



eurofidai
— UAR CNRS / ESSEC 3390

EUROPEAN FINANCIAL DATA INSTITUTE

DATA DESCRIPTIONS GUIDE

GREEN BONDS

User guide



The European Financial Data Institute (EUROFIDAI – UAR3390) is a public academic institute under the authority of the CNRS (French National Center for Scientific Research) and the ESSEC Business School

I. Overview

1. Presentation¹

The Green bonds database, distributed by EUROFIDAI, is the outcome of a partnership between EUROFIDAI, SIX and MainStreet Partners. It is designed for academic research purposes and can only be used by researchers of academic institutions. It focuses on Green, Social, and Sustainability (GSS) bonds featured in major Green Bond indices, such as the Solactive Green Bond Index.

2. Coverage

The database includes a global selection of all Green, Social and Sustainable (GSS) bonds, with a significant emphasis on European markets, which represent at least 50% of the bonds in the database.

This extensive coverage ensures that users have access to a diverse range of GSS bonds issued across various regions, facilitating comprehensive analysis and research.

3. Selection Criteria

The database includes over 5,000 bonds issued worldwide since 2010 and that meet the following criteria:

- **General liquidity rule:** Generally, bonds with an issued amount exceeding USD 200 million. This threshold aims to ensure good liquidity levels. Yet, the database includes some bonds with lower issued amounts.
- **Coverage:** Include bonds from the main Green Bond indices (e.g. Solactive Green) with the objective to get over 95% coverage of the GSS market
- **Issuer type:** No discrimination based on issuer types or labels, allowing for a diverse range of issuers, including governments, municipalities, corporations, and financial institutions.

This selection methodology results in approximately 25% of all Green, Social, and Sustainability (GSS) bonds being included in the database, representing about 75% of GSS bonds' monetary value (amount outstanding). Finally, the database also includes bonds that have come to maturity.

¹ EUROFIDAI greenbonds database only redistributes Mainstreet Partners data and SIX financial information data and does not calculate any scores for companies. We refer users to <https://www.mspartners.org/methodologies/#corporates> for the methodology for ESG scores by MainStreet Partners.

4. Data Composition

The GSS bonds database is decomposed in three databases:

- Historical prices
- Characteristics
 - Green bond characteristics
 - Financial characteristics

- **Historical Prices**

The Historical Prices database reports 45 variables related to the historical daily pricing information for each bond in the database. Key variables include the opening and closing price, best bid and best ask price, the trading volume, accrued interests, the duration to maturity as well as the yield to maturity. We refer the reader to Section III, Step 2: Data Extraction.

- **Characteristics**

The GSS bonds characteristics database is composed of two separate databases.

- **Green, Social, and Sustainability Characteristics**

The first component of the Characteristics database reports 123 “green” characteristics for each bond in the database. The data provided by Mainstreet Partners originates from a variety of sources, including publicly available sources, company disclosures, and specialist data providers. The data is not transformed by Eurofidai and posted in its raw form as delivered by MainStreet Partners.

Green, Social, and Sustainability (GSS) metrics assess the impact and alignment of green bonds with sustainability goals. These include proceeds uses, greenhouse gas emissions reduced or avoided, energy efficiency improvements, clean transportation projects, etc.

- **Financial Characteristics**

The second component of the Characteristics database also reports 20 “financial” characteristics for each bond in the database. They include variables such as the issue price, the type of amortization, the coupon rate and its frequency, the seniority of the bond and whether the bond is callable or convertible. We refer the reader to Section III, Step 3: Characteristics.

5. Data Frequency and Update

EUROFIDAI receives historical prices every day. The new information is added to the database on the first day of every month. The GSS characteristics are also updated the first day of every month. Finally, the financial characteristics are fixed and do not need an update.

II. Structure of the EUROFIDAI codes for GSS Bonds

EUROFIDAI assigns a unique and permanent EUROFIDAI identifier (code) to each bond in the database. The EUROFIDAI code has a 15-digit structure:

- The first three (3) numbers correspond to the type of security:
 - 600 for green bonds,
- The seven (7) middle digits correspond to a unique identifier.
- The last five (5) numbers represent the marketplace or stock exchange.

For instance, the EUROFIDAI code for the bond 1 ENGI 36 EMTN- 1 % Euro Medium Term Notes – 2021-26.10.36 issued by Engie SA and traded on Euronext Paris is 600147683410025.

- 600: green bond
- 1476834: Engie's identifier
- 10025: Euronext Paris

EUROFIDAI or ISIN codes are necessary to extract green bonds data. A user can submit a single code or a list of codes (in a .txt file with one code per row).

We strongly encourage users to use the EUROFIDAI over ISIN codes for two reasons:

1. ISIN codes can change over time while the EUROFIDAI code is permanent and unique to each bond.
2. A bond traded on different markets have the same ISIN code but different EUROFIDAI codes. For instance, the green bond 1 ENGI 36 EMTN- 1 % Euro Medium Term Notes – 2021-26.10.36 traded on eleven different markets has a single ISIN code but eleven EUROFIDAI code, one for each market where the bond trades. Using a EUROFIDAI code allows users to target a specific stock market for a bond.

III. Extracting data from the GSS Bonds Database

Data extraction from the Green Bonds (GSS) database follows a two-step process.

Step 1: Code Search

1. Searching for a GSS bond can be done using several criteria:

- a. Instrument Name; or
- b. Issuer Name; or
- c. ISIN code²; or
- d. EUROFIDAI Code; or
- e. Issuer Codes (Company ID)

As an example, consider the following green bond issued by ENGIE and traded on Euronext Paris:

- a. 1 ENGI 36 EMTN - 1 % Euro Medium Term Notes - 2021-26.10.36
- b. ENGIE SA
- c. FR0014005ZQ6
- d. 600147683410025
- e. 478801

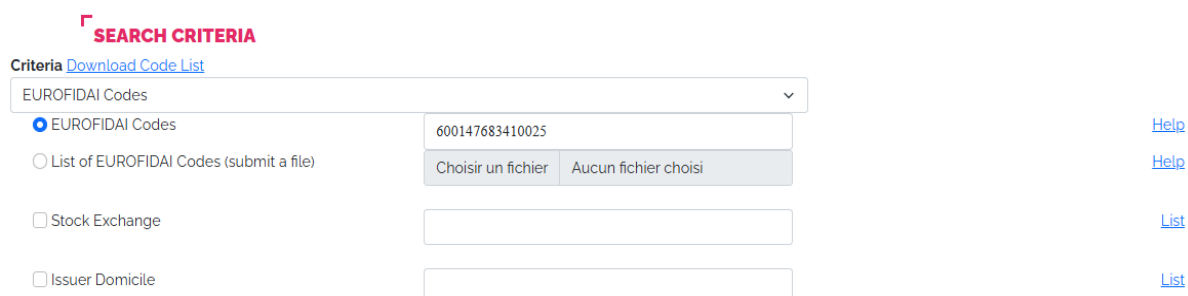
Users can click on “*Download Code List*” under the heading **Search Criteria** (See **Figure 1**) for a complete list of all bonds in the database and the detailed information for a code search.

Click on the rectangle with the downward arrow to select which criteria you want to use and enter the information in the rectangle below. Figure 1 illustrates the above example with the Eurofidai code.

*** A EUROFIDAI code corresponds to an instrument and a market place. Thus, a single bond has as many EUROFIDAI codes as the number of market places where it trades. However, the coverage and amount of information reported vary from one market place to another. Thus, we recommend using the EUROFIDAI code that identifies the instrument and the market place with the most comprehensive historical price data (**largest number of observations**). This information is found in the code list of the database under the code search tab.

² A company may have numerous ISIN codes, one for each financial instrument issued by the company.

Figure 1: Code search



SEARCH CRITERIA

Criteria [Download Code List](#)

EUROFIDAI Codes

EUROFIDAI Codes 600147683410025 [Help](#)

List of EUROFIDAI Codes (submit a file) Choisir un fichier Aucun fichier choisi [Help](#)

Stock Exchange [List](#)

Issuer Domicile [List](#)

A search can be extended to a list Eurofidai codes by submitting a file in .txt format with one code per row (click on *Browse* and upload your file)

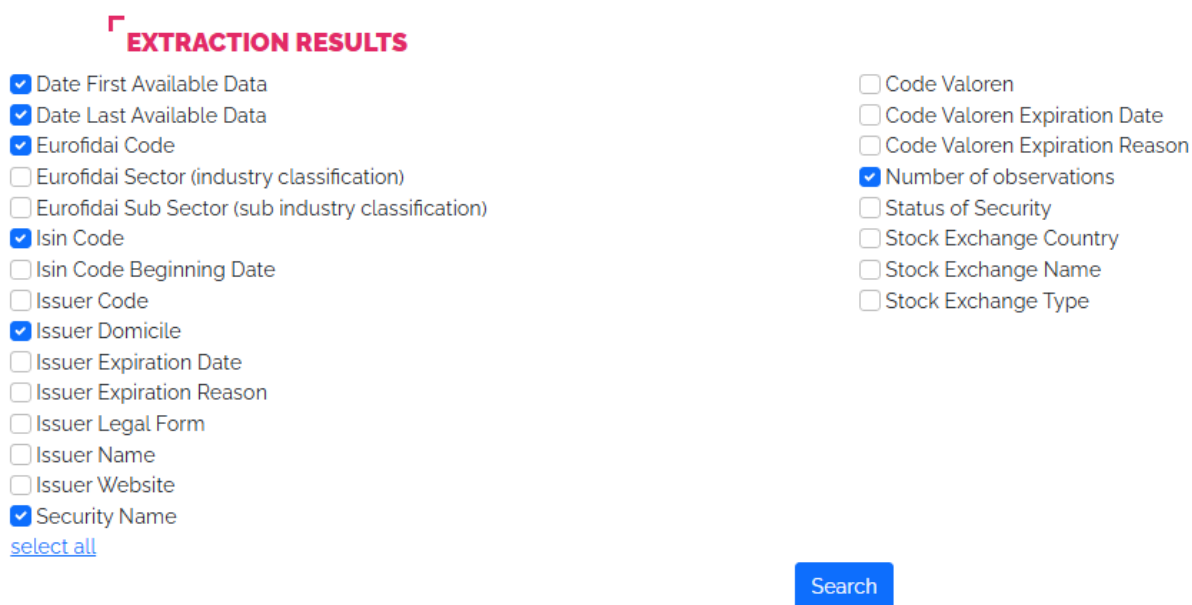
A Green bonds search can also be conducted by:

- i) Stock Exchange;
- ii) Issuer Domicile (country).

Click on **List** on the right hand side of the screen to get the complete list of stock exchange or country codes for issuers.

To allow the user to select the EUROFIDAI code that most closely matches his search, the “Code search” page offers to select **complementary information** about the bonds (See **Figure 2**). Users can select any number or all (click on Select all) variables.

Figure 2: Code search: complementary information about Green Bonds



EXTRACTION RESULTS

Date First Available Data

Date Last Available Data

Eurofidai Code

Eurofidai Sector (industry classification)

Eurofidai Sub Sector (sub industry classification)

Isin Code

Isin Code Beginning Date

Issuer Code

Issuer Domicile

Issuer Expiration Date

Issuer Expiration Reason

Issuer Legal Form

Issuer Name

Issuer Website

Security Name

[select all](#)

Code Valoren

Code Valoren Expiration Date

Code Valoren Expiration Reason

Number of observations

Status of Security

Stock Exchange Country

Stock Exchange Name

Stock Exchange Type

Step 2: Data Extraction


Data extraction requires the specification of three criteria (See **Figure 3**):

- Time period
- Eurofidai Code
- List of variables (under the heading Extraction Results)

By default, the period covered is set from 2010 to today. Users can specify any other period for their search.

Data extraction can only be done using EUROFIDAI codes. The extraction can be performed using a single code or a list of codes (.txt format with one code per row).

Users can select any number or all (click on Select all) pricing variables for a green bond



EXTRACTION RESULTS

<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Best Ask <input checked="" type="checkbox"/> Best Bid <input checked="" type="checkbox"/> Fixing Price Six <input checked="" type="checkbox"/> Highest Price <input checked="" type="checkbox"/> Last Ask <input checked="" type="checkbox"/> Last Bid <input checked="" type="checkbox"/> Last Price <input checked="" type="checkbox"/> Lowest Price <input checked="" type="checkbox"/> Max Redemption Price <input checked="" type="checkbox"/> Max Subscription Price <input checked="" type="checkbox"/> Official Closing Price <input checked="" type="checkbox"/> Opening Price <input checked="" type="checkbox"/> Price Reporting Amount <input checked="" type="checkbox"/> Price Reporting Quote Type <input checked="" type="checkbox"/> Price Reporting Unit <input checked="" type="checkbox"/> Reference Price <input checked="" type="checkbox"/> Valuation Price <p>Unselect all</p>	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Accrued Interest <input checked="" type="checkbox"/> Accrued Interest t + 3 Days <input checked="" type="checkbox"/> Accrued Interest t + n Days <input checked="" type="checkbox"/> Adjustment Factor <input checked="" type="checkbox"/> Aggregated Volume <input checked="" type="checkbox"/> Aggregated Volume Part <input checked="" type="checkbox"/> Duration to Maturity <input checked="" type="checkbox"/> Number of Trades <input checked="" type="checkbox"/> Open Interest <input checked="" type="checkbox"/> Price Quoted Currency <input checked="" type="checkbox"/> Price Trading Nominal <input checked="" type="checkbox"/> Price Trading Unit <input checked="" type="checkbox"/> Turnover <input checked="" type="checkbox"/> Volume <input checked="" type="checkbox"/> Volume Part <input checked="" type="checkbox"/> Yield To Maturity
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There is no limit to the volume of data which can be downloaded at Step1 (Code Search) and Step 2 (Data Extraction). You will automatically receive a link from EUROFIDAI to access your data once your request is processed.

Table 1 reports the name and the description of the variables available in the Data Extraction output.

Table 1: Historical pricing information

Table 1: Green bonds Valuation Price Variables	
Field Name	Field Description
greenbond_name	Name of the instrument.
eurofidai_code	Eurofidai code of the bond
quotation_date	Date of quotation.
valuation_price	The actual price.
valuation_price_type	Defines the type of price used for the Valuation Price. The type refer to a large set of price types such as trade, bid, ask, mid, reference, etc.
quoted_price_currency_iso	Currency of the quoted price.
best_ask_price	Best ask price.
best_bid_price	Best bid price.
last_ask_price	The last ask, in an order book, represents the top of the book view, known as last recorded ask.
last_bid_price	The last bid, in an order book, represents the top of the book view, known as last recorded bid.
opening_price	Official opening price or first recorded price of the trading day.
opening_price_type	Value type valid for the open price.
lowest_price	Lowest official intra-day price.
lowest-price_type	Value Type for the low price.
highest_price	Highest official intra-day price.
highest_price_type	Value Type for the high price.
last_price	Last recorded official price (traded or reference).
last_price_type	Value quote valid for the last price.
official_closing_price	The closing price is the price marked by the trading venue, which exists once for a given trading day for each instrument.
official_closing_price_type	Value Type of the Official Closing Price.
reference_price	Reference prices calculated by own market methodology and for instance, NAV, VWAP, settlement prices (futures, options,

	Euronext lending and borrowing securities...).
reference-price_type	Value Type of the reference price.
price_reporting_amount	Number of instruments to which the reported trading price refers.
price_reporting_unit	Indicates the unit of measurement in which the instrument quantity is expressed: per instrument or per nominal. For prices, the instrument trades in this unit.
price_reporting_quote_type	Indicates whether the amount is a percentage price or not.
maxredemptionprice	Repurchase or redemption price is the NAV (Net Asset Value) at which an open-ended scheme purchases or redeems its units from the unitholders. It may include exit load, if applicable.
maxsubscriptionprice	The NAV (Net Asset Value) a unitholder is charged while investing in an open-ended scheme is called subscription price (or sales price). It may include sales load, if applicable.
trading_volume	The actual value of price or volume.
aggregated_volume	The sum of volume over all market places where the instrument is traded.
part_of_volume	Off-exchange volume.
aggregated_part_of_volume	The sum of Off-exchange volume over all market places where the instrument is traded.
number_of_trades	Number of trades cumulated over a trading day.
number_of_trades_type	Value Type of the number of trades.
turnover	Total turnover reached during a trading session.
turnover_type	Value Type of the turnover.
open_interest	Number of unexercised contracts or options for the previous trading day.
adjustment_factor	Factor for the adjustment of historical prices after a corporate action.
fixing_price_six	Daily 1pm fixing price for currencies. Note: to get the 1pm fixing, request the SIX-Market Code 148 or 149 and schedule your delivery after 4pm (Swiss time). Before 4pm intraday prices are delivered.

accrued_interest	Accrued interest (Standard).
accrued_interest_t_plus_3_days	Accrued interest with settlement period trading session plus three working days.
accrued_interest_t_plus_n_days	Accrued interest with settlement trading session plus N working days.
trading_unit	The unit in which the instrument trades.
trading_nominal	Nominal trading applies to financial instruments without a par value, or where the par value or nominal value according to the issue conditions no longer is in use for trading.
duration_to_maturity	Average weighted remaining life of a bond calculated on the basis of the present value of the bond and all future cash flows - based on the remaining life to maturity.
yield_to_maturity	The internal rate of return (IRR, overall interest rate) earned by the investor who buys the bond today at the market price, assuming that the bond will be held until maturity, and that all coupon and principal payments will be made on schedule.

Important note: The number of pricing variables depends on the time period for a search.

- Before October 2024: The following variables are documented:
 - Valuation price
 - Last ask price
 - Last bid price
 - Opening price
 - Lowest price
 - Highest price
 - Last price
 - Quotation price currency
- After October 2024
 - All variables in Table 1

Step 3: Characteristics

In addition to historical pricing information, users can download the characteristics of individual green bonds. They are of two types:

- i) Green Bonds (GSS) characteristics

ii) Financial characteristics

Green, Social and Sustainable (GSS) Characteristics

MainStreet Partners provides a list of 123 variables that characterize each bond in the database.

We refer users to the Excel file **MainStreet Partners GSS Bonds Data Dictionary** for the complete list of variables and definitions.

Financial Characteristics

In addition to the historical prices and the Green Bonds characteristics, the Green Bonds database provides a list of general financial characteristics for each bond (See **Table 2**).

Table 2: Financial Characteristics

Table 2: Bond Issuance Characteristics	
Field Name	Field Description
eurofidai_code	Code assigned by Eurofidai to each bond
date_generation	Reference date at which Six Financial Information produced the data and provided the data to Eurofidai.
valoren_code	Official national instrument identifier assigned by the National Numbering Agency responsible for Switzerland: SIX Financial Information.
isin_code	International Securities Identification Number based on the national identification number and structured regarding ISO6166. The ISIN consists of 3 parts:1. Country code based on ISO3166-1 representing in most cases the country of issue 2. Nine character long national identification code (filled with leading zeros if needed 3.Single character check digit based on the Luhn algorithm)
issue_price	Price at which newly issued securities are sold.
issue_price_quotation_type	Indicates if the total amount is specified as an amount or as a percentage or if it is stated per a specific number of instruments/units.
issue_price_quotation_type_code	Code for the Issue Price Quotation Type

amortization_type	Represents the different ways in which planned or effective amortization payments are/were executed.
amortization_type_code	Code corresponding to the amortization type.
current_coupon_rate	Coupon rate (nominal interest rate) of the bond (in percentage).
current_coupon_type	Characteristics of an interest payment made for an instrument. Interest payments are regular payments, their amounts are either fixed or depend on certain reference sizes such as reference interest rates.
current_coupon_type_code	Code corresponding to the type of coupon.
coupon_frequency_time_unit	Unit of time used for the coupon distribution frequency.
coupon_frequency_number_time_unit	Frequency of the coupon distribution, expressed in the unit of time indicated in Coupon Frequency - Time Unit.
coupon_frequency_number_time_unit_code	Code corresponding to the frequency of the coupon distribution
coupon_capitalization	Indicates if coupons are partially or fully capitalized.
first_coupon_date	Date (Y/M/D) at which the first coupon is paid to the investors.
coupon_currency	Currency of the coupon or the nominal value of the security.
coupon_currency_code	Code corresponding to the coupon currency
callable	Indicates whether the debtor (issuer) is free to terminate. This relates to the redemption of part or the whole of the issue.
convertible	Indicates if investors (creditors) can convert the bond.
puttable	Indicates if the creditor (holder of the instrument) is free to terminate. This relates to redemption of the whole tranche or issue.
inflation_protected	Indicates if the bond is protected against inflation.
seniority	Indicates the rank compared with other securities of the same type issued by the same issuer in the case of liquidation.
seniority_code	Code corresponding to the seniority of the bond