, 2012 to 2021
Table 2.16.11	Aquaculture in Small Farm Reservoir Volume of Production by Species and Geolocation, 2012 to 2021
Table 2.17	Imports of Fish and Fishery Products, 2012 to 2021
Table 2.18	Exports of Fish and Fishery Products, 2012 to 2021
Table 2.19	Other Crops Area Planted_Harvested, 2012 to 2021
Table 2.20	Palay and Corn Area Harvested, 2012 to 2021
Table 2.21.1	Palay and Corn Volume of Production, 2012 to 2021
Table 2.21.2	Other Crops Volume of Production, 2012 to 2021
Table 2.22.1	Annual Production of Organic Soil Amendments (OSA), 2012 to 2021
Table 2.22.2	Total Area of Land Under Organic Farming, 2012 to 2021
Table 2.23.1	Palay Estimated Inorganic Fertilizer Use, 2012 to 2020
Table 2.23.2	Corn Estimated Inorganic Fertilizer Use, 2012 to 2020
Table 2.24	Imports of Crops, 2012 to 2021
Table 2.25	Exports of Crops, 2012 to 2021

Table 2.26.1-2.26.4	Livestock Inventory by Animal Type, Farm Type, and Geolocation, 2012 to 2021
Table 2.26.5	Poultry Inventory by Animal Type, Farm Type, and Geolocation, 2012 to 2021
Table 2.27.1	Animals Slaughtered in Slaughter Houses by Animal Type and Geolocation, 2012 to 2021
Table 2.27.2	Chickens Dressed in Dressing Plants by Geolocation, 2012 to 2021
Table 2.28	Imports of Livestock, 2012 to 2021
Table 2.29	Exports of Livestock, 2012 to 2021
Table 2.30.1	Number of CITES Export Permits Issued, 2012 to 2021
Table 2.30.2	Number of CITES Import Trade Permits Issued, 2012 to 2021
Table 2.30.3	Number of CITES Re-Export Trade Permits Issued, 2012 to 2021
Table 2.31	Physical Flow Accounts of Water, 2012 to 2020
Table 2.32	Number of Water Permits Issued and Volume of Water Allocated by Water Use, 2012 to 2021

VI. Citation

Philippine Statistics Authority. (29 September 2022). *Technical Notes on Compendium of Philippine Environment Statistics 2012 – 2021 Component 2: Environmental Resources and their Use*
<https://psa.gov.ph/content/compendium-philippine-environment-statistics-component-2>

VII. Contact Information

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