Catarina Costa, pg52676

Marta Aguiar, pg52694

Impact of the Food Industry on the Environment and its Ecosystems

Universidade do Minho

State of Art

- **Studies**:

- Smith et al. (2019) and Johnson et al. (2020)

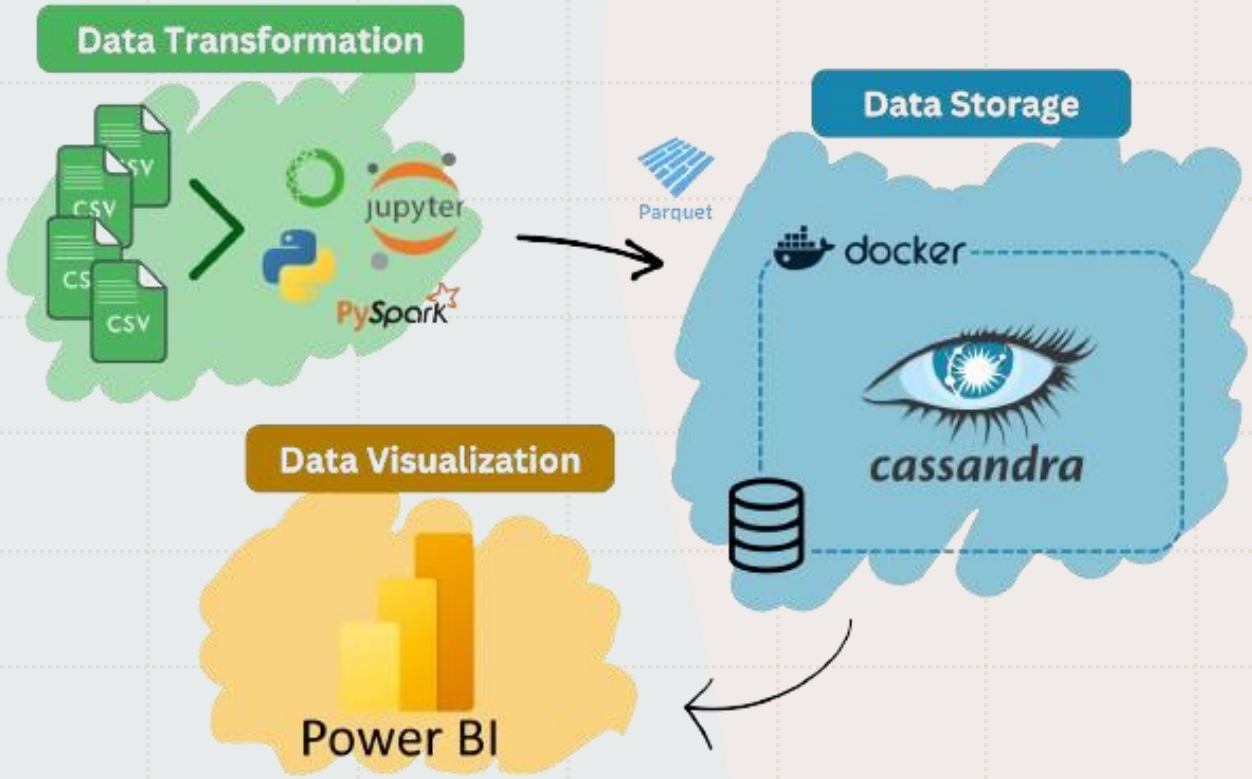
- **Projects**:

- ADA_Project;

- magpie;

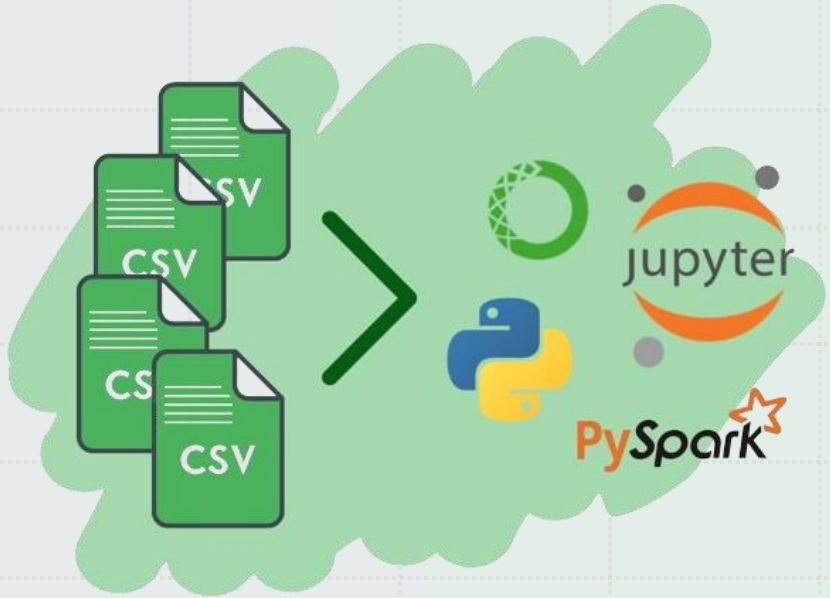
- Agri-Food-Emission-Analysis Crop-Production-Analysis-Using-PowerBI

Architecture

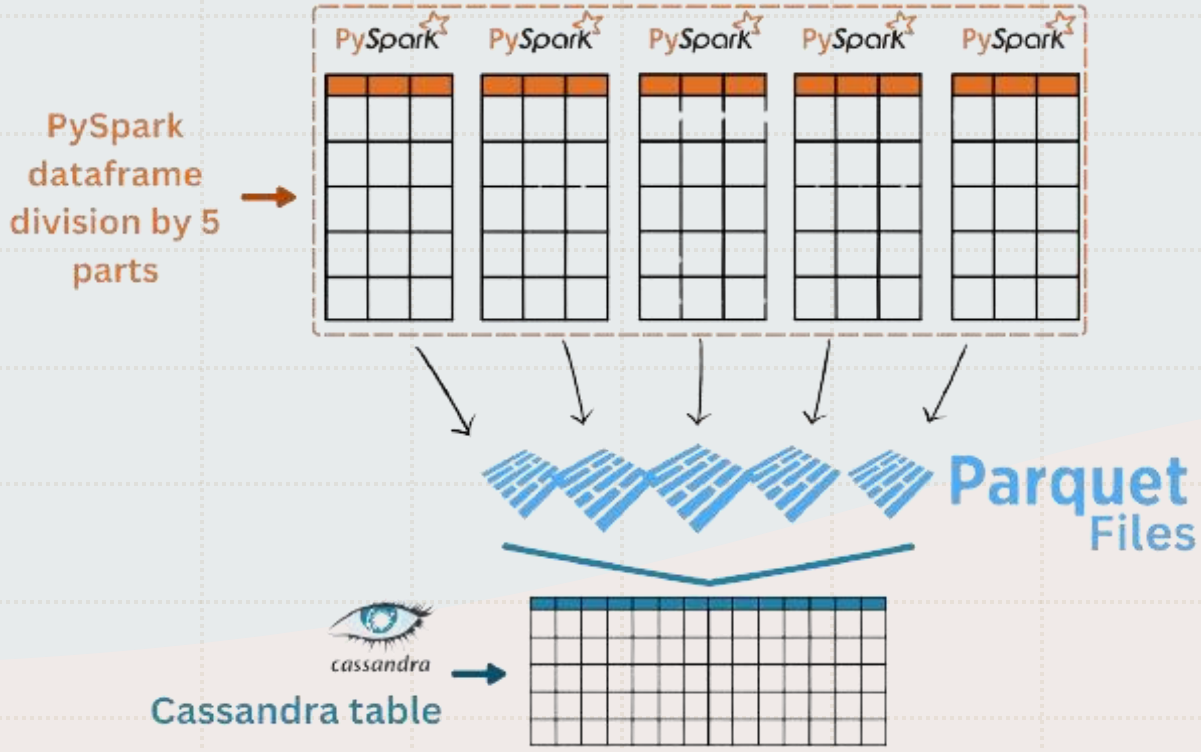


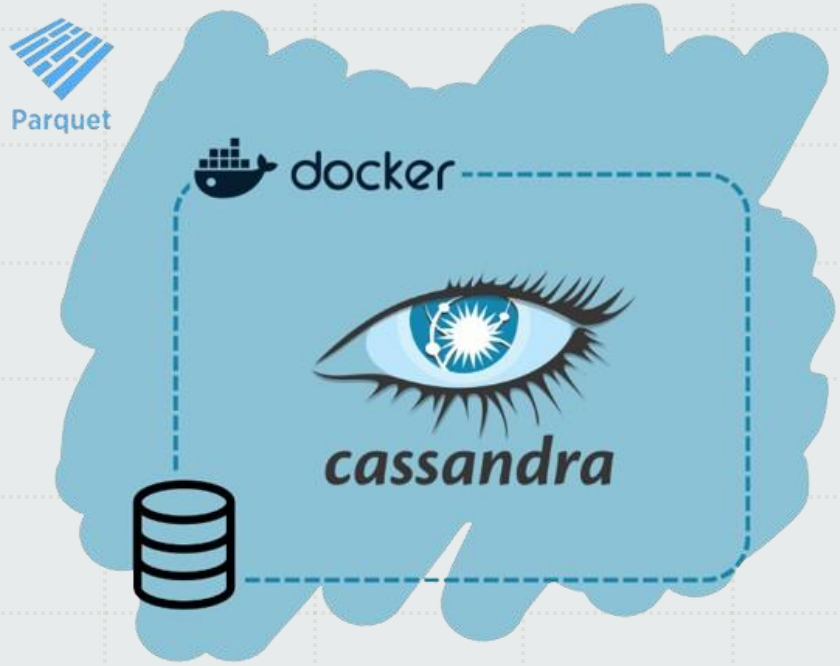
Data Transformation

- Removed all data prior to the year 2010.
- Renamed columns (to help with merging).
- Dropped irrelevant columns from the dataframes.
- Removed the countries with the most NaN values and sort them by Country.
- Remove rows and columns with the highest number of NaN values.
- Replaced NaN values with 0.0 (neutral element).
- Converted the data to the correct data types.
- Handled missing values in specific string columns by replacing them with the placeholder 'Unknown'.



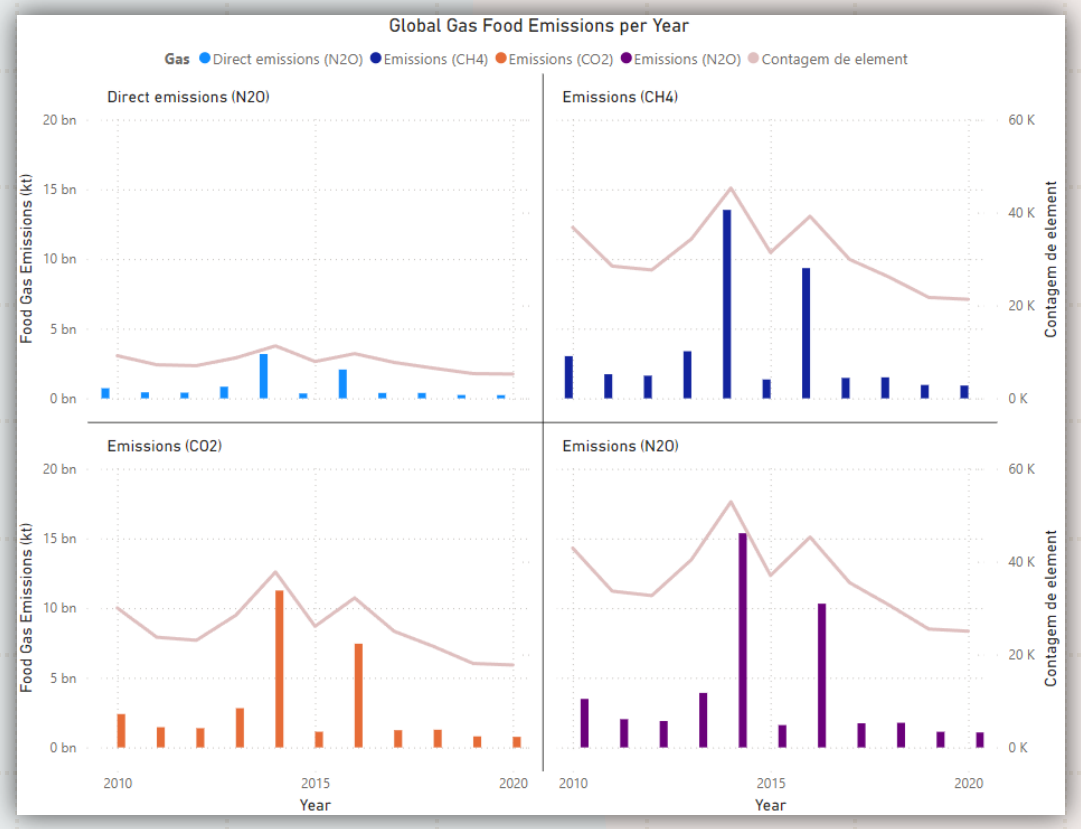
Data Storage



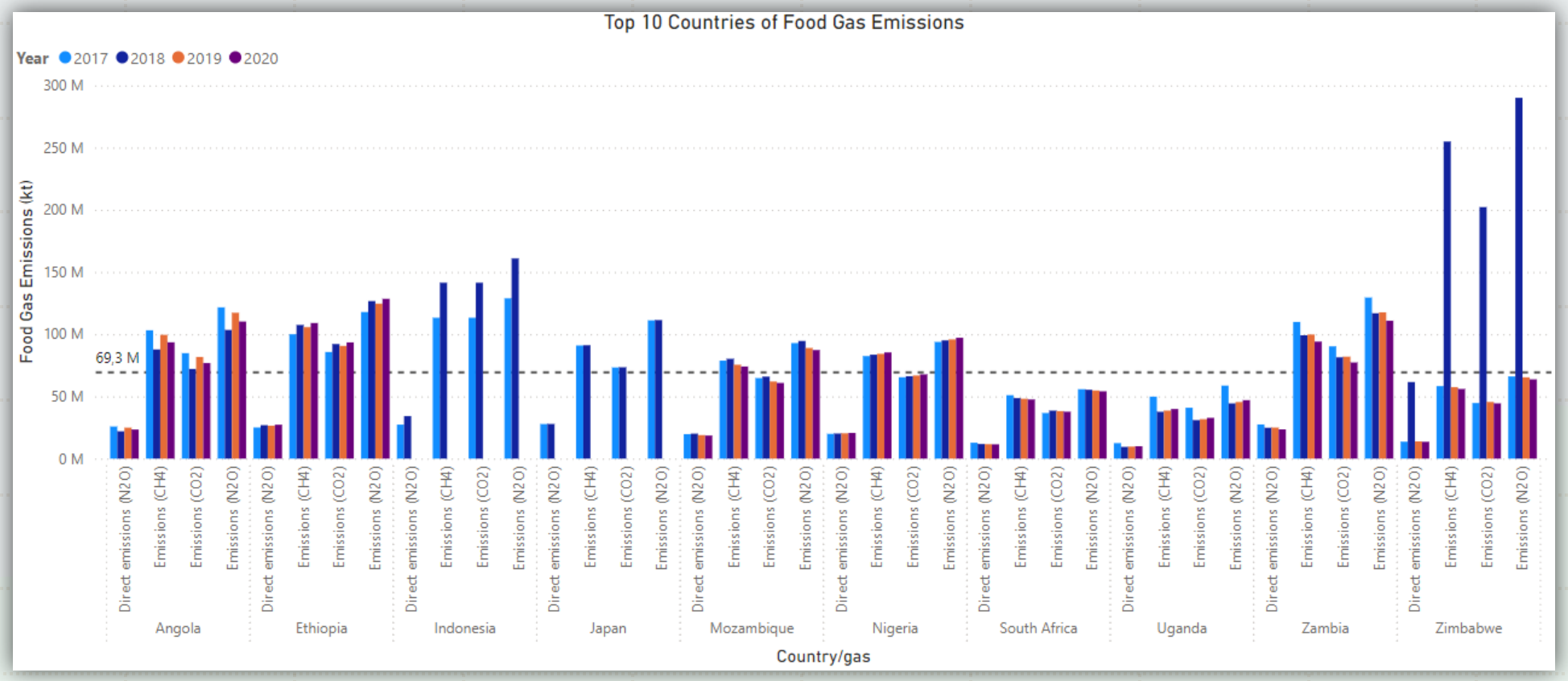


Data Visualization

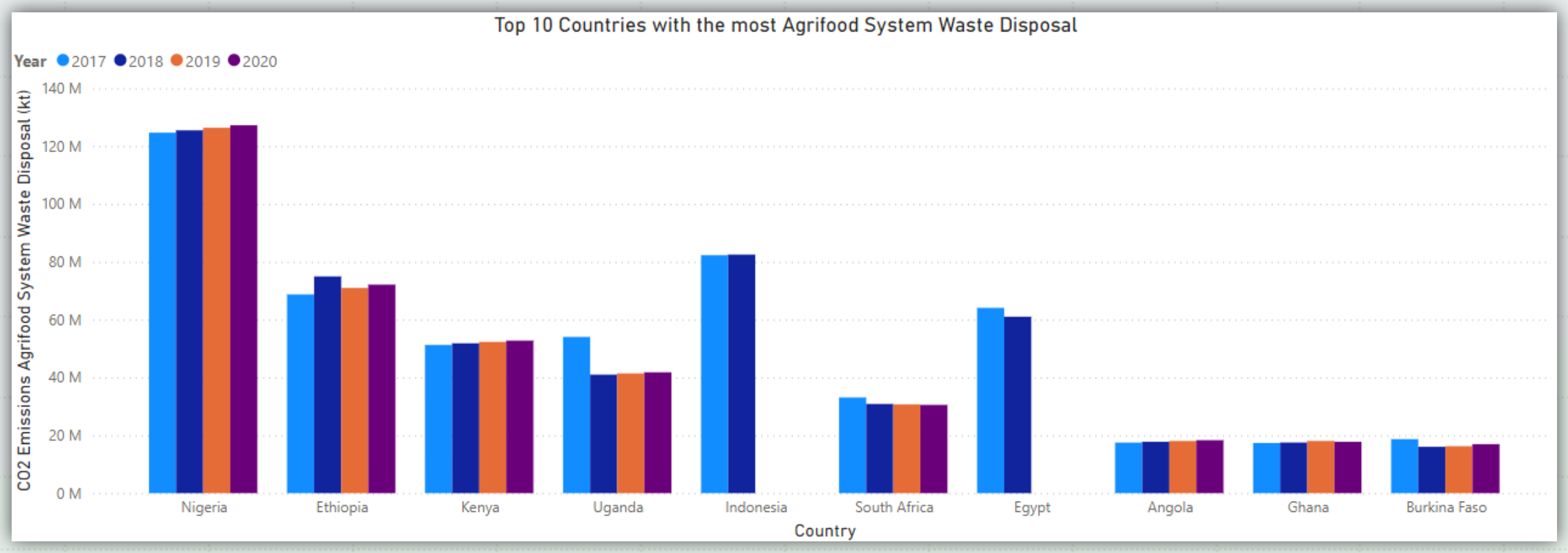
Global Food Gas Emissions per Year



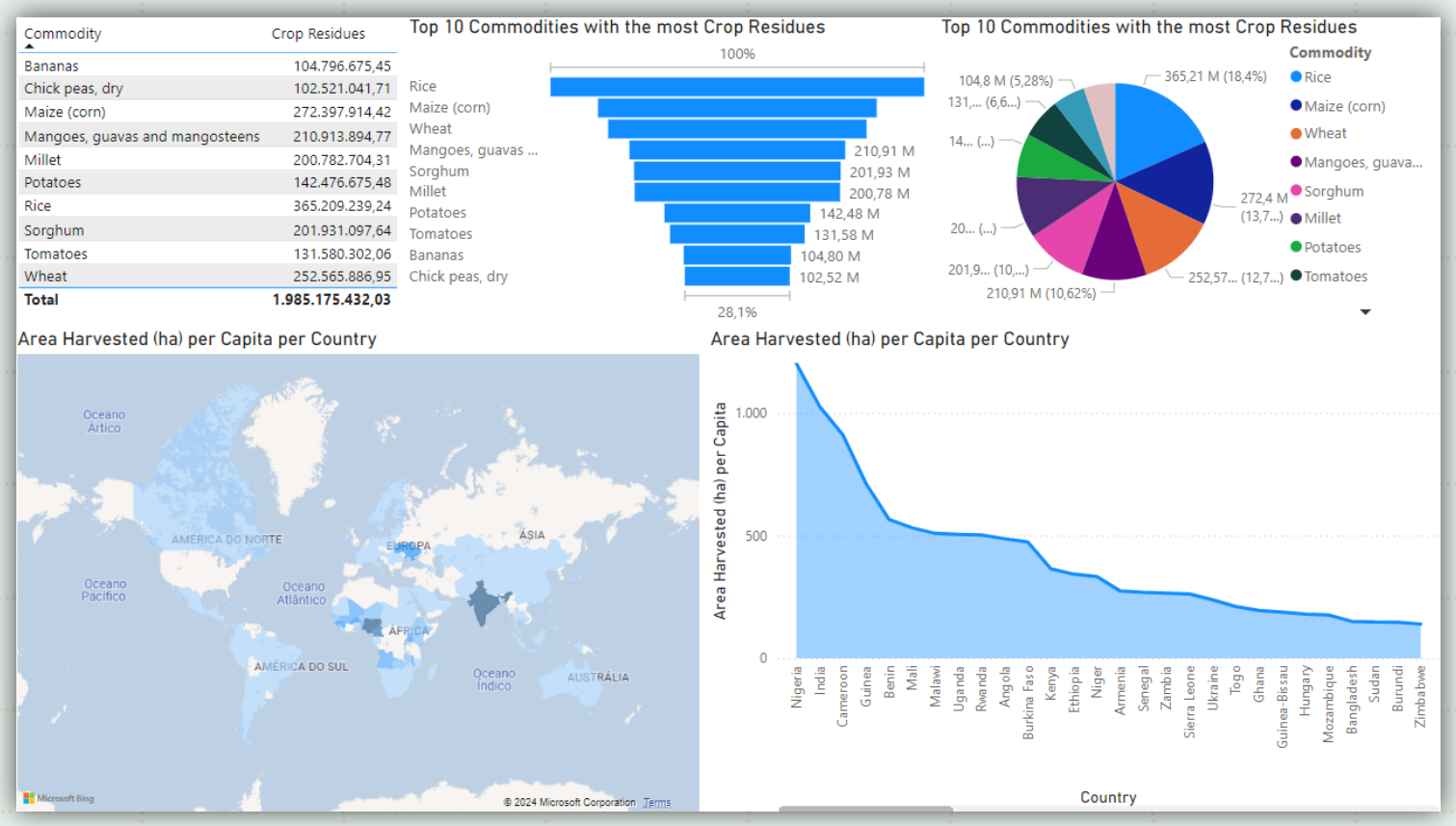
Top 10 Countries of Food Gas Emissions



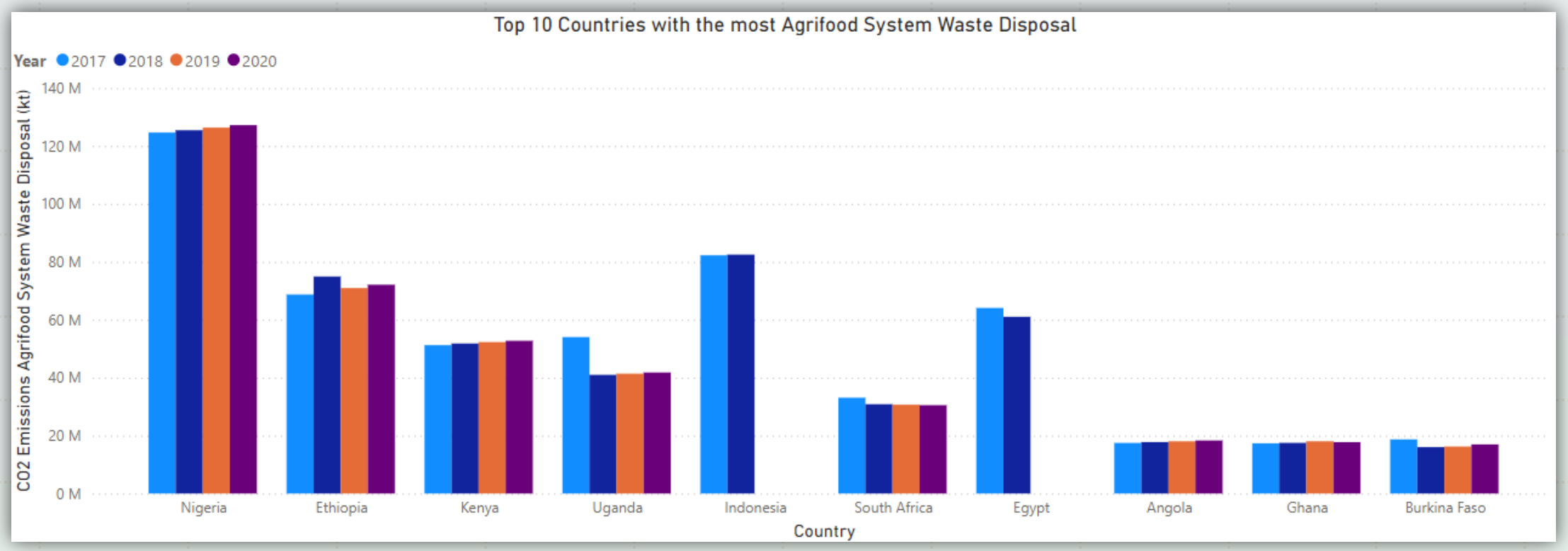
Top 10 Countries of CO2 Emissions from Crop Residues by Year



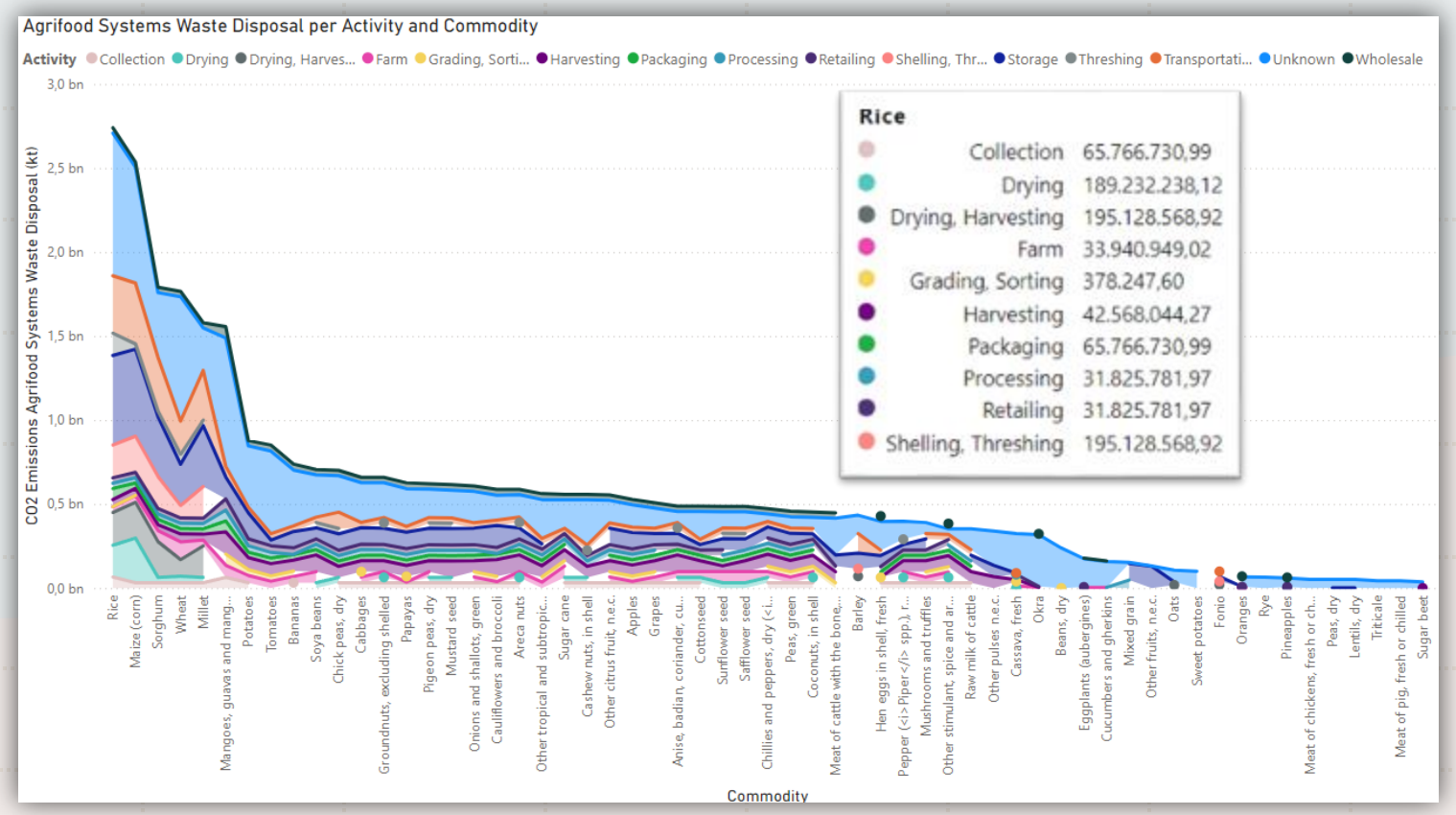
Top 10 Commodities by CO2 Emissions from Crop Residues and Area Harvested per Capita

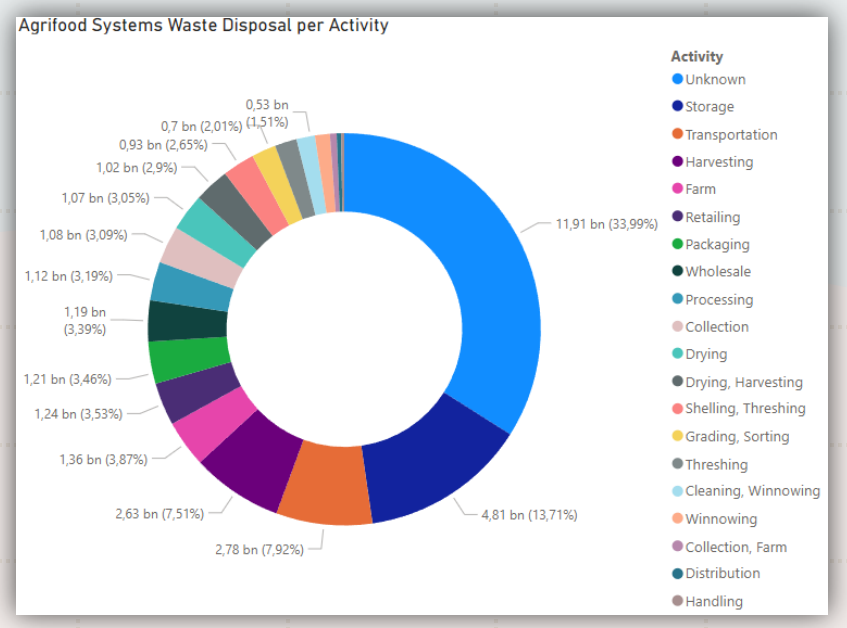


Top 10 Countries with the most CO2 Emissions from Agrifood Systems Waste Disposal



CO2 Emissions from Agrifood Systems Waste Disposal per Activity and Commodity





Conclusion

- The environmental impacts arising from the food industry were visualized.
- Due to the large amount of data, it was not possible to explore it all in this work.

References

Projects

ADA Project: https://github.com/ChatPerche/ADA Project

Magpie: https://github.com/magpiemodel/magpie

Agri-Food-Emission-Analysis: https://github.com/Deme-EY/Agri-Food-Emission-Analysis

Crop-Production-Analysis-Using-PowerBI : https://github.com/I-Veb/Crop-Production-Analysis-Using-PowerBI/blob/main/Crop%20Production%20Analysis.pdf

Datasets

Agrofood co2 emission.csv : https://www.kaggle.com/datasets/alessandrolobello/agri-food-co2-emission-dataset-forecasting-ml?resource=download

Total Emissions Per Country (2000-2020).csv : https://www.kaggle.com/datasets/justin2028/total-emissions-per-country-2000-2020

global-food.csv : https://ourworldindata.org/explorers/global-food?facet=none&Food=Total&Metric=Production&Per+Capita=false

fao global food waste 2000 2021.csv : https://www.kaggle.com/datasets/yanchoo/global-food-waste-2000-2021