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Boedijanto, F. J., & Delina, L. L. (2024). Potentials and challenges of artificial intelligence-supported greenwashing detection in the energy sector. *Energy Research & Social Science*, 115. <https://doi.org/10.1016/j.erss.2024.103638>

We decided to adapt the greenwashing-detection pipeline suggested by Boedijanto and Delina: web scraping of environmental documents/disclosures (in our case, carbon credit project proposals) and use of NLP tools to assess the integrity of claims and project descriptions. We also relied on their descriptions of various greenwashing tactics (ex. “the use of vague or ambiguous language, exaggerated claims, and selective reporting”) in the prompt engineering phase of training our model. Finally, by utilizing scalable tools suitable for large volumes of text-based data, our project also addresses a key shortcoming identified by the authors: the difficulty of detecting fraudulent claims due to the “sheer volume of disclosures and communication channels involved.”

Boulieris, P., Pavlopoulos, J., Xenos, A. et al. (2024). Fraud detection with natural language processing. *Mach Learn* 113, 5087–5108. <https://doi.org/10.1007/s10994-023-06354-5>

Boulieris, Pavlopoulos, and Xenos suggest the use of Isolation Forest algorithm for unsupervised anomaly detection in online banking transactions. We decided to use the same algorithm for unsupervised anomaly detection in the available numerical data related to carbon credit transactions.

The Integrity Council for the Voluntary Carbon Market (ICVCM). (2024). The Core Carbon Principles. <https://icvcm.org/core-carbon-principles/>

The ICVCM is an independent, non-profit governance organization that aims to standardize evaluation of carbon credit projects across the globe. We relied on their recently released Core Carbon Principles report, particularly the principles related to Emissions Impact, to provide high-level ideas about markers that speak to the integrity of a proposed carbon credit project. In training our model, we believed that projects that failed to meet these principles were more likely to be fraudulent.

Moodaley, W., & Telukdarie, A. (2023). Greenwashing, Sustainability Reporting, and Artificial Intelligence: A Systematic Literature Review. *Sustainability*, 15(2), 1481. <https://doi.org/10.3390/su15021481>

Moodaley and Telukdarie provide a high-level overview of recent research on the use of ML and AI tools to detect corporate greenwashing. They identify that this is a fast-emerging area of research with the potential for impact on public and consumer perceptions of corporate sustainability effects.

Pyle, A. (2024, April 11). *Ask the experts: Carbon credits 101*. Colorado State University, Warner College of Natural Resources. <https://warnercnr.source.colostate.edu/ask-the-experts-carbon-credits-101/>

A short interview with two faculty members from Colorado State University about the basics of carbon credits. At less than a five minute read, this is a good plain-language resource for audience members looking for a quick introduction or refresher about carbon credits.

*The Ultimate Guide to Understanding Carbon Credits*. CarbonCredits.com. (2025).

<https://carboncredits.com/the-ultimate-guide-to-understanding-carbon-credits/>

An introduction to carbon markets, carbon credits, and carbon offsets that helped our team members understand how carbon markets function and the process by which carbon credits are generated and carbon offsets are traded. This is a good resource for any audience member looking for a longer but still beginner-friendly introduction to these topics.

Zhang, D., Yu, Z., Zeng, Z. et al. (2025). A text-based framework for carbon price forecasting via multivariate temporal graph neural network. *J Supercomputing* 81, 488.

<https://doi.org/10.1007/s11227-025-06974-9>

Zhang et al. describe their development of a neural network model that combines a variety of data sources, including extracting topic and sentiment information from news headlines, into a powerful tool for accurate prediction of carbon prices. We took inspiration from their methods in creating our own model, which similarly combines textual and numerical information to flag greenwashing and fraudulent transactions.