UNECE Guidelines for the Application of Environmental Indicators

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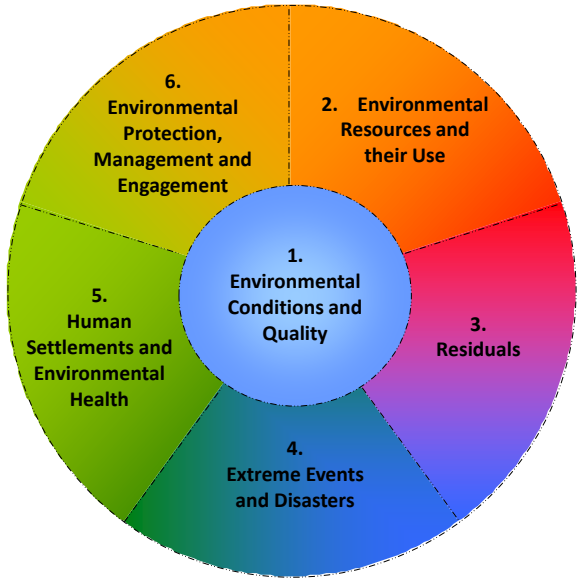

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ECE Guidelines for the Application of Environmental Indicators

Short recap

Adopted by the UNECE Committee on Environmental Policy in 2007 to help countries in Eastern Europe, Caucasus and Central Asia in:

a) **Improving the systems of environmental monitoring and reporting** for the purpose of environmental decision-making and public awareness raising
b) **Making national environment assessments comparable** with those of other UN Member States
c) **Facilitating data gathering** for future environmental assessment reports.

Several assessments carried out since then showed:

- Many countries used the guidelines as a starting point for developing environment statistics
- Guidelines contributed to strengthening collaboration between NSOs and MoEs

ECE Guidelines for the Application of Environmental Indicators

Current structure

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10 “traditional topics”

See:

https://unece.org/guidelines-application-environmental-indicators

49 “indicators”

Indicator	Description	Production	Glossary of terms
A. Air pollution and ozone depletion			
A1. Emissions of pollutants into the atmospheric air (updated October 2014)	PDF	XLS	PDF
A2. Ambient air quality in urban areas (updated October 2014)	PDF	XLS	PDF
A3. Consumption of ozone-depleting substances (updated October 2014)	PDF	XLS	PDF
B. Climate change			
B1. Air temperature (updated October 2014)	PDF	XLS	PDF
B2. Atmospheric precipitation (updated October 2014)	PDF	XLS	PDF
B3. Greenhouse gas emissions (updated October 2014)	PDF	XLS	PDF
C. Water			
C1. Renewable freshwater resources (updated October 2014)	PDF	XLS	PDF
C2. Freshwater abstraction (updated October 2014)	PDF	XLS	PDF
C3. Total water use (updated October 2014)	PDF	XLS	PDF
C4. Household water use per capita (updated October 2014)	PDF	XLS	PDF

ECE Guidelines for the Application of Environmental Indicators

XLS production sheets

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Example: indicator C-3 “total water use”

Calculates:

- Freshwater available
- Freshwater use
- Freshwater use per GDP

→ In fact, a mix of basic statistics and indicators

Production sheet is aligned with UNSD water statistics questionnaire

		Unit	1990	1995	2000	2001	2002	2003	2004	2005
										Freshwater available
1	Freshwater abstracted (= Table C-2, row 4)	million m^3								
2	Desalinated water	million m^3								
3	Reused water	million m^3								
4	Imports of water	million m^3								
5	Exports of water	million m^3								
6	**Total freshwater available** (Rows 1 + 2 + 3 + 4 - row 5)	million m^3	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**
7										**Freshwater use**
8	Losses of water during transport	million m^3								
9	**Total freshwater use** (Row 6 - row 8)	million m^3	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**
10										*of which used by*
11	*Households*	million m^3								
12	*Agriculture, forestry and fishing (ISIC 01-03)*	million m^3								
13	*of which (of row 12) used for:* Irrigation in agriculture	million m^3								
14	*Manufacturing (ISIC 10-33)*	million m^3								
	Electricity industry (ISIC	.... m^3								

ECE Guidelines for the Application of Environmental Indicators

XLS production sheets

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Example: indicator A-2 "Ambient air quality in urban areas"

Includes:

- Data for PM_{10}, SO_2, NO_2 and ground-level O_3
- For each of these substances:
  - Daily average limit value
  - Annual average limit value
  - Annual average concentration
  - The highest daily concentration
  - Number of days with exceeded daily limit value

Which of these are "the indicators"?

6		**Monitoring Station A1**						
8	1	Type of Monitoring Station:						
10			Unit	1990	1995	2000	2001	2002
11		**PM 10**						
12	2	Daily average limit value	µg/m3					
13	3	Annual average limit value	µg/m3					
14	4	Annual average concentration	µg/m3					
15	5	The highest daily concentration	µg/m3					
16	6	Number of days with exceeded daily limit value	#					
17		**SO2 - sulphur dioxide**						
18	7	Daily average limit value	µg/m3					
19	8	Annual average limit value	µg/m3					
20	9	Annual average concentration	µg/m3					
21	10	The highest daily concentration	µg/m3					
22	11	Number of days with exceeded daily limit value	#					
23		**NO2 - nitrogen dioxide**						
24	12	Daily average limit value	µg/m3					
25	13	Annual average limit value	µg/m3					
26	14	Annual average concentration	µg/m3					
27	15	The highest daily concentration	µg/m3					
28	16	Number of days with exceeded daily limit value	#					
29		**O3 - ground-level ozone**						

Rationale

Why a review of the indicators and online guidelines?

JTFESI requested the Secretariat to review the ECE set of environmental indicators and the associated guidelines to

- **Inform better the recent global policies** (such as 2030 Agenda, Paris Agreement and Sendai Framework for Disaster-risk Reduction)
- Improve data availability for regular **pan-European Environmental Assessments and reporting**
- **Link them with statistical frameworks**, such as the FDES and SEEA
- **Increase user-friendliness** of the metadata.

Guidelines for the Application of Environmental Indicators

The Joint Task Force revised the Guidelines for the Application of Environmental Indicators in Eastern Europe, Caucasus, Central Asia and South-Eastern Europe. With this revision the online version of the Guidelines was created.

In the Online Guidelines each indicator is presented through three files: description of the indicator, table for the production of the indicator, and glossary of terms.

The latest update for each indicator is indicated with a relevant date.

Indicator	Description	Production	Glossary of terms
A. Air pollution and ozone depletion			
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A2. Ambient air quality in urban areas (updated October 2014)	PDF	XLS	PDF
A3. Consumption of ozone-depleting substances (updated October 2014)	PDF	XLS	PDF
B. Climate change			
B1. Air temperature (updated October 2014)	PDF	XLS	PDF
B2. Atmospheric precipitation (updated October 2014)	PDF	XLS	PDF
B3. Greenhouse gas emissions (updated October 2014)	PDF	XLS	PDF
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C2. Freshwater abstraction (updated October 2014)	PDF	XLS	PDF
C3. Total water use (updated October 2014)	PDF	XLS	PDF
C4. Household water use per capita (updated October 2014)	PDF	XLS	PDF
C5. Water supply industry and population connected to water supply industry (updated October 2014)	PDF	XLS	PDF
C6. Connection of population to public water supply	Integrated into C5		
C7. Water losses (updated October 2014)	PDF	XLS	PDF
C8. Reuse and recycling of freshwater (updated October 2014)	PDF	XLS	PDF
C9. Drinking water quality (updated October 2014)	PDF	XLS	PDF
C10. BOD and concentration of ammonium in rivers (updated October 2014)	PDF	XLS	PDF
C11. Nutrients in freshwater (updated October 2014)	PDF	XLS	PDF
C12. Nutrients in coastal seawaters (updated October 2014)	PDF	XLS	PDF

Revision process has been multi-dimensional

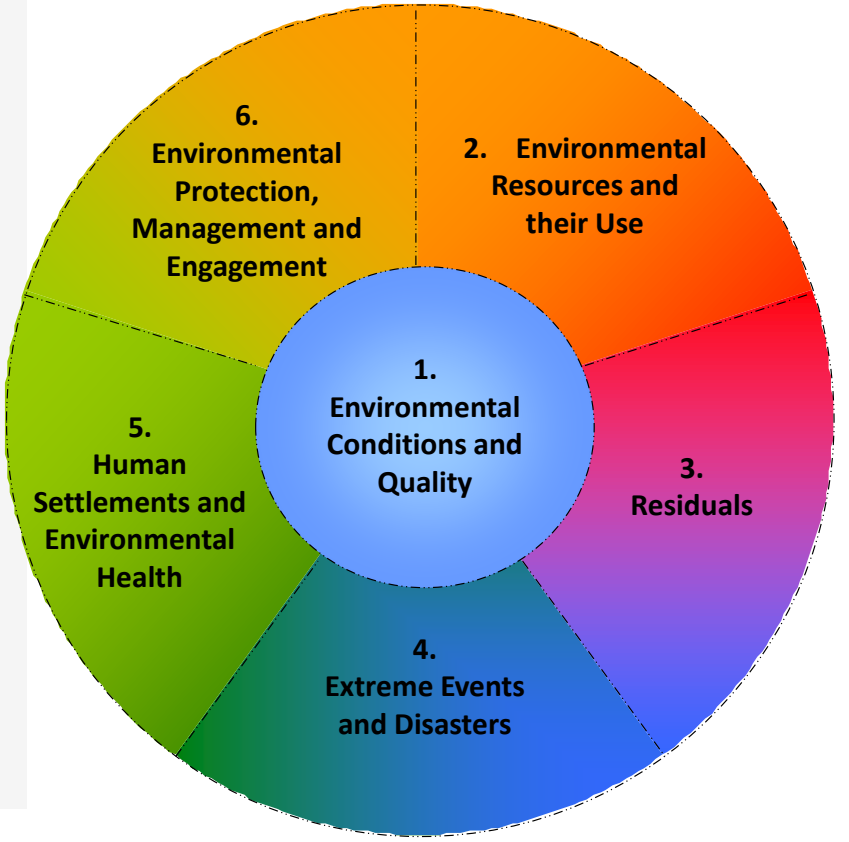
1. Distinction between “indicators” and “data and statistics”, using the definitions used in the UN Framework for the Development of Environment Statistics (FDES)
2. Presentation of the indicators according to FDES structure
3. Review of the list of indicators
4. Update of indicator metadata, including filling of some “placeholders”
5. All information stored in a bilingual database (English and Russian)

Presentation of indicators according to FDES structure

Benefits of aligning it with the UN FDES

Some benefits of using the structure of the FDES for the list of recommended UNECE Environmental Indicators:

1. Use of a globally agreed structure
2. FDES defines environmental indicators, data and statistics
3. FDES is broad, comprehensive and integrative. It defines the overall scope of environment statistics, thus can be used to identify information gaps and to set priorities
4. It can handle “cross-cutting issues”, such as climate change, COVID-19 or circular economy
5. New indicators can easily be added
6. Supports implementation of environmental statistics
7. Methodological guidelines (e.g. Manual on the Basic Set of Environment Statistics) available.



Presentation of indicators according to FDES structure

Example: Climate change-related indicators

Indicator theme "B. Climate change" (old guidelines) included indicators on physical conditions of the atmosphere (B1. and B2) and air emissions (B3). This is problematic from several points of view:

1. Greenhouse gas emissions are missing in indicator theme "A. Air pollution and ozone depletion".
2. Climate change is a cross-cutting issue with a broad scope, including climate change drivers, emissions, impacts, mitigation and adaptation.

Therefore, indicator theme "B. Climate change" was removed; indicators moved to other areas (called "topics" in the newly proposed structure).

OLD STRUCTURE

B. Climate change

- B1. Air temperature (updated October 2014)
- B2. Atmospheric precipitation (updated October 2014)
- B3. Greenhouse gas emissions (updated October 2014)

NEW STRUCTURE (FDES)

Topic "Atmosphere, climate and weather" (component "Environmental conditions and quality", sub-component "Physical conditions")

Topic "Emissions of greenhouse gases" (component "Residuals", sub-component "Emissions to air")

Structure of the guidelines document

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I. Background
II. Alignment of the list of indicators with UN FDES
    A. Clarification of terminology
    B. Distinction between “indicators” and “data and statistics” in the revised Guidelines
    C. Grouping of the list of indicators
    D. Organization of the list of indicators in the revised guidelines
    E. Data disaggregation
III. Selection of the proposed indicators
    A. Component “environmental conditions and quality”
    B. Component “environmental resources and their use”
    C. Component “residuals”
    D. Component “extreme events and disasters”
    E. Component “human settlements and environmental health”
    F. Component “environmental protection, management and engagement”
IV. Data and statistics needed for compiling the list of indicators

Structure of the indicator metadata sheets

Example "A-2.2 SO2: "Number of days with exceeded daily limit value" 1/2

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Indicator theme (old)	A Air pollution and ozone depletion
Component (FDES)	1: Environmental Conditions and Quality
Sub-component (FDES)	1.3: Evironmental Quality
Indicator topic (FDES)	1.3.1: Air quality

Indicator **A-2.2 SO2: Number of days with exceeded daily limit value**

ID and name in indicator guidelines	A2 Ambient air quality in urban areas
First publication	Latest update 4/29/2019
Indicator definition	The number of days during a year when air pollution levels for sulphur dioxide (SO2) exceed the established limit values in urban areas with regular observations of air quality
Unit of measure	Days per year
Coverage	Selected cities
Spatial aggregation	Individual monitoring stations
Reference period	Calendar year
Update frequency	Annual
Purpose	The indicator provides a measure of the state of the environment in terms of air quality and the impact of air pollution on the population, the state of the environment and on vegetation/ecosystems.
Policy context	ECE Convention on Long-range Transboundary Air Pollution (CLRTAP); WHO Europe guidelines on air quality limit values; Environmental Strategy of countries of South-Eastern and Eastern Europe, Caucasus and Central Asia: optimization of standards for ambient air pollution in urban areas; EU Directives 2008/50/EC (Air Quality Framework Directive) and 2004/107/EC lay down standards for air pollutants

Link with SDG indicators

Policy references

Title and weblink	Comments
1979 ECE Convention on Long--range Transboundary Air Pollution (CLRTAP) https://www.unece.org/environmental-policy/conventions/envlrtapwelcome/the-air-convention-and-its-protocols/the-convention-and-its-achievements.html	reducing and preventing air pollution by SO2, NOX, NH3, non-–-methane volatile organic compounds (NMVOC), O3, PM, lead, mercury, cadmium and POPs
Air Quality Guidelines for Europe http://www.euro.who.int/en/publications/abstracts/air-quality-guidelines-for-europe	WHO Europe recommends in its guidelines air quality limit values for 32 main air pollutants; in the 2006 revision those for SO2, nitrogen dioxide (NO2) , PM and O3
Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:32008L0050	Laying down standards for air pollutants

Methodology for indicator calculation: The indicators counts the number of days per year on which the nationally set daily limit value for a given pollutant was exceeded

Structure of the indicator metadata sheets

Example "A-2.2 SO2: "Number of days with exceeded daily limit value" 2/2

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Methodology references

Title of the reference document	Link
1979 ECE Convention on Long--range Transboundary Air Pollution (CLRTAP)	https://www.unece.org/environmental-policy/conventions/envlrtapwelcome/the-air-convention-and-its-protocols/the-convention-and-its-achievements.html
Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe	https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:32008L0050
WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide, Global update 2005, Summary of risk assessment	https://apps.who.int/iris/bitstream/handle/10665/69477/WHO_SDE_PHE_OEH_06.02_eng.pdf?sequence=1

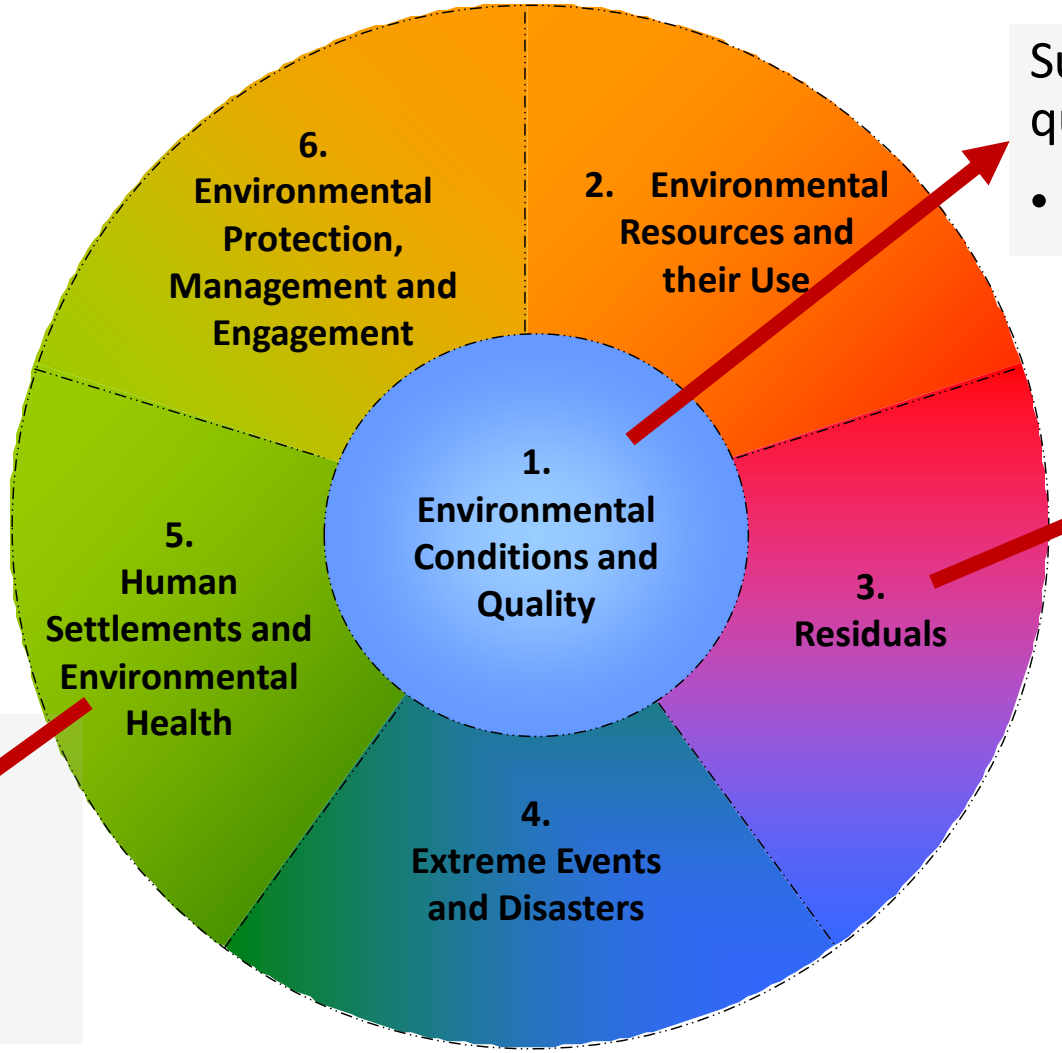
Data and statistics needed to compile the indicator

ID	Data item	FDES topic
6	Ambient air quality - SO2: Daily average limit value	1.3.1: Air quality
7	Ambient air quality - SO2: Annual average limit value	1.3.1: Air quality
9	Ambient air quality - SO2: The highest daily concentration	1.3.1: Air quality

Comments: The type of calculation of exceedances can differ from country to country and between the different pollutants; Metadata on the used limit value and calculation of exceedences should be provided.

Where can we find the “air indicators” in the UNECE Indicator Guidelines?

The list of indicators can be found at the “topic” levels



Sub-component 1.3 „environmental quality“

- Topic 1.3.1 „air quality“

Sub-component 3.1 „emissions to air“

- Topic 3.1.1 „emissions of GHGs“
- Topic 3.1.2 „consumption of ODS“
- Topic 3.1.3 “emissions of other substances to air”

Sub-component 5.1 „human settlements“

- Topic 5.1.4 „exposure to ambient pollution“

Thank you!

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