

# Exploratory Data Analysis for EU ETS

This is an R notebook that documents the EDA for the EU ETS.

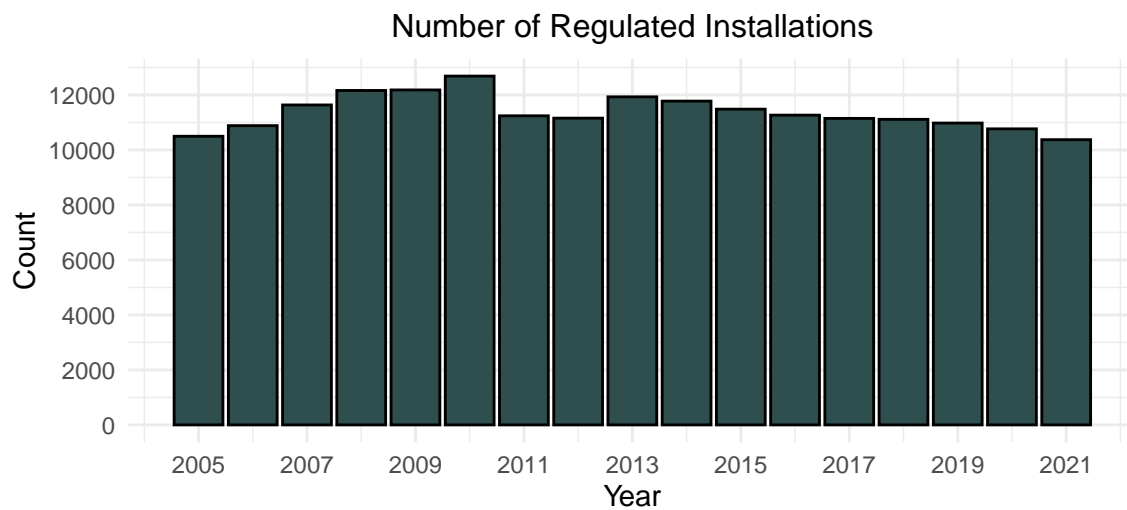
## Data Overview

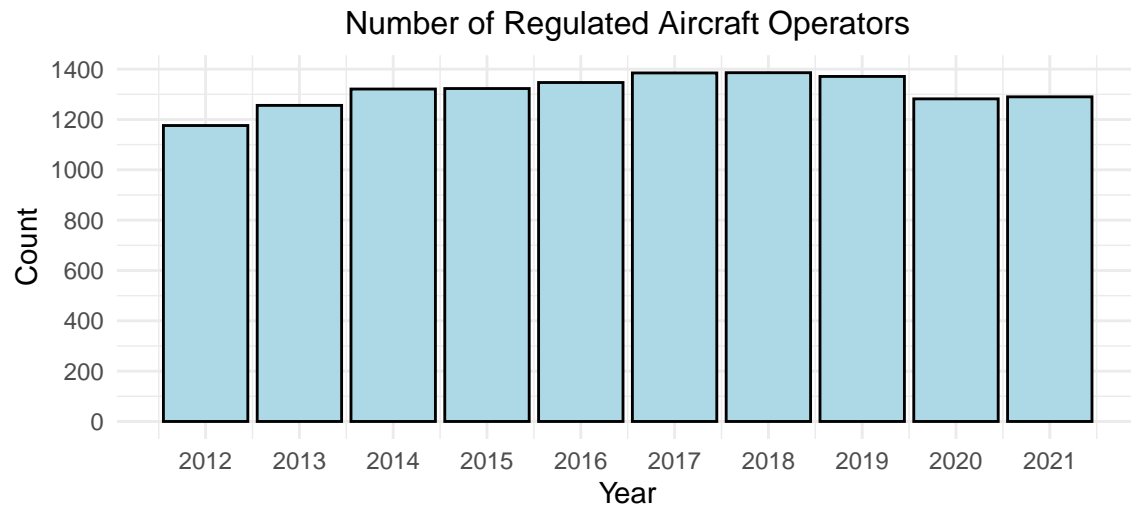
The table below summarises the number of unique observations for different variables. There are 17,281 \* 17 = 302,957 unique installation-year.

Variables	Unique Values
Account Holder ID	11605
Account ID	18782
Installation ID	17821
Compliance Year	17

## Regulated Entities

The EU ETS covers both the installations and aircraft operators, with the latter being regulated starting from 2012. The two figures below show the number of regulated entities in each year for installations and aircraft operators, respectively.

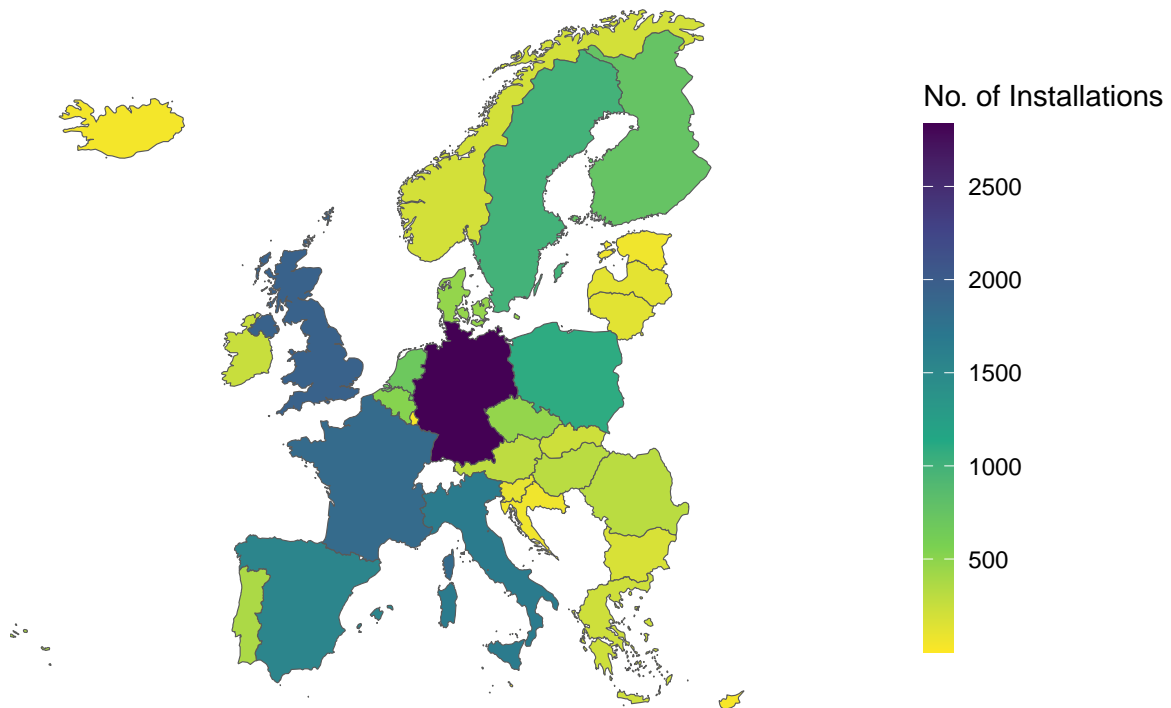




The plot below shows the number of ever regulated installations in each country.

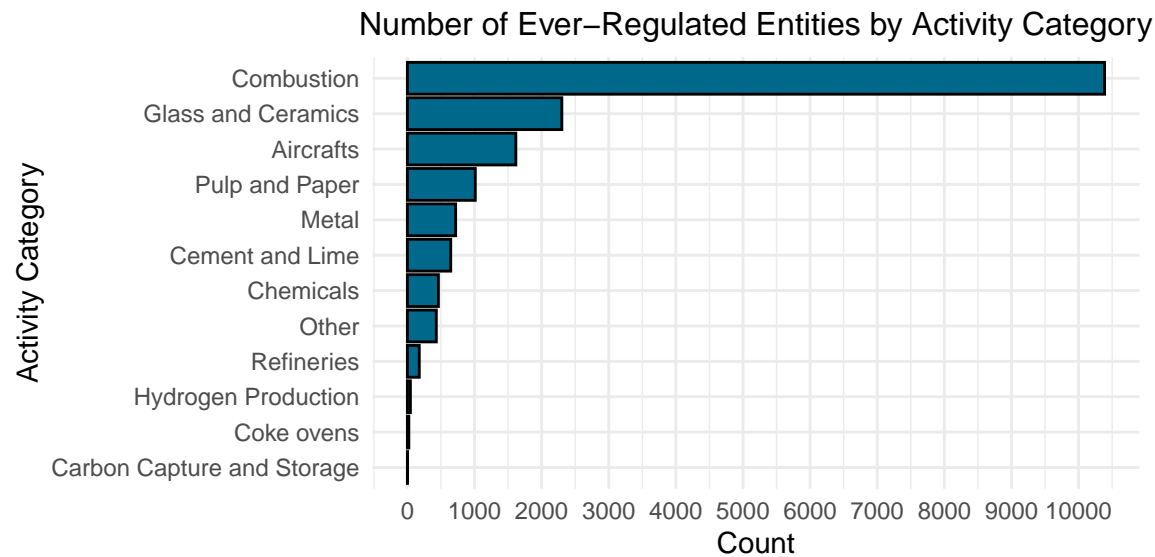
### Number of Ever Regulated Installations by Country

From 2005 to 2021



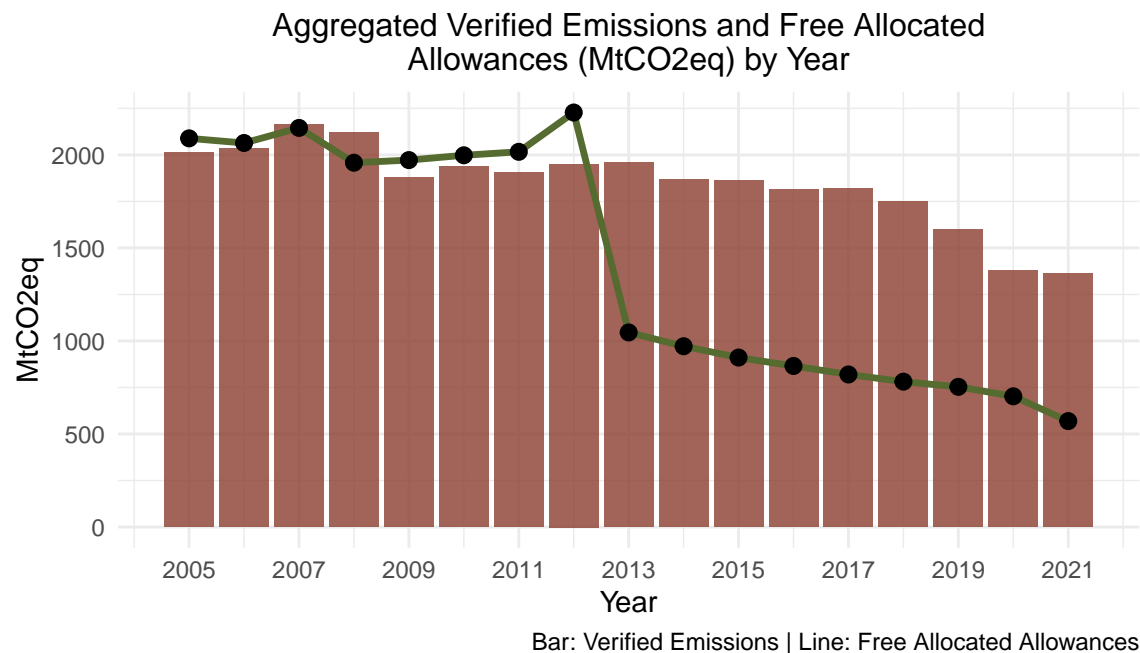
Data: EUTL

The figure below shows the regulated entities by EU ETS regulated activities, regrouped by activity category. The most common activity is the activity involving combustion of fuels.

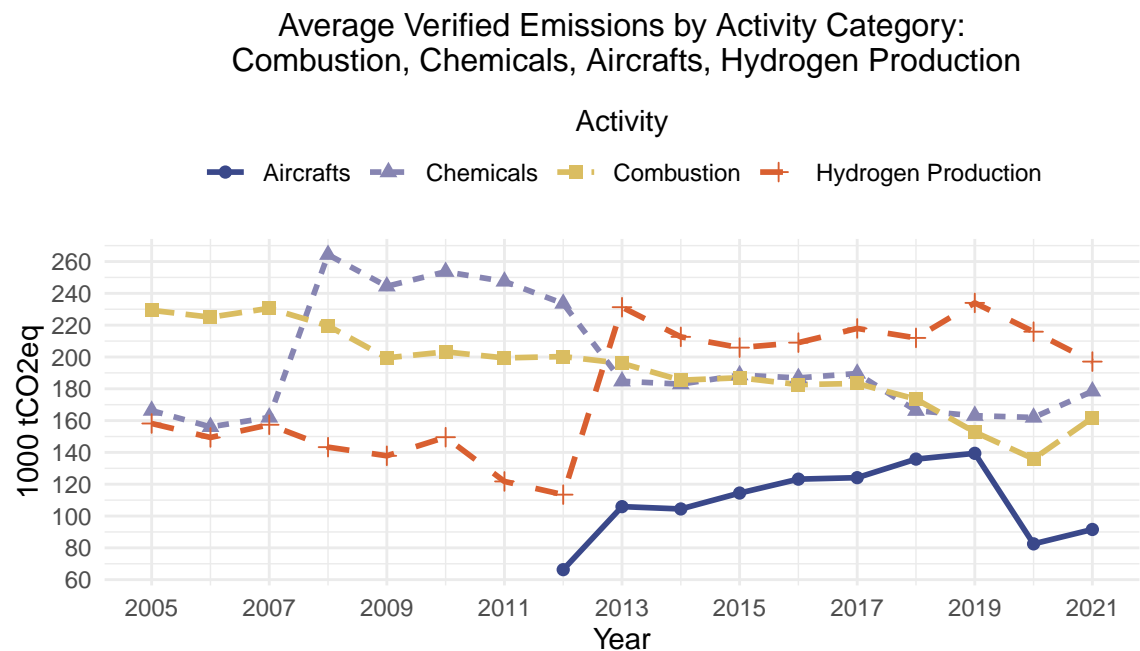
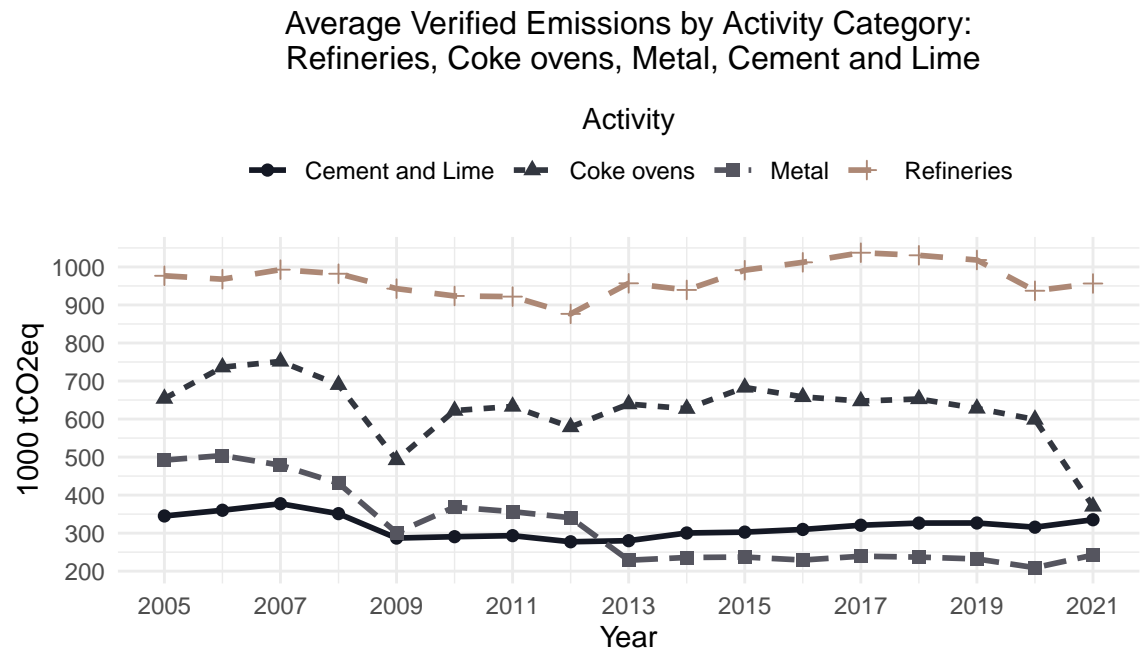


## Emissions

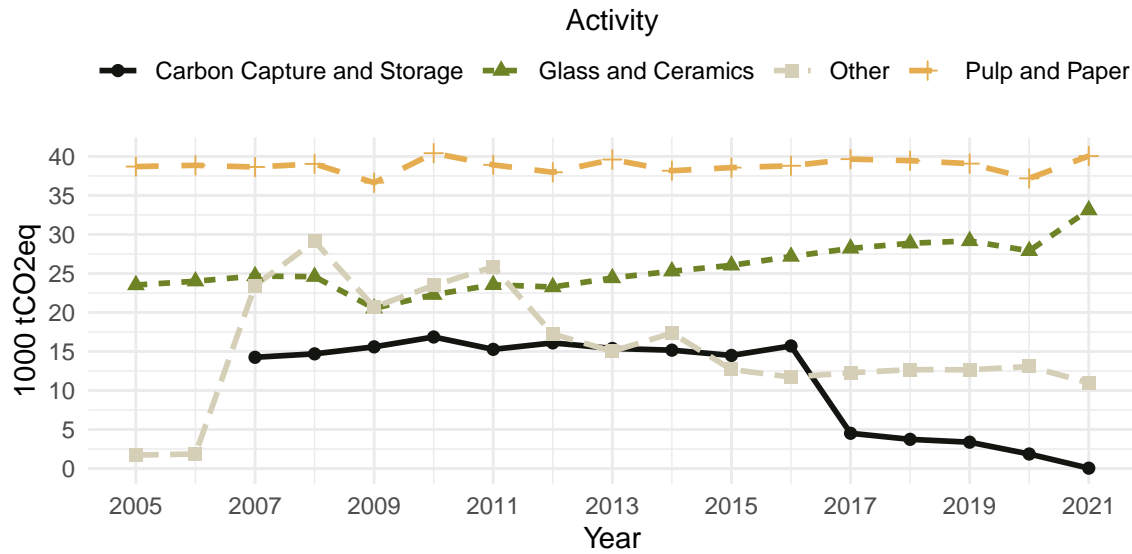
This section will explore the emission and compliance of the EU ETS. The figure below shows the aggregated verified emissions and aggregated free allocated allowances across all entities by year.



The figures below display the annual verified emissions averaged across installations in the same activity category. For most activity categories, the average verified emissions do not seem to consistently trend downwards.



### Average Verified Emissions by Activity Category: Glass and Ceramics, Pulp and Paper, Carbon Capture and Storage, Other



The heat map shows the average verified emissions by country, averaging across installations and years in Phase 3 (2013-2020).

### Average Installation Verified Emissions by Country (Phase 3) From 2013 to 2020

