DA12 project Kick-off webinar
9 - 11 March 2021

Caribbean SIDS relevant climate change and disasters indicators for evidence-based policies

Types and Sources of Statistics

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Sources of Environment Statistics

- The data needed to produce environment statistics is produced by a wide variety of institutions using various methods of collection and/or compilation

- It is important to understanding the pros and cons of each type of source in the production of ES

- Some sources (censuses, surveys, and administrative records) are common in other statistical domains, but others are specific to ES: monitoring stations, remote perception, estimation models.

Types of Sources of Environment Statistics

1a. **Censuses** (population, housing, economic, agricultural, establishment)

1b. **Surveys** (households, agriculture, enterprises, employment, economics, environmental)

2. **Administrative records** (of government ministries, departments and agencies, utility companies, authorities of related areas such as water, land, energy, forest, fisheries, education, health, budget, etc.)

3. **Remote sensing and thematic mapping** (satellite imagery, forests or land use and/or coverage, water pollution levels in lakes and lagoons)

4. **Monitoring systems** (field monitoring stations for water quality, precipitation, air pollution, climate, soils, etc.)

5. **Scientific research**, projects and studies.

6. **Estimation and modelling** (regressions, simulation, extrapolation and interpolation)

1. Censuses and surveys

a. **Censuses**: data is collected from the entire population under study.

b. **Surveys**: a representative proportion of the population under study, defined on the basis of specific sampling methods.

Environmental statistics can be collected from surveys in the following ways:
* adding environmental questions/modules to surveys and censuses primarily aimed at collecting general or other data
* conducting surveys whose primary objective is to collect environmental data and statistics

Data collected through environmental surveys are:
* Not always feasible due to budget constraints;
* The data can often be obtained from other statistical surveys (e.g., demographic, social, economic, sectoral) whose primary objective is to produce other types of statistics.

2. Administrative records

Government agencies often contain a large amount of data in their administrative records. These data can be transformed to produce environmental statistics:

Government administration data is usually produced to document administrative, legal and internal, health, foreign trade, education, and trade:
- Examples: Environmental education, environmental management, environmental health, household activities and environmental-related establishments.

Advantages:
- The cost of collecting data from administrative records is significantly lower than establishing and conducting specialised surveys;
- The response load level is minimized;
- Full coverage is achieved for administrative units (e.g., parish data)

Possible limitations:
- Differences between administrative and statistical terms and definitions
- Risk of handling reported data
- Data may not be verified or validated for statistical purposes, there may be restrictions on access to data
- Data coverage, while complete for administrative purposes, may not match statistical requirements.

3. Remote sensing and thematic mapping

Enables:

The collection of data in hazardous or inaccessible locations; the capture of large regions without entering the territory (e.g., plant cover of a country)

Substitution of large data collection that could be costly and time consuming, ensuring that areas or objects are not disturbed in the data collection process

Remote perception includes: sensors on satellites, aircraft, helicopters, buoys, ships, balloons, drones and probes

Data processing results can be presented in the form of images, maps and classifications.

Example:

Remote perception data can be captured and analysed to build forest cover measurements, compare the impact of natural and technological disasters, verify soil erosion area, desertification, determine pollution extent, track land cover changes and estimate populations of different animal species.

Remote sensing, **combined with proper terrain verification and direct measurements**, **provides high-quality data for statistics on the environment**.

4. Monitoring systems

This usually consists of on-the-spot or remote monitoring stations which are used to capture quantitative and qualitative elements of the environment, e.g., water, air or soil quality/contamination; as well as meteorological, hydrological and atmospheric parameters.

Main advantages:
- Data is generally collected using verifiable scientific methods
- The data are generally validated (calibrated instruments)
- Data is generally available in long series and relevant geographic coverage
- Models are frequently used to improve data quality.

Possible limitations:
Ground monitoring stations are usually located in critical areas where:
- High levels of pollution are observed
- Areas are highly sensitive
- Large number of the population are exposed or affected.

Consequently, measurements and data will be site-specific and difficult to apply to a larger area (sometimes there is no point in adding them) to obtain quality measures on larger territories (e.g., national).

5. Scientific research and special projects

The data collected from this type of research or from special projects will be focused on the research topic.

Main advantages:
- The data produced is generally available at no cost or low cost
- The response burden is minimised
- The data can often be used to fill gaps in data series
- They are useful for determining coefficients for models.

Possible limitations:
- Data may be based on terms and definitions other than those used in statistics
- Access to micro-data may be limited
- They may lack metadata
- Data coverage is local or case-specific (e.g., limited areas, industries)
- The data is produced on a time limit (no continuity).

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Thank you for your attention!

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