AN INTRODUCTION OF FRAMEWORK FOR THE DEVELOPMENT OF ENVIRONMENT STATISTICS (FDES)

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6.
Environment
Protection,
Management and
Engagement
2.
Environmental
Resources and
their Use
1.
Environmental
Conditions and
Quality
5.
Human
Settlements and
Environmental
Health
3.
Residuals
4.
Extreme Events
and Disasters

Why is a framework needed?

- Environment statistics is still a relatively new statistical domain.

- Human wellbeing depends on the environment has led to a growing list of environmental issues on which decisions must be taken, such as:
  - climate change
  - biodiversity loss
  - natural resource management

An environment statistics framework:

- Marks out the scope of environment statistics
- Facilitate presentation of data from various subject areas and sources;
- Suitably simplifies the complexity of the environment so as to render its measurement tractable
- Identify the range of statistics relevant to societal decision-making regarding the environment
- It is coherent with frameworks for statistics already used in other domains in order to facilitate the integration of environment statistics

Component 2: Environmental Resources and their Use

Environmental resources are:

The living

Non living

constituents of the earth together comprising the biophysical environment that may provide benefits to humanity.

Environmental resources include:

- subsoil resources (non energy and energy minerals);
- land;
- soil resources;
- biological resources;
- water resources

They can be naturally:

renewable (e.g., fish, timber or water)

non-renewable (e.g., minerals).

Component 2, Environmental resources and their use

- Focused on measuring stocks and changes in stocks of these resources.

- Changes in the stocks of environmental resources include:

additions and reductions, from both anthropogenic and natural activities.

Component 2 contains 6 sub-components

2.1: Non-energy Mineral Resources

2.2: Energy Resources

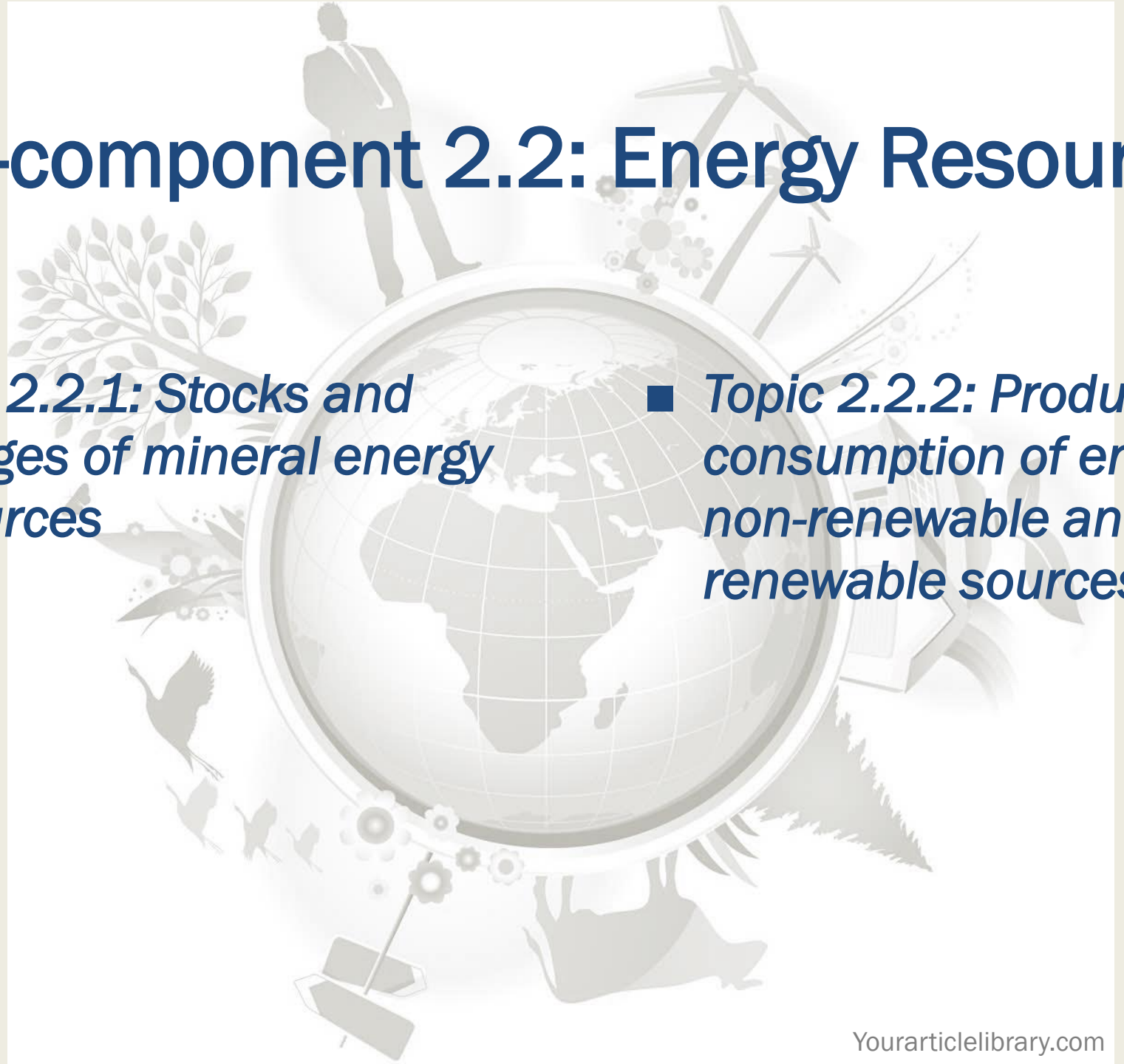
2.3: Land

2.4: Soil Ressources

2.5: Biological Resources

2.6: Water Resources.

Sub-component 2.2: Energy Resources



- *Topic 2.2.1: Stocks and changes of mineral energy resources*
- *Topic 2.2.2: Production and consumption of energy from non-renewable and renewable sources*

Mineral energy resources:

- cannot be renewed in any human timescale

Statistics on the magnitude of their stocks through time are required in order to:

- assist in the sustainable management of these resources.

Stocks of mineral energy resources are defined as:

- The amount of known deposits of mineral energy resources.

Example of *mineral energy resources*

Fossil fuel:

- natural gas,
- crude oil
- natural gas liquids
- oil shale
- natural bitumen
- extra heavy oil
- coal and lignite

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peat

uranium

Thorium ores

Extraction of mineral energy resources reflects:

The quantity of the resource physically removed from the deposit during a period of time, usually one year.

Main sources of statistics about extraction of mineral resources are:

Economic statistics on mining as well as energy statistics.

Topic 2.2.2: Production and consumption of energy from non-renewable and renewable sources

- Energy production refers to the capture, extraction or manufacture of fuels or energy in forms which are ready for general consumption.

- Energy is produced for human consumption in a number of different ways, depending on its source.

Topic 2.2.2: Production and consumption of energy from non-renewable and renewable sources

- *Energy production, transformation, distribution and consumption are made with different efficiency rates.*
- *These processes cause distinct environmental impacts (land use change, air pollution, GHG emissions, waste etc.)*
- *Producing statistics to describe these activities is key to environmental sustainability policy.*
- *Total energy production originates from non-renewable and renewable sources.*

The main sources of statistics on the production and consumption of energy are:

energy statistics and energy balances that are available from national energy authorities or NSOs in most countries.

The most important statistics cover the production of energy by the different types of non-renewable and renewable energy sources:

Production of primary and secondary energy,
The total consumption of energy,
The amount of electricity produced,
The installed capacities for electricity production.

Table 3.2: Basic Set of Environment Statistics – Component 2: Environmental Re

Component 2: Environmental Resources and their Use			
Sub-component 2.1: Non-energy Mineral Resources			
Topic	**Statistics and Related Information** (**Bold Text - Core Set/Tier 1**; Regular Text - Tier 2; *Italicized Text - Tier 3*)	**Category of Measurement**	**Potential Aggregations and Scales**
Topic 2.1.1: Stocks and changes of non-energy mineral resources	a. Non-energy mineral resources		▪ By mineral ▪ National ▪ Sub-national
	1. **Stocks of commercially recoverable resources**	Mass, Volume	
	2. New discoveries	Mass, Volume	
	3. *Upward reappraisals*	Mass, Volume	
	4. *Upward reclassifications*	Mass, Volume	
	5. **Extraction**	Mass, Volume	
	6. *Catastrophic losses*	Mass, Volume	
	7. *Downward reappraisals*	Mass, Volume	
	8. *Downward reclassifications*	Mass, Volume	
	9. Stocks of potentially commercially recoverable resources	Mass, Volume	
	10. *Stocks of non-commercial and other known resources*	Mass, Volume	
Topic 2.1.2: Production and trade of non-energy minerals	a. Production of non-energy minerals	Mass, Volume	
	b. Imports of non-energy minerals	Currency, Mass, Volume	
	c. Exports of non-energy minerals	Currency, Mass, Volume	

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Sub-component 2.2: Energy Resources			
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Topic 2.2.1: Stocks and changes of mineral energy resources	a. Mineral energy resources		▪ By resource (e.g., natural gas, crude oil and natural gas liquids, oil shale, natural bitumen and extra heavy oil (includes oil extracted from oil sands), coal and lignite, peat, non-metallic minerals except for coal or peat, uranium and thorium ores, and other metallic minerals) ▪ National ▪ Sub-national
	1. **Stocks of commercially recoverable resources**	Mass, Volume	
	2. New discoveries	Mass, Volume	
	3. *Upward reappraisals*	Mass, Volume	
	4. *Upward reclassifications*	Mass, Volume	
	5. **Extraction**	Mass, Volume	
	6. *Catastrophic losses*	Mass, Volume	
	7. *Downward reappraisals*	Mass, Volume	
	8. *Downward reclassifications*	Mass, Volume	
	9. Stocks of potentially commercially recoverable resources	Mass, Volume	
	10. *Stocks of non-commercial and other known resources*	Mass, Volume	
	11. **Imports of energy minerals**	Currency, Mass, Volume	
	12. **Exports of energy minerals**	Currency, Mass, Volume	

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Topic 2.2.2: Production and use of energy from non-renewable and renewable sources	a. Production of energy from non-renewable and renewable sources		• By non-renewable resource (e.g., petroleum, natural gas, coal, fission fuels, non-sustainable firewood, waste, other non-renewables) • By renewable resource (e.g., solar, wind, geothermal, hydropower and ocean resources, solid biomass, biogas and liquid biofuels) • National • Sub-national
	1. **Total**	Energy unit, Mass, Volume	
	2. **Non-renewable sources**	Energy unit, Mass, Volume	
	3. **Renewable sources**	Energy unit, Mass, Volume	

	b. Production of energy		▪ By primary energy resource (e.g., petroleum, natural gas, coal, hydroenergy, geothermal, fission fuels, cane products, other primary) ▪ By secondary energy resource (e.g., electricity, liquefied petroleum gas, gasoline/alcohol, kerosene, diesel oil, fuel oil, coke, charcoal, gases, other secondary) ▪ National ▪ Sub-national
	1. **Primary energy production**	Energy unit, Mass, Volume	
	2. **Secondary energy production**	Energy unit, Mass, Volume	
	c. **Total use of energy**	Energy unit, Mass, Volume	▪ By energy source ▪ By household ▪ By ISIC economic activity ▪ National ▪ Sub-national
	d. Electric energy		▪ By energy source ▪ National ▪ Sub-national
	1. **Electricity production**	Energy unit	
	2. **Installed capacities**	Energy unit	

Source:

- An introduction of Framework for the Development of Environment Statistics (FDES) کامل بنویسم