

Complete Fronted Design

Team 74

Our web application was developed using python Dash and dash-bootstrap-components to build a consistently styled and responsive layout.

The application use tabs to separate different interfaces, currently it has:

- Carbon Market
Business description of the problem
- Data carbon-market
Table with carbon-market data
- Data CO2
Table with CO2 Emissions data
- Boxplot Analysis
Interactive box plot that allows the user to pick what columns want to use
- CO2_emitted
Interactive line plot that allows the user to pick countries to visualize the co2 emitted by year
- Pair Plot Analysis
Shows a comparison for the carbon-market data with co2 emissions.
- Report
Show the methods and analysis performed with the conclusions
- About Us
Show the team-members description

The code for this project is available in Github

<https://github.com/apinzonf/ds4a-carbon-market-project>

Some screenshots

Carbon-Market analysis

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Carbon Market

Data carbon-market

Data CO2

Boxplot Analysis

CO2_emitted

Pair Plot Analysis

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Analyzing Carbon Market Data

Business Problem

The PNUMA – Programa de Las Naciones Unidas para el Medio Ambiente look forward to increase confidence in carbon markets from a data analysis perspective considering the growing uncertainty regarding transparency in the generation of carbon credits.

There is a high diversity of projects that search to achieve voluntary objectives through the implementation of emission reduction actions in various sectors of the economy, from the forestry sector to public transportation. This diversity of actors and methodologies used bring uncertainty to the companies that buy them, the civil society and the authorities.

The carbon markets have been developed in a mainly voluntary way (goals for reducing and offsetting emissions from companies that voluntarily decide to buy carbon credits for corporate social responsibility and to demonstrate some type of commitment to offsetting their emissions), which means that carbon markets are not standardized and those are very different from each other and it is difficult to account for their robustness.

Business Impact

The impact of this analysis is to know if the generation of carbon credits in the voluntary market has effectively contributed to changing the emission trajectories in the countries that host the projects and if the differentiation of the projects could explain the quality or robustness of the projects. The questions we will solve with this analysis are as follow:

1. In which sectors do carbon credits have a greater, lesser or no impact?

2. Is there a relationship between the issuance of carbon credits and greenhouse gas emissions?

3. In which regions, sectors or countries it is possible to see a better understanding of the impact?

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project_id	credits_issued	credits_retired	registry_issued_credits	voluntary_registry	arb_project	voluntary_status	scope	type	reduction_removal	me
ACR102	0	0	0	ACR	No	Completed	Chemical Processes	SF6 Replacement	Reduction	no
ACR103	0	0	0	ACR	No	Completed	Agriculture	Manure Methane Digester	Reduction	no
ACR105	0	0	0	ACR	No	Completed	Forestry & Land Use	Afforestation/Reforestation	Impermanent Removal	no
ACR106	0	0	0	ACR	No	Completed	Waste Management	Landfill Methane	Reduction	no
ACR107	0	0	0	ACR	No	Completed	Industrial Manufacturing	Fuel Switching	Reduction	no
ACR109	0	0	0	ACR	No	Registered	Industrial Manufacturing	Pneumatic Retrofit	Reduction	no
ACR110	0	0	0	ACR	No	Completed	Waste Management	Landfill Methane	Reduction	no
ACR111	0	0	0	ACR	No	Registered	Industrial Manufacturing	Pneumatic Retrofit	Reduction	no
ACR112	0	0	0	ACR	No	Completed	Waste	Landfill Methane	Reduction	no

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Carbon-Market analysis

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Carbon Market	Data carbon-market	Data CO2	Boxplot Analysis	CO2_emitted	Pair Plot Analysis	Report	About Us
country	year	credits_issued	credits_retired	registry_issued_credits	credits_remaining	CO2_emitted	percentage_mitigation
Argentina	1996	0	0	0	0	126560000	0
Argentina	1997	0	0	0	0	127320000	0
Argentina	1998	0	0	0	0	133170000	0
Argentina	1999	0	0	0	0	134190000	0
Argentina	2000	0	0	0	0	131910000	0
Argentina	2001	0	0	0	0	124870000	0
Argentina	2002	0	0	0	0	117470000	0
Argentina	2003	0	0	0	0	128360000	0
Argentina	2004	0	0	0	0	141850000	0
Argentina	2005	0	0	0	0	146320000	0
Argentina	2006	0	0	0	0	155370000	0
Argentina	2007	58509	0	0	0	163630000	0.0357568905457434
Argentina	2008	65655	0	1	1	168150000	0.0390454950936663
Argentina	2009	165360	22814	102206	102206	157440000	0.105030487804878
Argentina	2010	222274	10000	179134	179134	168140000	0.1321957892232663
Argentina	2011	4075	63154	2875	2875	177260000	0.0022988829967279
Argentina	2012	189017	4363	52988	52988	178530000	0.1058740827872066
Argentina	2013	0	1200	0	0	182000000	0

Carbon-Market analysis

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Carbon Market Data carbon-market Data CO2 Boxplot Analysis CO2_emitted Pair Plot Analysis Report About Us

Select category for x axis

region

Select numerical data for y axis

credits_issued

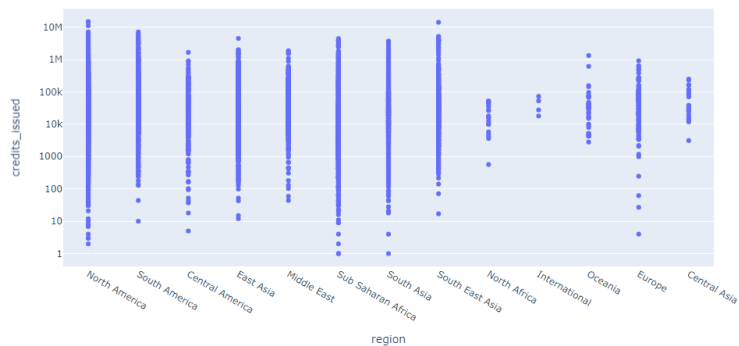
credits_issued

credits_remaining

credits_retired

registry_issued_credits

Boxplot of credits_issued by region



Carbon-Market analysis

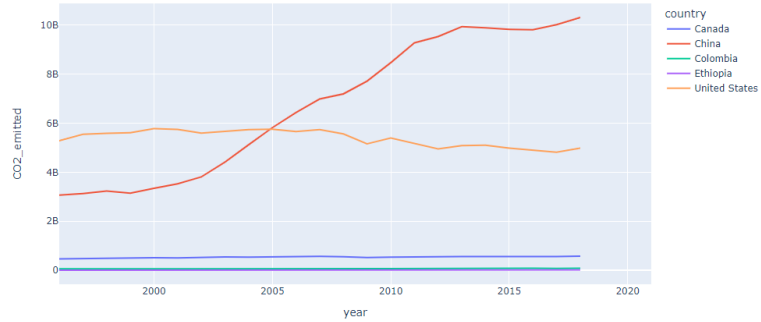
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Select countries

- ☒ Colombia
- ☒ China
- ☒ United States
- ☒ Ethiopia
- ☒ Canada
- Argentina
- Aruba
- Australia
- Bangladesh
- Belize
- Benin

CO2 emitted by country



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PairPlot of carbon-market credits with co2 emissions



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Report for Carbon Market Data

Conclusions

The carbon markets have been developed in a mainly voluntary way (goals for reducing and offsetting emissions from companies that voluntarily decide to buy carbon credits for corporate social responsibility and to demonstrate some type of commitment to offsetting their emissions), which means that carbon markets are not standardized and those are very different from each other and it is difficult to account for their robustness.

Sectorized analysis of the carbon credit market

Comparison with the carbon emission according to the sample we take

ToDo

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