Package 'carbonpredict'

August 8, 2025

Title Predict Carbon Emissions for UK SMEs

Version 0.0.2

Description
This package uses pre-trained models to predict scope 1 and 2 carbon emissions for SMEs.

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Imports dplyr,
ggplot2,
progress,
lmerTest

Suggests testthat (>= 3.0.0),
mockery

Config/testthat/edition 3

Contents

`batch_predict_emissions`
Batch Predict Emissions

Description

Prediction entry point for batch SME and agriculture emissions

Usage

```
batch_predict_emissions(data, company_type, output_path = NULL)
```

Arguments

data	A single entry (list or named vector), a data frame, or a path to a CSV file. The data should contain company_name, 2-digit UK sic_code, and annual turnover columns.
company_type	A single entry "sme" or "farm" to determine which emission prediction funtions to call.
output_path	Optional file path to save the results as a CSV. If NULL, results are not saved to a file.

Value

A data frame with input columns and predicted emissions for each scope. Optionally saved to a CSV file.

Examples

```
sample_data <- read.csv(system.file("extdata", "sme_examples.csv", package = "carbonpredict"))
sample_data <- head(sample_data, 3)
batch_predict_emissions(data = sample_data, company_type = "sme", output_path = NULL)
```

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batch_sme_plots *Batch SME Plots*

Description

Batch plot SME Scope 1 & 2 emissions

Usage

```
batch_sme_plots(data, output_path = NULL)
```

Arguments

data	A data frame or path to a CSV file with columns "sic_code", "turnover", and optionally "company_name".
output_path	Optional directory to save plots. If NULL, plots are not saved.

Value

Donut chart plots for each row in the data. Optionally saved to a directory as PNG files.

Examples

```
sample_data <- read.csv(system.file("extdata", "sme_examples.csv", package = "carbonpredict"))
sample_data <- head(sample_data, 3)
batch_sme_emissions <- batch_predict_emissions(data = sample_data, company_type = "sme", output_path = NULL)
batch_sme_plots(data = batch_sme_emissions, output_path = NULL)
```

plot_sme_emissions *Plot SME Emissions*

Description

Plot a donut chart of Scope 1 and Scope 2 emissions

Usage

```
plot_sme_emissions(scope1_emissions, scope2_emissions, company_name = NULL)
```

Arguments

scope1_emissions	Numeric value for Scope 1 emissions.
scope2_emissions	Numeric value for Scope 2 emissions.
company_name	Optional character string for the company name to include in the chart title.

Value

A ggplot2 donut chart.

Examples

```
scope_1 = sme_scope1(85, 12000000)
scope_2 = sme_scope2(85, 12000000)
plot_sme_emissions(scope1_emissions = scope_1$predicted_emissions, scope2_emissions = scope_2$predicted_emis
```

sme_emissions_profile *SME Emissions Profile*

Description

Calls the Scope 1 and Scope 2 emissions prediction functions and returns their results as a list and plots a donut chart

Usage

```
sme_emissions_profile(sic_code, turnover, company_name = NULL)
```

Arguments

sic_code	A 2-digit UK SIC code (numeric).
turnover	Annual turnover value (numeric).
company_name	Optional company name for labeling plots (string).

Value

A list with two elements: scope1 and scope2, each containing the predicted emissions data frame, as well as a donut chart.

Examples

```
sme_emissions_profile(sic_code = 85, turnover = 12000000, company_name = "ABC")
```

---

sme_scope1 *Predict SME Scope 1 Emissions*

Description

This function loads a pre-trained emission model to predict scope 1 carbon emissions for a given SIC code and turnover.

Usage

```
sme_scope1(sic_code, turnover)
```

Arguments

sic_code	A 2-digit UK SIC code (numeric).
turnover	Annual turnover value (numeric).

Value

A data frame with predicted emissions and input variables.

Examples

```
sme_scope1(sic_code = 85, turnover = 12000000)
```

---

sme_scope2 *Predict SME Scope 2 Emissions*

Description

This function loads a pre-trained emission model to predict scope 2 carbon emissions for a given SIC code and turnover.

Usage

```
sme_scope2(sic_code, turnover)
```

Arguments

sic_code	A 2-digit UK SIC code (numeric).
turnover	Annual turnover value (numeric).

Value

A data frame with predicted emissions and input variables.

Examples

```
sme_scope2(sic_code = 85, turnover = 12000000)
```

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