Package 'r2dii.analysis'

February 18, 2025

Title Measure Climate Scenario Alignment of Corporate Loans

Version 0.5.1

Description These tools help you to assess if a corporate lending portfolio aligns with climate goals. They summarize key climate indicators attributed to the portfolio (e.g. production, emission factors), and calculate alignment targets based on climate scenarios. They implement in R the last step of the free software 'PACTA' (Paris Agreement Capital Transition Assessment; <https://www.transitionmonitor.com/>). Financial institutions use 'PACTA' to study how their capital allocation decisions align with climate change mitigation goals.

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URL https://rmi-pacta.github.io/r2dii.analysis/, https://github.com/RMI-PACTA/r2dii.analysis

BugReports https://github.com/RMI-PACTA/r2dii.analysis/issues

Depends R (>= 3.5)

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Contents

`data_dictionary` *Data Dictionary*

Description

A table of column names and descriptions of data frames used or exported by the functions in this package.

Usage

```
data_dictionary
```

Format

`data_dictionary`**:**

dataset Name of the dataset

column Name of the column

typeof Type of the column

definition Definition of the column

Examples

```
data_dictionary
```

target_market_share *Add targets for production, using the market share approach*

Description

This function calculates the portfolio-level production targets, as calculated using the market share approach applied to each relevant climate production forecast.

Usage

```
target_market_share(
  data,
  abcd,
  scenario,
  region_isos = r2dii.data::region_isos,
  use_credit_limit = FALSE,
  by_company = FALSE,
  weight_production = TRUE,
  increasing_or_decreasing = r2dii.data::increasing_or_decreasing
)
```

Arguments

data	A "data.frame" like the output of `r2dii.match::prioritize`.
abcd	An asset level data frame like r2dii.data::abcd_demo.
scenario	A scenario data frame like r2dii.data::scenario_demo_2020.
region_isos	A data frame like r2dii.data::region_isos (default).
use_credit_limit	Logical vector of length 1. `FALSE` defaults to using the column `loan_size_outstanding`. Set to `TRUE` to use the column `loan_size_credit_limit` instead.
by_company	Logical vector of length 1. `FALSE` defaults to outputting `production_value` at the portfolio-level. Set to `TRUE` to output `production_value` at the company-level.
weight_production	Logical vector of length 1. `TRUE` defaults to outputting production, weighted by relative loan-size. Set to `FALSE` to output the unweighted production values.
increasing_or_decreasing	A data frame like r2dii.data::increasing_or_decreasing.

Value

A tibble including the summarized columns `metric`, `production`, `technology_share`, `percentage_of_initial_producti` and `scope`. If `by_company = TRUE`, the output will also have the column `name_abcd`.

Handling grouped data

This function ignores existing groups and outputs ungrouped data.

See Also

Other functions to calculate scenario targets: target_sda()

Examples

```
library(r2dii.data)
library(r2dii.match)

loanbook <- head(loanbook_demo, 100)
abcd <- head(abcd_demo, 100)

matched <- loanbook %>%
  match_name(abcd) %>%
  prioritize()

# Calculate targets at portfolio level
matched %>%
  target_market_share(
    abcd = abcd,
    scenario = scenario_demo_2020,
    region_isos = region_isos_demo
    )

# Calculate targets at company level
matched %>%
  target_market_share(
  abcd = abcd,
  scenario = scenario_demo_2020,
  region_isos = region_isos_demo,
  by_company = TRUE
  )

matched %>%
  target_market_share(
    abcd = abcd,
    scenario = scenario_demo_2020,
    region_isos = region_isos_demo,
    # Calculate unweighted targets
    weight_production = FALSE
    )
```

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target_sda *Add targets for CO2 emissions per unit production at the portfolio level, using the SDA approach*

Description

This function calculates targets of CO2 emissions per unit production at the portfolio-level, otherwise referred to as "emissions factors". It uses the sectoral-decarbonization approach (SDA) to calculate these targets.

Usage

```
target_sda(
  data,
  abcd,
  co2_intensity_scenario,
  use_credit_limit = FALSE,
  by_company = FALSE,
  region_isos = r2dii.data::region_isos
)
```

Arguments

`data`	A dataframe like the output of `r2dii.match::prioritize()`.
`abcd`	An asset-level data frame like r2dii.data::abcd_demo.
`co2_intensity_scenario`	A scenario data frame like r2dii.data::co2_intensity_scenario_demo.
`use_credit_limit`	Logical vector of length 1. `FALSE` defaults to using the column `loan_size_outstanding`. Set to `TRUE` to instead use the column `loan_size_credit_limit`.
`by_company`	Logical vector of length 1. `FALSE` defaults to outputting `weighted_production_value` at the portfolio-level. Set to `TRUE` to output `weighted_production_value` at the company-level.
`region_isos`	A data frame like r2dii.data::region_isos (default).

Value

A tibble including the summarized columns `emission_factor_metric` and `emission_factor_value`. If `by_company = TRUE`, the output will also have the column `name_abcd`.

Handling grouped data

This function ignores existing groups and outputs ungrouped data.

See Also

Other functions to calculate scenario targets: `target_market_share()`

Examples

```
library(r2dii.match)
library(r2dii.data)
```

```
loanbook <- head(loanbook_demo, 150)
abcd <- head(abcd_demo, 100)

matched <- loanbook %>%
  match_name(abcd) %>%
  prioritize()

# Calculate targets at portfolio level
matched %>%
  target_sda(
   abcd = abcd,
   co2_intensity_scenario = co2_intensity_scenario_demo,
   region_isos = region_isos_demo
   )

# Calculate targets at company level
matched %>%
  target_sda(
   abcd = abcd,
   co2_intensity_scenario = co2_intensity_scenario_demo,
   region_isos = region_isos_demo,
   by_company = TRUE
   )
```

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