# Natural Disasters

UNSD

Workshop on Environment Statistics

(Abuja, 19-23 May 2008)

# Need for indicators

- Information on frequency and severity of natural disasters is important for preparedness and risk management as well as for assessing vulnerability

# Definition of disaster

- a situation or event, which overwhelms local capacity, necessitating a request to the national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering.

# Types of Natural Disasters

Natural disasters:

– floods;

– natural disasters of geological origin, (volcanic eruptions, earthquakes and landslides);

– natural disasters of climatic or meteorological origin, (droughts, cold waves, heat waves, avalanches, wave surges including tsunamis and tidal waves, and wind storms including cyclones, hurricanes, storms, tornadoes, tropical storms, typhoons and winter storms);

– wildfires, both forest and scrub;

– insect infestations; and

– epidemics of cholera, diarrhea, meningitis, dengue fever and malaria.

# International Data Sources:

– Office of United States Foreign Disaster Assistance/Centre for Research on the Epidemiology of Disasters (OFDA/CRED) International Disaster Database.

– [1] Specific sources of OFDA/CRED data include UN:AFRO, UN:FAO, UN:IRIN, UN:OCHA, UN:PAHO, UN:UNDP, UN:UNEP, UN:UNDRO, UN:UNICEF, UN:WFP, UN:WHO/OMS, UN:WMO, US gov:CDC, US gov:FEMA, US gov:NOAA, US gov:OFDA, US gov:Smithsonian, US gov:USGS, Govern:ADRC, Govern:IDNDR, MunichRe, SwissRe, Press:AFP, Press:International Herald Tribune, Press:Mode, Press:Reuters.

# Inclusion in database:

- In order for a disaster to be entered into the database at least one of the following criteria has to be fulfilled:

- 10 or more people reported killed

- 100 people reported affected

- a call for international assistance

- declaration of a state of emergency

# Main variables:

- **Events per year**: The year that a disaster occurs is easily recognized for sudden disasters like landslides and earthquakes. For long-term disasters like droughts, the data are divided by the number of affected years, and a separate entry is made for each year of the event.
- **Killed**: Persons confirmed as dead and persons missing and presumed dead.
- **Injured**: People suffering from physical injuries, trauma or an illness requiring medical treatment as a direct result of a disaster.
- **Homeless**: People needing immediate assistance in the form of shelter
- **Affected**: People requiring immediate assistance during a period of emergency, i.e. requiring basic survival needs such as food, water, shelter, sanitation and immediate medical assistance; appearance of a significant number of cases of an infectious disease introduced in a region or a population that is usually free from that disease.
- **Estimated Damage**: The economic impact of a disaster usually consists of direct (e.g. damage to infrastructure, crops, housing) and indirect (e.g. loss of revenues, unemployment, market destabilization) consequences on the local economy. Estimated damage is given in US$. If cost damage is originally reported in the local currency, it will be directly converted in US$. For each disaster, the registered figure corresponds to the damage value at the moment of the event, i.e. the figures are shown true to the year of the event.

# CSD Indicators of Sustainable Development

- Theme:   Natural hazards
- Sub-theme:       Vulnerability to natural hazards
- Indicator:       PERCENTAGE OF POPULATION LIVING IN HAZARD PRONE AREAS
- Sub-theme:       Disaster preparedness and response
- Indicator:       Human and economic loss due to natural disasters

# NEPAD list

- Frequency of extreme events: number, people affected (Air)
- (Number of people affected by waterborn diseases - Water)
- Percentage of population affected by natural disasters
- Frequencies of extreme events
- Number of technological/geological(?) accidents
- Number of sensitive sites prone to disasters by zone
- Rates of occurence of specified parameters which can lead to natural disasters
- Periodicities or "return periods" of each type of natural hazard and impacts on property and on the population
- Observed impacts of natural hazards and decisions on methods of reducing future impacts
- Efficient monitoring of parameters, which lead to natural hazards
- Effective modeling of parameters for predictive applications

# Indicators selected for ECA list

| | |
|---|---|
| Exposure to various types of natural hazards, drought, floods etc | Percentage of population living in hazard prone areas [CSD] |
| | Frequency of extreme events * |
| Impacts to various types of natural hazards, drought, floods etc | Human and economic loss due to natural disasters [CSD] |
| Inadequate early warning system for the timely prediction of location and intensity of future natural disasters | % of population having access to information from early warning systems |
| Adaptive capacity | Public expenditure on disaster reduction and related measures |

# Availability of methodology

**Natural Disasters and Environmental Performance**

*Exposure to various types of natural hazards, drought, floods etc*

- Percentage of population living in hazard prone areas [CSD]………………………………………. 6
- Frequency of extreme events [CRED]……………………………………………….…. 12

*Impacts to various types of natural hazards, drought, floods etc*

- Human and economic loss due to natural disasters [CSD]…….……………………………..19

*Inadequate early warning system for the timely prediction of location and intensity of future natural disasters*

- % of population having access to information from EWS [NOT AVAILABLE]………………25

*Adaptive capacity*

- Public expenditure on disaster reduction and related measures [NOT AVAILABLE]………..25

# DANGER OF DROUGHTS

**Norte de México: vulnerabilidad a la sequía meteorológica por cambio climático**



SEVERIDAD DE LA SEQUÍA METEOROLÓGICA
MODELO GFDL-R30

NULO
BAJO
ALTO
MUY ALTO
SEVERO
MUY SEVERO

500 km

10 estados  más del 68%
de superficie alto grado
vulnerabilidad a desertificación

8 estados serían
 más vulnerables a sequía
meteorológica
afectados en casi  90%  de territorio

HERNANDEZ, M.E. et al. 1995.