Climate Change and Disasters Indicators: A Caribbean and Latin American perspective

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### Climate Process Drivers

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Outline: Climate change statistics and indicators

- Drivers: Concentrations (GEI)
- Emissions and mitigation efforts in LAC
- Evidence of CC in LAC, and impacts
  - Regional and global warming evidence
  - Evidence of higher frequency of disasters
  - Evidence of greater disaster impact
- Adaptation
CC Drivers indicators: examples
Regional (LAC) Share in Total CO2 Emissions, 1990 - 2014

LAC region accounts for 5-8% of global CO2 emissions

Source: ECLAC, based on information from the Climate Analysis Indicator Tool (CAIT), based on CDIAC, IEA, EIA y FAO. [online] http://cait.wri.org
CARICOM and World: Sources of GHG Emissions, 2014


(In thousands of barrels of oil equivalent)


(In thousands of barrels of oil equivalent)

Latin America and the Caribbean: Renewable Primary Energy Supply by Energy source, 2017

(In percentages)

- Hydroenergy: 8.0%
- Geothermal: 0.6%
- Other: 3.5%
- Firewood: 7.5%
- Sugar cane and derivatives: 7.9%
- Renewable proportion of the primary energy supply: 27.4%

Source: CEPAL, calculated on the basis of OLADE, Energy Information System of Latin America and the Caribbean (SIEE) [online] http://sier.olade.org
LAC: Motorization rate* by country, 2015

*Motorization rate refers to the number of vehicles per 1,000 persons.

539 thousands of hectares were lost in 25 years, equivalent to more than the total area of the island of Trinidad. Suriname represents almost half of the CARICOM forest area.

Source: ECLAC based on data from the Food and Agriculture Organization of the United Nations (FAO); Global Forest Resources Assessment (FRA) 2015
Países de América Latina y el Caribe (44): Proporción de la superficie cubierta de bosques para el año 2015 y tasa de variación acumulada para el periodo 1990-2015

1990-2015 (Porcentaje)

Superficie cubierta de bosques

Tasa de variación acumulada (1990-2015)

2015 • Variación

SDG indicator 15.2.1

Fuente: Comisión Económica para América Latina y el Caribe (CEPAL), Base de datos de publicaciones estadísticas (CEPPALSTAT), sobre la base de cálculos realizados con la superficie nacional de bosques de Evaluación de los recursos forestales mundiales 2015 (FRA 2015) y la superficie terrestre nacional de las Bases de datos estadísticos de la FAO (FAOSTAT)
Carbon intensity of GDP has decreased from 1990 to date in the LAC region.

CC Evidence indicators: examples
LAC accounts for only **8% of the 2014 global GHG emissions**. However, it is acutely vulnerable to climate change consequences, particularly the Caribbean SIDS.

Aggregate estimates put the economic cost of a **2.5°C** rise in temperature for the LAC region at between **1.5% and 5% of the region’s current GDP**.

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**Mean annual temperature change in the Caribbean**, 1961-2017

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* Includes Cuba and the Dominican Republic.
Evidence of CC Occurrence: Climate Change Regional Patterns

Latin America and the Caribbean: Changes in average Sea Surface Temperature (SST)

In this comparison we observe an increase of average sea surface temperature from North to South. It should be noted that this source performs satellite monitoring, therefore the data is first observed and then complemented by buoys at sea, allowing the temperature to be measured.

Source: National Oceanic and Atmospheric Administration, NOAA
Caribbean: Number of Disasters Associated with Climate Change by Disaster Type, 1900-2019

CARIBBEAN: Number of disasters associated with climate change by disaster type (1900 - 2019)

Measuring climate change in the Caribbean: the impact of disasters

The **2017 hurricanes season** in the Caribbean, including category 5-hurricanes Irma and Maria, resulted in **177 deaths** and more than **10 million affected people**.

Number of large-scale disasters* in LAC by type of disaster, 1990-2017

* According to the source, at least one of the following criteria must be fulfilled in order for an event to be entered into the database: (a) 10 or more people deaths; (b) 100 or more people affected/injured/homeless and/or (c) declaration by the country of a state of emergency and/or an appeal for international assistance.

Please note that according to UNISDR, over the last 25 years, small-scale disasters have accounted for more than half of human losses caused by climate events in Latin America and the Caribbean.
Each square represents 5 events. In the case of dry mass displacement, each square represents less than 2 events.

Updated in April 2018
CC Impacts indicators: examples
LAC: Number of Human Deaths and Persons Directly Affected by Disasters, 1990-2018

Directly affected persons

Human deaths

70% of economic losses (US$) from disasters in LAC are related to CC.

The hyperactive and catastrophic 2017 Atlantic hurricane-tropical cyclone season was reported as the most expensive in history.

NOTE: The VALUE of damages and economic losses directly or indirectly related to climate change disasters in the last 5 decades amounts to 161 billions of dollars.

LAC: coral bleaching according to NOAA categories, 1963 - 2018

La intensidad de uso de agua por unidad de valor agregado agrícola es mayor en Sudamérica, superando la media regional. Centroamérica tienen una media similar a la regional y El Caribe por debajo de la media regional.
LAC: water withdrawal per agricultural aggregated value, last available year

Relación entre el PIB y Extracción de Agua Agrícola

1. Países con alto valor agregado agrícola y bajo consumo de agua. **Países eficientes. Ninguno**

2. Países con bajo valor agregado agrícola y bajo consumo de agua. **Casi todos**

3. Países con alto valor agregado agrícola y alto consumo de agua. **Brasil**

4. Países con bajo valor agregado agrícola y alto consumo de agua. **Países ineficientes. México**

Fuente: FAO, Base de datos de agua Aquastat y Cepalstat
World: Land productivity PPN, 1999-2013

Note: Estimates present high uncertainty, are conservative, limited to certain sectors and regions, and have various methodological limitations (difficulty in incorporating adaptation processes and potential effects of extreme climatic phenomena. Stern, 2013).
CC Mitigation and adaptation indicators: examples
Marine protected areas compared to marine area by CARICOM countries, 2018

Meta 11 de Aichi = 10%

Humedales Ramsar LAC (Millones de hectáreas)

Fuente: Ramsar: - Convención relativa a los humedales de importancia internacional, especialmente como hábitat de aves acuáticas - http://www.ramsar.org
Demands for regionally relevant climate change-related metrics and work program
“The Latin American and Caribbean region is in an asymmetrical position in relation to climate change. The region has made a historically small contribution to climate change yet it is highly vulnerable to its effects and will, moreover, be involved in the possible solutions in several ways.”  
(ECLAC, 2014)
Towards a regional framework on climate change and disaster indicators

- **ECLAC**
  - Producing regional CC indicators, focusing on impact and adaptation (region and subregion)
  - Building a list of regionally relevant indicators for climate change reporting (keeping in mind the global list currently being drafted)
  - Focusing on occurrence and impact of disasters, environmental health, impact on agriculture and tourism, loss of mangroves and coral bleaching

- **Member-States**: ECLAC and Regional Experts are supporting national production of climate change statistics and encourage Member States to:
  - Assess data availability on climate change to build on the existing
  - Develop CC indicators starting with the most relevant issues for the region (i.e. disasters and adaptation)

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**Main challenges**

- Developing mitigation statistics other than renewables, electromobility, etc.
- Developing indicators to relate natural resource use, biodiversity with climate change and development
- Developing adaptation indicators as they are spatially specific (potential collaboration with UBA Germany)
- Developing indicators related to build back better
Figure 2.3.4: Concentrations of plastic debris in surface waters of LAC. Coloured circles indicate mass concentrations. Gray areas indicate predicted accumulation zones.

- Áreas grises indican predicción de zonas de acumulación.

Source: modified from Cozar et al. 2014
CARICOM: intensity use of fertilizers and pesticides, 2016

Source: ECLAC based on data from the Food and Agriculture Organization of the United Nations (FAO);
En 2016, la contaminación atmosférica quitó más de cuatro millones de años de vida saludable a la población de América Latina y el Caribe.

En Haití, en 2016, cada persona perdió más de 5 días de vida saludable por la contaminación, mientras cada Panameño perdió 1 día y medio.


América Latina y el Caribe: Desechos electrónicos (e-waste) generados per cápita, 2016

Nota: metodología en análisis y validación

América Latina y el Caribe: Desechos Electrónicos (e-waste) generados per cápita, 2016
(kilogramos por persona)

Fuente: United Nations University, VIE – SCYCLE, Bonn, Germany.
Inter-institutional coordination mechanisms in Latin America for environment statistics

- Presidential Decree 2018
- Co-chairs: NSO and Min Env
- 18 members: Ministries, companies, universities
- Thematic subgroups
Chile

Comité Interinstitucional de Información Ambiental (RE 0179, 15-03-2012)
Comité Interinstitucional de Información Ambiental y Cuentas Ambientales (RE 0069, 02-02-2017)

Objetivo del Comité: Proveer y validar la información ambiental, requerida para dar cumplimiento a los deberes que en esta materia corresponden al Ministerio del Medio Ambiente debe realizar, de acuerdo con lo establecido en la Ley Nº19.300, así como en los distintos Acuerdos, Convenios, y Tratados internacionales suscritos por el país en materia ambiental.

Bases de datos
Gráficos
Informes y reportes
Información y toma de decisiones

70 Instituciones
Mesas temáticas
Convenios de colaboración
Thank you for your attention

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http://www.cepal.org/es/temas/estadisticas-ambientales
https://comunidades.cepal.org/estadisticas-ambientales/es