



TECHNICAL NOTES

Compendium of Philippine Environment Statistics 2012 – 2022

Component 2: Environmental Resources and their Use

I. Conceptual Framework

The Compendium is a compilation of environment and related socio-economic statistics collected from various government agencies. It is an adoption of the Framework for the Development of Environment Statistics (FDES) 2013.

FDES 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) environmental protection, management, and engagement.

As described in 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 serves 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 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.

The Global Set of Climate Change Statistics and Indicators (GSCCSI) is a comprehensive statistical framework, with statistics, 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. The Global Set was developed by the United Nations Statistics Division in collaboration with the UN Framework

Convention on Climate Change. The GSCCSI consists of five thematic areas, namely: drivers, impacts, vulnerability, mitigation, and adaptation.

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”. Statistics under this component focuses on measuring the availability, consumption, and use of environmental resources.

This component has six subcomponents: mineral resources, energy resources, land, soil resources, biological resources, and water resources. These statistics are linked to the GSCCSI, particularly, on the thematic area of Drivers. These are also closely related to the asset and physical flow accounts of the System of Environmental-Economic Accounting Central Framework.

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.

2.1.1 Stocks and changes of mineral resources – required to assist in the sustainable management of these resources.

2.1.2 Production and trade of minerals – is important to measure the pressure on these resources.

Subcomponent 2.2: Energy Resources

Energy can be produced from non-renewable and renewable sources. As with 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, hydroelectric, geothermal, and biomass. There are two topics under this subcomponent.

2.2.1 Stocks and changes energy resources – which can provide insights on the sustainable management of these resources.

2.2.2 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.

2.3.1 Land use – statistics on land use cover both land in use and land not in use.

2.3.2 Use of forest land – 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 and the impact of natural disasters, and to assess soil depletion due to economic activities. Although conceptually included in the FDES, 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 and aquatic resources and a range of other animal and plant resources (such as livestock, orchards, crops and wild animals), fungi and bacteria. Biological resources may be natural (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.

2.5.1 Timber resources – which are defined by the volume of trees, living and dead, which can still be used for timber or fuel.

2.5.2 Aquatic resources – this includes fish, crustaceans, mollusks, shellfish, aquatic mammals, and other aquatic organisms that are considered to live within the boundaries of the EEZ of a country throughout their life cycles, including both coastal and inland fisheries.

2.5.3 Crops – refer to plants or agricultural produce grown for food or other economic purposes, such as clothes or livestock fodder.

2.5.4 Livestock – this covers animal species raised by humans for commercial purposes, consumption, or labour.

2.5.5 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 comprise 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 consequential in the compilation of the water asset and flow accounts. There are two topics under this subcomponent.

2.6.1 Water resources – measured in terms of flows to and out of the inland water resources during a period of time.

2.6.2 Abstraction, use and returns of water – are 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, soil, biological, and water resources were obtained from the following:

Data Item	Source
Mineral Resources	
<ul style="list-style-type: none"> • Metallic Minerals Resource, Reserve Inventory of the Philippines • Non-Metallic Minerals Resource, Reserve Inventory of the Philippines 	Mines and Geosciences Bureau, Department of Environment and Natural Resources (MGB, DENR)
<ul style="list-style-type: none"> • Mineral Production 	
<ul style="list-style-type: none"> • Mineral Accounts of the Philippines 	Environment and Natural Resources Accounts Division, Philippine Statistics Authority (ENRAD, PSA)
Energy Resources	
<ul style="list-style-type: none"> • Energy Balance Tables 	Department of Energy (DOE)
<ul style="list-style-type: none"> • Energy Accounts of the Philippines 	ENRAD, PSA
Land	
<ul style="list-style-type: none"> • Area Under Irrigation 	National Irrigation Administration (NIA)
<ul style="list-style-type: none"> • Area Reforested 	Forest Management Bureau (FMB), DENR
Biological Resources	
<ul style="list-style-type: none"> • Roundwood Forest Production • Production of Processed Wood 	FMB, DENR
<ul style="list-style-type: none"> • Production of Non-Timber Forest Products 	
	FMB, DENR

Data Item	Source
<ul style="list-style-type: none"> Imports and Exports of Fish and Fishery Products 	Trade Statistics Division, PSA
<ul style="list-style-type: none"> Imports and Exports of Crops 	
<ul style="list-style-type: none"> Imports and Exports of Livestock 	
<ul style="list-style-type: none"> Imports and Exports of Minerals 	
<ul style="list-style-type: none"> Imports and Exports of Forest Products 	
<ul style="list-style-type: none"> Volume of Production (Commercial, Inland Municipal, Marine Municipal, and Aquaculture) 	Fisheries Statistics Division, PSA
<ul style="list-style-type: none"> Area Planted and Area Harvested: Palay, Corn, and Other Crops 	Crops Statistics Division, PSA
<ul style="list-style-type: none"> Volume of Production: Palay, Corn, and Other Crops 	
<ul style="list-style-type: none"> Estimated Inorganic Fertilizer Use of Palay and Corn 	
<ul style="list-style-type: none"> Annual Production of Organic Soil Amendments 	Department of Agriculture (DA)
<ul style="list-style-type: none"> Total Area of Land Under Organic Farming 	
<ul style="list-style-type: none"> Livestock, Chicken and Duck Inventory 	Livestock and Poultry Statistics Division, PSA
<ul style="list-style-type: none"> Animals Slaughtered in Slaughter Houses 	
<ul style="list-style-type: none"> Chickens Dressed in Dressing Plants 	
<ul style="list-style-type: none"> Number of CITES Imports, Exports and Re-Export Permits Issued 	Biodiversity Management Bureau (BMB), DENR
Water Resources	
<ul style="list-style-type: none"> Number of Water Permits Issued and Volume of Water Allocated 	National Water Resources Board (NWRB)

Data Item	Source
<ul style="list-style-type: none"> • Summary of Water Permit Grants by Water Source Type, Use, and Region 	
<ul style="list-style-type: none"> • Water Accounts of the Philippines 	ENRAD, PSA

III. Compilation Methodology

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

IV. Definition of Terms

1. 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*).
2. 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*)
3. Biological resources – renewable resources that are capable of regeneration through natural (non-managed or managed) processes. Biological resources include timber and aquatic resources and a range of other animal and plant resources (such as livestock, orchards, crops, and wild animals), fungi and bacteria. (*FDES Glossary, 2013*)
4. Crops – plants or agricultural produce grown for food or other economic purposes, such as clothes or livestock fodder (*FDES Glossary, 2013*).

5. 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*).
6. 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*)
7. 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*)
8. 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*)
9. Land cover – the observed (bio) physical cover on the earth's surface (*FDES Glossary, 2013*).
10. 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*)

11. Livestock – animal species that are raised by humans for commercial purposes, consumption, or labour (ISIC Rev. 4, Section A, Division 01) (*FDES Glossary, 2013*).
12. 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*).
13. 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*).
14. 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*)
15. Soil resources – comprise the top layers (horizons) of soil that form a biological system (*FDES Glossary, 2013*).
16. Stocks of non-renewable energy resources – amount of known deposits of mineral energy resources (*FDES Glossary, 2013*).
17. Stocks of mineral resources – amount of known deposits of non-metallic and metallic mineral resources (*FDES Glossary, 2013*).
18. Timber resources – defined by the volume of trees, living and dead, which can still be used for timber or fuel (*FDES Glossary, 2013*).
19. 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*)

20. 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 updated annually. The web release material includes press release, statistical tables, infographics, and social cards.

List of Statistical Tables:

Table 2.1.1	Metallic Minerals Resource, Reserve Inventory of the Philippines
Table 2.1.2	Non-Metallic Minerals Resource, Reserve Inventory of the Philippines
Table 2.2	Mineral Production by Mineral
Table 2.3	Physical Asset Accounts for Mineral Resources
Table 2.4	Imports of Minerals
Table 2.5	Exports of Minerals
Table 2.6	Physical Asset Accounts for Energy Resources
Table 2.7	Energy Balance Table
Table 2.8	Area Under Irrigation
Table 2.9	Area Reforested by Sector
Table 2.10	Log Production by Region
Table 2.11.1	Roundwood Forest Production by Product
Table 2.11.2	Production of Non - Timber Forest Products by Product

Table 2.12	Production of Processed Wood by Product
Table 2.13	Imports Forest Products
Table 2.14.1	Exports Forest Products
Table 2.15.1	Commercial Fisheries Volume of Production by Species and by Geolocation
Table 2.15.2	Inland Municipal Fisheries Volume of Production by Species and by Geolocation
Table 2.15.3	Marine Municipal Fisheries Volume of Production by Species and by Geolocation
Table 2.16.1	Aquaculture Brackish water Fish Pond Volume of Production by Species and Geolocation
Table 2.16.2	Aquaculture Brackish water Fish Pen Volume of Production by Species and by Geolocation
Table 2.16.3	Aquaculture Brackish water Fish Cage Volume of Production by Species and by Geolocation
Table 2.16.4	Aquaculture Freshwater Fish Pond Volume of Production by Species and Geolocation
Table 2.16.5	Aquaculture Freshwater Fish Pen Volume of Production by Species and Geolocation
Table 2.16.6	Aquaculture Freshwater Fish Cage Volume of Production by Species and Geolocation
Table 2.16.7	Aquaculture Marine Pen Volume of Production by Species and Geolocation
Table 2.16.8	Aquaculture Marine Cage Volume of Production by Species and Geolocation
Table 2.16.9	Aquaculture Oyster, Mussel, Seaweed Volume of Production by Species and Geolocation
Table 2.16.10	Aquaculture, Rice Fish Volume of Production by Species and by Geolocation
Table 2.16.11	Aquaculture in Small Farm Reservoir Volume of Production by Species and Geolocation
Table 2.17	Imports of Fish and Fishery Products
Table 2.18	Exports of Fish and Fishery Products
Table 2.19	Other Crops Area Harvested, Planted
Table 2.20	Palay and Corn Area Harvested

Table 2.21.1	Palay and Corn Volume of Production
Table 2.21.2	Other Crops Volume of Production
Table 2.22.1	Annual Production of Organic Soil Amendments (OSA)
Table 2.22.2	Total Area of Land Under Organic Farming
Table 2.23.1	Palay Estimated Inorganic Fertilizer Use
Table 2.23.2	Corn Estimated Inorganic Fertilizer Use
Table 2.24	Imports of Crops
Table 2.25	Exports of Crops
Table 2.26.1 to 2.26.4	Livestock Inventory by Animal Type, Farm Type and Geolocation
Table 2.26.5 to 2.26.6	Poultry Inventory by Animal Type, Farm Type and Geolocation
Table 2.27.1 to 2.27.4	Animals Slaughtered in Slaughter Houses by Animal Type and Geolocation
Table 2.27.5	Chickens Dressed in Dressing Plants by Geolocation
Table 2.28	Imports of Livestock
Table 2.29	Exports of Livestock
Table 2.30	Number of CITES Trade Permits Issued
Table 2.31	Physical Flow Accounts of Water
Table 2.32.1	Number of Water Permits Issued and Volume of Water Allocated by Water Use

VI. Citation

Philippine Statistics Authority. (07 December 2023). *Technical Notes on Compendium of Philippine Environment Statistics 2012 – 2022 Component 2: Environmental Resources and their Use*. <https://psa.gov.ph/content/compendium-philippine-environment-statistics-component-2-environmental-resources-and-0>.

VII. Contact Information

Ms. Virginia M. Bathan
Chief Statistical Specialist
Environment and Natural Resources Accounts Division
(632) 8376-2041
enrad.staff@psa.gov.ph

For data request, you may contact:
Knowledge Management and Communications Division
(632) 8462-6600 locals 839, 833, and 834
info@psa.gov.ph