FRAMEWORK FOR THE DEVELOPMENT OF ENVIRONMENT STATISTICS (FDES 2013)

DRAFT CHAPTER ON ENVIRONMENTAL HEALTH STATISTICS

Session One: Environment Statistics Toolbox

Seventh Meeting of the Expert Group on Environment Statistics, New York 10-19 November 2020

United Nations Statistics Division

Outline

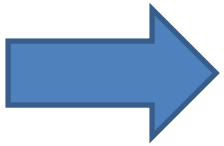
1. Status of each part of the methodology sheet
2. New reality
3. Gaps
4. Feedback received
5. Next steps

BSES table

Sub-component 5.2: Environmental Health					
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**	**Methodological Guidance**
Topic 5.2.1: Airborne diseases and conditions	a.	Airborne diseases and conditions		▪ By disease or condition ▪ National ▪ Sub-national ▪ Urban ▪ Rural ▪ By gender ▪ By age group ▪ By time period	▪ WHO
		1. Incidence	Number		
		2. Prevalence	Number		
		3. Mortality	Number		
		4. *Loss of work days*	Number		
		5. *Estimates of economic cost in monetary terms*	Currency		
Topic 5.2.2: Water-related diseases and conditions	a.	Water-related diseases and conditions			
		1. **Incidence**	Number		
		2. **Prevalence**	Number		
		3. **Mortality**	Number		
		4. *Loss of work days*	Number		
		5. *Estimates of economic cost in monetary terms*	Currency		
Topic 5.2.3: Vector-borne diseases	a.	Vector-borne diseases			
		1. **Incidence**	Number		
		2. **Prevalence**	Number		
		3. **Mortality**	Number		
		4. *Loss of work days*	Number		
		5. *Estimates of economic cost in monetary terms*	Currency		
Topic 5.2.4: Health problems associated with excessive UV radiation exposure	a.	Problems associated with excessive UV radiation exposure			
		1. *Incidence*	Number		
		2. *Prevalence*	Number		
		3. *Loss of work days*	Number		
		4.*Estimates of economic cost in monetary terms*	Currency		
Topic 5.2.5: Toxic substance- and nuclear radiation-related diseases and conditions	a.	Toxic substance-and nuclear radiation-related diseases and conditions		▪ By category of toxic substance ▪ By disease or condition ▪ National ▪ Sub-national ▪ Urban ▪ Rural ▪ By gender ▪ By age group	▪ WHO
		1. Incidence	Number		
		2. Prevalence	Number		
		3. *Loss of work days*	Number		
		4. *Estimates of economic cost in monetary terms*	Currency		

Part 2: Introduction/relevance (1)

1. About 23% of deaths [12.6 mil in 2012] attributed to environmental causes by WHO
2. Main causes:
   - infectious and parasitic diseases
   - nutritional conditions
   - noncommunicable diseases
   - air, water and soil pollution
   - food and drinking water quality
   - chemical exposures
   - ultraviolet radiation
   - climate change
3. Covid-19 is an air-borne disease



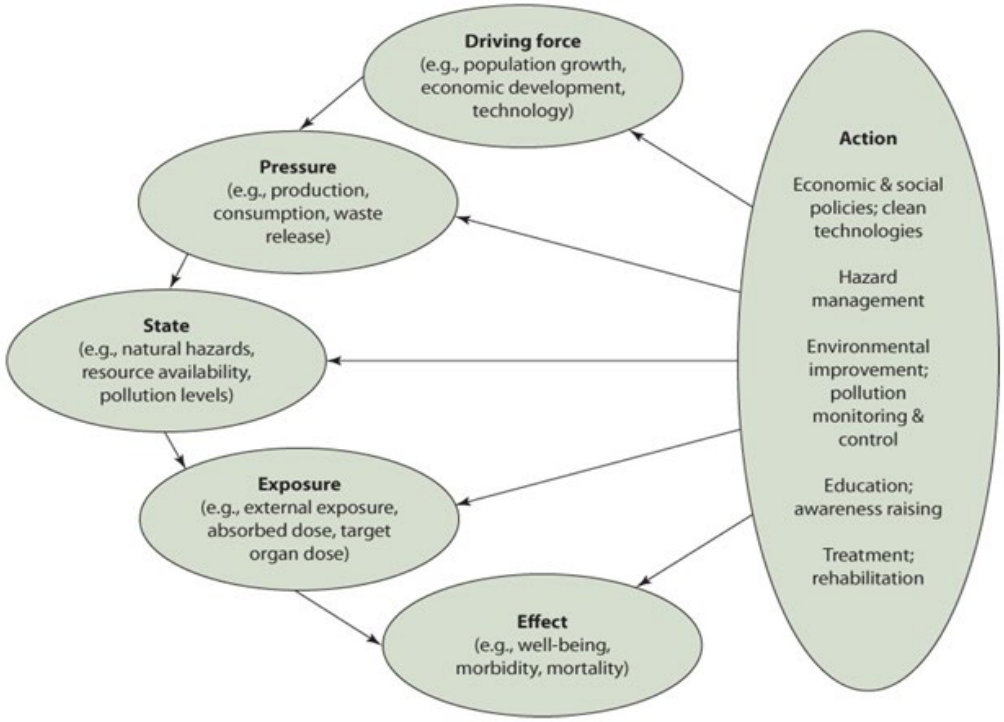
Wellbeing
Quality of life

Part 2: Introduction/relevance (2)

1. Objective: present relevant definitions, classifications and international guidance on environmental health
2. Health in official statistics
   - numbers of people affected
   - classification of diseases
3. Improving environmental aspects:
   - Better identify the causes
   - More on responses, prevention (e.g. costs of treating for vectors, env. clean-up, etc)

Part 2: Introduction/relevance (2)

FDES helps by suggesting the needed statistics which illustrate causal links



Effect: Incidence of water-related diseases (5.2.2.a.1)
Driving force: Population living in urban areas (5.1.1.a)
Pressure: Wastewater discharge (untreated 3.2.3.a.2)
State: Freshwater quality (1.3.2)
Exposure: Concentration levels of faecal coliforms (1.3.2.c.1)
Response: various

FDES Manual on the Basic Set of Environment Statistics:
https://unstats.un.org/unsd/envstats/fdes/manual_bses.cshtml

Part 3. Definitions and description of the statistics (1)

- Multiple generic terms, e.g.:

  'Environmental health comprises those aspects of human health, including quality of life, that are determined by physical, chemical, biological, social and psychosocial factors in the environment' (WHO)

- **Incidence** generally refers to the rate of occurrence of new cases of disease (number of new cases in a specified population per unit of time), while **prevalence** is the proportion of the population with the disease at a given point in time.
- **Environmental exposures** include change in climate, contamination of water, and food supply (by chemicals used in agriculture, plasticizers used in the packaging of foods, and drugs in food animals) as well as harmful compounds in prepared food
- An **epidemic** is a widespread occurrence of an infectious disease in a community at a particular time. A **pandemic** is an outbreak of disease that occurs over a wide geographic area and affects an exceptionally high proportion of the population.

Part 3. Definitions and description of the statistics (1 - airborne)

- 5.2.1.a.1. Incidence, which is expressed as a number registering the rate of occurrence of new cases per type of airborne disease or condition.
- 5.2.1.a.2. Prevalence is similarly expressed as a number registering the proportion of people affected in the total population per type of disease or condition.
- 5.2.1.a.3. Mortality is expressed as the number of persons deceased by type of airborne disease.
- 5.2.1.a.4. *Loss of work days:* the number of days of work lost through illnesses from airborne diseases and their effect e.g. absences from work
- 5.2.1.a.5. *Estimates of economic costs in monetary terms:* includes the monetary cost of treating air-borne disease, and indirect costs from labour and other impacts

Incidence, prevalence and mortality are Tier 2; loss of work days and economic costs, Tier 3. More work needed in the context of Covid-19!

Part 3. Definitions and description of the statistics (2 – water-related, vector-borne)

Water-related covers waterborne, water-washed, water-based and water-related insect vector diseases.

Vector-borne are transmitted by insects/animals [non-water insects]

Incidence, prevalence and mortality are Tier 1; loss of work days and economic costs, Tier 3.

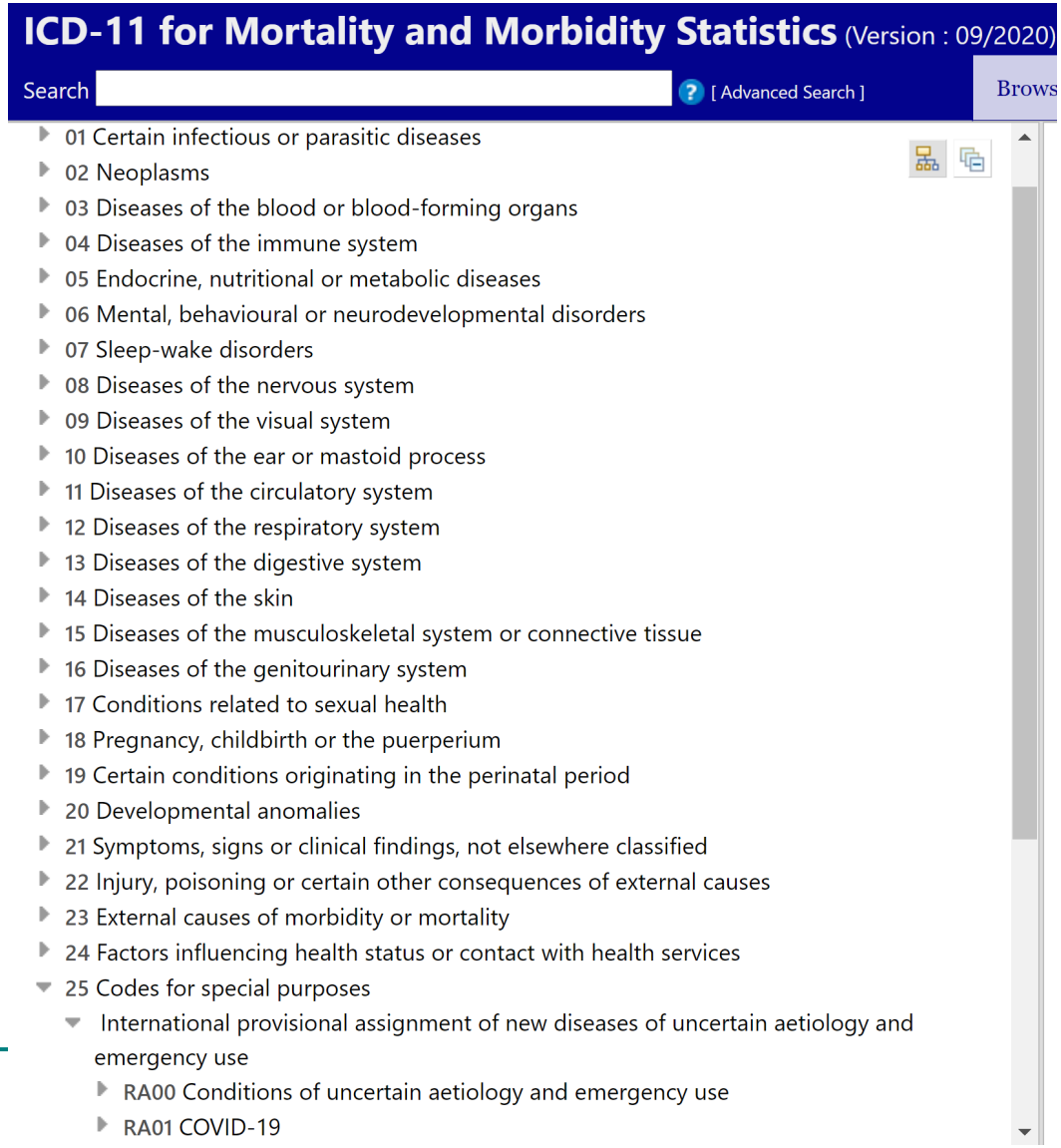
Methods to calculate loss of work days and economic costs in internationally comparable way are needed.

Part 3. Definitions and description of the statistics (3 – UV, toxic and nuclear exposures)

- Incidence and prevalence, loss of work days and economic costs all in Tier 3.
- All statistics in this topic require further work with inputs from experts and country examples.

Part 4. International sources and recommendations

- Revised International classification of diseases (ICD-11) to be included.
- The classification of water-related diseases requires more effort.
- Missing overview of international statistical recommendations, frameworks and standards.
- More sources of regional and global data.



Part 5. Data collection and sources of data

- Scope – some diseases need clarifying the relation to environmental factors
- Measurement category/units

Type of health statistics	Units
Incidences	Number of new cases
Prevalence	Percent from total population
Deaths	Number of deceased persons
Economic costs	Currency (US $)
Labour losses	Number of days

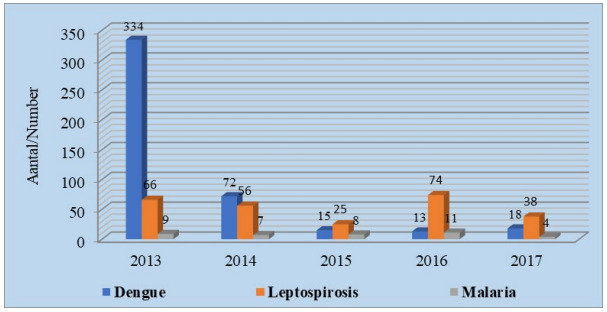
- Data collection - Surveillances of diseases

  Further work needed on loss of work days and economic costs

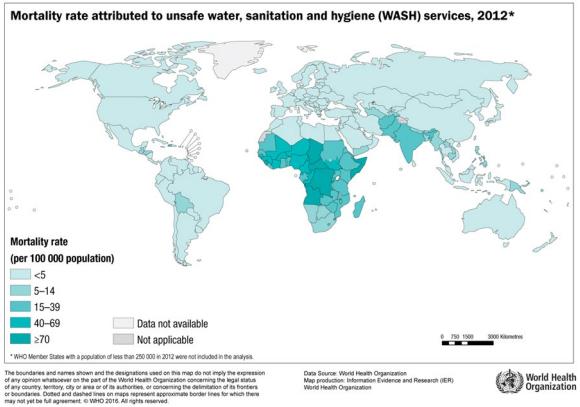
- Quality control needs more input

Part 6. Uses and dissemination

- Includes examples of dissemination formats



Incidence of Tuberculosis cases per 100,000 population						
	Number of cases			Population	**Incidence rate**	**Death rates**
Year	Male	Female	Total			
2010	141	60	201	531,170	**37.8**	2.9
2011	95	37	132	539,910	**24.4**	2.8
2012	99	36	135	541,638	**24.9**	2.0
2013	105	36	141	520,222	**27.1**	2.2
2014	107	51	158	558,773	**28.3**	NA*
2015	101	49	150	567,300	**26.4**	NA*
2016	80	36	116	575,700	**20.1**	NA*
2017	100	37	137	583,400	**23.5**	NA*
2018	130	47	177	590,100	**23.5**	NA*
Source: National Aids Programme (NAP)						



- SEEA accounts/tables that use these statistics
- Commonly used indicators

Indicator	Age	Sex	Period	Value	Unit	Recent trend	Change from previous
D01 - Fraction of mortality attributable to particulate air pollution	30+ yrs	Persons	2018	5.15	%	–	–

More national examples are needed

Part 6. Uses and dissemination

- SDG indicators that apply these statistics – Goal 3.

Target 3.3 "By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases" cover the topics airborne and vector borne diseases.[64]

- Indicator 3.3.2: Tuberculosis incidence per 100,000 population (airborne diseases)
- Indicator 3.3.3: Malaria incidence per 1,000 population (vector-borne diseases)
- Indicator 3.3.5: Number of people requiring interventions against neglected tropical diseases (vector borne diseases)

SDGs		FDES		
	SDG Indicators	**Location in the FDES: Component Sub-Component and Topic**	**Statistics used in the SDG Indicator corresponding to BSES (SDG Indicator can be compiled either fully or partially from BSES statistics)**	**Statistics related to but not directly used in SDG Indicators OR Statistics related to Tier III indicators (either fully or partially linked to BSES)**
	3.3.5 Number of people requiring interventions against neglected tropical diseases (Tier I)	Component 5: Human Settlements and Environmental Health, Sub-component 5.2: Environmental Health, Topic 5.2.2: Water-related diseases and conditions	5.2.2.a. Water-related diseases and conditions **5.2.2.a. 1. Incidence** **5.2.2.a. 2. Prevalence** **5.2.2.a. 2. Mortality**	
		Component 5: Human Settlements and Environmental Health, Sub-component 5.2: Environmental Health, Topic 5.2.3: Vector-borne diseases	5.2.3.a. Vector-borne diseases **5.2.3.a. 1. Incidence** **5.2.3.a. 2. Prevalence** **5.2.3.a. 3. Mortality**	
	3.9.1 Mortality rate attributed to household and ambient air pollution (Tier I)	Component 1: Environmental Conditions and Quality, Sub-component 1.3: Environmental Quality, Topic 1.3.1: Air quality	1.3.1.a. Local air quality **1.3.1.a. 2. Concentration level of particulate matter ($PM_{2.5}$)**	1.3.1.a.1: Concentration level of particulate matter (PM10) 1.3.1.a.3: Concentration level of tropospheric ozone (O3) 1.3.1.a.4: Concentration level of carbon monoxide (CO)

Comments received

- WHO first review (in Feb 2020): challenging to separate the attributable fraction. Environmental should not be assessed in isolation of all diseases in a country, need more consistent links with other topics.

- WHO second review provided (Oct 2020):
  - more authoritative references
  - An option to resolve the 'water-related classes' – use a modified Bradley classification with 5 categories

1. Waterborne (including both microbiological and chemical)
2. Water access-related (covering the hygiene aspects of 'water-washed' in the Bradley classification
3. Water-based
4. Water-related insect vectors
5. Engineered water system associated

Next steps

- Country and expert reviews of the draft methodology sheet are needed [by mid-December]
- Further discussion with WHO