

Components, sub-components and statistical topics of the FDES 2013

Component 4: Disasters and Extreme Events

Disasters and Extreme Events

Introduction



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

Data sources are the 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

Disasters and Extreme Events

Scope and content

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.

Disasters and Extreme Events

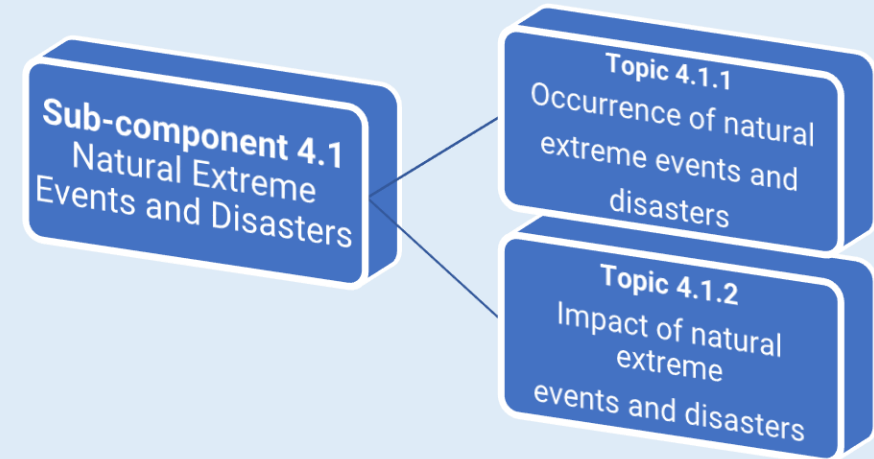
Overview

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

Disasters and Extreme Events

Sub-Component 4.1: Natural Extreme Events and Disasters

- This subcomponent organizes statistics on the frequency and intensity of extreme events and disasters deriving from natural phenomena, as well as their impact on human lives and habitats and the environment as a whole.
- Statistics on natural extreme events and disasters are important to policymakers, analysts and civil society not only to assess the impact of an ongoing disaster, but also to monitor the frequency, intensity and impact of disasters over time



Sub-Component 4.1: Natural Extreme Events and Disasters

Topic 4.1.1: Occurrence of natural extreme events and disasters

This topic 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).

Sub-Component 4.1: Natural Extreme Events and Disasters

Topic 4.1.1: Occurrence of natural extreme events and disasters

Statistics and related information for Topic 4.1.1

Component 4: Extreme Events and Disasters			
Subcomponent 4.1: Natural Extreme Events and Disasters			
Topic 4.1.1: Occurrence of natural extreme events and disasters			
Statistics and related information			
(Bold text —Core Set/Tier 1; regular text—Tier 2; <i>italicized text</i> —Tier 3)	Category of measurement	Potential aggregations and scales	Methodological guidance
a. Occurrence of natural extreme events and disasters		<ul style="list-style-type: none"> • By event • National • Subnational 	<ul style="list-style-type: none"> • Centre for Research on the Epidemiology of Disasters Emergency Events Database (CRED EM-DAT) • UN Economic Commission for Latin America and the Caribbean (UNECLAC) Handbook for Estimating the Socio-economic and Environmental Effects of Disasters • The United Nations Office for Disaster Risk Reduction (UNISDR)
1. Type of natural extreme event and disaster (geophysical, meteorological, hydrological, climatological, biological)	Description		
2. Location	Location		
3. Magnitude (where applicable)	Intensity		
4. Date of occurrence	Date		
5. Duration	Time period		

Sub-Component 4.1: Natural Extreme Events and Disasters

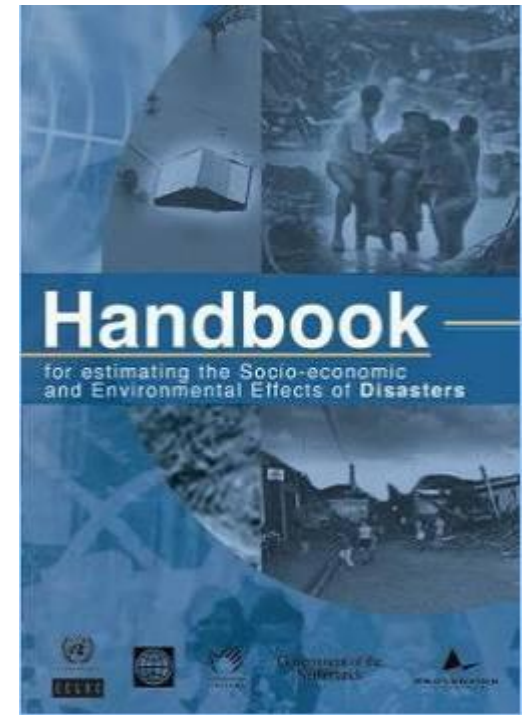
Topic 4.1.2: Impact of natural extreme events & disasters

- 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.

Sub-Component 4.1: Natural Extreme Events and Disasters

Topic 4.1.2: Impact of natural extreme events & 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 4.1: Natural Extreme Events and Disasters

Topic 4.1.2: Impact of natural extreme events & disasters

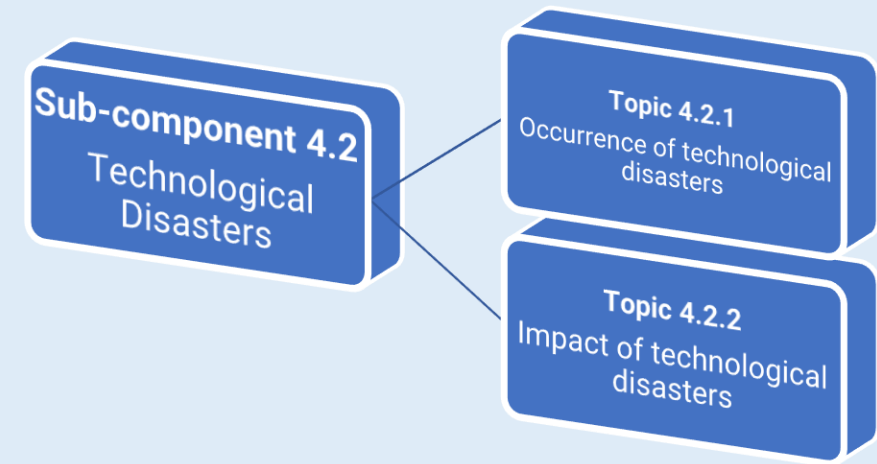
Statistics and related information for Topic 4.1.2

Component 4: Extreme Events and Disasters			
Subcomponent 4.1: Natural Extreme Events and Disasters			
Topic 4.1.2: Impact of natural extreme events and disasters			
Statistics and related information			
(Bold text —Core Set/Tier 1; regular text—Tier 2; <i>italicized text</i> —Tier 3)	Category of measurement	Potential aggregations and scales	Methodological guidance
a. People affected by natural extreme events and disasters		<ul style="list-style-type: none"> • By event • National • Subnational 	<ul style="list-style-type: none"> • Centre for Research on the Epidemiology of Disasters Emergency Events Database (CRED EM-DAT) • UN Economic Commission for Latin America and the Caribbean (UNECLAC) Handbook for Estimating the Socio-economic and Environmental Effects of Disasters • The United Nations Office for Disaster Risk Reduction (UNISDR)
1. Number of people killed	Number		
2. Number of people injured	Number		
3. Number of people homeless	Number		
4. Number of people affected	Number		
b. Economic losses due to natural extreme events and disasters (e.g., damage to buildings, transportation networks, loss of revenue for businesses, utility disruption)	Currency	<ul style="list-style-type: none"> • By event • By ISIC economic activity • National • Subnational • By direct and indirect damage 	
c. Physical losses/damages due to natural extreme events and disasters (e.g., area and amount of crops, livestock, aquaculture, biomass)	Area, description, number		
d. Effects of natural extreme events and disasters on integrity of ecosystems		<ul style="list-style-type: none"> • By event • By ecosystem • National • Subnational 	
1. <i>Area affected by natural disasters</i>	Area		
2. <i>Loss of vegetation cover</i>	Area		
3. <i>Area of watershed affected</i>	Area		
4. <i>Other</i>	Description		
e. <i>External assistance received</i>	Currency	<ul style="list-style-type: none"> • By event • National 	

Disasters and Extreme Events

Sub-Component 4.2: Technological Disasters

- This subcomponent organizes statistics on technological disasters that may arise as a result of human intent, negligence or error, or faulty or failed technological applications. It groups information on the occurrence and impact of such disasters on human lives, habitats, the environment, and on disaster preparedness for such types of disasters.
- CRED recognizes three types of technological disasters



Accidents	Associated
industrial	chemical spill, collapse, explosion, fire, gas leak, poisoning, radiation and other
transport	air, road, rail, and water
miscellaneous	collapse, explosion, fire and other disasters of varied origin

Sub-Component 4.2: Technological Disasters

Topic 4.2.1: Occurrence of technological disasters

- This topic organizes information on the frequency and nature of disasters that arise as a result of human intent, negligence or error, or from faulty or failed technological applications. Nuclear meltdowns and pipeline or tanker leakages that result in significant harm to the environment, including potentially significant consequent impacts on humans.
- It should also include information on the identification and characterization of the different types of events including information on type of disaster, location, date of occurrence and duration. The frequency of these technological disasters (Where pertinent because of repeated episodes) can also be critical in guiding policy-making and the development of deterrents. Technological disaster should be categorized using the same criteria of CRED EMDAT.

Sub-Component 4.2: Technological Disasters

Topic 4.2.1: Occurrence of technological disasters

Statistics and related information for Topic 4.2.1

Component 4: Extreme Events and Disasters			
Subcomponent 4.2: Technological Disasters			
Topic 4.2.1: Occurrence of technological disasters			
Statistics and related information			
(Bold text —Core Set/Tier 1; regular text—Tier 2; <i>italicized text</i> —Tier 3)	Category of measurement	Potential aggregations and scales	Methodological guidance
a. Occurrence of technological disasters		<ul style="list-style-type: none"> • By event 	<ul style="list-style-type: none"> • CRED EM-DAT
1. Type of technological disaster (industrial, transportation, miscellaneous)	Description	<ul style="list-style-type: none"> • By ISIC economic activity 	<ul style="list-style-type: none"> • UNECLAC: Handbook for Estimating the Socio-economic and Environmental Effects of Disasters
2. <i>Location</i>	Location	<ul style="list-style-type: none"> • National 	
3. <i>Date of occurrence</i>	Date	<ul style="list-style-type: none"> • Subnational 	
4. <i>Duration</i>	Time period		

Sub-Component 4.2: Technological Disasters

Topic 4.2.2: Impact of technological disasters

- This topic includes specific impacts on humans and damage to the ecosystems and economy arising from technological disasters. Impacts may include environmental damage, radiation-related conditions and diseases or other health impacts, property damage, loss of livelihoods, services and housing, social and economic disruption.
- The statistics in this topic include the number of people killed, injured, rendered homeless, or affected, as well as economic loss
- 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.

Sub-Component 4.2: Technological Disasters

Topic 4.2.2: Impact of technological disasters

Statistics and related information for Topic 4.2.2

Component 4: Extreme Events and Disasters			
Subcomponent 4.2: Technological Disasters			
Topic 4.2.2: Impact of technological disasters			
Statistics and related information			
(Bold text —Core Set/Tier 1; regular text—Tier 2; <i>italicized text</i> —Tier 3)	Category of measurement	Potential aggregations and scales	Methodological guidance
a. People affected by technological disasters		<ul style="list-style-type: none"> • By event 	<ul style="list-style-type: none"> • CRED EM-DAT
1. Number of people killed	Number	<ul style="list-style-type: none"> • National 	<ul style="list-style-type: none"> • UNECLAC: Handbook for Estimating the Socio-economic and Environmental Effects of Disasters
2. <i>Number of people injured</i>	Number	<ul style="list-style-type: none"> • Subnational 	
3. <i>Number of people homeless</i>	Number		
4. <i>Number of people affected</i>	Number		
b. Economic losses due to technological disasters (e.g., damage to buildings, transportation networks, loss of revenue for businesses, utility disruption)	Currency	<ul style="list-style-type: none"> • By event • By ISIC economic activity 	
c. Physical losses/damages due to technological disasters (e.g., area and amount of crops, livestock, aquaculture, biomass)	Area, description, number	<ul style="list-style-type: none"> • National • Subnational • By direct and indirect damage 	
d. Effects of technological disasters on integrity of ecosystems		<ul style="list-style-type: none"> • By event 	
1. <i>Area affected by technological disasters</i>	Area	<ul style="list-style-type: none"> • National 	
2. <i>Loss of vegetation cover</i>	Area	<ul style="list-style-type: none"> • Subnational 	
3. <i>Area of watershed affected</i>	Area		
4. <i>Other</i> (e.g., for oil spills: volume of oil released into the environment, impact on ecosystem)	Description		
e. <i>External assistance received</i>	Currency	<ul style="list-style-type: none"> • By event • National 	

Q & A

Disasters and Extreme Events

Primary institution (s) responsible for the following statistics

Sub-component 4.1: Natural Extreme Events and Disasters	
Topic 4.1.1: Occurrence of natural extreme events and disasters	
Statistics	Institution (s)
a.1. Type of natural extreme event and disaster (geophysical, meteorological, hydrological, climatological, biological)	
a.2. Location	
Topic 4.1.2: Impact of natural extreme events and disasters	
a.1. Number of people killed	
b. Economic losses due to natural extreme events and disasters (e.g., damage to buildings, transportation networks, loss of revenue for businesses, utility disruption)	

Thank you



United Nations Avenue, Gigiri
PO Box 30552 – 00100 GPO Nairobi, Kenya

www.unep.org