

# Introduction

Paradigm shift in America



Donald Trump during an election campaign event [1]



Colombian landscape [2]

[1] Retrieved from <https://www.ft.com/content/90468253-0560-4cb2-a302-2e8636234265>

[2] Retrieved from <https://aviaturdmc.com/colombian-landscapes-10-places-you-should-know/>

# SCA 2024

# Sustainability Championship of America 2024

A comprehensive sustainability comparison of American and Caribbean countries.

Methods of Advanced Data Engineering  
Student: Fabian Hildebrandt  
Matriculation No.: 23392857



### Overall champions

- Countries with the best sustainability performance across three dimensions: environmental, economical, and social



### Rising stars

- Emerging countries with significant recent improvements towards more sustainability



### Latecomers

- Countries struggling with sustainability and with negative/low rates of change

---

#### Category

---

- (1) Emissions per capita
- (2) Renewable energy share
- (3) Emissions related to land use change (e.g. deforestation)
- (4) Water stress levels
- (5) Waste equivalent emissions
- (6) Health expenditure
- (7) Air pollution
- (8) Education efficiency
- (9) Carbon intensity (emissions per GDP)
- (10) Economical development
- (11) (Climate risks)
- (12) Natural resource depletion

SCA 2024 - Categories

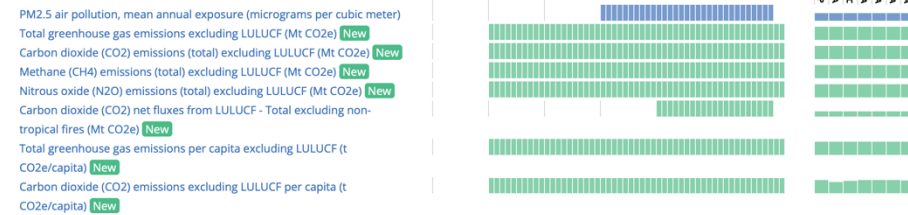
### Environment



Source: Photo from Unsplash.

The *Environment* pillar measures the sustainability of a country's economic performance given its natural resource endowment, management, its risk or resilience to climate change and other natural hazards. It pays particular attention to the internalization of environmental externalities created by economic activity. It also accounts for sustainable energy access and food security, crucial factors for stable long-term economic growth.

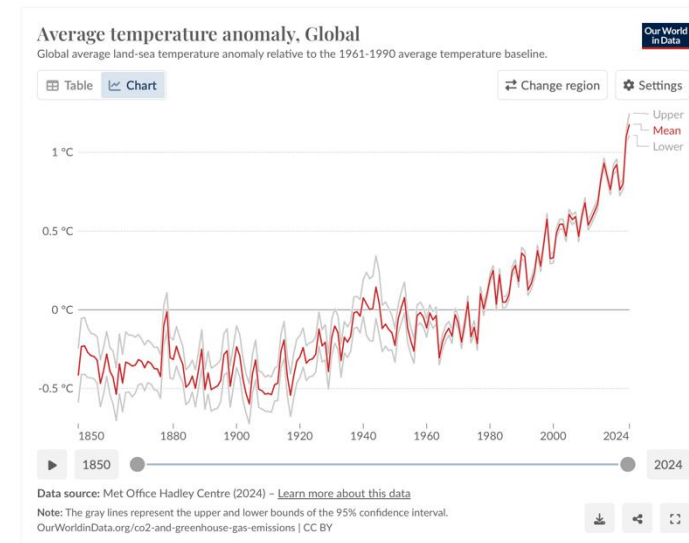
### Emissions & pollution



Exemplary indicators of the ESG Data Framework [3]

## DS1: Sovereign ESG Data Framework [3]

- *Origin: World Bank Group*
- Wide range of ESG (environmental, social, governance) indicators published under a CC-BY 4.0 license
- API for automatic data retrieval



Visualization of the Our World in Data Report [4]

## DS2: CO<sub>2</sub> and Greenhouse Gas Emissions [4]

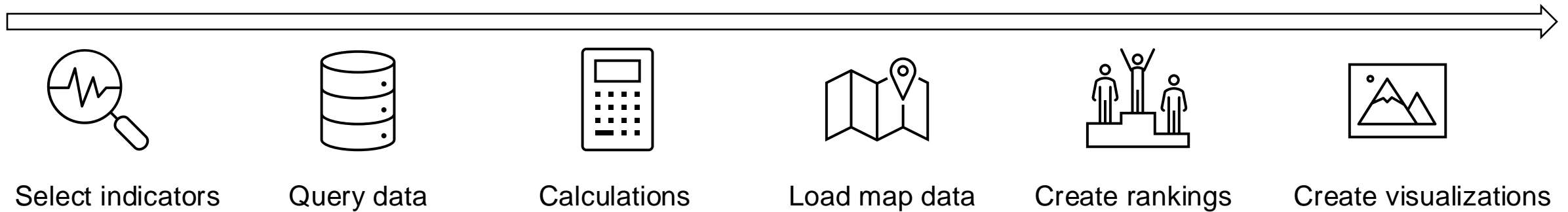
- *Origin: Our World in Data*
- Comprehensive report with a dataset containing data on emissions published under a CC-BY 4.0 license

[3] The World Bank (2023) – “Sovereign ESG Data Framework.” Published online at The World Bank. Retrieved from: <https://esgdata.worldbank.org/data/framework?lang=en> [Online Resource]

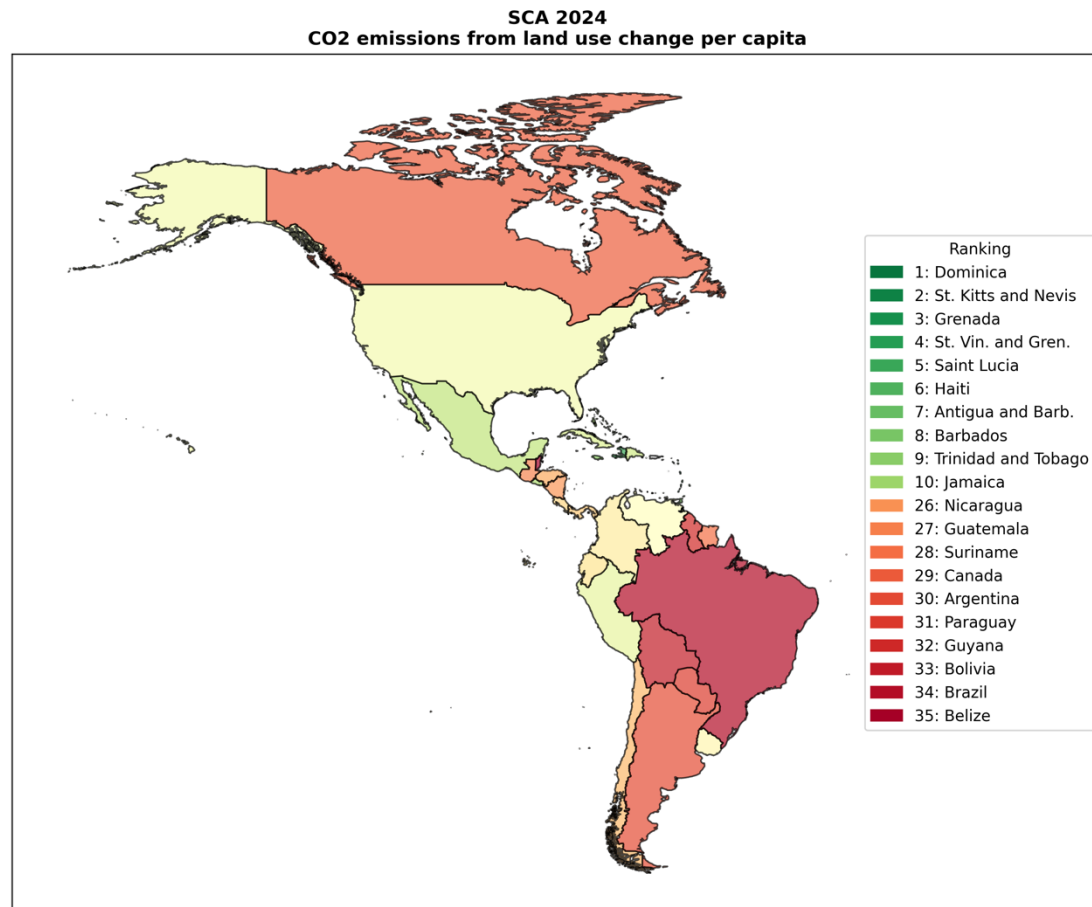
[4] Hannah Ritchie, Pablo Rosado and Max Roser (2023) - “CO<sub>2</sub> and Greenhouse Gas Emissions” Published online at OurWorldinData.org. Retrieved from: <https://ourworldindata.org/co2-and-greenhouse-gas-emissions> [Online Resource]

# Evaluations

Analysis in a nutshell





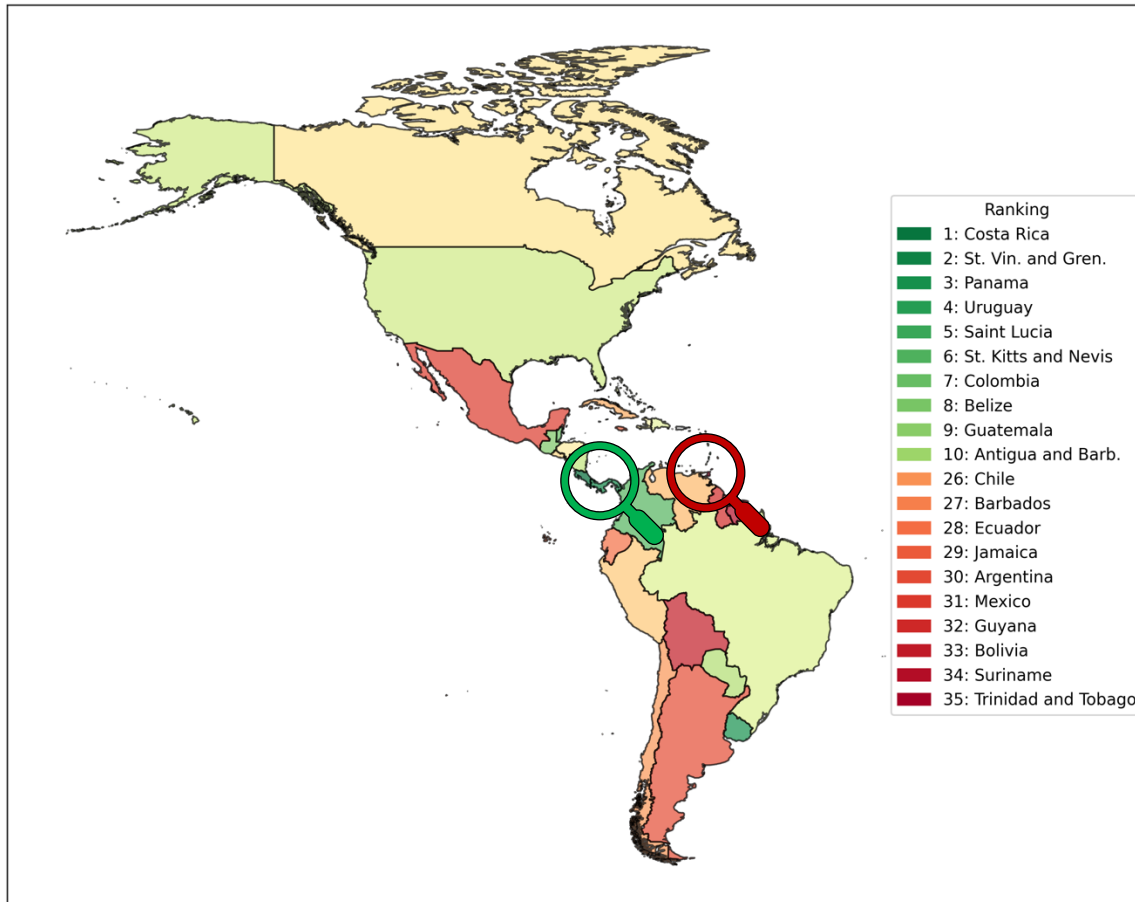


SCA 2024 – Visualization of individual indicators

## Generic data analysis

- Data pipeline can be used for any indicators from the World Bank Group and the OWID CO<sub>2</sub> dataset
- Data analysis & rankings can be adjusted simply by changing the configuration file
- Other rankings/ other continents are also possible

SCA 2024  
Overall Champion



SCA 2024 – Overall champions ranking

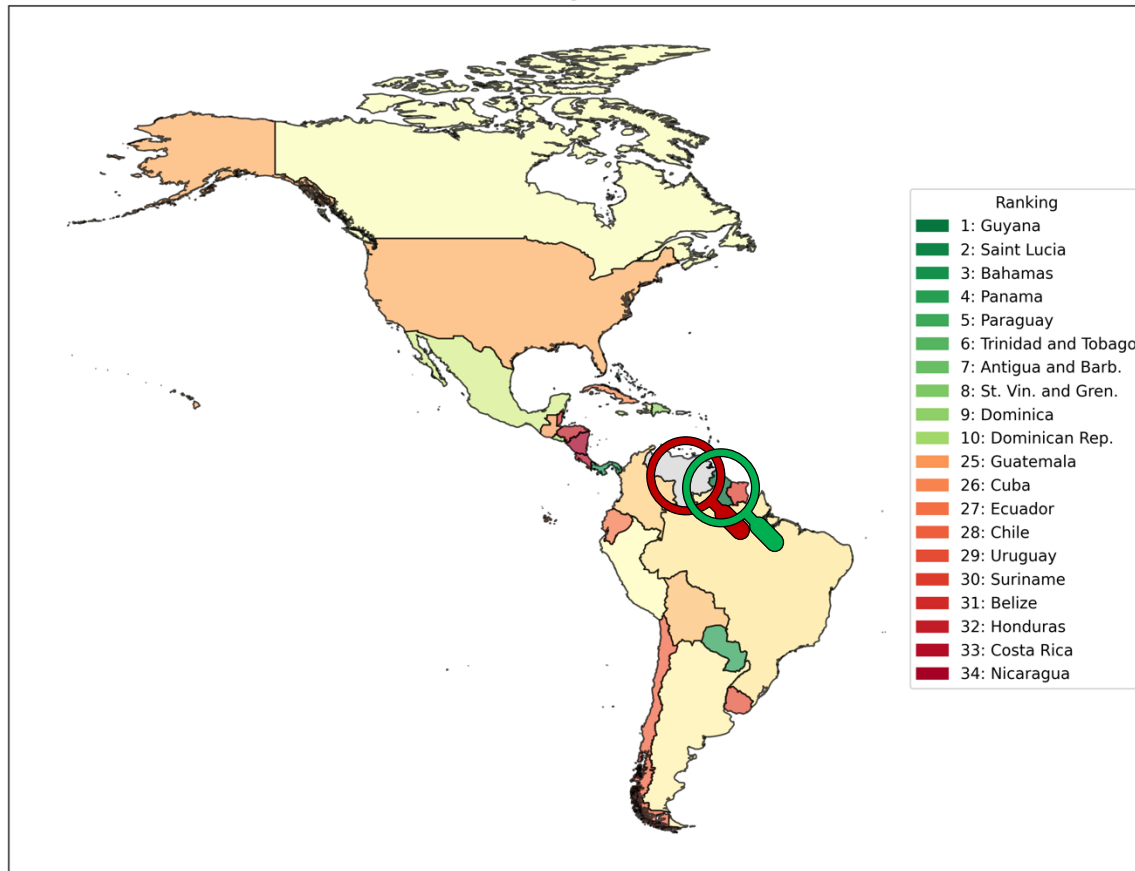
### Overall champion - Costa Rica

- Efficient and sustainable policies in the economical, environmental and social dimension secured the first place for Costa Rica
- **Examples:** Early preservation laws (1994), abolishment of its military (1949) and free trade zone regime (1982)

### Latecomer - Trinidad and Tobago

- T&T's economy is built upon and heavily dependent on fossil fuels → highest emissions per capita and lowest renewable energy consumption (below 1 %)
- Current administration further pursues this path

SCA 2024  
Rising Stars



SCA 2024 – Rising stars ranking

### Rising star - Guyana

- Great improvements towards social welfare, environmental sustainability and infrastructure development
- Strongest transition to reducing the carbon intensity of its economy

### Latecomer - Venezuela

- Only sovereign country, that didn't report enough indicators to be included in the rising stars ranking
- Economic collapse, political instability, and humanitarian emergencies → causing millions to leave the country



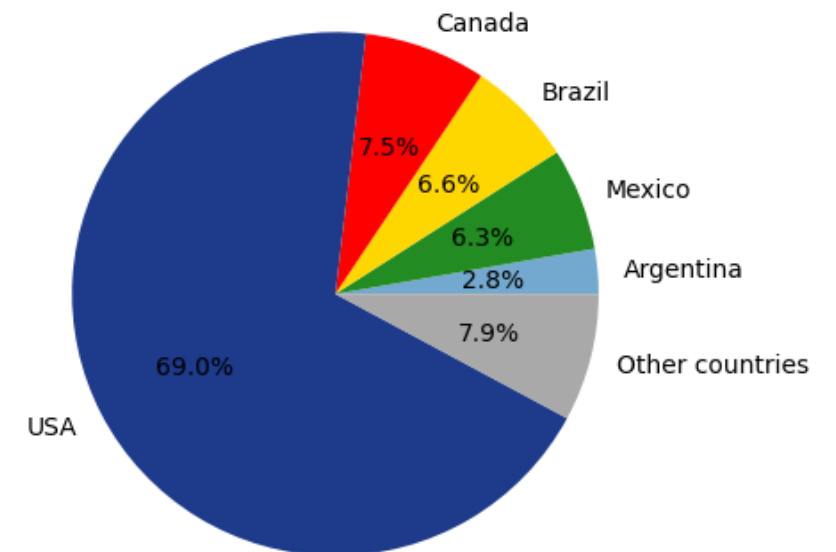
### Limitations

- Even though SCA is a broad comparison of the sustainability, it doesn't tell the stories of all countries and their challenges
- Only limited to a quantitative analysis
- Actuality: Many indicators haven't been reported yet for the years 2022 - 2024

### Outlook

- Costa Rica and Guyana demonstrate how sustainable policies can lead to significant progress in all three sustainable dimensions
- However, the impact is limited: Major five economies in terms of CO<sub>2</sub> emissions together represent 92 % of America's total emissions
- Big countries have the greatest potentials to set ambitious sustainability targets, invest in technology to mitigate climate change, and serve as role models for other emerging nations.

Annual total emissions of carbon dioxide (2022)



Absolute comparison of the American countries in terms of CO<sub>2</sub> emissions