

Data Sources in Environment and Climate Change Statistics



Ninth Meeting of the Expert Group on Environment Statistics
New York, 25-28 October 2022 (virtual)



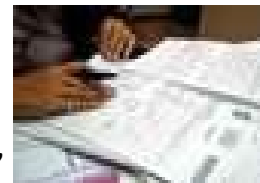
Outline

- ❑ List of Sources
- ❑ Statistical Surveys, including Censuses and Specialized Surveys
- ❑ Population and Housing Censuses
- ❑ Statistics and Indicators that can be Sourced from Censuses
- ❑ Specialized Surveys
- ❑ Conclusion



Sources of Data

1. **Statistical surveys** (e.g., censuses or sample surveys of population, housing, agriculture, enterprises, households, employment, and different aspects of environment management)
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.)



FDES 2013, pg. 8



Sources of Data (2)

5. Scientific research, special projects and studies undertaken to fulfill domestic or international demand

FDES 2013, pg. 8

Other sources include **Estimation, projections and modeling** (e.g. regressions, simulation, extrapolation and interpolation).

Inventories applicable to GHG emissions and forest-related indicators and statistics



Statistical surveys (including censuses and specialized surveys)



Exploring New Areas of data collection in Environment and Climate Change Statistics

UNSD has been reviewing existing Censuses and surveys for many years to support countries in adding new or expanding existing questions. There has been:

- Substantial increase in the number of surveys and censuses available [online](#) (over 100).
- Better outreach to countries who have provided surveys in several languages other than English (e.g. Arabic, French, Portuguese, Spanish).
- Filterable by themes (13) separately or combined, country and year.
- A range of 27 countries spanning six regions (Africa, Asia, Europe, North America, Latin America and the Caribbean, Oceania).
- Relatively heavy focus on the themes of waste and water (32/90 surveys) but efforts are afoot to expand this selection to cover more themes including climate change

Search

Australia, Agricultural census, 2015

Country: Australia Year: 2015 Theme: Land and agriculture

[Document Link](#)

[Background Link](#)

Australia, Land management practices survey 2013

Country: Australia Year: 2013 Theme: Land and agriculture

[Document Link](#)

[Background Link](#)

Australia, Rural environment and agricultural commodities survey 2014

Country: Australia Year: 2014 Theme: Land and agriculture

[Document Link](#)

[Background Link](#)

Botswana, Agricultural censuses questionnaire - Form I Identification, 2015

Country: Botswana Year: 2015 Theme: Agriculture

[Document Link](#)

[Background Link](#)

Botswana, Agricultural censuses questionnaire - Form II Traditional Farmers, 2015

Country: Botswana Year: 2015 Theme: Agriculture

[Document Link](#)

[Background Link](#)



Exploring New Areas of data collection in Environment and Climate Change Statistics (2)

- The Environment Statistics Section (EVSS) has been collaborating with the Secretariat of the Pacific Community (SPC) who are in the process of developing a module aimed at collecting Climate Change data. <https://www.spc.int/>
- The Section is working in close collaboration internally with the Demographic Statistics Section in reviewing environment-related questions in the population and housing censuses (PHC).

<https://unstats.un.org/unsd/demographic-social/census/document-resources/>



Population and Housing Censuses (PHC)



Environment as a Separate Section

Censuses have traditionally included questions, and in some cases a separate section, on environmentally-related issues such as disposal of waste, water quality, toilet facility, source of energy, type of fuels used, etc.

Unique questions or separate sections, however, are still in the developmental stage or are very rare.

Although not exhaustive some examples of countries having separate Environment sections or unique questions are:

- In 2000 round of PHC Belize was the only country in the world found to have a separate section on environment in the census;
- In 2010 round Belize and Trinidad and Tobago each had a separate section on the Environment.
- In 2020 round Grenada and Tanzania each had a separate section on the Environment. Tanzania added several new questions, including on climate change, in this round.



Examples of Environment as a Separate Section

Some countries have a separate section for environment in their PHC questionnaire.

For 2000 Round of Censuses Belize was the only country in the world at that time with a separate section for environment.

SECTION 2 ENVIRONMENTAL ISSUES FOR A PERSON 18 YEARS AND OVER

2.1 Which environmental issue are you most concerned about in your area?

- 01 Waste disposal
- 02 Water contamination
- 03 Drainage
- 04 Air pollution
- 05 Use of pesticides
- 06 Deforestation
- 07 Destruction of mangroves
- 08 Soil erosion
- 09 Squatting
- 10 Other (Specify _____)
- 11 Flooding
- 12 Have no issue of concern
- 99 Don't know/Not stated

2.2 What is your main source of environmental information?

- 1 Relatives/Friends
- 2 Newspaper, TV or Radio
- 3 Internet
- 4 School/Library
- 5 Environmental interest group
- 6 Government or local council
- 7 Other (Specify _____)
- 8 None
- 9 Don't know/Not stated

2.3 Do you believe the information available in Belize, on the environment is sufficient or not enough?

- 1 Sufficient
- 2 Not enough
- 3 Don't know

2.4 In the last five years, do you believe the overall quality of the environment in Belize has improved, worsened or remained much the same?

- 1 Improved
- 2 Worsened
- 3 Remained much the same
- 4 Unsure/Don't know

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Examples of Environment as a Separate Section (2)

Belize maintained a separate section on environment in 2010 round.

SECTION 4 ENVIRONMENT Now, we want to identify your household's concerns about issues negatively affecting the quality of natural resources such as the air, water, and land.

4.1: What environmental issues affect and/or concern you in your area or community?

[DO NOT READ OPTIONS]

	Affect	Concern	Both
a. Waste disposal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Water contamination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Drainage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Air pollution	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Use of pesticide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Deforestation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Destruction of mangroves	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Soil erosion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Squatting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. Flooding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k. Integrity of protected areas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l. Impacts of oil exploration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
m. Noise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
n. Other (specify) _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> None			
<input type="radio"/> DK/NS			

4.2: What are your sources of environmental information?

[MULTIPLE RESPONSES ALLOWED]

- Relatives/Friends
- Newspaper, TV or Radio
- Internet
- School/Library
- Environmental interest group
- Government or local town, city or village council
- Other (specify) _____
- None
- DK/NS

In 2011 Trinidad and Tobago also had a separate environment section.

SECTION 12: ENVIRONMENT - HEAD OF HOUSEHOLD

53. DISPOSAL OF HOUSEHOLD GARBAGE

How does this household usually dispose of its garbage?

Use the following options to answer this question.

a) Garbage truck/skip/bin	c) Burning	e) Burying	g) Other
b) Dumping (land)	d) Dumping river/sea/pond/drain	f) Compost	

O 01 White goods - fridge, washing machine, stove a b c d e f g (specify) _____

O 02 Electronic items - stereo, computer, fan, TV etc. a b c d e f g (specify) _____

O 03 Organics - food and vegetables a b c d e f g (specify) _____

O 04 Glass and glass products a b c d e f g (specify) _____

O 05 Plastic - containers, bottles etc. a b c d e f g (specify) _____

O 06 Paper and paper products a b c d e f g (specify) _____

O 07 Tyres of vehicles a b c d e f g (specify) _____

O 08 Vegetation and wooden products a b c d e f g (specify) _____

54. ENVIRONMENTAL ISSUES

INTERVIEWER:
Multiple responses can be shaded.

What environmental issue(s) affect(s) your household in your community?

O 00 None	O 06 Deforestation	O 12 <u>Waste water</u> discharge
O 01 Solid Waste disposal	O 07 Destruction of mangrove	O 13 Excessive noise
O 02 Water contamination	O 08 Soil erosion	O 77 Other (specify) _____
O 03 Drainage	O 09 Flooding	O 98 Don't know
O 04 Air pollution	O 10 Cell tower	O 99 Not stated
O 05 Use of pesticide	O 11 Sewerage discharge	



Examples of Environment as a Separate Section (3)

In 2021 Grenada had a separate section on the environment

In 2022 Tanzania has a separate section on the environment with new questions (not yet available publicly).

HOUSEHOLD INFORMATION ENVIRONMENT

HF1: In the last year, did you have any environmental issue with the following?

MULTI-SELECT: YES/NO

HF1

- 01 / Waste disposal
- 02 / Water contamination
- 03 / Drainage
- 04 / Air pollution
- 05 / Use of pesticide
- 06 / Deforestation
- 07 / Destruction of mangroves
- 08 / Soil erosion
- 09 / Squatting
- 10 / Flooding
- 11 / Cell Phone tower
- 12 / Noise
- 13 / Coastal erosion
- 14 / Land Slippage
- 88 / Anything Else

HF1: Specify other environment issue

TEXT

HF1_other

E HF1.Yes.Contains(88)

SECTION C: ENVIRONMENT

C1: Does this Hamlet/Village/Shehia have bordered with the following environment?

No.	Environment	Have/ border Yes = 1, No = 2
1	River or Stream	
2	Lake	
3	Sea/Ocean	
4	Dam	
5	Forest	
6	Grazing land	
7	Land for Cultivation	
8	National Park/Game Reserve/Reserved Area/Tourism/antiquities	

C2: Does this community have any knowledge about climate change?

Yes = 1 | No = 2

C3: How does the current climate change differ from that of over past 10 years?

- A. Temperature increases
- B. Temperature decreases
- C. Rain increases
- D. Rain decreases
- E. Change in rain seasons
- F. Increased sea level
- G. Increased lake/Dam level
- H. Decreased lake/Dam level
- I. No difference



Unique Questions on the Environment in the PHC

In 2000 round of PHC Niue Island, a territory in the Pacific Islands, Kiribati and Hungary included unique questions on specific environmental issues.



Examples of Some Unique Questions in the PHC

Niue, 2001 Census: [<https://unstats.un.org/unsd/envstats/censuses/>]

Chemical awareness: Do you or any member of your household use any of the following?
Are you and your household aware of the harmful effects of chemicals to the environment and health? Are you prepared or willing to reduce the amount of chemicals

- herbicides
- pesticides
- fungicides used by your household?

Kiribati, 2005 Census: <https://unstats.un.org/unsd/demographic-social/census/document-resources/?search=&docType=&countryName=Kiribati>

Environmental Issues (Yes/No)

Does this household dispose rubbish by

- Collection point (Council): ____
- Recycle system: ____
- Beach: ____
- Ground Pit (marua): ____
- Other places not defined: ____



Examples of Some unique questions

Kiribati, 2005 Census - <https://unstats.un.org/unsd/demographic-social/census/document-resources/?search=&docType=&countryName=Kiribati>

Environmental Issues (Yes/No);
Does this household have seawall:

Hungary, 2001 Census - <https://unstats.un.org/unsd/demographic-social/census/document-resources/?search=&docType=&countryName=Hungary>

What is the **character of the environment** of the building?

- 1 Traditional urban
- 2 Building blocks, housing estate
- 3 Suburb of villas
- 4 Family houses
- 5 Rural
- 6 Recreation district
- 7 Industrial zone
- 8 Sparsely built outskirts
- 9 Grouped built outskirts
- 10 Unsatisfactory from social point of view
- 11 Other



Statistics and Indicators from the Global Set that can be sourced from Censuses



Statistics and Indicators from the Global Set that can be derived from Censuses

Area: Drivers

17. Population growth, (Tier 1)

Field	Description	
Indicator	Population growth	
Statistics		Population
Topic	Population	
Themes	Population	
Data collection methods	Census, survey, population register	Census, survey, population register

Area: Drivers

18. Urban population as a proportion of total population, (Tier 1)

Field	Description	
Indicator	Urban population as a proportion of total population	
Statistics		Population living in urban areas
Topic	Population	Population
Themes	Population	Population
Data collection methods	Census, survey, population register	Census, survey, population register



Statistics and Indicators that can be derived from Censuses

Area: Drivers

24. Livestock units per agricultural area, (Tier 2)

Field	Description		
Indicator	Livestock units per agricultural area		
Statistics		Area under land use categories [agriculture]	Number of live animals in livestock units
Topic	Land and agriculture		
Themes	Agriculture		
Data collection methods	Censuses	Censuses, remote sensing and thematic mapping	Censuses

Area: Drivers

25. Use of nitrogen fertilizers per hectare of total agricultural area (cropland and pastures), (Tier 2)

Field	Description		
Indicator	Use of nitrogen from chemical fertilizers per hectare of total agricultural area (cropland and pastures)		
Statistics		Chemical fertilizers	Area under land use categories [agriculture]
Topic	Land and agriculture		
Themes	Agriculture		
Data collection methods		Censuses, proxy from import & production records	Censuses, remote sensing and thematic mapping



Statistics and Indicators that can be derived from Censuses

Area: Vulnerability

83. Customer price of drinking water, (Tier 2)

Field	Description	
Indicator	Customer price of drinking water	
Statistics	Price of water	
Topic	Water security, food security and agriculture	
Themes	Water	
Data collection methods	Surveys, censuses	Surveys, censuses

Area: Vulnerability

84. Water production cost, (Tier 2)

Field	Description
Indicator	Water production cost
Statistics	Equivalent to the indicator
Topic	Water security, food security and agriculture
Themes	Water
Data collection methods	Surveys, censuses



Statistics and Indicators that can be derived from Censuses

Area: Vulnerability

85. Area of biofuels (and other non-food crops) as a proportion of total agricultural area

Field	Description		
Indicator	Area of biofuels (and other non-food crops) as a proportion of total agricultural area		
Statistics		Area of biofuels production	Area under land use categories [agriculture]
Topic	Water security, food security and agriculture		
Themes	Agriculture		
Data collection methods		Administrative records, surveys	Censuses, remote sensing and thematic mapping

Area: Vulnerability

86. Population relying on subsistence and pastoral farming

Field	Description		
Indicator	Population relying on subsistence and pastoral farming		
Statistics		Area of rainfed agricultural systems	Area under land use categories [agriculture]
Topic	Water security, food security and agriculture		
Themes	Agriculture		
Data collection methods		Farm surveys	Censuses, remote sensing and thematic mapping



Statistics and Indicators that can be derived from Censuses

Area: Vulnerability

92. Buildings (settlements) vulnerable to climate change, (Tier 3)

Field	Description		
Indicator	Buildings (settlements) vulnerable to climate change		
Statistics		Hazard-prone areas	Number of dwellings with adequacy of building materials defined by national or local standards
Topic	Buildings and infrastructure vulnerable to climate change		
Themes	Buildings		
Data collection methods		Remote sensing and thematic mapping	Household surveys, censuses

Area: Vulnerability

93. Coverage of essential public health services, (Tier 3)

Indicator	Coverage of essential public health services
Statistics	Refer to original source in metadata
Area	Vulnerability
Topic	Vulnerable population
Themes	Health
Data collection methods	Administrative records



Statistics and Indicators that can be derived from Censuses

Area: Vulnerability

98. Proportion of population using safely managed drinking water services, (Tier 2)

Indicator	Proportion of population using safely managed drinking water services	
Statistics		Population using an improved drinking water source
Area	Vulnerability	
Topic	Vulnerable population	
Themes	Water resources	
Data collection methods	Household surveys and censuses; Administrative reports. Monitoring systems. Compilation/extraction of data from NSO, ministries of water, sanitation, health, environment.	Household surveys and censuses; Administrative reports. Monitoring systems. Compilation/extraction of data from NSO, ministries of water, sanitation, health, environment.

Area: Vulnerability

99. Proportion of population with access to heating/cooling (Tier 3)

Field	Description		
Indicator	Proportion of population with access to heating/cooling		
Statistics		Population with access to heating	Population with access to cooling
Topic	Vulnerable population		
Themes	Energy		
Data collection methods		Surveys, censuses	Surveys, censuses



Statistics and Indicators that can be derived from Censuses

Area: Vulnerability

101. Proportion of the population living below the international poverty line by sex, age, employment status and geographic location (urban/rural), (Tier 2)

Field	Description
Indicator	Proportion of the population living below the international poverty line by sex, age, employment status and geographic location (urban/rural)
Statistics	Refer to original source in metadata
Topic	Vulnerable population
Themes	Poverty
Data collection methods	Surveys; censuses

Area: Vulnerability

103. Proportion of urban population living in slums, informal settlements or inadequate housing, (Tier 2)

Field	Description		
Indicator	Proportion of urban population living in slums, informal settlements or inadequate housing		
Statistics		Area of slums	Population living in informal settlements
Topic	Vulnerable population		
Themes	Poverty		
Data collection methods		Surveys, censuses	Surveys, censuses



Statistics and Indicators that can be derived from Censuses

Area: Vulnerability

104. Indigenous population living in isolated areas, (Tier 3)

Field	Description
Indicator	Indigenous population living in isolated areas
Statistics	Number of indigenous persons
Topic	Vulnerable population
Themes	Indigenous population
Data collection methods	Surveys, censuses

Area: Vulnerability

105. Proportion of population with disability, (Tier 3)

Field	Description
Indicator	Proportion of population with disability
Statistics	
Area	Vulnerability
Topic	Vulnerable population
Themes	Disability
Data collection methods	Censuses, Surveys



Statistics and Indicators that can be derived from Censuses

Areas: Adaptation, mitigation

147. Buildings adapted to climate change, (Tier 3)

Field	Description	
Indicator	Water use per capita	
Statistics		Total freshwater available for use
Topic	Water management	
Themes	Water	
Data collection methods		Censuses, household surveys, administrative records

Area: Adaptation

155. Water use per capita, Tier 2)

Field	Description	
Indicator	Buildings adapted to climate change	
Statistics		Number of dwellings with adequacy of building materials defined by national or local standards
Topic	Area-based adaptation to climate change	
Themes	Buildings	
Data collection methods	Administrative records	Monitoring systems, censuses, surveys, administrative reports



Specialized surveys



Specialised Surveys

Surveys are an additional method of data collection

Questions/module on the environment can be added to existing surveys e.g. LFS, HHS, MICS, etc.

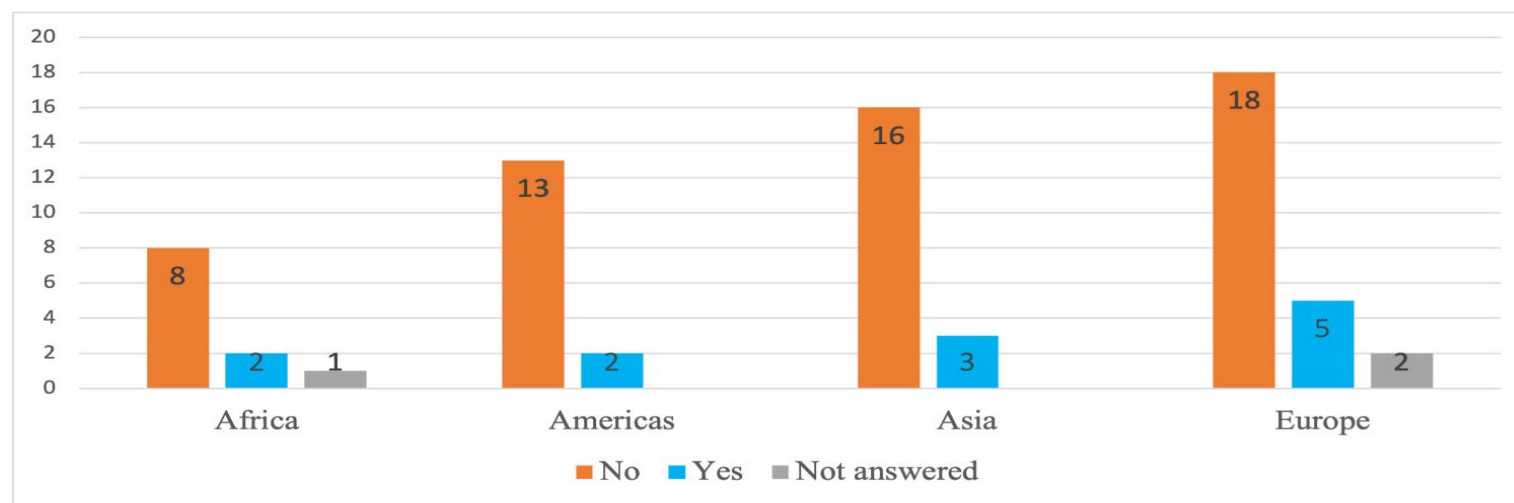
Specialized Surveys can be developed -

- Several surveys can be found on UNSD's website e.g. on water and waste and more are expected to be added including on Climate change.
- For Climate Change Nepal has developed a dedicated survey on the impact of Climate Change.
- The Global Consultation conducted by UNSD in 2021 on the draft Global Set revealed information from a wide range of countries on specialised surveys or modules added to existing surveys.



Specialized Surveys - Global Consultation 2021, Part 1

From Section D, Production and reporting of climate change statistics, **Question D5: Has the NSO developed any specialized climate change surveys, or modules in existing censuses/surveys** revealed the following -



Twelve responses referenced an NSO's development of a specialized climate change survey, or module within an existing census or survey. Knowing full well that historically, NSOs have rarely incorporated measurement of climate change into their work programmes, these 12 responses demonstrate likely movement in the direction whereby, increasingly, NSOs may be more closely involved in data collection on climate change statistics in future.



Specialized Surveys dedicated to Climate Change Global Consultation 2021, Part 1 (2)

From Section D, Production and reporting of climate change statistics Question D6. If D5 is yes, list the names of these surveys revealed that Countries mentioned various surveys and censuses they have developed including the following:

- Agencia Nacional de Transito
- Climate Adaption Financing Survey
- Climate Change and Natural Disaster Perspectives
- Environmental Expenditure Survey
- Forestry surveys
- Household Environmental Survey
- Living Standards Survey
- Low Carbon and Renewable Energy Economy Survey
- National Climate Change Impact Survey
- National Climate Statistic Report
- Pilot Survey on Sex, Age and Disability Disaggregated Data (SADDD) for Climate Change Adaptation (CCA) and Disaster Risk Reduction
- Rural, Agricultural and Fishery Census
- Omnibus Survey: Environmental Quality and Behaviour
- Waste Generation Survey

Those highlighted appear to be dedicated to Climate Change.



Conclusion

The PHC continues to be a major source of Environment/ Climate Change data.

Where feasible, it is advisable as some countries are doing, to

- expand existing sections on Environment/ Climate Change in the PHC questionnaire by adding more relevant questions
- explore inclusion of a separate section in the PHC
- include a module on the environment/climate change in existing surveys
- develop specialised surveys as many countries have successfully done.

UNSD urges countries to use the search tool on our website and send us feedback; also feel free to send us any survey instruments you have used or are aware of to envstats@un.org



Thank You!

UNSD Environment Statistics Section
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