Country-owned official statistics as a source for water statistics

Environment Statistics Section
United Nations Statistics Division (UNSD)

Prepared for the **Global Webinar on Geospatial and Other Data Sources for Environment Statistics: Assessing the Impact of the Economy on the Environment**

*Session Two: Impact of economic processes on freshwater and marine ecosystems*

Outline

1. **Issues pertaining to Water**

2. **History and current context of the UNSD/UNEP Questionnaire on Environment Statistics – water section**

3. **Sources used for the Questionnaire**

4. **Examples of uses of water statistics for informing policy issues**

1. Issues pertaining to water

- The United Nations World Water Development Reports (WWDR), Sustainable Development Goal agenda (Goal 6), Framework for the Development of Environment Statistics, Global Set of Climate Change Statistics and Indicators, System of Environmental-Economic Accounting all demonstrate many policy issues pertinent to water.
- Between 2017 and 2022, various focuses of the WWDR have been upon:

Groundwater: approx. 99% of all liquid freshwater on Earth, and is the vast majority of drinking water for rural populations, yet it is often poorly understood and hence undervalued, mis-manged or abused.

Valuing water: Valuing water allows for better water resources management. Understanding its worth and incorporating it into decision-making is fundamental to achieving Sustainable Development Goals (SDGs), especially Goal 6.
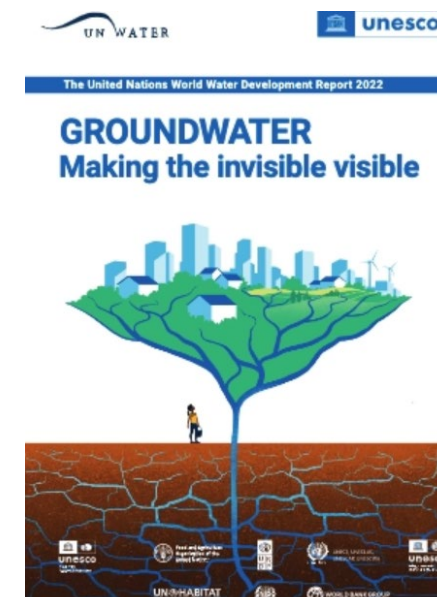
1. Issues pertaining to water

Water and climate change: The Global Set of Climate Change Statistics and Indicators emphasizes water throughout. Water as a resource, economic industries' abstraction of water from the environment, water quality, security, cost and supply of water, population's accessibility to water, wastewater generated and treated, etc. feature spanning various thematic areas of climate change (e.g. drivers, impacts, vulnerability, etc.).

Wastewater: Goal 6 of the SDG Policy Agenda calls for close measurement of wastewater volumes generated and treated. The UN World Water Report 2017 invites wastewater generated by industries and households to be considered a resource, rather than a costly problem. Discharge of wastewater to the environment without treatment is common in many countries yet barely measured or managed.
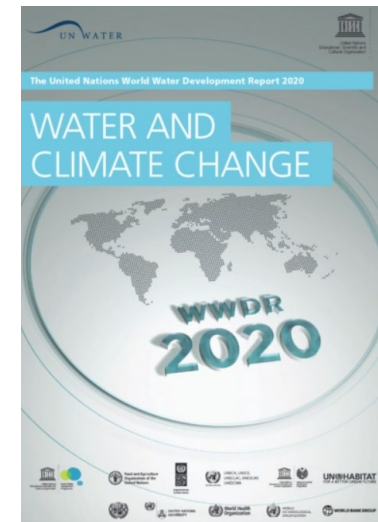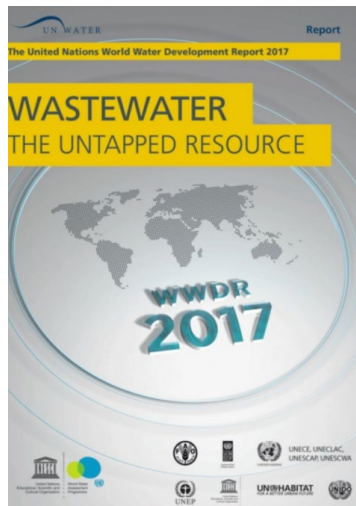
2. UNSD/UNEP Questionnaire on Environment Statistics
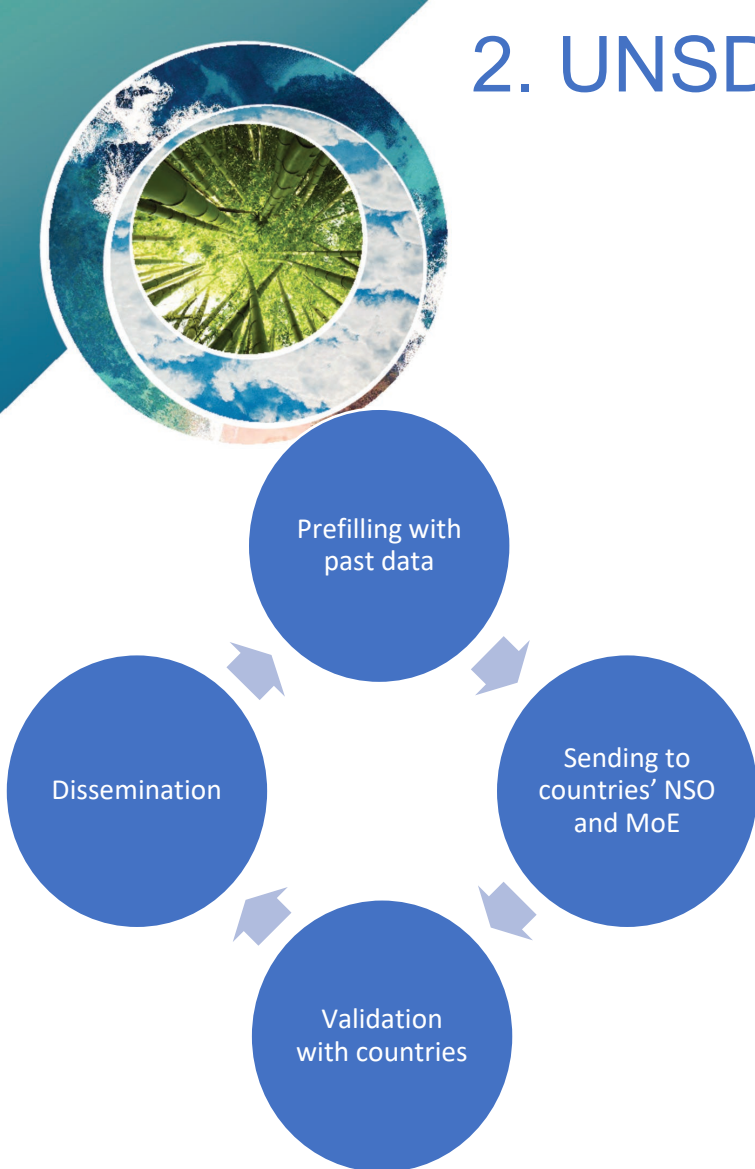
- Since 1999, UNSD has completed 10 data collections on water and waste data (usually biennially) from about 160-170 UN member states. Mandated by UNSC 28th session (1995); reinforced at 34th session (2003).

- [Questionnaires](#) are sent to National Statistical Offices (NSOs) and Ministries of Environment (MoE). Increasingly, the NSO responds. Liaison between the NSO, the MoE and other stakeholders usually necessary.

- Questionnaires are not sent to Eurostat and OECD members and candidate members. 170+ member states in previous years; about 163 member states in the 2022 collection cycle

- Response rate typically hovers around 50% (2018: 52%; 2020: approx.: 46%).

- No imputation, no estimation. No change in variables collected in 2022 compared to 2020. Instead, focus is more on boosting response rates, especially to those variables related to SDG indicators

- The current (2022) data collection is the 11th one. Thank you for your collaboration!

Prefilling with past data

Sending to countries' NSO and MoE

Validation with countries

Dissemination

2. UNSD/UNEP Questionnaire on Environment Statistics: disseminated outputs

- **UNSD environmental indicators**: https://unstats.un.org/unsd/envstats/qindicators Time series, or most recently available data for selected variables provided by countries. Disseminated after completion of collection cycle.

- **Country files**: https://unstats.un.org/unsd/envstats/country_files Individual country data on water and waste. Disseminated periodically during collection cycle. Demand from key users to view Country files as soon as possible.

- **Country snapshots**: https://unstats.un.org/unsd/envstats/snapshots/ Individual country data spanning many environmental themes.

- **Tailored queries**: Per solicitation from key users (often Food and Agriculture Organization, World Health Organization, UN Environment Programme, UN-HABITAT, academia).

3. Water section and sources used

UNSD

UN environment programme

United Nations Statistics Division (UNSD) and United Nations Environment Programme

QUESTIONNAIRE 2022 ON ENVIRONMENT STATISTICS

Section: **WATER**

TABLE OF CONTENTS

Example citations for country data in Tables W1: Renewable Freshwater Resources; W2: Freshwater Abstraction and Use; W3: Water Supply Industry (ISIC 36)

- "Information provided by the **National Meteorology and Hydrology Service**… corresponds to its "Official Bulletin of Temperatures and Precipitation"
- "The precipitation is obtained from **the rain gauge network of the monthly Hydrological Bulletin**, representative for the whole country: its municipalities."
- "The source data are the average precipitation heights per station. They come from the **National Agency for Civil Aviation and Meteorology**…"
- "This data comes from the **Directorate of Water Resources Management and Planning**…"

- "Information provided by **XXX Water Supply and Sewerage Authority**."
- "The figures given here are only pertaining to the water supplied by Male **Water and Sewage Co.**"
- "Data refer to water produced by the **National Water and Sewerage Corporation**. It only delivers water in larger towns and cities."

Example citations for country data in Tables W4: Wastewater Generation and Treatment; W5: Population Connected to Wastewater Treatment

- "...volumes processed in the wastewater treatment plants managed by the **National Office of Sanitation** only."
- "Information provided by the **Authority for Control and Social Control of Potable Water and Basic Sanitation**."
- "...discharging wastewater into wastewater treatment plants managed by **Municipal Technical Services**, as well as recording the quantities of tanker trucks of private associations that discharge wastewater into wastewater treatment plants of the Municipal Technical Services."
- "...data of the **Santo Domingo province** from: Administrative records, water sector, monthly statistical report, **Santo Domingo Aqueduct and Sewerage Corporation**."

Abundantly clear that for the National Statistical Office to compile water statistics, it is bound to liaise with some or all of: Ministry of Environment; Ministry of Water; Ministry of Agriculture; Municipal Water Office; Municipal Wastewater Treatment Office; etc.

Within an institution, what might the source be?

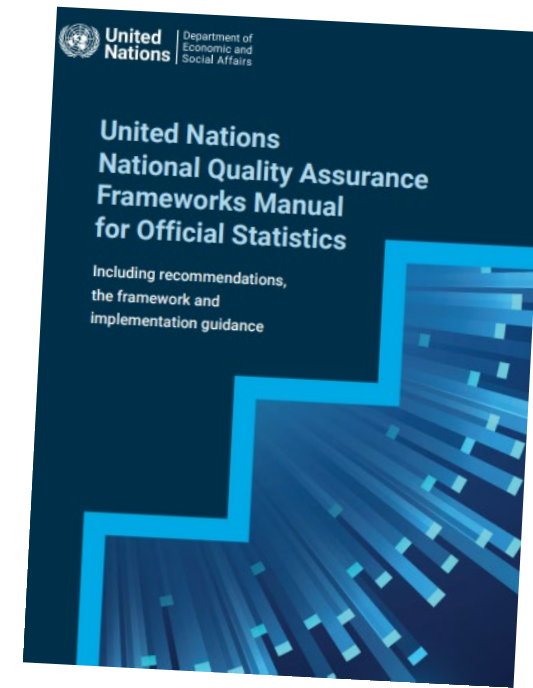Per the Framework for the Development of Environment Statistics (2013)…

- i. statistical surveys (e.g., censuses or sample surveys of population, housing, agriculture, enterprises, households, employment, and different aspects of environment management);
- ii. administrative records of government and non-government agencies responsible for natural resources, as well as other ministries and authorities;
- iii. remote sensing and thematic mapping (e.g., satellite imaging and mapping of land use and land cover, water bodies or forest cover);
- iv. monitoring systems (e.g., field-monitoring stations for water quality, air pollution or climate);
- v. scientific research and special projects undertaken to fulfil domestic or international demand.

FRAMEWORK FOR THE DEVELOPMENT OF ENVIRONMENT STATISTICS (FDES 2013)

United Nations
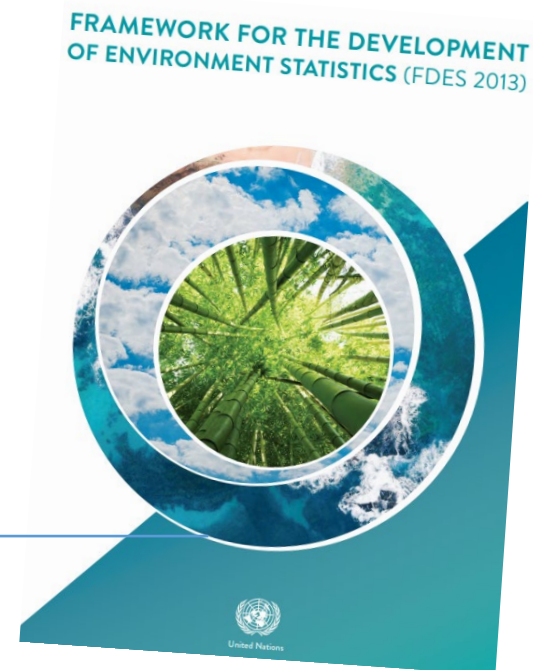
Within an institution, what might the source be?

Per the National Quality Assurance Framework (2019)…
- i. Statistical data sources
- ii. Administrative data sources
- iii. Other data sources and new data sources

(a) Cross-country sample surveys by supranational organizations or international enterprises;

(b) Data compiled and maintained by private professional organizations or business associations, or by non-profit institutions in general;

(c) Data and records compiled and maintained and/or owned by enterprises that cover large parts of the population of statistical units, in particular e-commerce, media and telecommunications providers, but also other enterprises that provide services directly to individuals or businesses, such as insurance companies, banks and airlines;

(d) Earth observation and remote sensing;

(e) Thematic mapping and monitoring systems (e.g., field-monitoring stations for water quality, air pollution, etc.);

(f) Research/scientific and pilot studies;

(g) Citizen-generated data

United Nations | Department of Economic and Social Affairs

United Nations National Quality Assurance Frameworks Manual for Official Statistics

Including recommendations, the framework and implementation guidance

4. Examples of uses of water statistics for informing policy issues…

Table W1: Renewable Freshwater Resources

Line	Category	Unit
1	Precipitation	
2	Actual evapotranspiration	
3	Internal flow (=1-2)	
4	Inflow of surface and groundwaters from neighbouring countries	
5	**Renewable freshwater resources (=3+4)**	mio m³/y
6	Outflow of surface and groundwaters to neighbouring countries	
7	*of which:* Secured by treaties	
8	Not secured by treaties	
9	Outflow of surface and groundwaters to the sea	

- Variables highlighted in yellow directly feed into Sustainable Development Goal indicator 6.4.2: **Level of water stress: freshwater withdrawal as a proportion of available freshwater resources**

- Custodian agency: FAO. Partner agencies: UNEP, IUCN, UNSD, OECD, Eurostat

- Metadata [link]

Table W2: Freshwater Abstraction and Use

Line	Category	Unit
1	Fresh surface water abstracted	
2	Fresh groundwater abstracted	
3	**Gross freshwater abstracted (=1+2)**	mio m³/y
4	Water returned without use	
5	**Net freshwater abstracted (=3-4)**	

Table W2: Freshwater Abstraction and Use

Line	Category
22	**Total freshwater use (=20-21)**
	of which used by:
23	Households
24	Agriculture, forestry and fishing (ISIC 01-03)
25	*of which for:* Irrigation in agriculture
26	Mining and quarrying (ISIC 05-09)
27	Manufacturing (ISIC 10-33)
28	Electricity, gas, steam and air conditioning supply (ISIC 35)
29	*of which for:* Electric power generation, transmission and distribution (ISIC 351)
30	Construction (ISIC 41-43)
31	Other economic activities

Notes :

- Variables highlighted in yellow directly feed into Sustainable Development Goal indicator 6.4.1: **Change in water-use efficiency over time**
- Custodian agency: FAO. Partner agencies: UNEP, IUCN, UNSD, OECD, Eurostat
- Metadata [link]

6 CLEAN WATER AND SANITATION

Table W2: Freshwater Abstraction and Use

Line	Category	Unit
1	Fresh surface water abstracted	
2	Fresh groundwater abstracted	
3	**Gross freshwater abstracted (=1+2)**	mio m^3/y
4	Water returned without use	
5	**Net freshwater abstracted (=3-4)**	

SUSTAINABLE DEVELOPMENT GOALS

Table W4: Wastewater Generation and Treatment

| Line	Category	Unit
1	**Total wastewater generated**	
2	*by:* Agriculture, forestry and fishing ISIC (01-03)	
3	Mining and quarrying (ISIC 05-09)	
4	Manufacturing (ISIC 10-33)	
5	Electricity, gas, steam and air conditioning supply (ISIC 35)	
6	*of which by:* Electric power generation, transmission and distribution (ISIC 351)	
7	Construction (ISIC 41-43)	
8	Other economic activities	
9	Households	
10	Wastewater treated in urban wastewater treatment plants	1000 m³/d
11	*of which:* Primary treatment	
12	Secondary treatment	
13	Tertiary treatment	
14	Wastewater treated in other treatment plants	
15	*of which:* Primary treatment	
16	Secondary treatment	
17	Tertiary treatment	
18	Wastewater treated in independent treatment facilities	
19	Non-treated wastewater	
20	Sewage sludge production (dry matter)	1000 t

6 CLEAN WATER AND SANITATION

- Variables highlighted in yellow directly feed into Sustainable Development Goal indicator 6.3.1: **Proportion of domestic and industrial wastewater safely treated**

- Custodian agencies: WHO, UN-HABITAT, UNSD

- Metadata [link]

Use of Questionnaire data for System of Environmental Economic Accounting (SEEA) Central Framework and SEEA-Water…

- … (SEEA CF) provides tools for describing **stocks** and **changes in stocks** of environmental assets (water, land, energy, timber, etc.), as well as supporting **environmental activities**
- Tables W1 (Renewable Freshwater Resources) and W2 (Freshwater abstraction and use) of the Questionnaire serve as input to Asset Accounts for Water Resources
- Tables W2, W3 (Water supply industry) and W4 (Wastewater generation and treatment) of the Questionnaire serve as input to physical flow accounts of water.
- Consistent annual time series are key as opening and closing stock and change over time are of interest.
- Asset accounts for water resources also demand for inflow and outflow of water to and from land surface and subsurface, and on the destination of these flows.
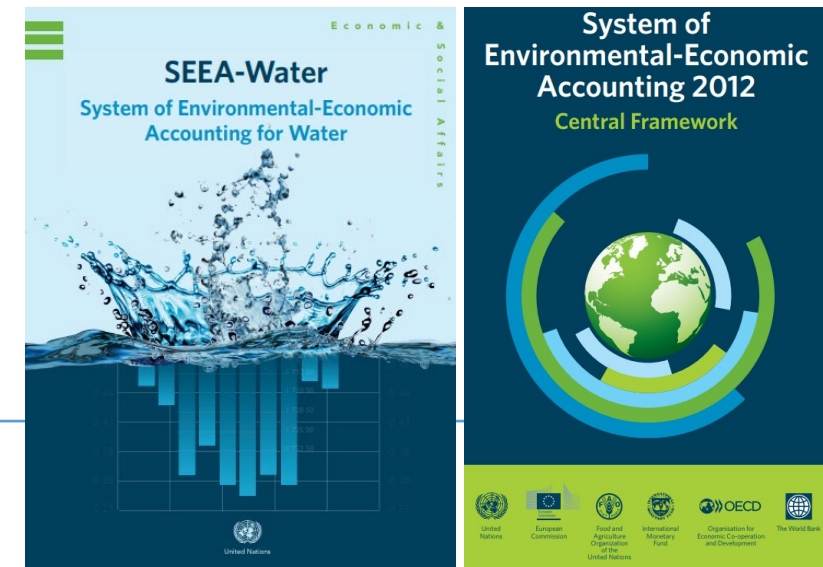
Use of Questionnaire data to apply to the Global Set of Climate Change Statistics and Indicators, and in turn, to a national Compendium on Climate Change Statistics

- Indicators such as those below would have underlying data reported in the Questionnaire:
  - Renewable freshwater resources per capita
  - Freshwater abstracted as a proportion of renewable freshwater resources
  - Water use per capita
  - Proportion of domestic and industrial wastewater flows safely treated
- Any effort undertaken in a country to compile a Compendium on Climate Change Statistics can have some data used to report to the Questionnaire. See collection of Compendia here:
  https://unstats.un.org/unsd/envstats/climatechange_reports.cshtml
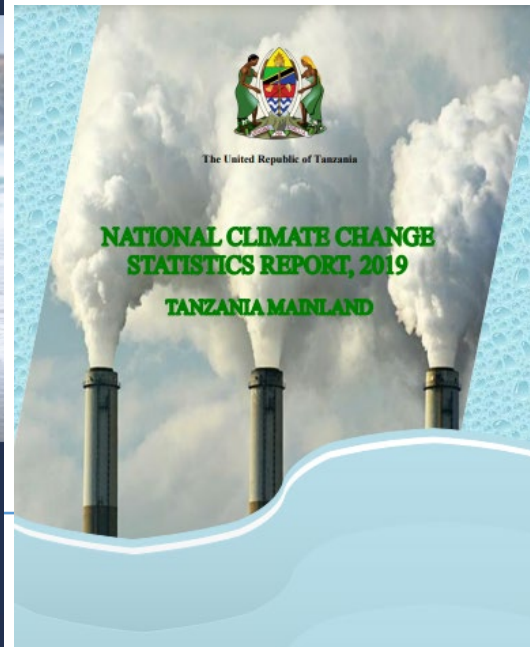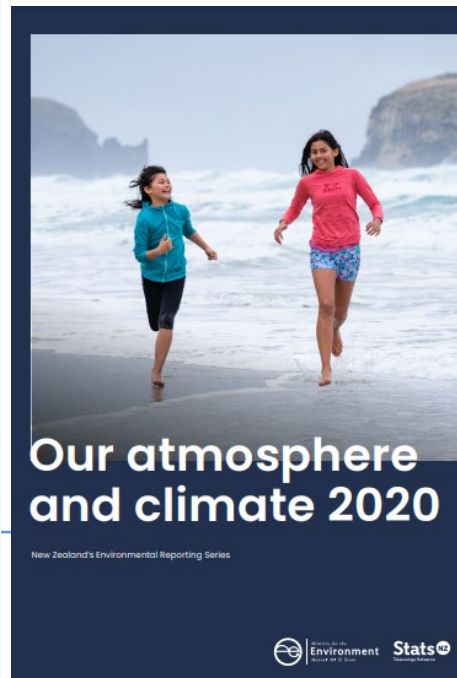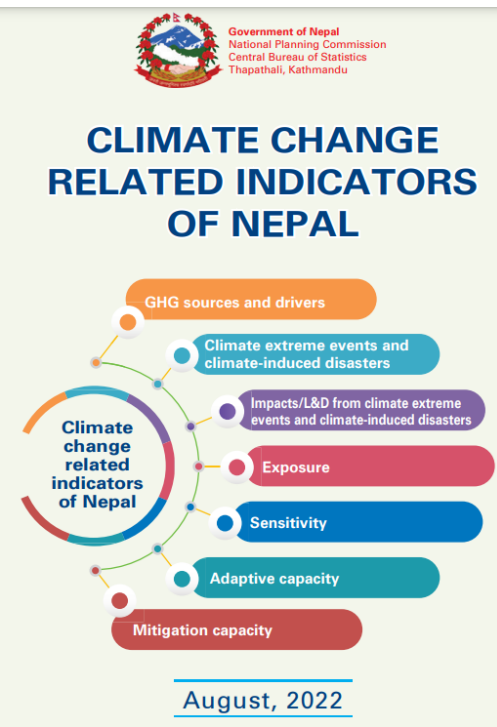
Use of Questionnaire data to apply to the Framework for the Development of Environment Statistics, and in turn, to a national Compendium on Environment Statistics

- Within the Framework for the Development of Environment Statistics, the Basic Set of Environment Statistics contained some 450+ statistics which countries can use as applicable when compiling a Compendium of Environment Statistics. Refer: https://unstats.un.org/unsd/environment/FDES/FDES-2015-supporting-tools/FDES.pdf
- Sub-component 2.6: Water Resources includes statistics such as: precipitation; actual evapotranspiration; water abstraction (from ground/surface water); desalinated water; reused water.
- Sub-component 3.2: Generation and Management of Wastewater includes statistics such as: Volume of wastewater generated and treated; wastewater discharged to the environment;
- Any effort undertaken in a country to compile a Compendium on Environment Statistics can have some data used to report to the Questionnaire. See collection of Environment Statistics Compendia here: https://unstats.un.org/unsd/envstats/fdescompendia.cshtml
- 56 country-compiled Compendia are available here: https://unstats.un.org/unsd/envstats/fdescompendia.cshtml

FRAMEWORK FOR THE DEVELOPMENT OF ENVIRONMENT STATISTICS (FDES 2013)
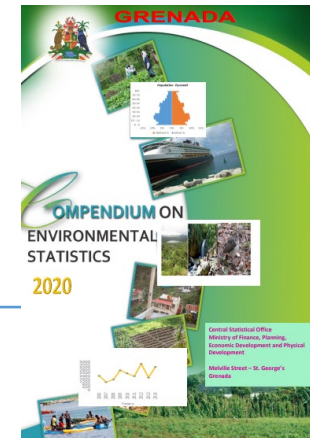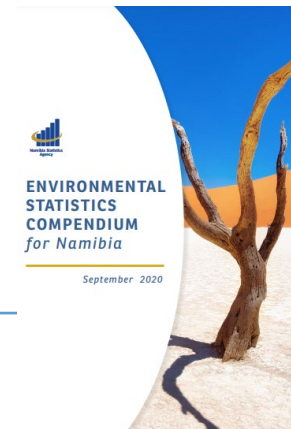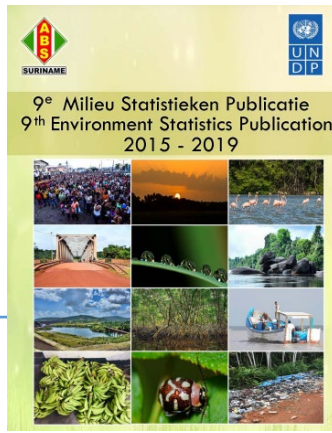
Grateful to countries for their contributions and for continued supply of data (and detailed footnote explanations) for the Questionnaire to measure issues pertinent to water.

Grateful to international partners who help improve the quality of the data, and its application to policy.

Thank You!

UNSD