

OVERVIEW OF THE DISASTER ASSESSMENT METHODOLOGY

Sustainable Development and Disaster Unit
ECLAC Subregional Headquarters for the Caribbean



UNITED NATIONS

ECLAC

St Lucia

August 2015

Outline

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- 1) Some facts about disasters in the Caribbean
- 2) Disaster assessment
- 3) Financial needs for recovery and reconstruction
- 4) The Sustainable Development and Disasters Unit

Facts about disasters

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World trends

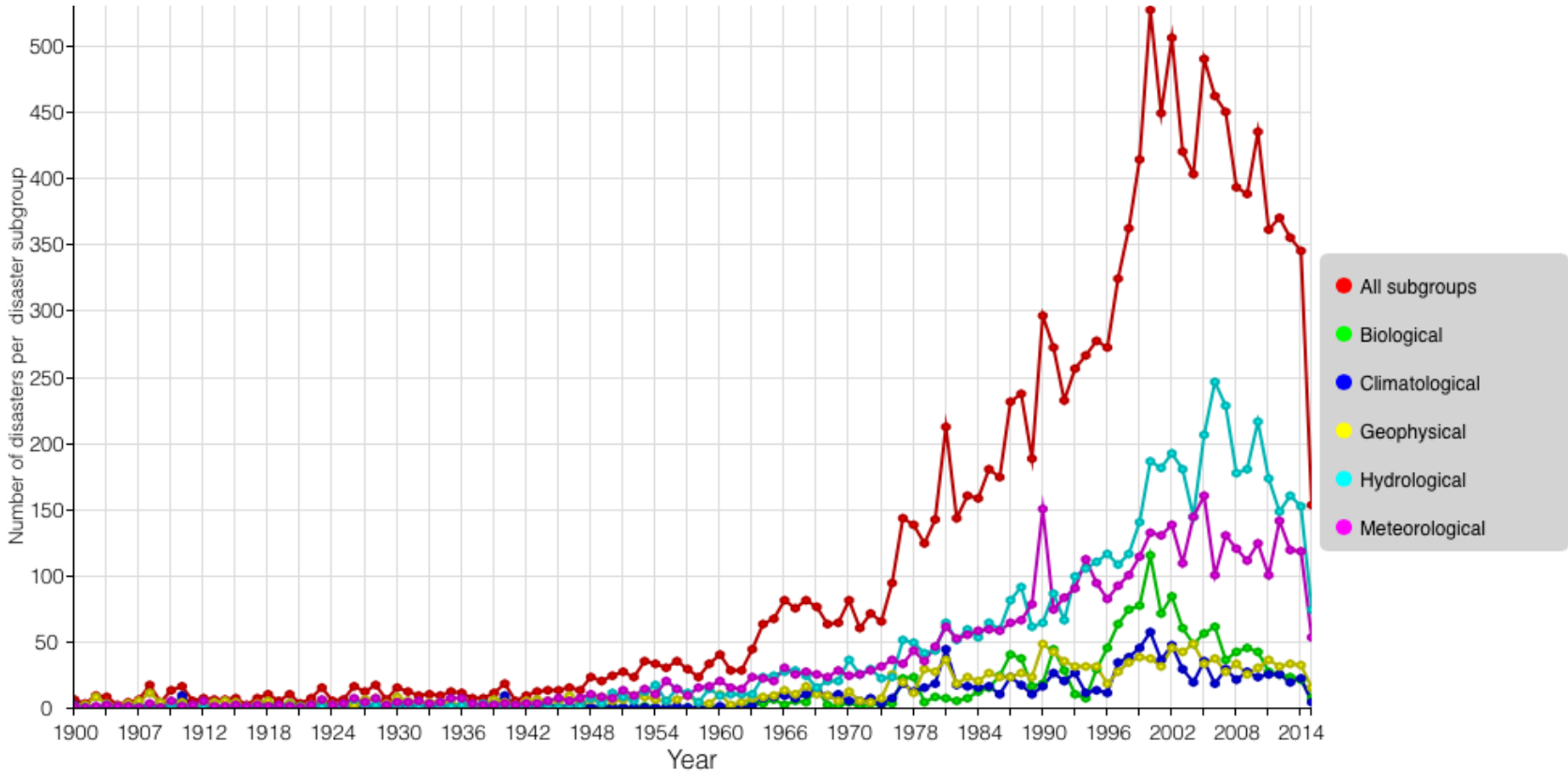
Disasters: World (1970-2015)



EM-DAT: The OFDA/CRED International Disaster Database - www.emdat.be - Université Catholique de Louvain, Brussels - Belgium

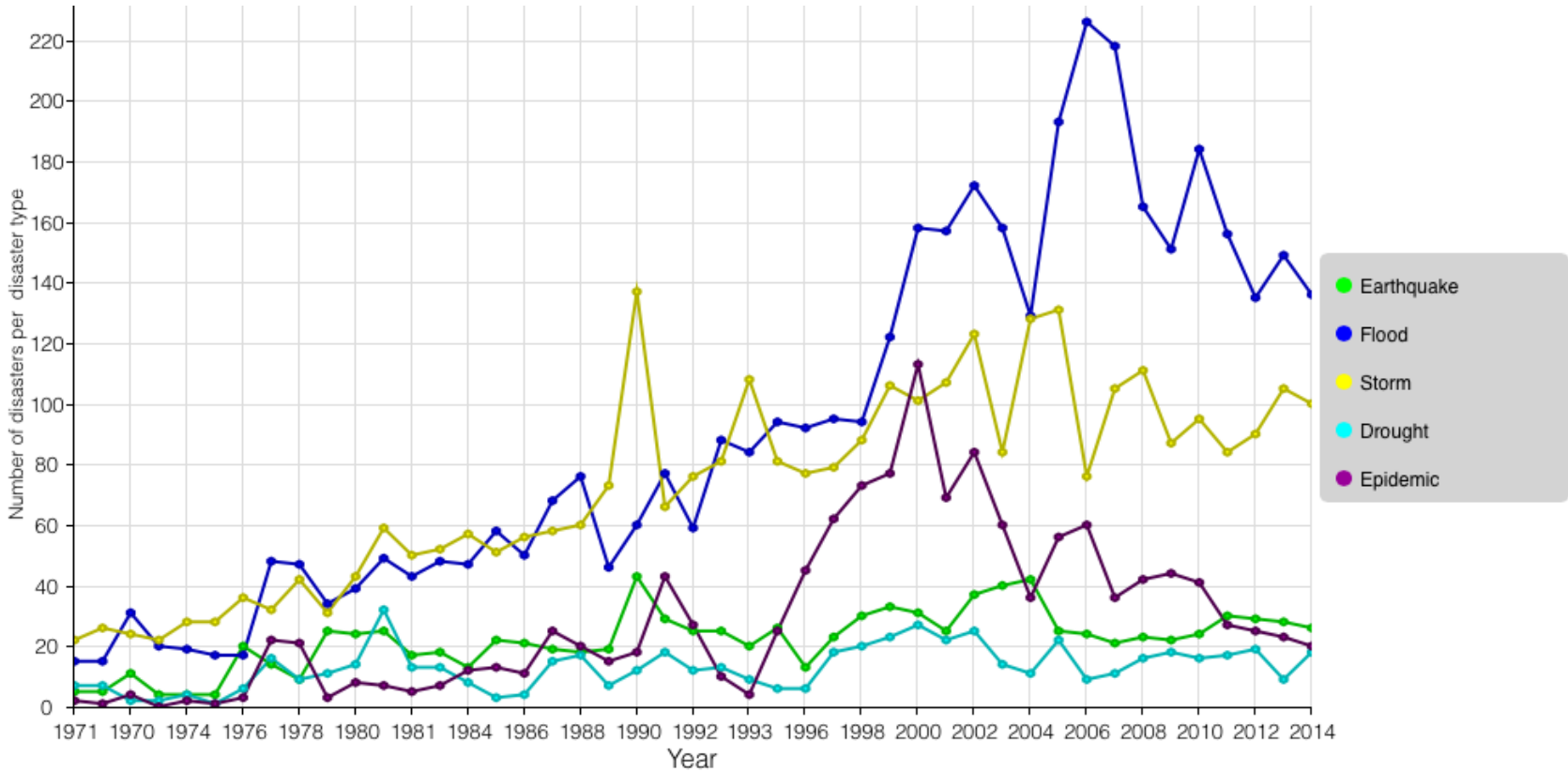
Disasters: World (1970-2015)

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Disasters: World (1970-2014)



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Facts about disasters

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World trends

Some facts about disasters in the Caribbean:

- Some statistics
- Disasters have increased along time
- Weather- related disasters determined the dynamics shown by disasters
- They are recurrent by no periodic

Facts about disasters

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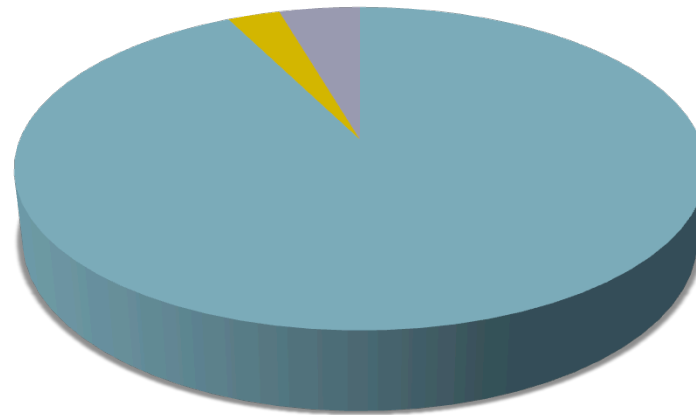
Some statistics

- 445 disasters has taking place on the Caribbean between 1970-2014
- 85% of disasters has been either storms or floods

Facts about disasters

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Some statistics

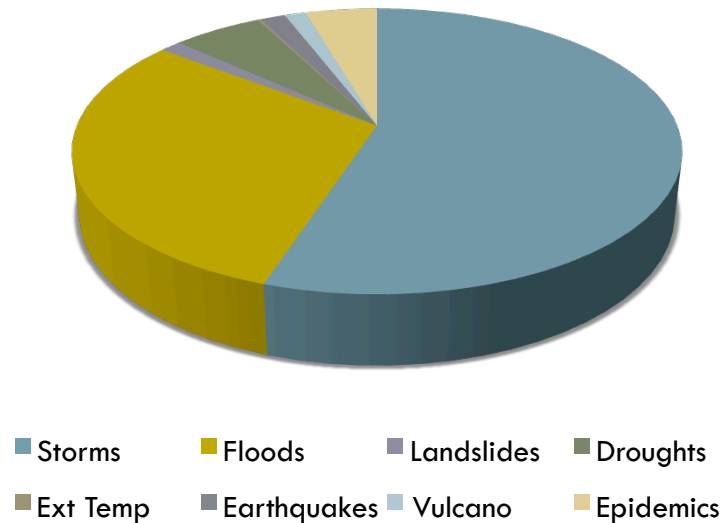


■ Climatological ■ Geological ■ Biological

Facts about disasters

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Some statistics



Facts about disasters

Some statistics

- 445 disasters has taking place on the region between 1970-2014
- 85% of disasters has been either storms or floods
- 28 storms have affected Cuba
- 23 floods have affected Dominican Republic
- The most lethal event on the region was the Port-au-Prince earthquake

Facts about disasters

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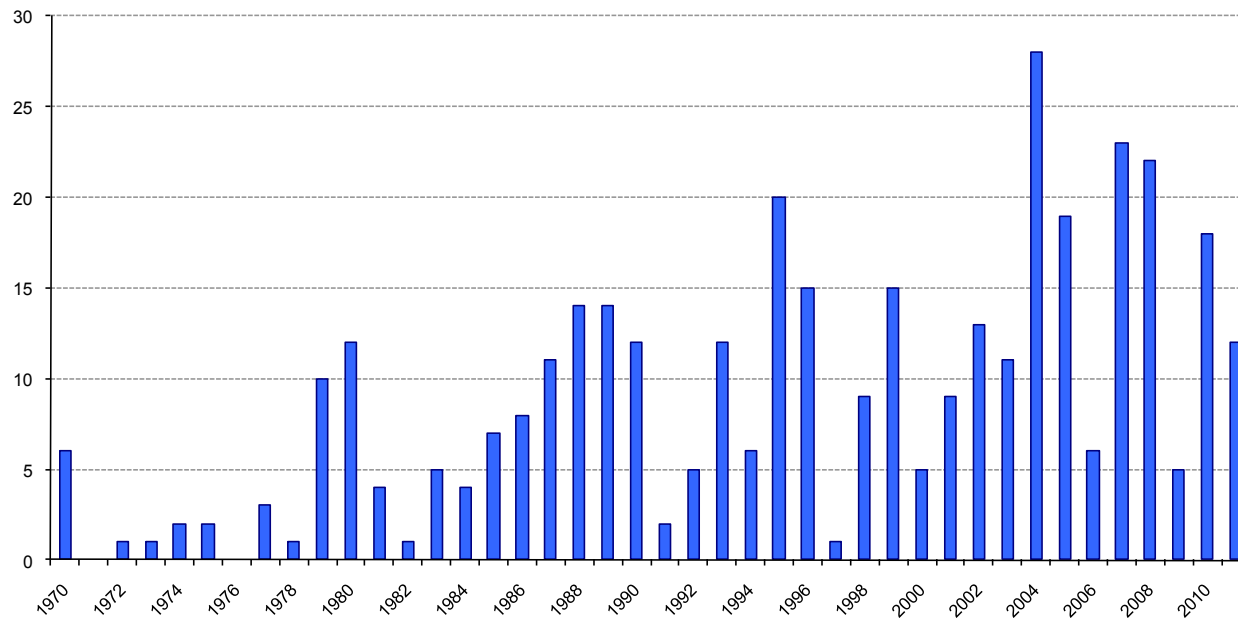
World trends

Some facts about disasters in the Caribbean:

- Some statistics
- Disasters have increased along time
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- Weather- related disasters determined the dynamics shown by disasters

The Caribbean: weather- related disasters

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Source: Emergency Events Database (EM-DAT) compiled by the Center for Research on the Epidemiology of Disasters (CRED) Catholic University of Lovaine, Brussels Belgium

The Caribbean: Storms

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Decades	Number of Disasters	Deaths	Affected Population
70s	14	1558	1760890
80s	39	2037	5538462
90s	66	1856	3869185
00s	100	4086	11298165
2010-2014	26	122	203746
Total	245	9659	22670448

Source: Emergency Events Database (EM-DAT) compiled by the Center for Research on the Epidemiology of Disasters (CRED) Catholic University of Lovaine, Brussels Belgium

The Caribbean: Floods

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Decades	Number of Disasters	Deaths	Affected Population
70s	10	224	326210
80s	31	841	1855985
90s	25	199	1299005
00s	44	3690	1081785
2010-2014	25	165	398963
Total	135	5119	4961948

Source: Emergency Events Database (EM-DAT) compiled by the Center for Research on the Epidemiology of Disasters (CRED) Catholic University of Lovaine, Brussels Belgium

Facts about disasters

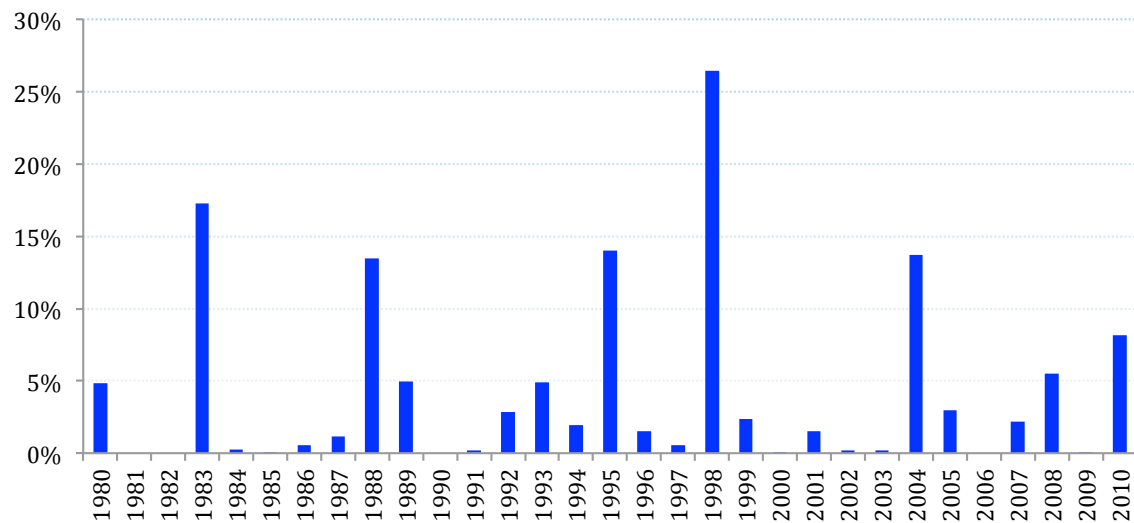
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Some facts about disasters in the Caribbean:

- Some statistics
- Disasters have increased along time
- They are recurrent by no periodic
- Weather- related disasters determined the dynamics shown by disasters
- The economic impacts of disasters have been greater in the Caribbean than in Latin America

The Caribbean: Damage/GDP ratio

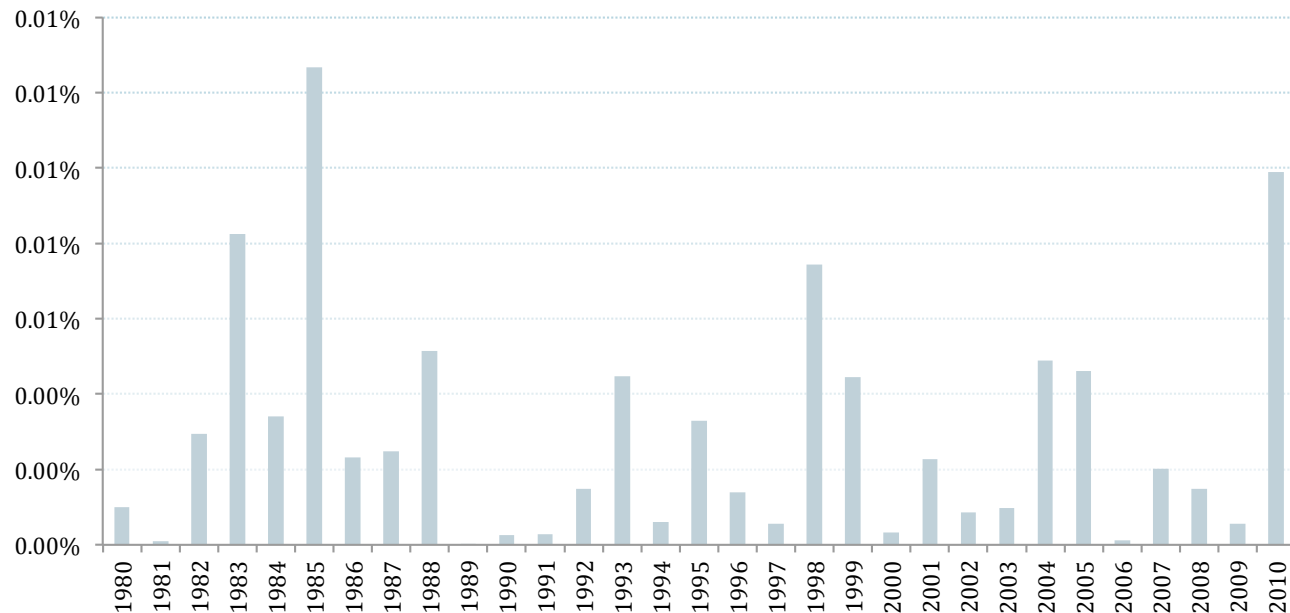
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Source: Emergency Events Database (EM-DAT) compiled by the Center for Research on the Epidemiology of Disasters (CRED) Catholic University of Lovaine, Brussels Belgium

Latin America and the Caribbean: Damage/GDP ratio

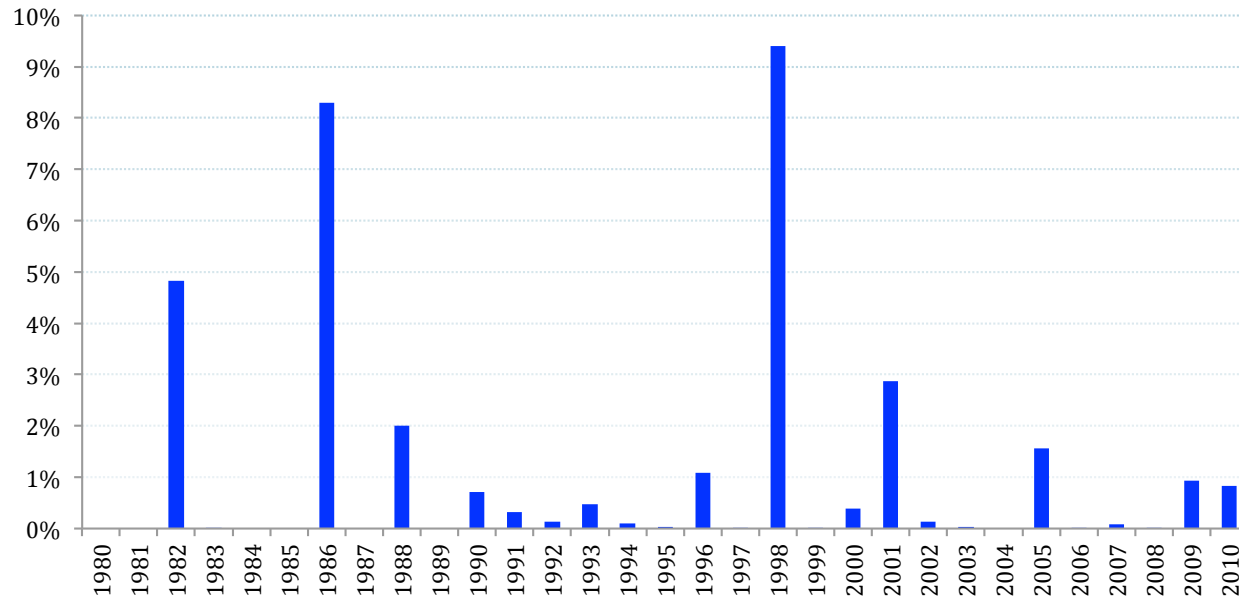
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Source: Emergency Events Database (EM-DAT) compiled by the Center for Research on the Epidemiology of Disasters (CRED) Catholic University of Lovaine, Brussels Belgium

Central America: Damage/GDP ratio

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Source: Emergency Events Database (EM-DAT) compiled by the Center for Research on the Epidemiology of Disasters (CRED) Catholic University of Lovaine, Brussels Belgium

Disaster Assessment

ECLAC has been a pioneer in the field of disaster assessment and in the development and dissemination of a disaster assessment methodology. Our history assessing disasters started in 1972 with the earthquake that struck Managua, Nicaragua.

Since then, ECLAC has taken part in more than 90 assessments of the social, environmental and economic effects and impacts of disasters in 28 countries in the region.

Disaster Assessment

Disaster Assessment:

1. **Estimation of effects:** damage, losses, and additional costs
2. **Estimation of impacts:** macro-economic and household level
3. **Estimation of financial needs:**
 - a. *Recovery:* it is partially estimated with the additional costs
 - b. *Reconstruction:* the DA should identify opportunities to incorporate disaster risk reduction in this process

These needs must be expressed in a disaggregated manner taking into consideration breakdowns by sector of economic activity, geopolitical divisions, and groupings of affected population.

Disaster Assessment

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Damage, losses, and additional costs are estimated based on sectoral information.

This methodology considers the following sectors:

- Social
- Infrastructure
- Productive

Estimations by sector

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1. Affected population

2. Social

- Education
- Health
- Housing
- Culture and cultural assets

3. Infrastructure

- Transportation
- Water and sanitation
- Power sector

4. Economic sectors

- Agriculture sector
- Manufacturing
- Commerce
- Tourism

Estimations by sector

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Once the effects are estimated by sector, we proceed to estimate the impacts at the macroeconomic and personal levels.

Overall and cross-cutting effects

- Macroeconomic impact
- Mainstreaming a gender perspective
- Environmental effects and impacts

Damage

Damage refers to the effects the disaster has on the assets of each sector, expressed in monetary terms. These occur during the event giving rise to the disaster. Depending on the sector, assets may include:

- a. Physical assets such as buildings, installations, machinery, equipment, means of transportation, storage facilities, furnishings, irrigation systems, dams, road systems and ports.
- b. Stocks of final and semi-finished goods, raw materials, materials and spare parts.

Damage

Two pieces of information are needed to set a monetary value on damage: the physical scale of the effect, and a price to convert it into a value.

Some valuation criterion has to be used to obtain a monetary estimate of such damage, and this methodology uses the *replacement price*, which is the current price (before the disaster) of an asset equivalent to the one destroyed.

Losses and Additional Costs

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It is important to distinguish between the two types of flow disruptions:

- 1) Losses
- 2) Additional Costs

Losses

Losses are the value of goods that go unproduced and services that go unprovided during a period running from the time the disaster occurs until full recovery and reconstruction is achieved.

Examples include a reduction in the size of future harvests because of the flooding of farmland or prolonged droughts, a decline in industrial production because of damage to plant or lack of raw materials or inputs such as water and electricity, and revenues forgone by utility firms because their services have been interrupted or reduced.

Losses

Losses are a more complex concept than damage. They are not a tally of obvious, tangible things (destroyed bridges, destroyed or damaged homes and so on). Calculating them means setting a value on production that will be forgone, which will obviously have an impact on GDP, employment, public finances and external accounts.

They are a dynamic measure of flows. This being so, the consequences of a disaster cannot be accounted for at the time they arise; their economic repercussions will persist for a certain time, which may vary from case to case.

Losses

This means that losses are hard to measure fully at the time valuation is carried out (a few weeks after the disaster). At that time, it is not always obvious whether the short-term losses are over or if they will continue, or what type of effect there will be in the medium term, especially when it is worth observing this separately for a particular sector that has been affected (agriculture or transport, for example).

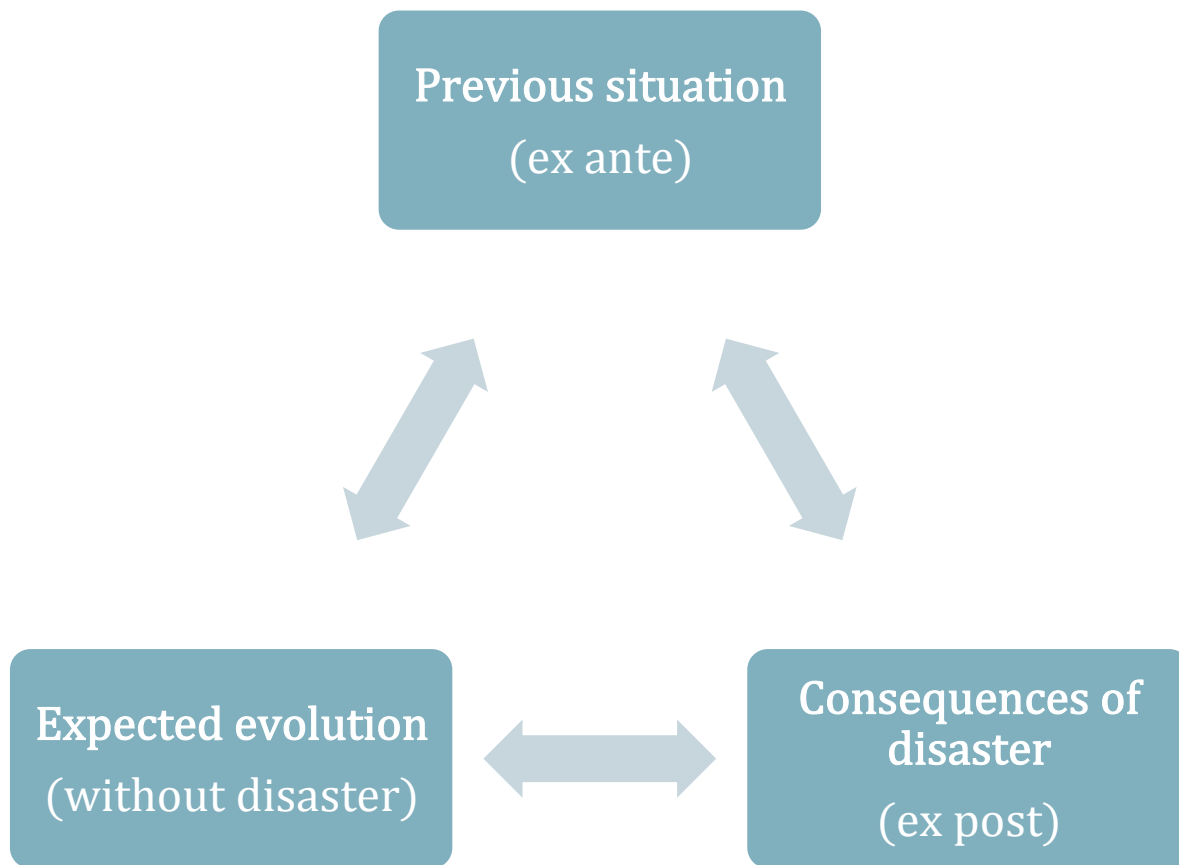
Additional Costs

Additional costs refer to outlays required to produce goods and provide services as a result of the disaster. These represent a response by both the public and the private sectors, which may take the form of:

- a) additional spending and/or
- b) spending shifting

This can happen within a sector, as when the health-care sector redirects planned infrastructure spending to purchases of medicines so that the pharmaceutical sector indirectly benefits and the construction sector loses out. Recomposition also takes place between sectors, as when the government decides to reduce technological development spending in order to direct the funds to emergency assistance (food, shelter and so on).

Estimates of damage and losses are made with respect to the baseline.
The final result would depend on the pace of recovery/reconstruction.



Sectoral Profile of Damage Estimates

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The Caribbean: Different types of disasters (percentages)

	Social	Infrastructure	Productive
Hurricanes & storms	28.2	8.3	61.8
Extreme precipitation	1.6	66.7	31.6
Geophysical	79.6	6.6	11.3

Sectoral Profile of Loss Estimates

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The Caribbean: Different kind of disasters (percentages)

	Social	Infrastructure	Productive
Hurricanes & storms	6.1	15.4	74.3
Extreme precipitation	43.7	38.2	18.1
Geophysical	47	22.1	30.9

Financial Needs for Recovery and Reconstruction

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There are four progressive stages for a country to achieve the successful integration of DRR into reconstruction:

- a) Integrating DRR into disaster assessments
- b) Sustained commitment to DRR during recovery planning
- c) Incorporating DRR in the design and implementation of recovery programs
- d) Translating the gains of resilient recovery into sustainable development

Disaster Assessment

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The technical assistance provided by the Sustainable Development and Disaster Unit focuses in four areas:

- 1) Disaster Assessment.
- 2) Quality control for Disaster Assessment done by national or local governments
- 3) Training courses on Disaster assessment methodology

Training Courses

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26 agosto 2015

Sustainable Development and Disaster Unit
ECLAC Subregional Headquarters for the Caribbean

Disaster Assessment

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- 2) Quality control for Disaster Assessment done by national or local governments
- 3) Training courses on Disaster assessment methodology
- 4) Assessing disaster risk reduction institutions

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