Session 3: Climate Change Statistics

Regional Programme on Climate Change and Disasters Statistics and Indicators: a Latin American and Caribbean perspective

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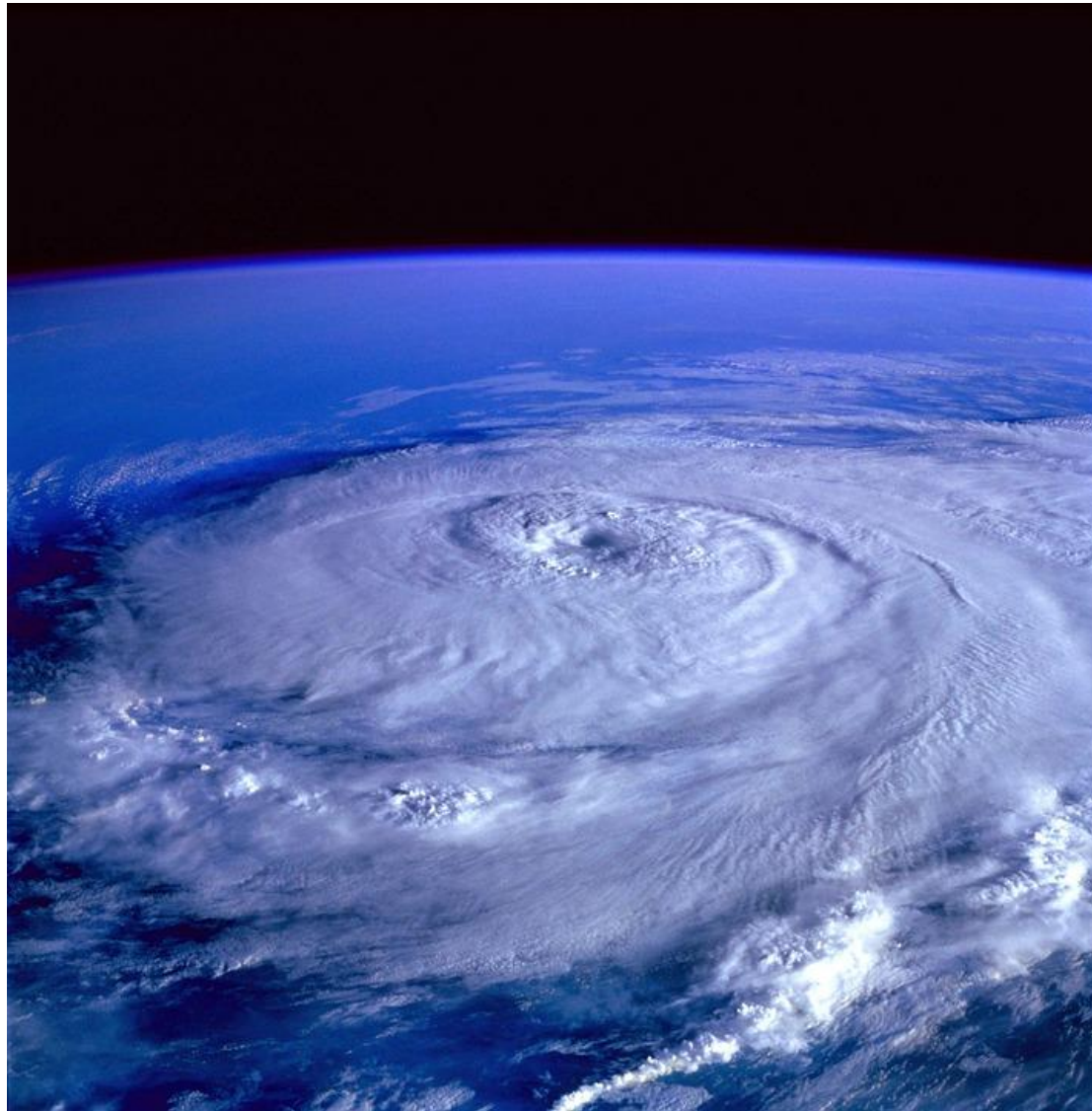**Economic Commission for Latin America and the Caribbean**
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2017:Irma, José, María: what's next in the 2018?

Roseau, the capital of Dominica after Hurricane Maria, Sept. 2017

La Habana after Hurricane Irma, Sept 2017

OUTLINE

1. Climate Change and Disasters Statistics and Indicators:

Demand and Supply

1.1 Climate change and disasters statistical demand

Increased Demand for Climate Change and Disaster Statistics and Indicators

- Climate change poses considerable challenges to statistical systems, both for Member-States and UN entities.

- The statistical community faces a growing demand for statistics and data from various stakeholders:

National Climate Change Public Policies $\longrightarrow$
- Emissions, Impact, Adaptation, Mitigation.
- Need to develop and strengthen capacities to statistically describe climate change
- Nationally Determined Contributions (NDCs)

Sustainable Development Goals $\longrightarrow$
- Goal 13: Take urgent action to combat climate change and its effects.
- 5 targets will be monitored through indicators that require statistics for their measurement.

Paris Agreement $\longrightarrow$

- Reduction of emissions
- Temperature increase under 2 ° C (compared to the pre-industrial era)
- Mobilize resources for adaptation
- Towards less carbon-intensive economies

Sendai Framework for Disaster-Risk Reduction $\longrightarrow$

- Risk identification, preparedness, occurence, recovery and response
- Need to develop and strengthen NSO capacities to statistically describe extreme events, disasters, disaster risk reduction and resilience

S.A.M.O.A. Pathway $\longrightarrow$

- SIDS = significant number of ECLAC Member-States
- Climate change is one of the priorities of the S.A.M.O.A Pathway (although no indicator reporting framework so far)

Sequence of Climate Change

- The IPCC framework is the basis on which the stages of the climate change sequence were constructed to determine the environmental statistics needed to report on climate change.

- Chapter 5 of the FDES identifies the individual components and statistics that describe each of the stages of the sequence of climate change.
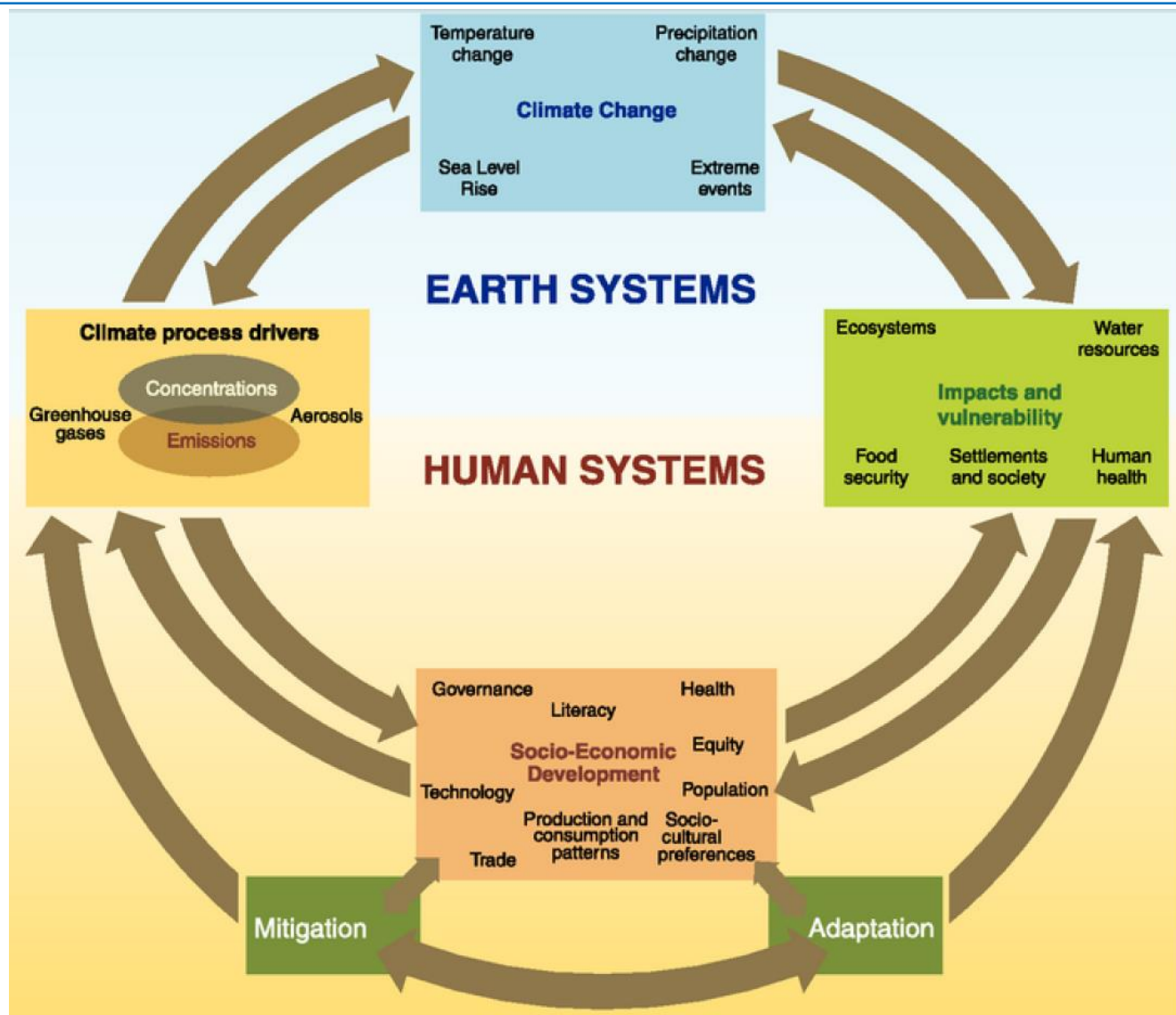
International statistical recommendations – work in progress

FDES

It describes the statistics that are require to inform about climate change and disaster statistics (Chapter 5)
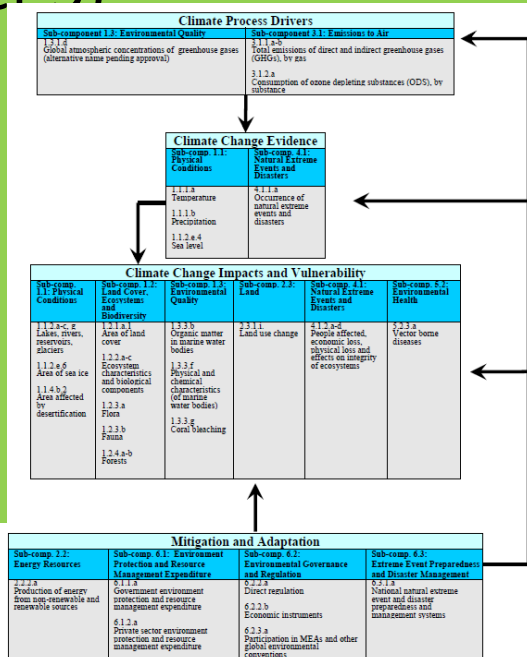
- **UNECE** Recommendations for CC related statistics – Conference of European Statisticians
- **UNECE/UNSD** work on CC indicators
- **UNESCAP** – Disaster Related Stats
- **ECLAC -** developing a regional programme of CC and Disaster Stats and Indicators

2. ECLAC Regional programme on Climate Change and Disaster Statistics and Indicators

Likely regional impacts of CC

Potential impacts and risks associated with climate change in Latin America

Impacts	Key risks	Climatic factors
Agriculture	Decreases in food production and quality, lower revenues and rising prices	• Temperature extremes • Precipitation extremes • CO_2 concentration • Precipitation
Water	Water supply in semi-arid and glacier-melt-dependent regions; flooding in urban areas associated with extreme precipitation	• Upward trend in temperature • Increased droughts • Snow cover
Biodiversity and forests	Land-use changes, disappearance of forests, coral reef bleaching, loss of biodiversity and of ecosystem services	• Increased deforestation • CO_2 concentration • Upward trend in temperature • Acidification of the oceans
Health	Spread of vector-borne diseases to other altitudes and latitudes	• Upward trend in temperature • Temperature extremes • Precipitation extremes • Precipitation
Tourism	Loss of infrastructure, rising sea levels, extreme events in coastal areas	• Rising sea levels • Temperature extremes • Precipitation extremes and flooding
Poverty	Reductions in the incomes of vulnerable groups, especially in the agricultural sector; increased income inequality	• Temperature extremes • Increased droughts • Precipitation
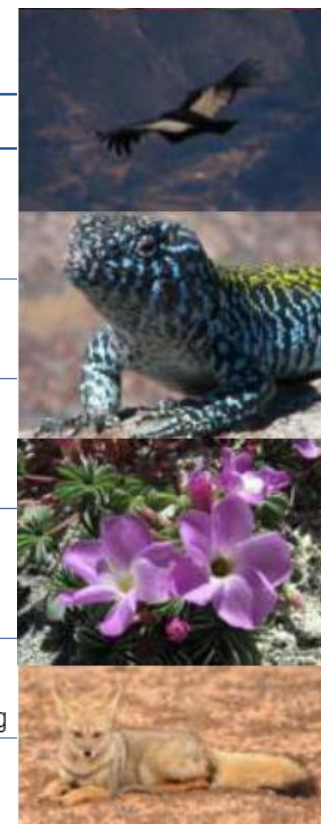
Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of Intergovernmental Panel on Climate Change (IPCC), "Chapter 27. Central and South America" in *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, V.R. Barros and others (eds.), Cambridge, Cambridge University Press, 2014.

2.1 Regionally relevant demand vs statistical supply

What we have

Statistics/Indicators describing:

- ❖ **CC Drivers**
- ❖ **Emissions and concentrations**
- ❖ **Mitigation** (to certain degree)
- ❖ **Evidence of climate change**

– International definitions, stat recommendations and international methods available to estimate and measure them.

– Consequently, there are enough statistics to inform about these topics in most countries, including LAC ones.

What we need

Statistics/Indicators describing:

- ❖ **Occurrence**
- ❖ **Disaster Risk Reduction**
- ❖ **Impact**
- ❖ **Adaptation**

❑ Very relevant topics to the LAC region

❑ Little statistical guidance available

❑ Still not well estimated/measured in LAC

❑ Lack of significant statistics and indicators

⟹ There is a considerable gap between **statistical availability** and regional **relevance of climate change statistics in LAC region**

Meeting of Regional Experts on Environmental Statistics (ECLAC, Santiago, Chile, September 2017)

15 regional experts

with vast experience in

environmental statistics and indicators

Regional United Nations Expertise

(3 ECLAC Divisions, UN-Environment)

2.3 Recommendations: towards a regional programme on climate change and disaster statistics

Regional experts recommendation: Strong support to build a regional programme on climate change and disaster indicators

Two-pronged approach of the climate change and disaster indicators programme: Technical support to develop regionally relevant and harmonized methodologies for climate change and disaster statistics and indicators

- ❖ Assess the feasibility of developing highly relevant climate change and disaster indicators to better monitor the SDGs and other international frameworks

Institutional support to climate change and disaster statistics:

- ❖ Moderating the recently launched Regional Network on Environment Statistics, which include a working group on climate change and disaster indicators

- ❖ Supporting the Statistical Conference of the Americas on Disaster Risk Reduction Indicators (newly created working group)

- ❖ Incorporate the geospatial community to the community of practice

Core cross-cutting outcome: Capacity building on climate change and disaster indicators

- ❑ Develop a blended training program with online modules for introductory level and in-person workshops for advanced level, Spanish and Portuguese

- ❑ Leveraging the heterogeneous capacities of LAC countries through South-South cooperation

ECLAC and partners

- ECLAC and Regional Experts can support national production of climate change and disaster statistics

- Refine/build a list of regionally relevant indicators for climate change and disaster reporting (building upon UNECE/UNSD work)

- Produce statistical recommendations for the compilation of relevant regional CC and Disaster indicators – to be presented to SCA

- Collaborate with Regional UNISDR to support NSOs in reporting to the Sendai Framework

- Focus on occurrence and impact of disasters, water, environmental health, impact on agriculture and tourism, loss of mangroves and coral bleaching

- Some countries have already expressed their interest to participate as pilot countries (Brazil, Colombia, El Salvador, Mexico) and almost all want to work on the programme (NSOs and EnvMinistries)

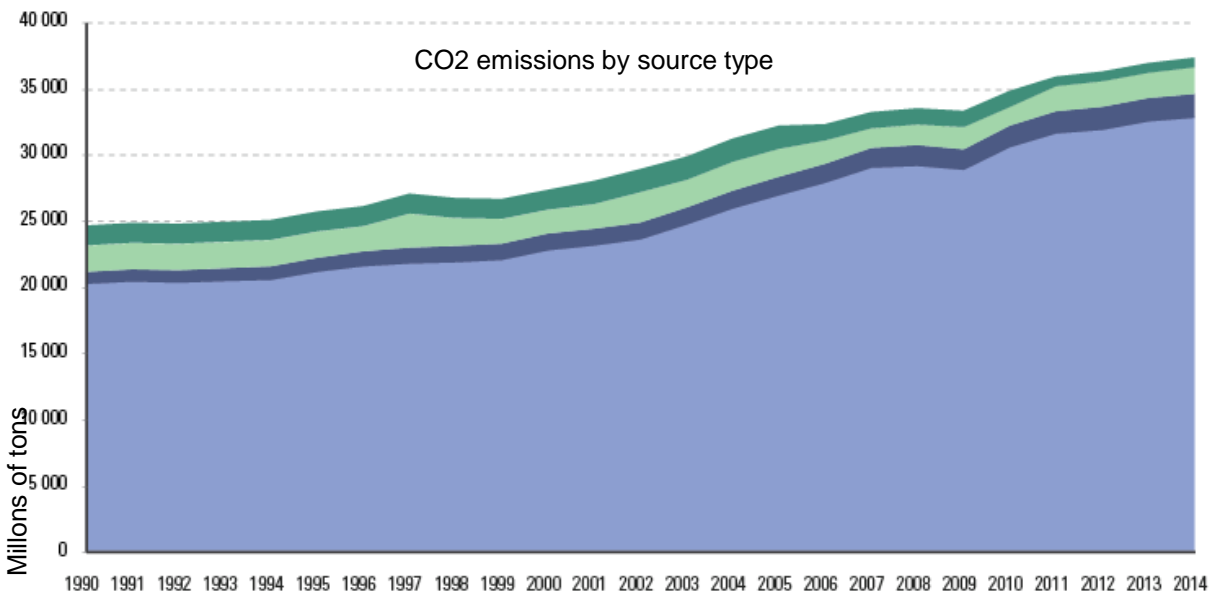- Build regional partnership for a first 3 to 4-year regional program

LAC countries:

- Assess data availability on climate change and disaster to build on the existing lists

- Develop/adapt CC&DRR indicators starting with the most relevant issues for the region (i.e. adaptation, disasters

# 3. Selected Indicators of Climate Change and Disasters in LAC

Regional emissions of CO$_2$

CO2 emissions by source type

Millons of tons

1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014
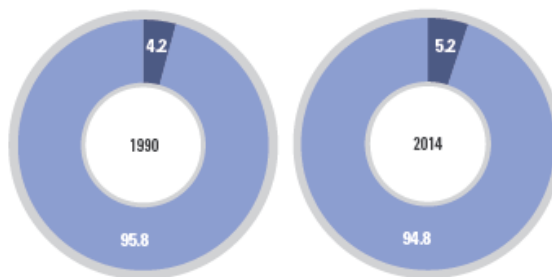
Participación regional en las emisiones totales, 2014/ *Regional share in total emissions, 2014*

Por cambio de uso de suelo y desforestación/
From land use change and deforestation
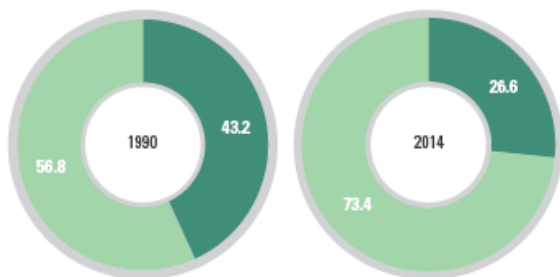
Por quema de combustibles fósiles y producción de cemento/
From fossil fuel burning and cement production

- América Latina y el Caribe/ *Latin America and the Caribbean*
- Resto del mundo/ *Rest of the world*

- América Latina y el Caribe/ *Latin America and the Caribbean*
- Resto del mundo/ *Rest of the world*

"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)

Source: ECLAC on the basis of World Resources Institute (WRI) "Climate Analysis Indicators Tool" **(CAIT)** [online] http://cait.wri.org/historical

Latin America and the Caribbean (33): GDP Carbon Intensity by source type 1990-2014

(MtCO$_2$ per each GDP US$ 1000)

GEI including LUCF

GEI excluding LUCF

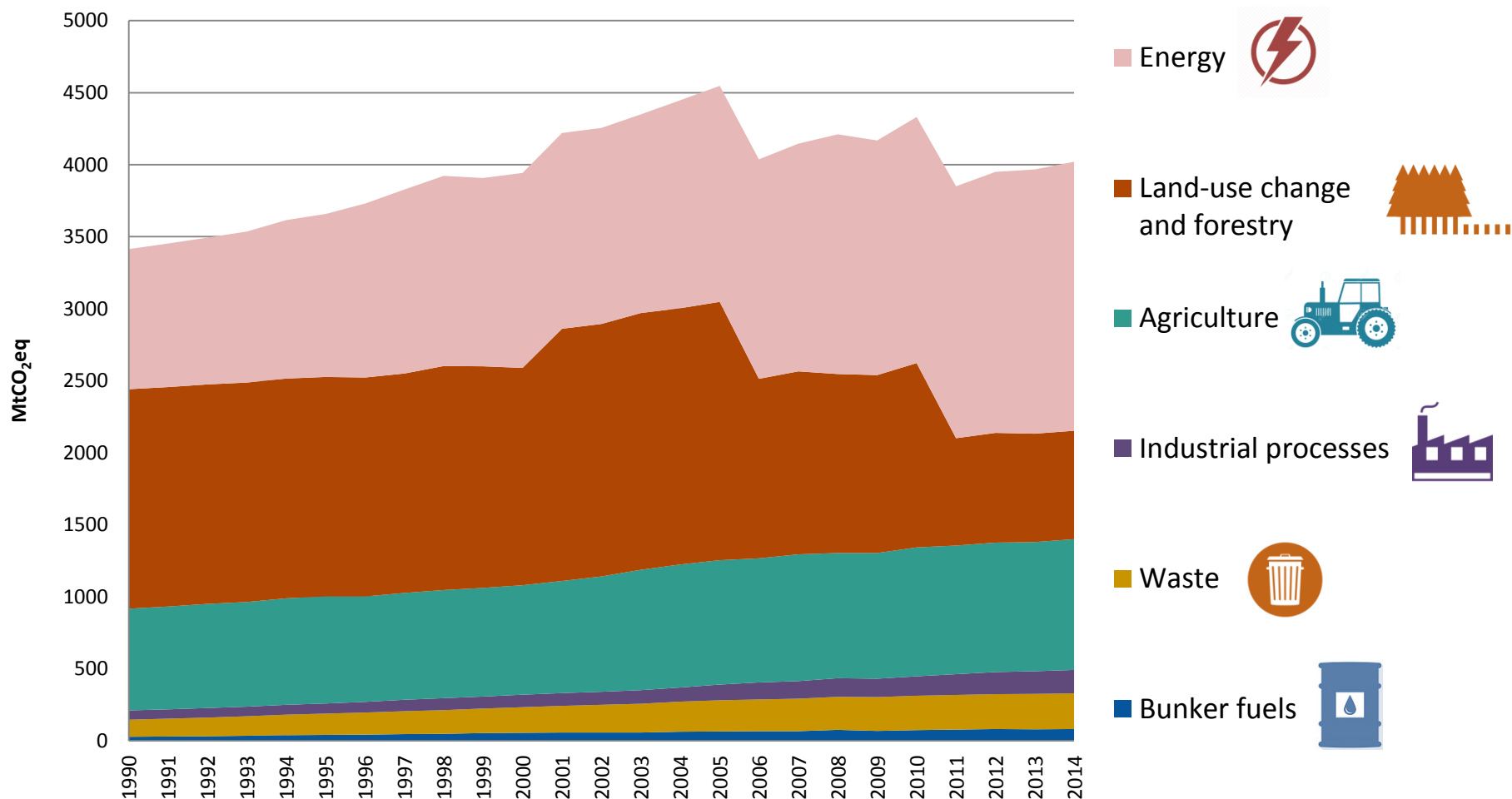CO$_2$ including LUCF

CO$_2$ excluding LUCF
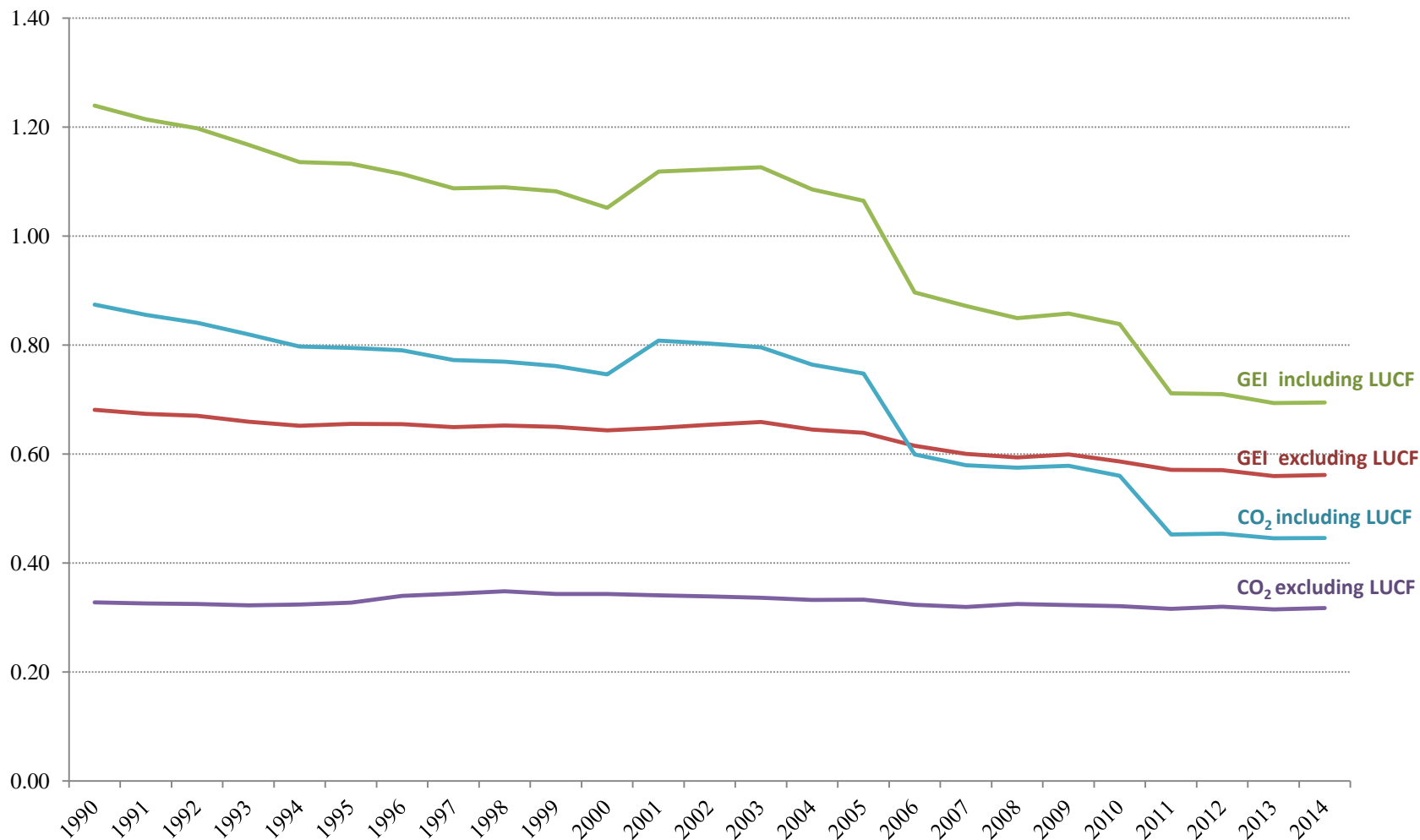
*GDP constant 2010 prices
**MtCO2: Millons of tons of CO2 equivalent

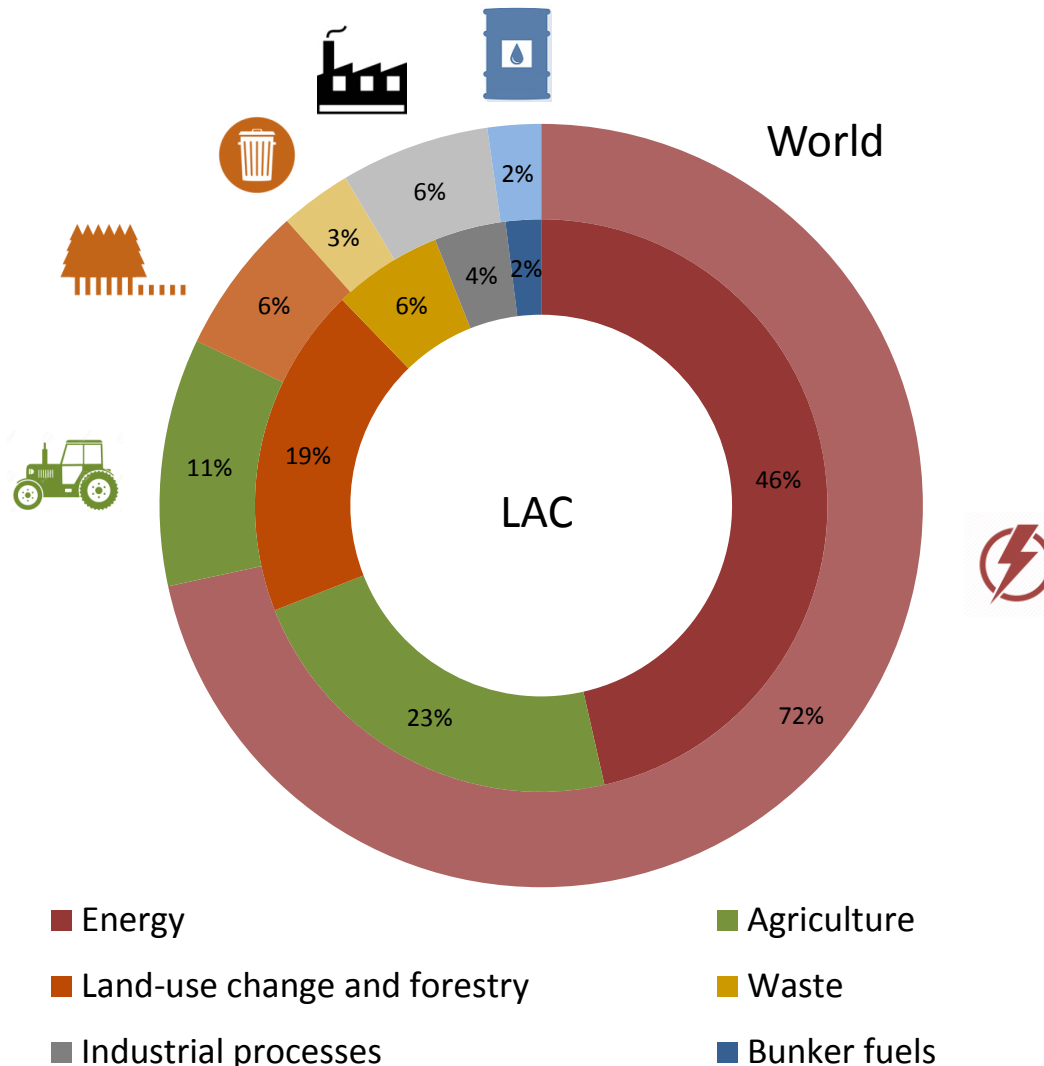**Source:** ECLAC on the basis of World Resources Institute (WRI) "Climate Analysis Indicators Tool" **(CAIT)** [online] http://cait.wri.org/historical

Latin America and the Caribbean : total emissions and per economic sector, 1990-2014

(MtCO2 eq)

Legend:
- Energy
- Land-use change and forestry
- Agriculture
- Industrial processes
- Waste
- Bunker fuels

World and Latin America and the Caribbean : GHG emissions por economic sector, 2014 (%)

Legend:

- Energy
- Land-use change and forestry
- Industrial processes
- Agriculture
- Waste
- Bunker fuels

Source: ECLAC on the basis of World Resources Institute (WRI) "Climate Analysis Indicators Tool" **(CAIT)** [online] http://cait.wri.org/historical

Evolution of surface and percentage of forest coverage in LAC territory, 1990,2000,2005,2010,2015

(En *miles de hectáreas* y *porcentajes*)

97 million hectares of forest were lost, **more than Venezuela's** total surface.

- Bar (Superficie de bosques) / Line (Cobertura boscosa del territorio) values:
  - 1990: 1 024 365 — 51%
  - 2000: 979 850 — 49%
  - 2005: 956 057 — 48%
  - 2010: 938 247 — 47%
  - 2015: 927 364 — 46%

Y-axis (left): Miles de hectáreas
Y-axis (right): Porcentaje

Legend: ▬ Superficie de bosques ◆— Cobertura boscosa del territorio
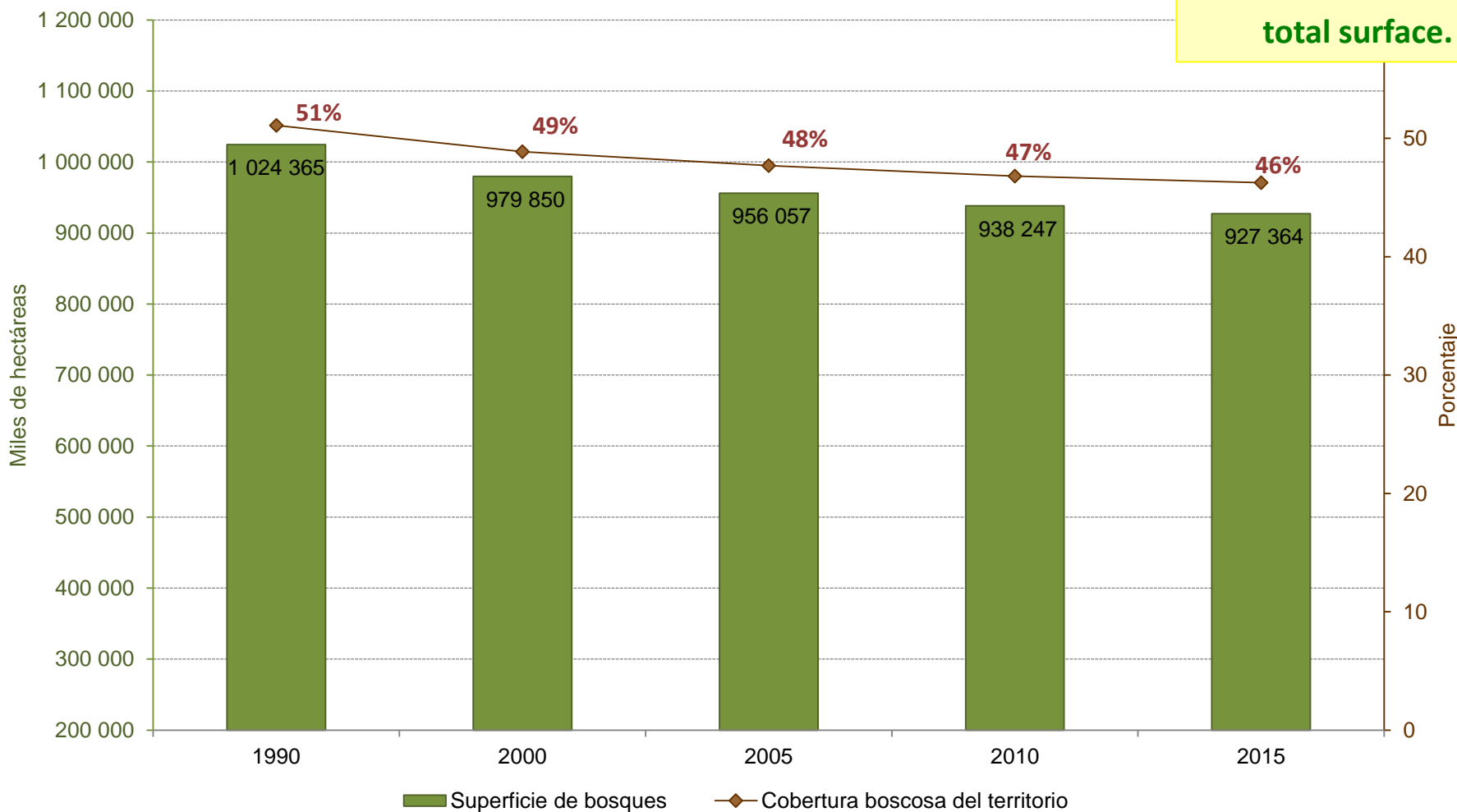
Fuente: Elaboración de CEPAL con base en datos de la Organización de las Naciones Unidas para la Alimentación y la Agricultura (FAO), Programa de Evaluación de los Recursos Forestales Mundiales (FRA) 2015

LAC: Energy intensity of GDP, 1990-2015

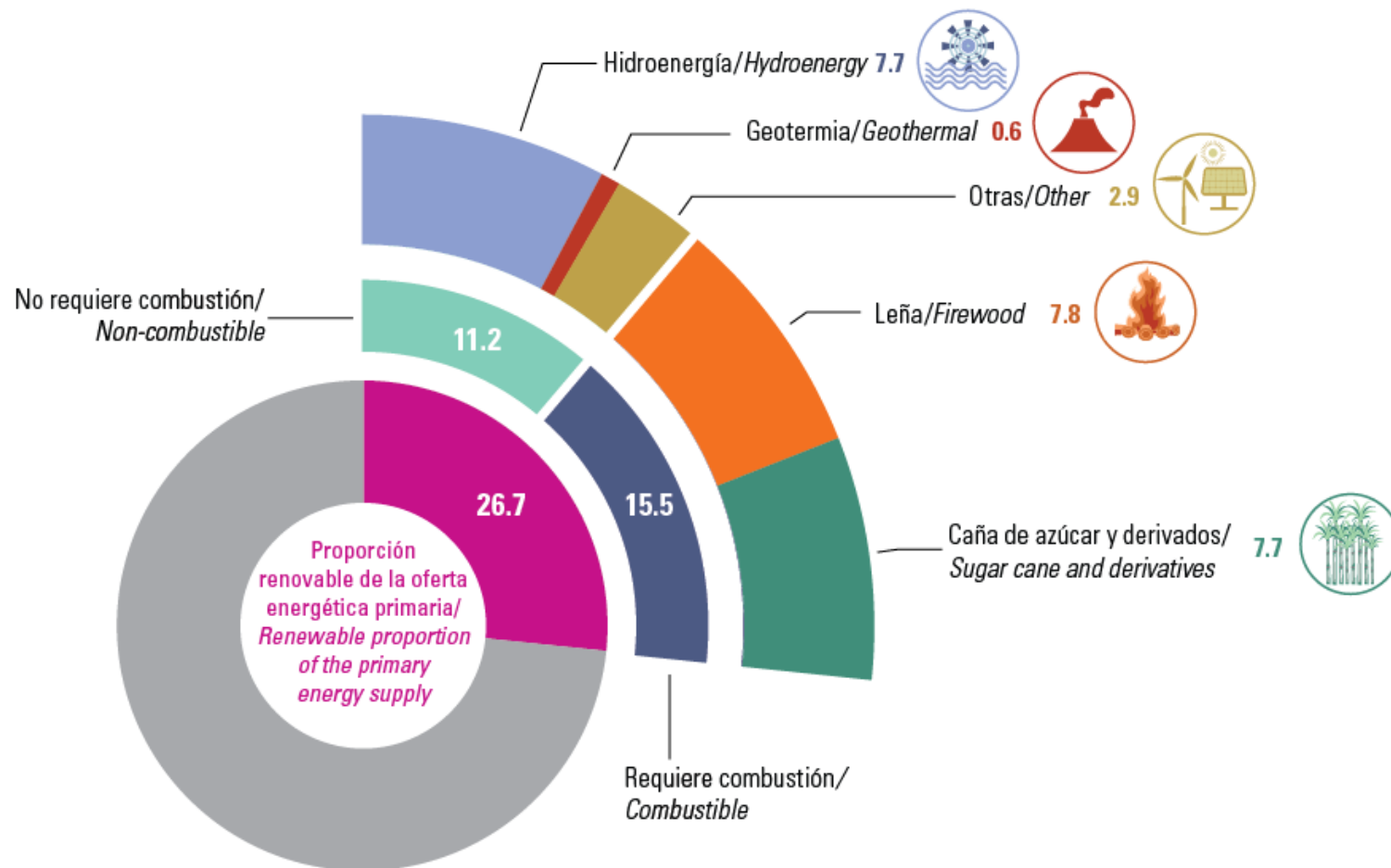Total energy consumption (in thousands of barrels equivalent of oil) per million dollars of GDP (constant 2010 PPP $)
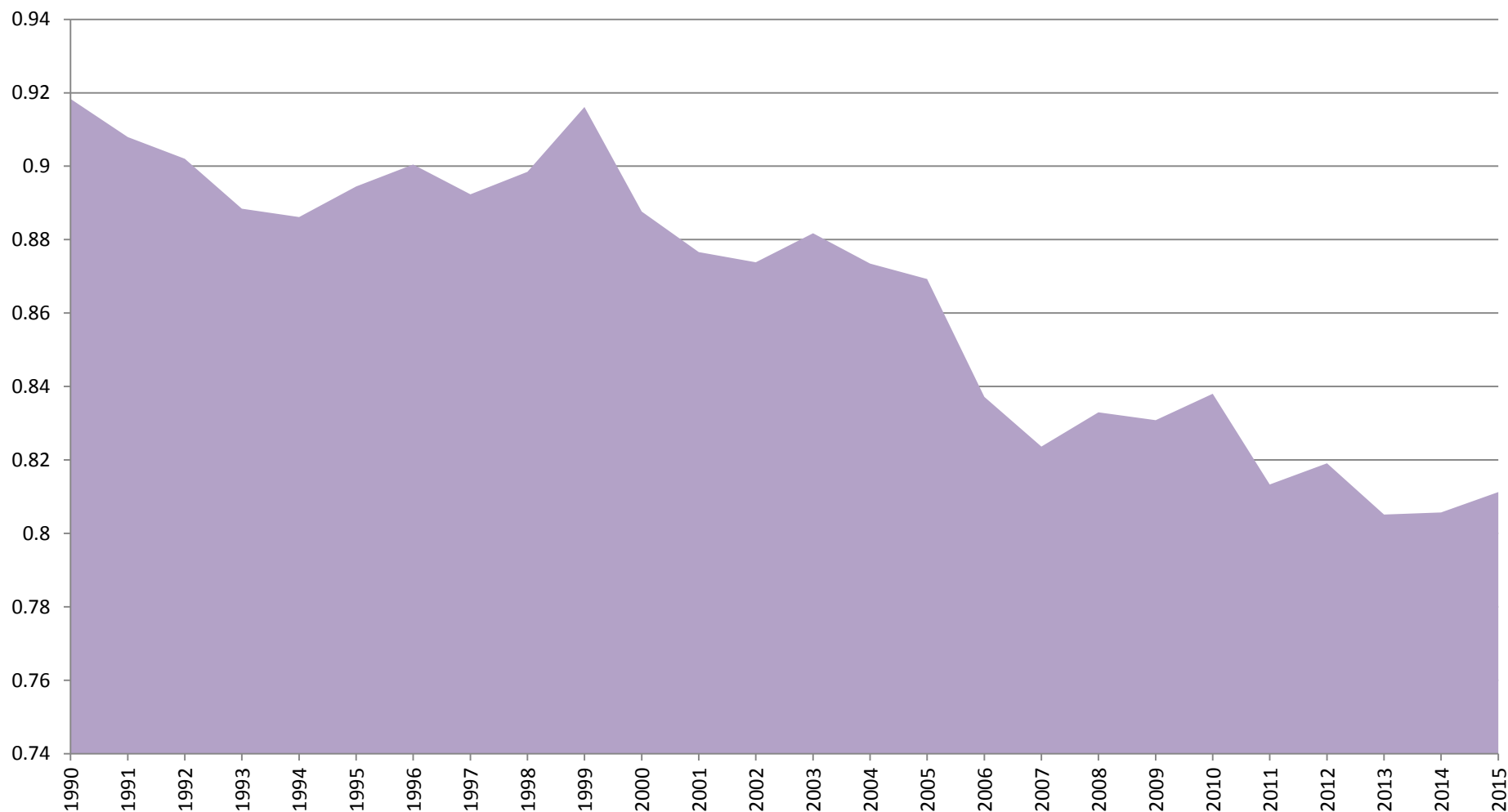
LAC: renewable (combustible and non-combustible) and non-renewable primary energy supply, 1970 – 2015
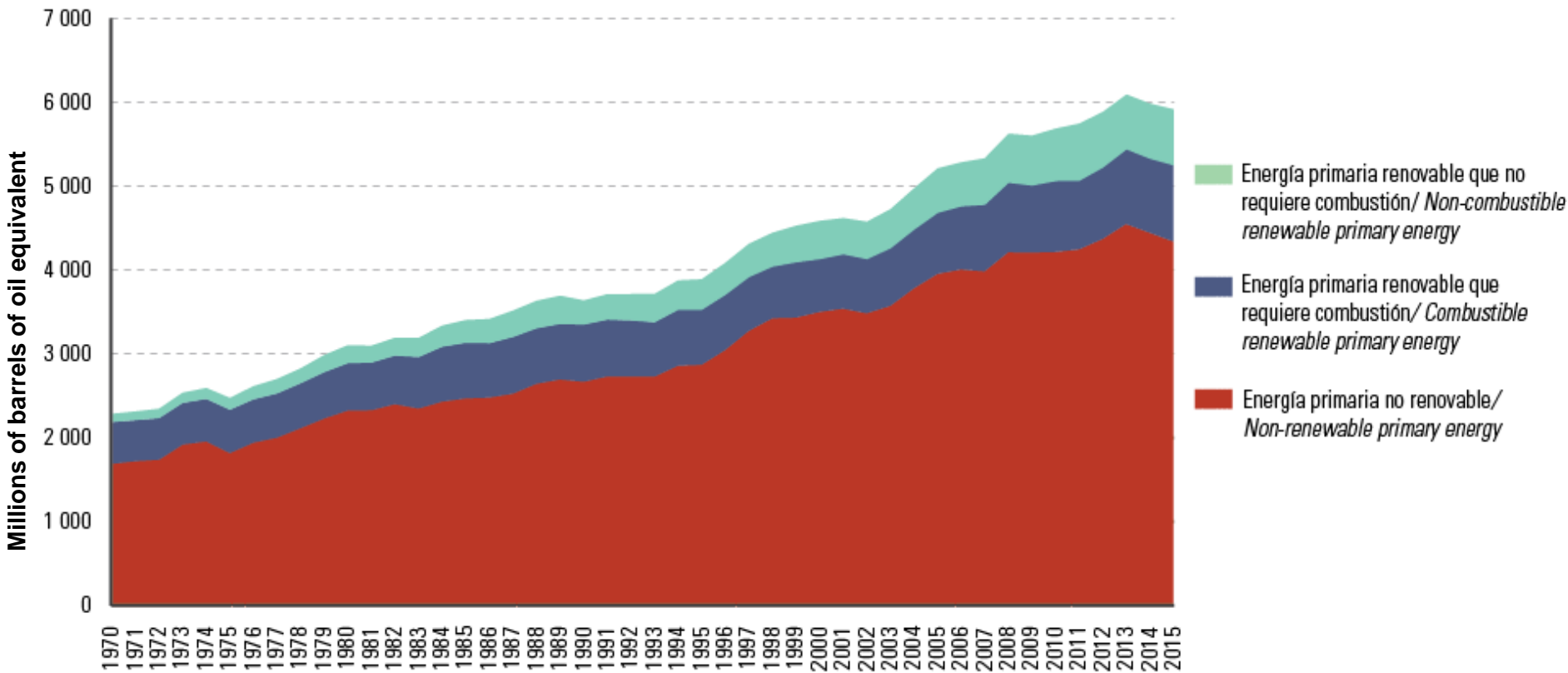
Source: ECLAC basedes on OLADE, Energy Economic Information System (SIEE) [online] http://sier.olade.org

América Latina y el Caribe: oferta de energía primaria renovable por recurso energético, 2015

(in percentages)

Hidroenergía/*Hydroenergy* **7.7**

Geotermia/*Geothermal* **0.6**

Otras/*Other* **2.9**

Leña/*Firewood* **7.8**

No requiere combustión/ *Non-combustible* — **11.2**

26.7 Proporción renovable de la oferta energética primaria/ *Renewable proportion of the primary energy supply*

15.5

Caña de azúcar y derivados/ *Sugar cane and derivatives* **7.7**

Requiere combustión/ *Combustible*

The economic cost of climate change

Impacts of climate change on the Latin American and Caribbean region assuming a 2.5°C temperature increase, second half of the twenty-first century [a]
(Percentages of regional GDP)
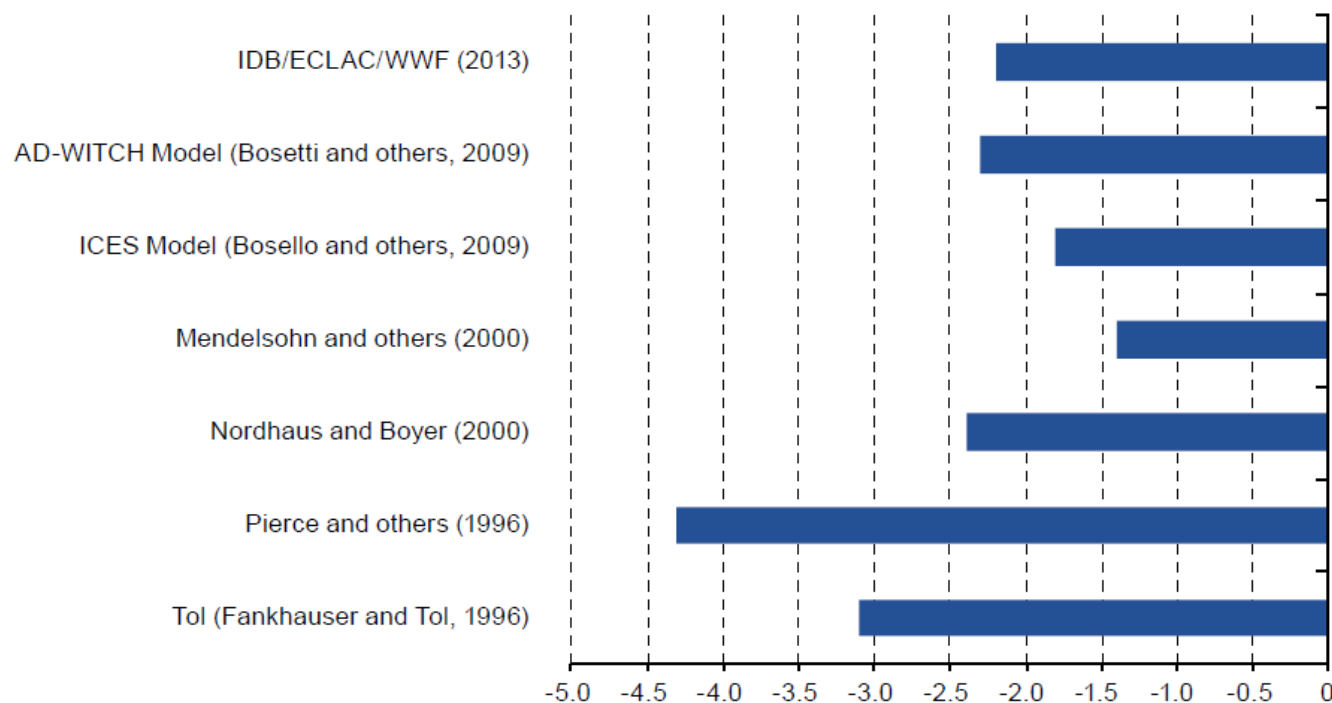
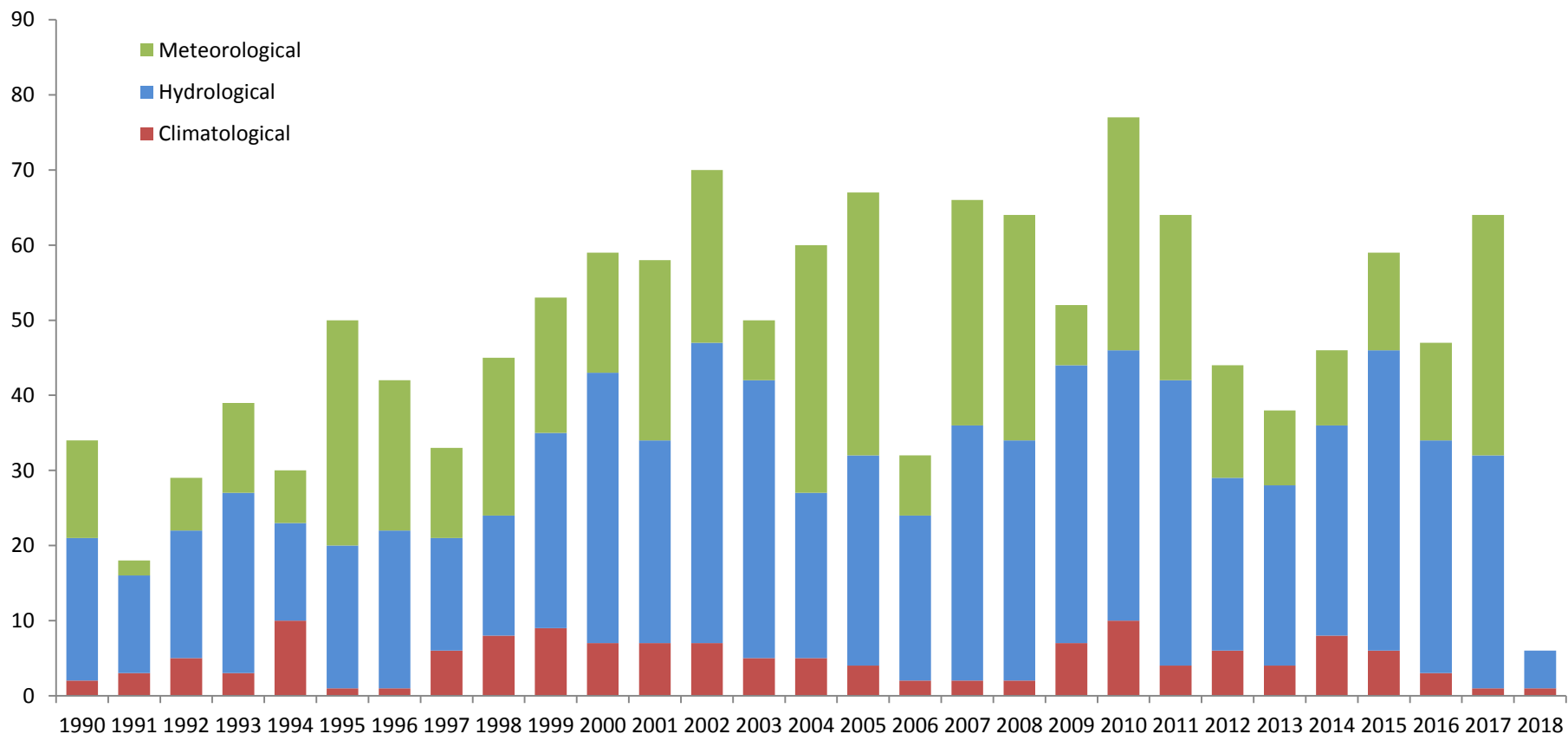Regional estimate for a 2.5°C – increase (c2050) =

-1.5% to -5% of current GDP

Note: Estimates are highly uncertain, conservative, limited to certain sectors and regions and have various methodological limitations (difficulty of incorporating adaptation processes and potential effects of extreme weather events, Stern, 2013).

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of F. Bosello, C. Carraro and E. De Cian, "Market- and policy-driven adaptation", in *Smart Solutions to Climate Change: Comparing Costs and Benefits*, Bjørn Lomborg (ed.), Cambridge University Press, 2010.

Extreme Events and Disasters in LAC

LAC: Extreme Natural Events and Disasters related to climate change
1990-2018

Economic damage caused by natural extreme events related to climate change
1990-2017. (US$ Millions)

Legend:
- Climatological (green)
- Hydrological (red)
- Meterological (blue)

Fuente: Source: EM-DAT: The Emergency Events Database - Universite catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium (http://www.emdat.be). Update on October, 2017
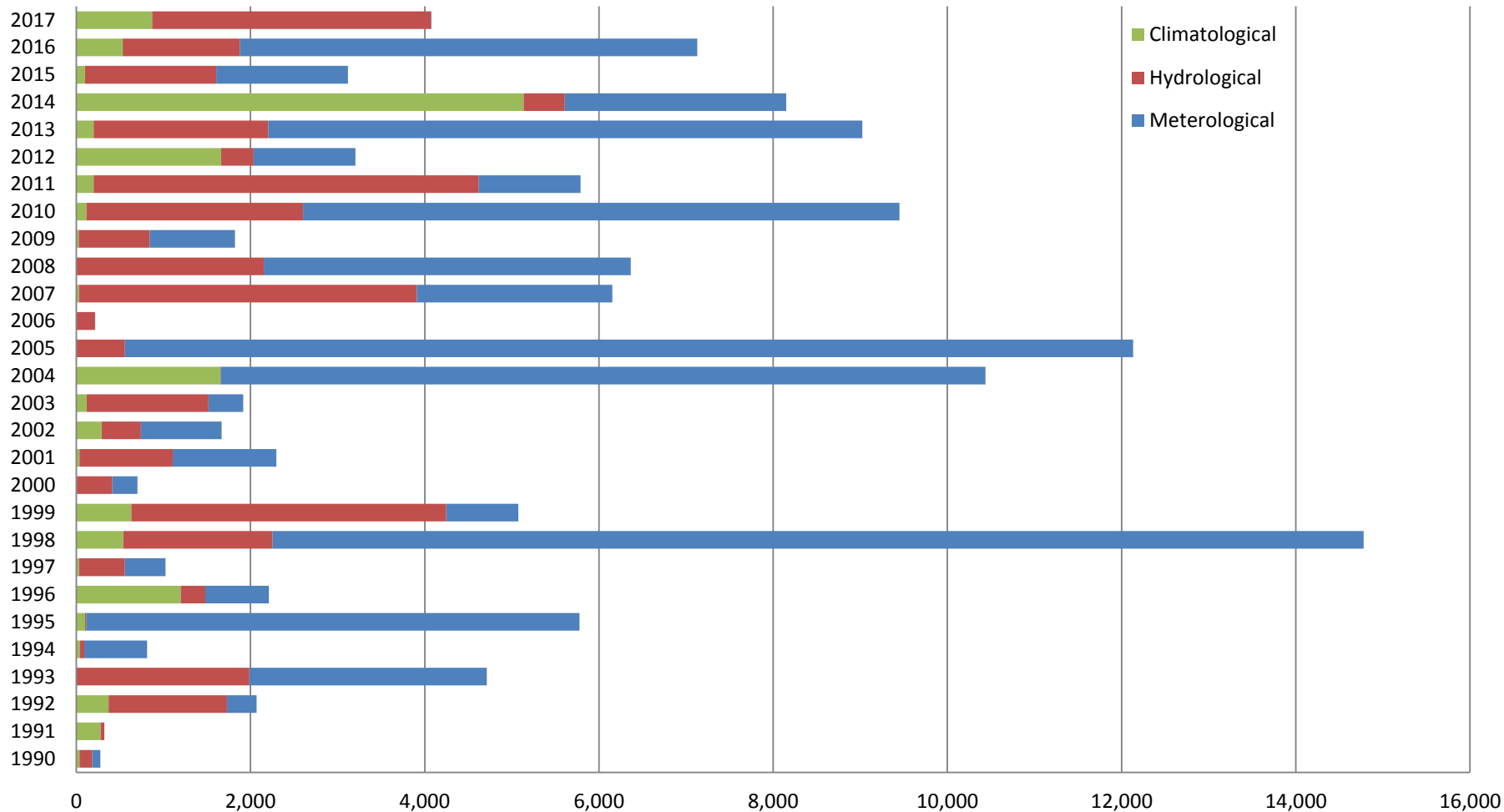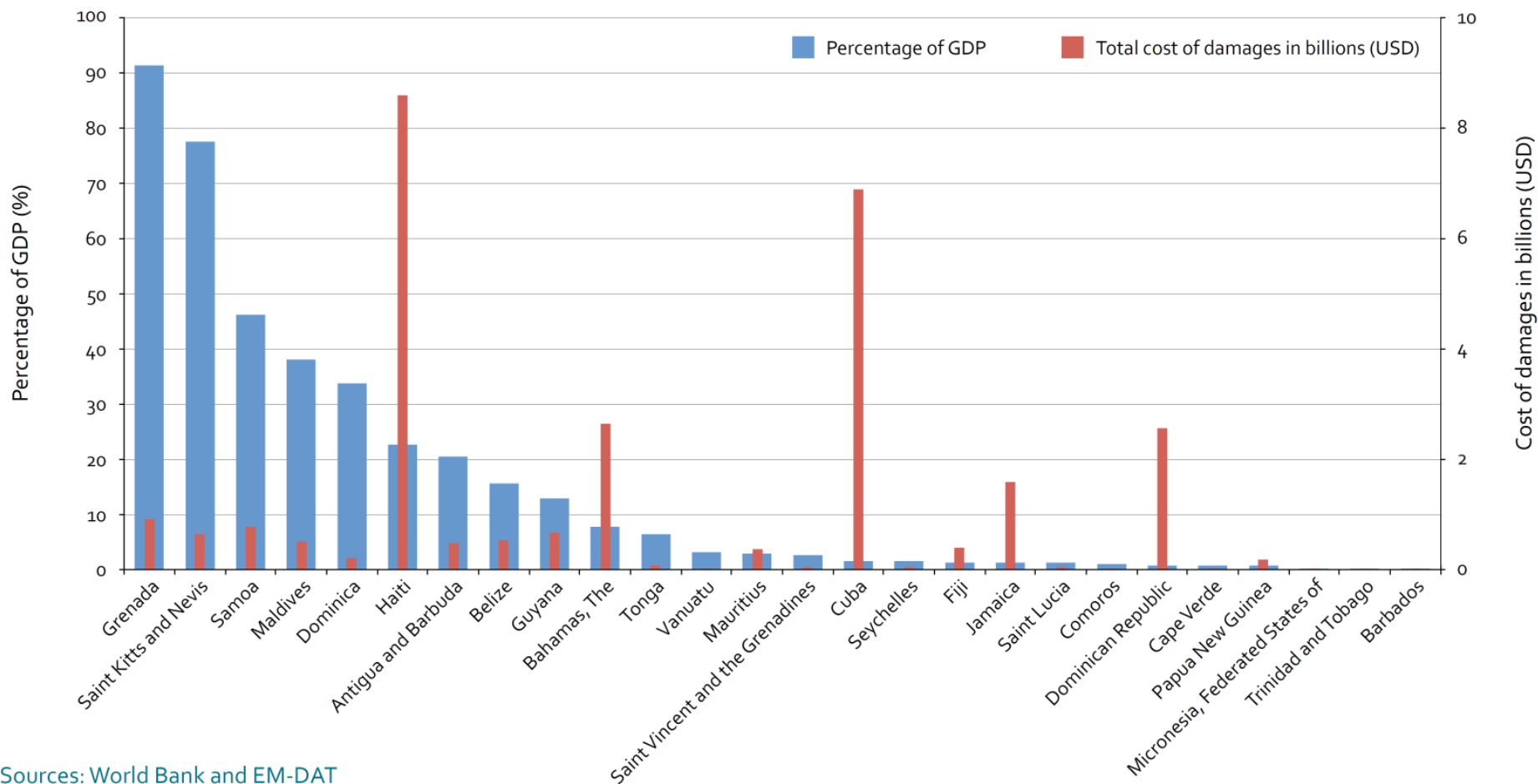
The economic cost of climate change: SIDS

Total cumulative costs of damage from natural disasters from 1990 to 2013 and as percentage of cumulative GDP

Sources: World Bank and EM-DAT

Fifth Meeting of the Expert Group on Environment Statistics

New York, 16-18 May 2018

THANK YOU!

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

UNITED NATIONS

ECLAC