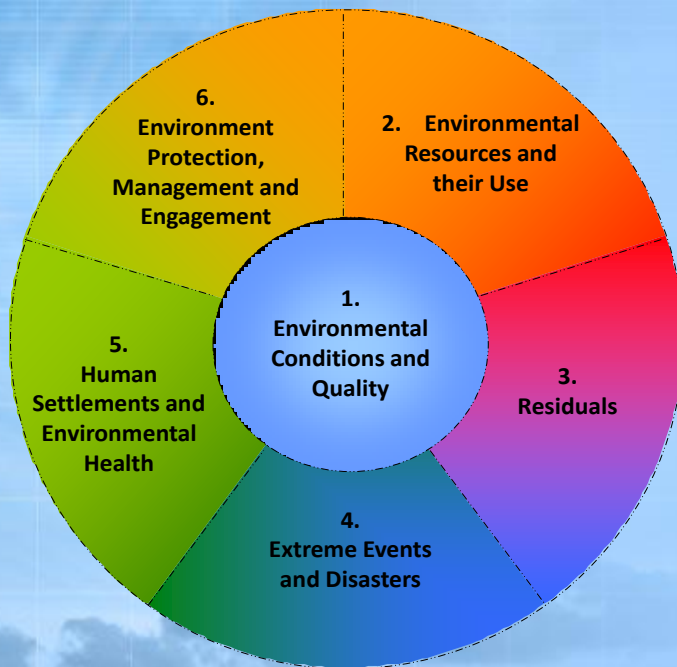# Components, sub-components and statistical topics of the FDES 2013
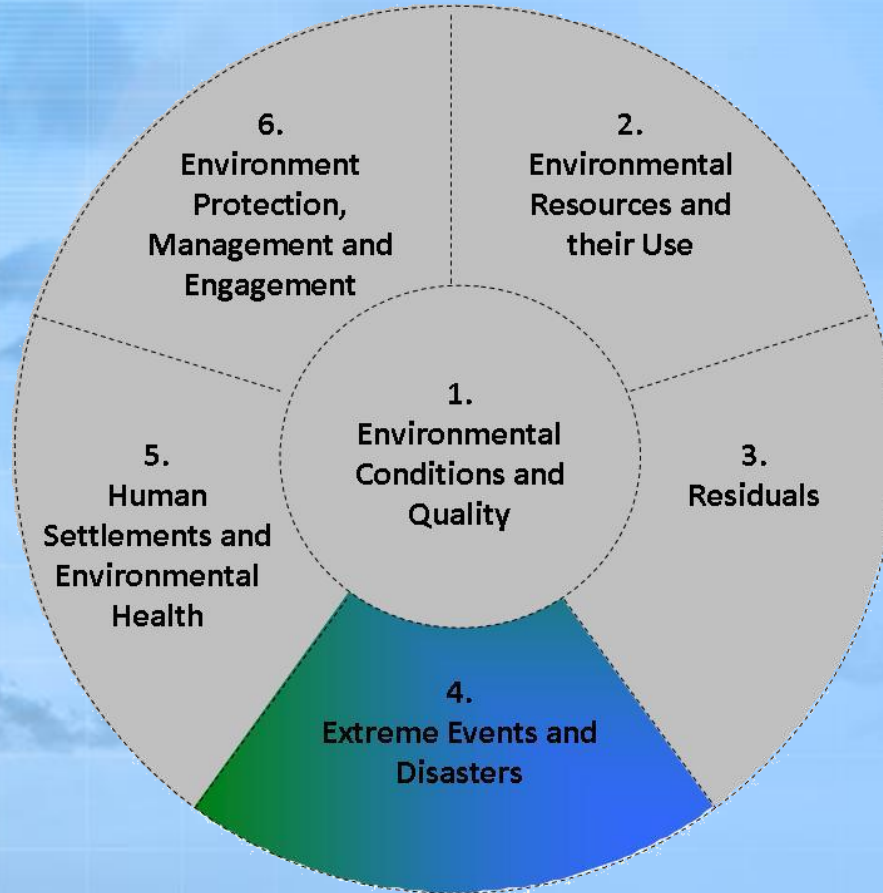
Component 4: Extreme Events and Disasters

Workshop on Environment Statistics in support of the implementation of the Framework for the Development of Environment Statistics (FDES 2013) (Calodyne, Mauritius, 26-29 January 2015)

Environment Statistics Section, United Nations Statistics Division
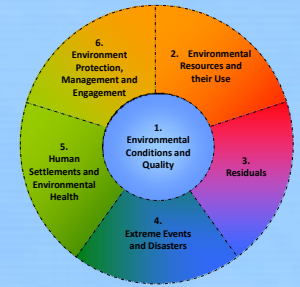
- This presentation has been elaborated by the Environment Statistics Section of the United Nations Statistics Division.

- It is based on Chapter 3 of the Framework for the Development of Environment Statistics (FDES) 2013 that can be downloaded here: http://unstats.un.org/unsd/statcom/doc13/BG-FDES-Environment.pdf

Component 4: Disasters and Extreme Events

Contents of Component 4

This component organizes statistics regarding the occurrence and impacts of extreme events and disasters on human wellbeing and on the infrastructure of the human sub-system.

Component 4: Disasters and Extreme Events

Definitions:

- **Extreme Event:** An event that is normally as rare or rarer than the 10th or 90th percentile within its statistical reference distribution at a particular location.

- **Disaster:** Described as a result of exposure to an extreme event.

  A disaster should be categorized using the same criteria as the CRED Emergency Events Database (EMDAT). This means that **at least one of the following** criteria must be fulfilled:

  i. Ten (10) or more people reported killed;

  ii. One hundred (100) or more people reported affected;

  iii. Declaration of a state of emergency; **or**

  iv. Call for international assistance has been made.

Component 4: Disasters and Extreme Events

Data Sources:

- National and sub-national authorities responsible for:
  - Disaster management and assistance
  - Emergency management and response agencies
  - Insurance companies
  - Optical and radar satellite operators for satellite information
  - Seismic monitoring and research centres

Component 4: Overview

Component 4 Extreme Events and Disasters	Sub-Component 4.1 Natural Extreme Events and Disasters (two topics, 18 statistics)	**Topic 4.1.1:** Occurrence of natural extreme events and disasters **Topic 4.1.2:** Impact of natural extreme events and disasters
	Sub-Component 4.2 Technological Disasters (two topics, 15 statistics)	**Topic 4.2.1:** Occurrence of technological disasters **Topic 4.2.2:** Impact of technological disasters

Sub-Component 4.1: Natural Extreme Events and Disasters

Sub-Component 4.1

Natural Extreme Events and Disasters

Topic 4.1.1

Occurrence of natural extreme events and disasters

Topic 4.1.2

Impact of natural extreme events and disasters

Topic 4.1.1: Occurrence of natural extreme events and disasters

Includes:

- Type of natural disaster, location, magnitude, date of occurrence and duration.

- Statistics on hazard prone areas and on the vulnerability to disasters (i.e. population living in hazard prone areas).

- Extreme events and disasters can be categorized and classified using the current classification of the Centre for Research on the Epidemiology of Disasters Emergency Disasters Database (CRED EMDAT).

Topic 4.1.2: Impact of natural extreme events & disasters

- Impact can be measured/informed by: the number of people killed, injured, homeless and affected, as well as economic loss.

- Economic loss can refer to damage to buildings and other economic assets, number of transportation networks affected, economic disruption or loss of revenue to commercial services, as well as utility disruption.

- Physical loss or damage refers to the magnitude of the impact of the event or disaster on the quantity and quality of land, crops, livestock, aquaculture, biomass, etc.

- The specific impact of each natural disaster on the integrity of the local ecosystem can also be reported on.

- External assistance received for disaster relief can also be measured.

## Topic 4.1.2: Impact of natural extreme events & disasters

Handbook for Estimating the Socio-economic and Environmental Effects of Disasters

- The United Nations Economic Commission for Latin America and the Caribbean (UNECLAC) has developed this handbook, useful to other countries and regions.

- It evaluates the overall impact of disasters associated with natural events and includes a methodology for evaluating this impact. This analysis of disaster impact in terms of damage and losses makes it possible to estimate the impact of disasters on economic growth, on the population's living conditions and on environmental conditions in the region.
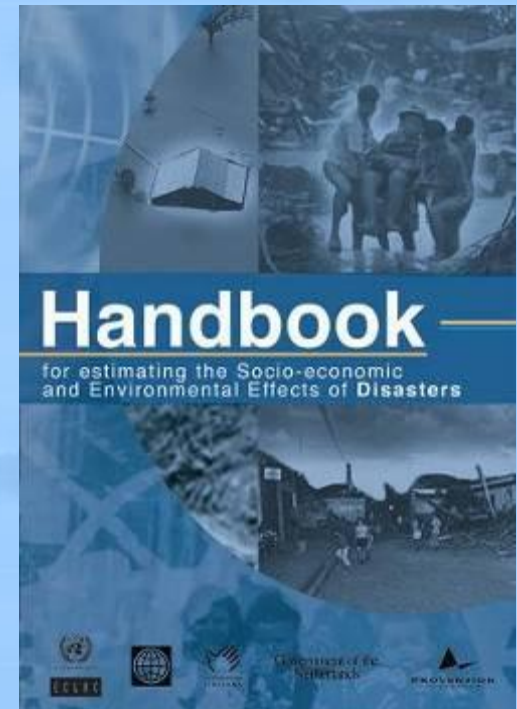
Handbook
for estimating the Socio-economic
and Environmental Effects of **Disasters**

Sub-Component 4.2: Technological Disasters

Sub-Component 4.2

Technological Disasters
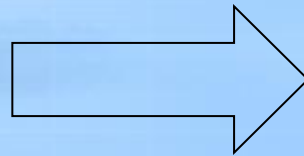
Topic 4.2.1

Occurrence of technological disasters

Topic 4.2.2

Impact of technological disasters

Sub-component 4.2: Technological Disasters

Includes information on the occurrence and impact of such disasters on human lives and habitats, and on the environment as well as on disaster preparedness for such types of disasters.

Technological disasters arise from human intent, negligence or error, or from faulty or failed technological applications.

Types of technological disasters recognized by CRED:

1. Industrial disasters which cover leakages of fluid toxic chemicals, oil spills and explosions;
2. Transport disasters: accidents of mechanized transport of chemicals, volatile materials or other hazardous substances by road, rail, water or pipeline;
3. Miscellaneous disasters such as arson fires and other disasters of varied origin.

Relevance:

- Technological disasters can impact large areas and affect both human safety and the environment in both the short and long term.
- Policy makers, analysts and civil society require statistics on technological disasters in order to understand who is ultimately responsible, what the immediate and potential impact may be, and to assess and mitigate future risks.

Topic 4.2.1: Occurrence of technological disasters

Content:

- Includes ocurrence and nature of disasters resulting from human intent, negligence, error or from faulty or failed technological applications.

Examples:

- Nuclear meltdowns and pipeline or tanker leakages that result in significant harm to the environment, including potentially significant consequent impacts on humans.

Scope:

- Identification and characterization of the different types of events including information on type of disaster, location, date of occurrence and duration. Where pertinent because of repeated episodes, the frequency of these technological disasters can also be critical in guiding policy-making and the development of deterrents.

- Inclusion in this sub-component, a technological disaster should be categorized using the same criteria as the CRED EMDAT.

Topic 4.2.1: Occurrence of technological disasters

Relevance:

- Technological disasters impact human lives, habitats and ecosystems in different ways, depending on the nature and intensity of the disaster. Their effects can be short term or may have significant or unknown duration. In the case of technological disasters, there is sometimes no precedent for a given disaster. The full magnitude of such disasters can sometimes neither be fully anticipated nor measured.

Topic 4.2.2: Impact of technological disasters

Includes the specific impacts on <u>humans</u> and <u>damage to the ecosystems and to the economy</u>, arising from technological disasters.

Impacts include environmental damage, radiation-related conditions and diseases or other health impacts, property damage, loss of livelihoods, services and housing, social and economic disruption.

Statistics:

- Number of people killed, injured, rendered homeless, or affected, as well as economic loss.

    <u>Economic loss</u>**:** Damage to buildings and other economic assets, number of transportation networks affected, economic disruption or loss of revenue to commercial services, and utility disruption.

    <u>Physical loss or damage</u>**:** The magnitude of the impact of the event or disaster on the quantity and quality of land, crops, livestock, aquaculture, biomass.

- If available, estimations of the loss of work days and of the economic cost in monetary terms (e.g., loss of wages or costs of treatment) and external assistance received for disaster relief.

Questions, comments for Component 4?