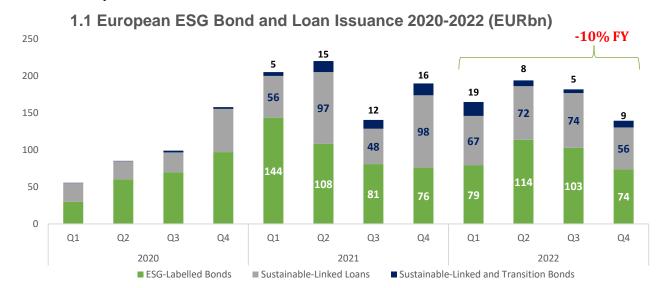


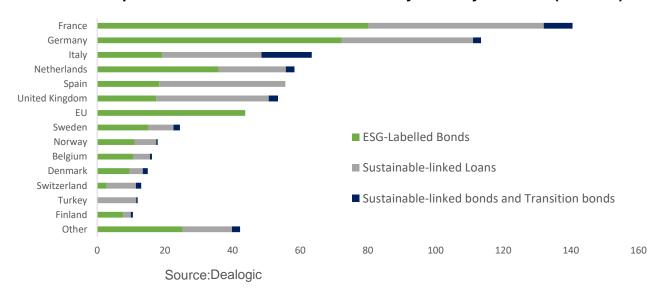
# afme/ Contents Finance for Europe

Key Findings	3
Regulatory Update	8
ESG Bond and Loan Issuance	11
ESG Bonds Outstanding	19
Carbon Pricing, Emissions and Trading	23
Fund Management	28
ESG Bond Trading	31
Valuations	34
Methodology and Criteria	41

# afme/ Key findings



### 1.2 European ESG Bond and Loan Issuance by Country: EURbn (2022 FY)



In Q4'22, European ESG bond and loan issuance accumulated a total of €155bn in proceeds, bringing the total annual issued amount to €680bn in 2022.

ESG bonds and loans include ESG-labelled bonds (proceeds-based), sustainable-linked bonds, transition bonds, green-linked loans and sustainable-linked loans.

The total supply of ESG bond and loan issuance declined 10% FY, predominantly driven by lower social bond issuance.

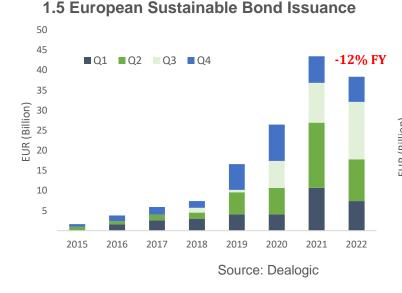
French issuers continued to lead in total ESG bond and loan issuance, followed by German issuers.

ESG securitisation issuance declined from €8bn in 2021 to €1.2bn in 2022.

# afme/ Key findings

### 1.3 European Green Bond Issuance

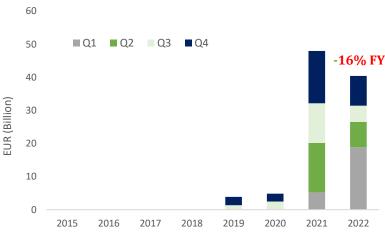




### 1.4 European Social Bond Issuance



### 1.6 European Sustainable-linked and transition Bond Issuance



ESG-labelled bond issuance which comprises Green, Social and Sustainable bonds, accumulated €68bn in proceeds in Q4 2022 (€369bn FY).

Green bond issuance stands out as the ESG sub asset class that grew the most during the year, accumulating an increase of 6% FY, while a decline was visible in Social and Sustainable bond issuance. The increase in green bond issuance has been driven by the corporate sector, with a 15% FY increase. The sovereign sector has continued to participate in the green bond market, with Austria and Denmark originating inaugural green sovereign bonds during the year and the continuation of green bond programmes by the EU and some European sovereigns.

Social bond issuance accumulated a decline of 40% in 2022FY. The strong participation of the French agency CADES did not offset the contraction in EU Commission Social bond issuance.

Sustainable bond issuance declined 12%FY, which is of similar proportion than the wider market contraction in non-ESG bonds during the year.

Sustainable-linked bond issuance saw a quarterly increase in Q4'22 after a slowdown in the previous two quarters. Despite the record Q1'22 issuance, total FY issuance declined 16% as the subsequent quarters recorded significantly lower issuance compared to 2021.



### Top single ESG bond issues by amount in 2022 FY

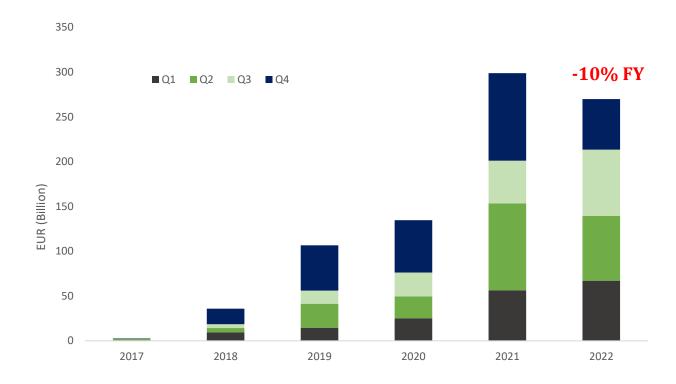
Environmental	Amount (EUR)	Maturity date	ISIN
European Union	6.0	04-Feb-43	EU000A3K4DG1
Italy	6.0	30-Apr-35	IT0005508590
European Union	6.0	04-Feb-33	EU000A3K4DW8
United Kingdom	5.0	31-Jul-53	GB00BM8Z2V59
European Union	5.0	04-Feb-48	EU000A3K4DM9
State of the Netherlands	5.0	15-Jan-40	NL0013552060
Social	Amount EUR (bn)	Maturity date	ISIN
European Union	6.5	04-Dec-37	EU000A3K4D09
CADES	6.0	19-Jan-32	FR0014007RB1
CADES	5.0	25-May-32	FR001400A3H2
CADES	5.0	25-Nov-32	FR001400CVE3
CADES	5.0	25-May-27	FR001400DZI3
CADES	4.1	02-Nov-25	US12802D2K12 XS2551365773
	A (ELID)	Maturity date	ISIN
Sustainability	Amount (EUR)	iviaturity date	101111
Sustainability  European Investment Bank - EIB	4.0	15-Nov-27	US298785JT41
European Investment Bank -			-
European Investment Bank - EIB	4.0	15-Nov-27	US298785JT41
European Investment Bank - EIB North Rhine Westphalia	2.0	15-Nov-27 15-Jun-32	US298785JT41 DE000NRW0NF8
European Investment Bank - EIB  North Rhine Westphalia  BNG  Agence Francaise de	4.0 2.0 1.8	15-Nov-27 15-Jun-32 12-Jan-32	US298785JT41  DE000NRW0NF8  XS2430965538

During 2022, the sovereign sector originated the largest single green issues with deal amounts of €6.5bn to €5bn.

The French Caisse d'Amortissement de la Dette Sociale (CADES) continues to consolidate as a market leader for social bonds.



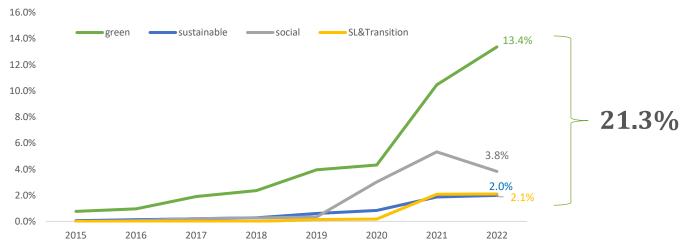
### 1.7 European sustainability-linked and Green-linked Loan Issuance 2017-2022



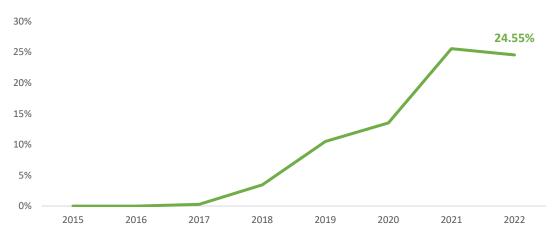
Sustainability-linked and green-linked loan origination accumulated a decline of 10% in 2022FY, with €270bn in proceeds during the year.

# afme/ Key findings

### 1.8 European ESG Bond Issuance as % of Total Bond Issuance



1.9 European Sustainability Linked and Green Loan Issuance as of Syndicated Loan Origination



Source: Dealogic

\*ESG includes Environmental, Social and Sustainable

ESG bond issuance, including ESG-labelled, sustainable-linked and transition bonds, represented 21.3% of total European bond issuance during 2022 FY, a higher proportion from 19.9% in 2021 FY but up from 20.8% in Q3'22. This was comprised of 13.4% green bonds, 3.8% social bonds, 2.0% sustainable bonds, 2.1% of sustainable-linked and transition bonds [SeeChart1.8]

Sustainability-linked and Green-linked loan issuance represented 24.55% of total European syndicated loan origination during 2022FY, down from 26% in FY 2021 [SeeChart1.9].



# Regulatory Update



### Regulatory/Supervisory Snapshot – Sustainable Finance\*



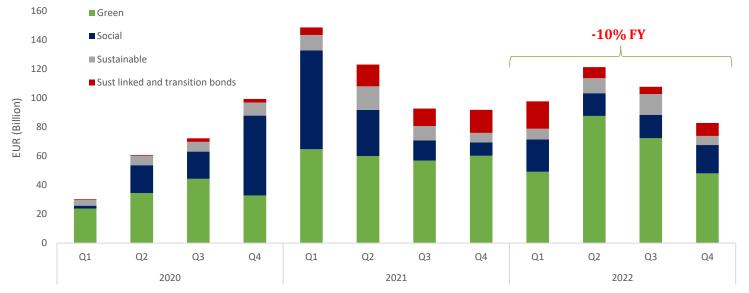


## ESG Bond and Loan Issuance

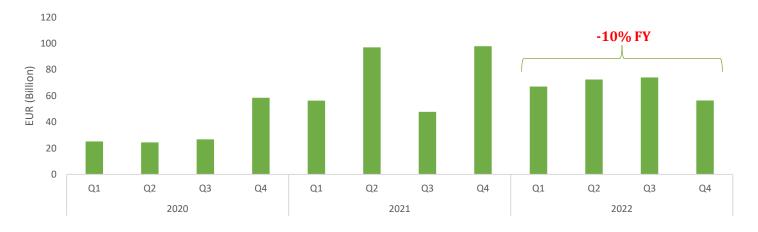


### **ESG Bond and Loan Issuance**

2.1 European ESG, sustainable linked, and transition bond issuance



2.2 European sustainability linked and Green linked Loan Issuance



Source: Dealogic

In Q4 2022 ESG, sustainable-linked and transition bond issuance accumulated €410bn in proceeds, with a 10% FY decline.

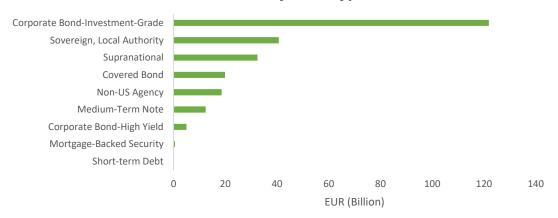
Although Q2'22 and Q3'22 were correspondingly the highest and second-highest quarterly green bond issuance amounts on records, lower social bond issuance negatively contributed to lower ESG supply during the year.

The EU continued as the world's leading region for Green and Social bond issuance, while North America is rapidly expanding its presence in sustainable-linked and green-linked syndicated lending.

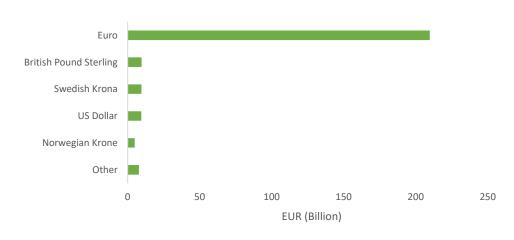
ESG linked loans decreased 10% FY compared to 2021, accumulating a total of €270bn in proceeds.

### afme/ Green Bond Issuance Finance for Europe

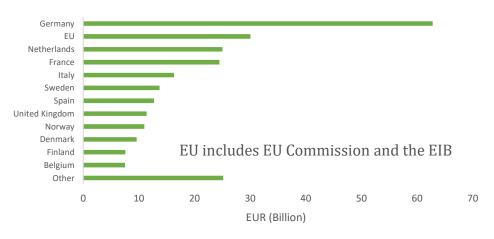
### 2.3 Green Bond Issuance by Deal Type 2022 FY



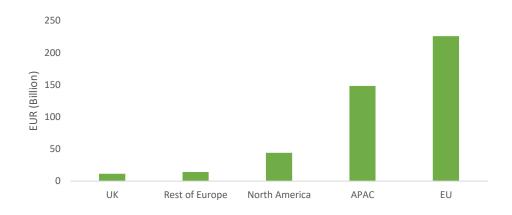
### 2.5 Green Bond issuance by Currency 2022 FY



### 2.4 Green Bond Issuance by Country (top 10) 2022 FY

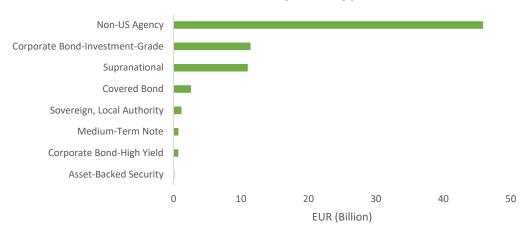


### 2.6 Green Bond Issuance Global Comparison 2022 FY

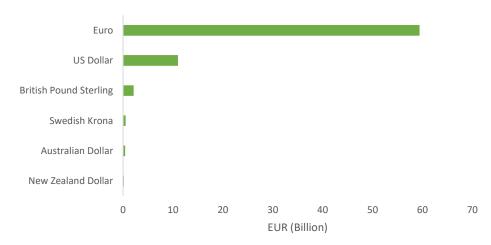


# afme/ Social Bond Issuance

### 2.7 Social Bond Issuance by Deal type: 2022 FY

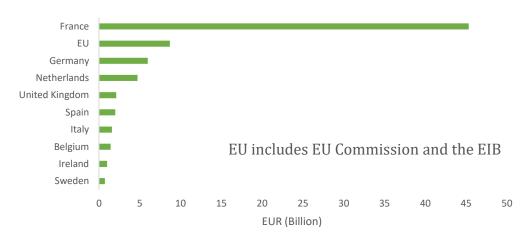


### 2.9 Social Bond Issuance by Currency: 2022 FY

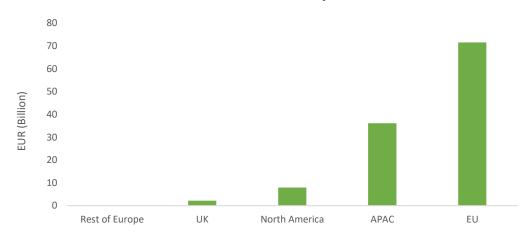


Source: Dealogic

### 2.8 Social Bond Issuance by Country: 2022 FY



### 2.10 Social Bond Issuance Global Comparison: 2022 FY





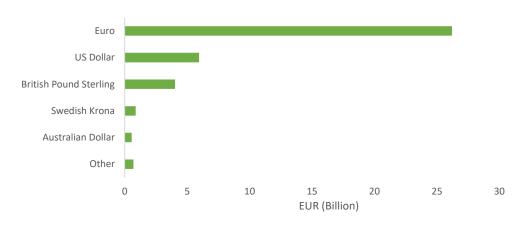
### **Sustainable Bond Issuance**

Proceeds of Sustainable Bonds are allocated between green projects and social projects

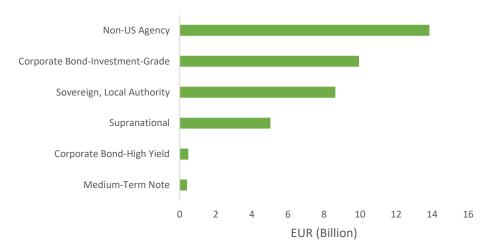
2.11 Sustainable Bond Issuance by Country: 2022 FY



2.12 Sustainable Bond Issuance by Currency: 2022 FY

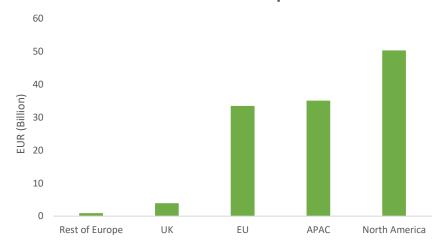


2.13 Sustainable Bond Issuance by Deal Type: 2022 FY



Source: Dealogic

2.14 Sustainable Bond Issuance Global Comparison: 2022 FY

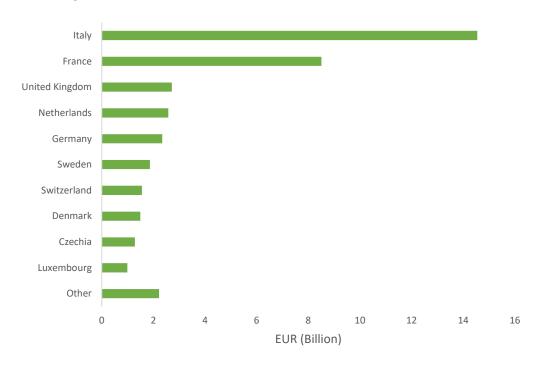




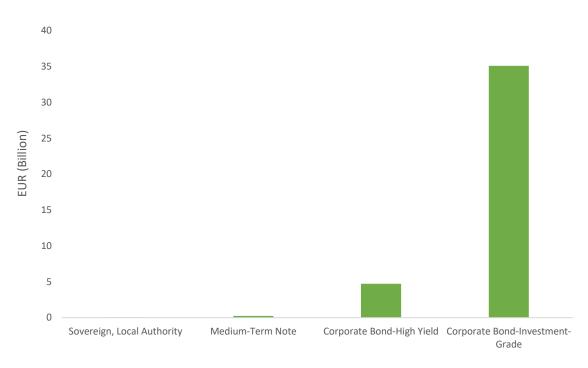
### Sustainable-linked and Transition Bond Issuance

Sustainable-linked bonds are performance-based bonds where payment is contingent on pre-determined KPIs which are aligned with sustainability strategies. Transition bonds are brown bonds issued by carbon intensive companies with the intention of starting to green their operations.

2.15 European Sustainable-linked Bonds Issuance by Country: 2022 FY



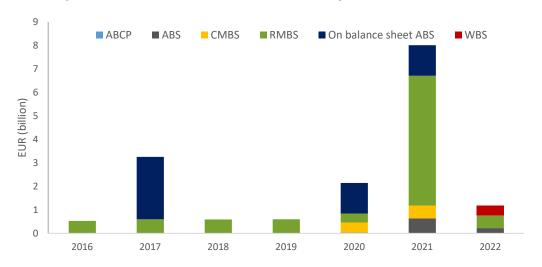
2.16 European Sustainable-linked Bond Issuance by Deal Type: 2022 FY



Source: Dealogic

## afme/ ESG Securitisation Issuance

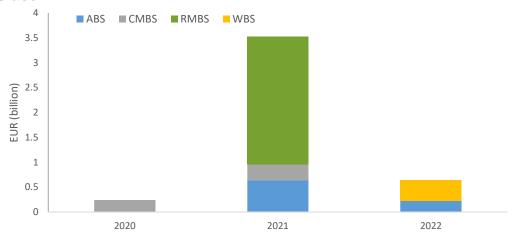
### 2.19 European ESG Securitisation Issuance by Asset Class

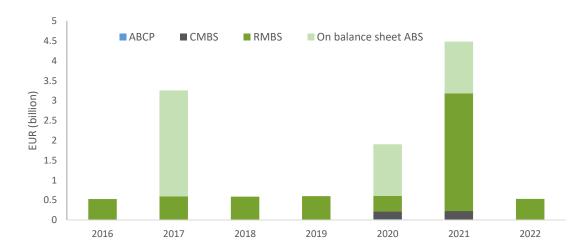


2.20 European ESG Securitisation Issuance by Country



2.21 European Social and Sustainable Securitisation Issuance by Asset 2.22 European Green Securitisation Issuance by Asset Class Class

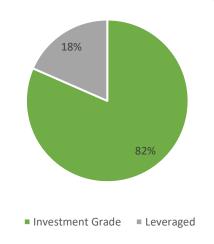




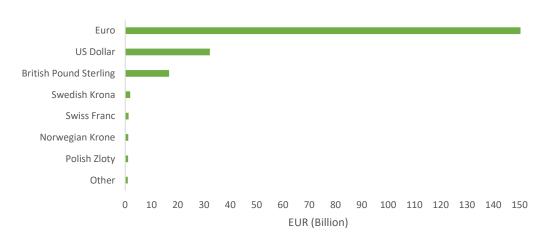
Source: Climate Bond Initiative, Credit Agricole, S&P, and European Data Warehouse

### afme/ ESG linked and Green Loan Issuance

### 2.23 ESG linked and Green Loan Issuance by Deal Type: 2022 FY

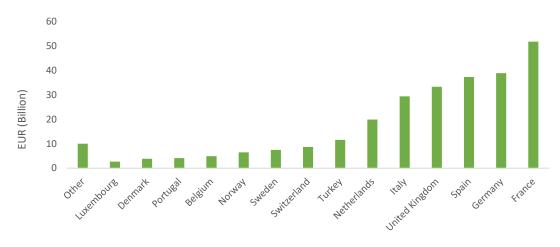


### 2.25 ESG linked and Green Loan Issuance by Currency: 2022 FY

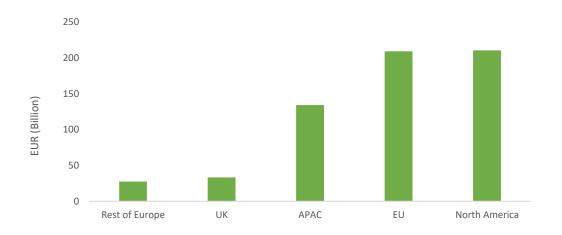


Source: Dealogic

2.24 ESG linked and Green Loan Issuance by Country: 2022 FY



### 2.26 ESG linked and Green Loan Issuance Global Comparison 2022 FY





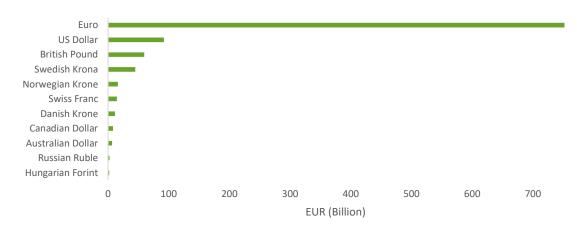
# ESG Bonds Outstanding

### afme/Green Bond Outstanding Finance for Europe

### 3.1 Evolution of European Green Bond Outstanding

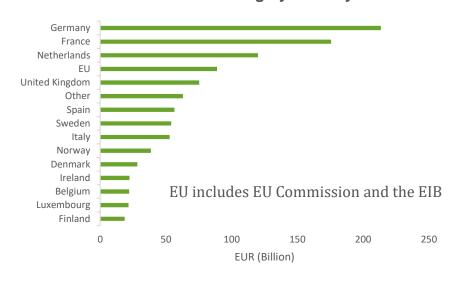


### 3.3 Outstanding Amount by Currency

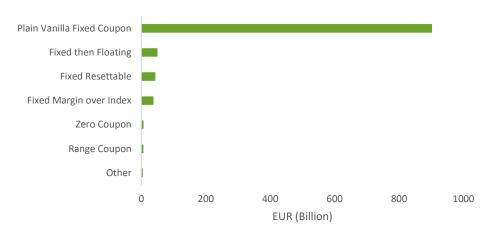


Source: Refinitiv Eikon

### 3.2 Green Bonds outstanding by Country

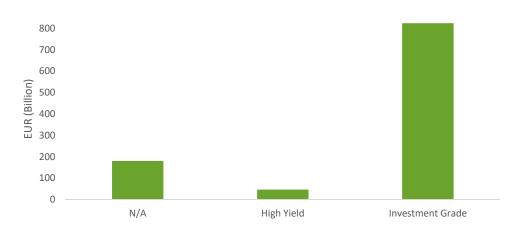


### 3.4 Outstanding Amount by Coupon Type

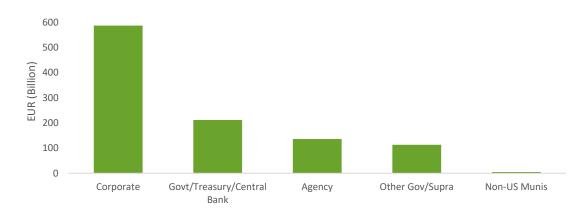


### afme/ Green Bond Outstanding Finance for Europe

### 3.5 Outstanding Amount by Bond Grade

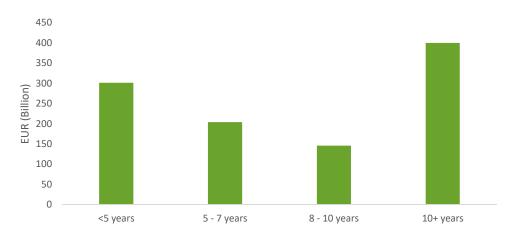


### 3.7 Outstanding Amount by Asset Class

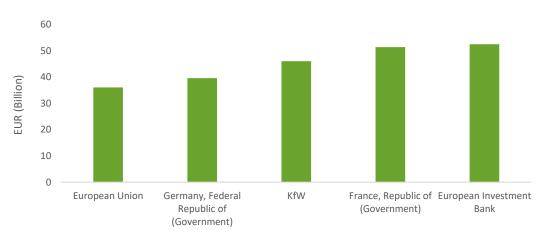


Source: Refinitiv Eikon

### 3.6 Outstanding Amount by Years to Maturity



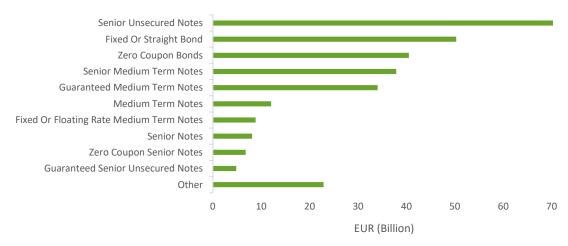
### 3.8 Outstanding by Top 5 Issuers



### afme/ Social Bond Outstanding Finance for Europe

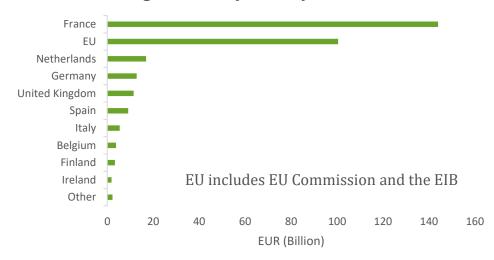


### 3.11 Outstanding Amount by Security Type

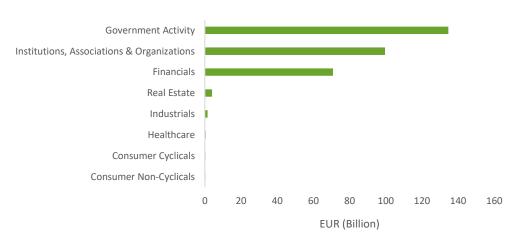


Source: Refinitiv Eikon

### 3.10 Outstanding Amount by Country



### 3.12 Outstanding Amount Issuer Economic Sector Type





# Carbon pricing, emissions and trading

### afme/ Carbon Market Prices Finance for Europe

### 4.1 Comparison of Global ETS Allowance Prices



Carbon prices have increased during Q4'22 in the EU and declined in the UK and New Zealand.

The European Union Allowance (EuA) price per metric tonne finalised Q4'22 at €81/Tn, from €80/Tn at the end of 2021.

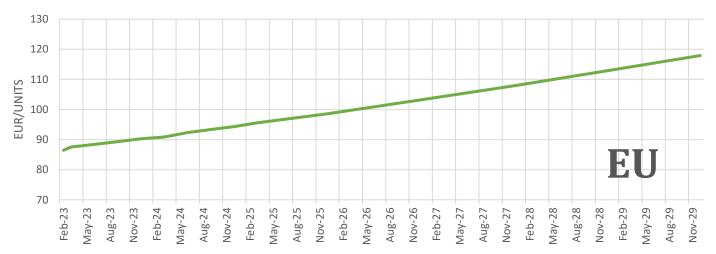
During the first months of Q1'23, EuA spot prices have surpassed €100/Tn.

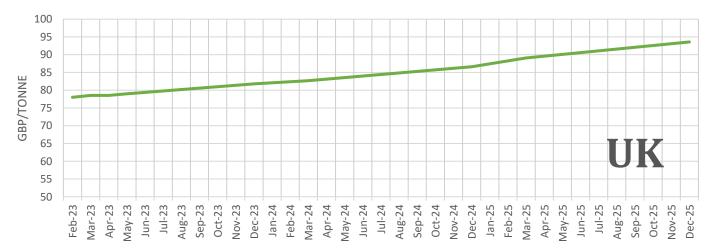
The Shanghai ETS price is the lowest among the main global ETS systems with a price per metric tonne of CNY57 as of Feb 2023 (€7.8/ Tonne) with minimal fluctuation during the year.

Prices may not be directly comparable across systems and vary greatly, given different institutional settings and differences in ETS design.

# afme/ Carbon Market Future Prices

### 4.2 Forward curve: European Union Allowance (EUA) and UK Electronic Energy Future Chain Contract





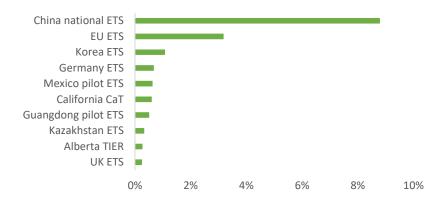
Source: Refinitiv Eikon

EU and UK forward curves anticipate price increases in carbon prices for the medium- and long-term.

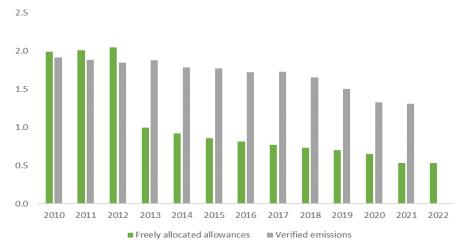


# Measurement of Carbon Emissions

### 4.3 Share of annual global GHG emissions (2022 FY)



#### 4.4 EU 27 + UK Allowance Vs verified Emissions



Source: European Environment Agency, The World Bank

As of 2022, China had the largest emissions trading scheme, with a share of 8.80% of annual GHG emissions.

The European Union Emissions Trading System (EUETS) remains the second largest green house gas ETS globally, with a share of 3.20%.

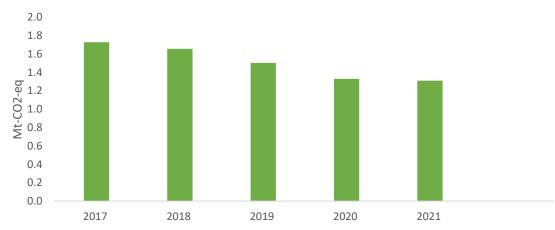
The third largest ETS globally is the Korea ETS, with a share of 1.10%.

EU+UK verified emissions have continuously decreased since 2013.

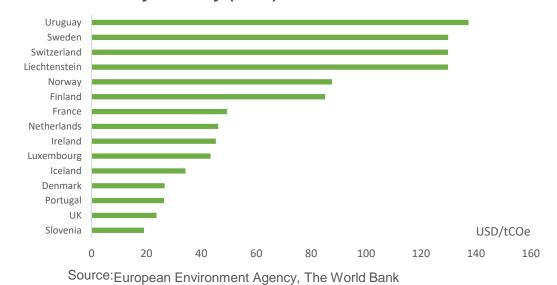


# Carbon Pricing – Allowance & Tax

### 4.5 Allowances auctioned or sold (EUAs and EUAAs)



### 4.6 Carbon Tax by Country (2022)



The EU ETS involves a cap being set on the total amount of certain greenhouse gases that can bee mitted by companies covered by the system. The cap is reduced over times o that total emissions fall.

Within the cap, companies receive or buy emission allowances, which they can trade as needed. The limit on the total number of allowances available ensures that they have a value.

Every year a company must surrender enough allowances to cover all its emissions. If a company reduces its emissions, it can keep the spare allowances to cover its future needs or sell them to another company that is short of allowances.

Total allocated allowances (EUA and EUAA) continued to decreased from 1349.73 MtCO2-eq in 2020 to 1004.47 MtCO2-eq in 2021.

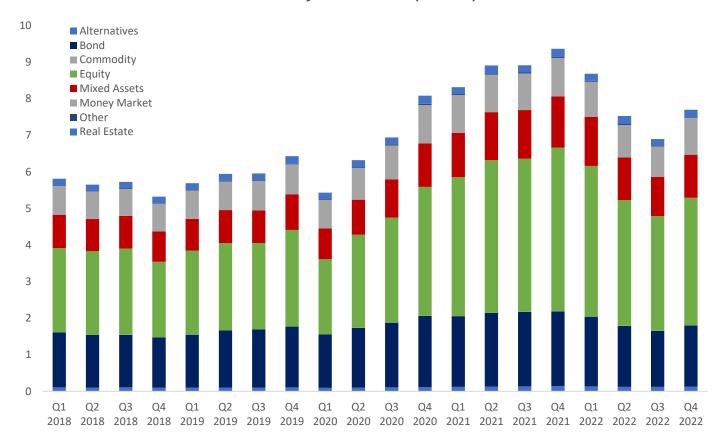
Carbon Taxes are another method of carbon pricing. Uruguay currently has the highest carbon tax globally at 137.3 USD/tCO2e. The country with second highest carbon tax is Sweden, at 129.89 USD/tCO2e.



# Fund Management

# afme/Global ESG funds

### 5.1 Global ESG Funds by Asset Class (USD tn)



Global ESG Funds rose during Q4'22, after a sequence of quarterly declines during the first three quarters of the year.

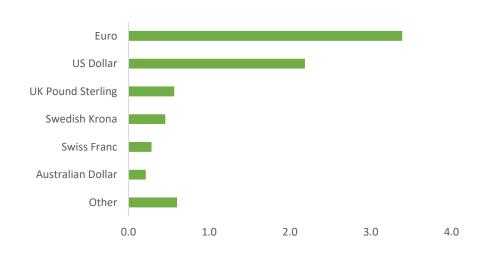
Funds with an ESG mandate (including Mutual Funds and ETFs) totalled \$7.7tn as of Q4'22, a 12% increase from Q3'22 but a 18% decrease from Q4'21 (\$9.4tn).

Almost all asset classes rose during the fourth quarter with the largest quarterly increase in Money Market (+21%) and Real Estate (+17%).

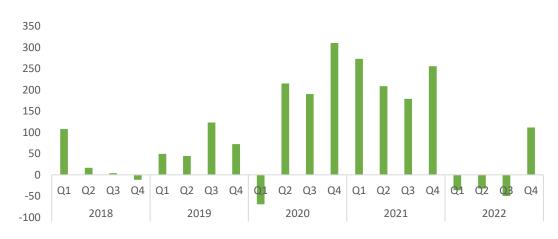
The FY contraction in ESG funds was driven predominantly by lower valuations. As observed in chart 5.4, the \$130bn inflow in Q4'22 was offset by outflows observed earlier in the year accumulating total outflows for \$1bn during 2022.

# afme/ Size of Global ESG Funds

### 5.2 Global ESG Funds by currency base (USD tn)

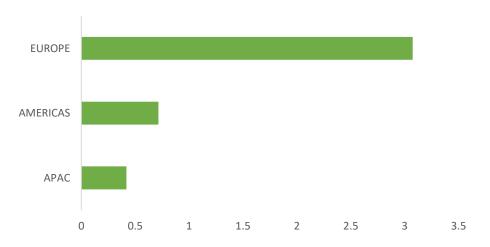


### 5.4 Global ESG fund flows (\$bn)



Source: Lipper

### 5.3 Global ESG Funds by geographical location (USD tn)



### 5.5 European ESG fund flows (\$bn)

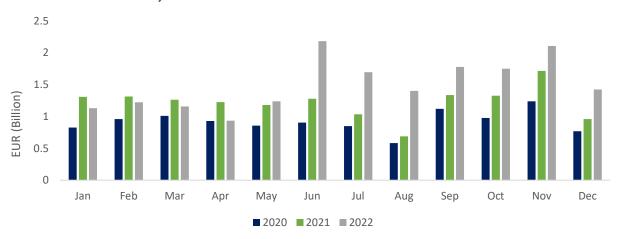




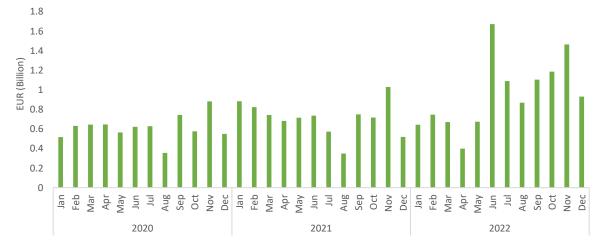
# ESG Bond Trading

# afme/ ESG Bond Trading Volumes

6.1 European ESG Bond Average Daily Trading Volumes (all issuers)

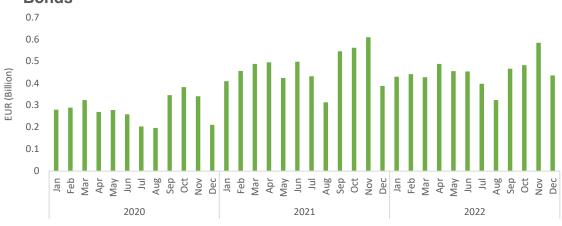


6.3 Average Daily Trading Volumes: European ESG Government, Agency, Supranational, and Sovereign Bonds

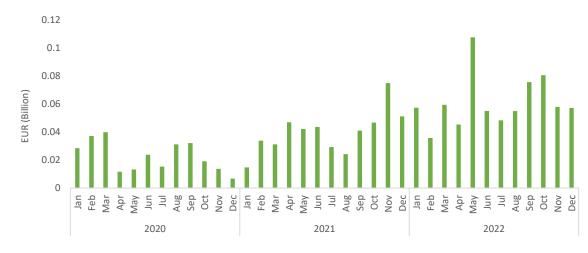


Source: Trax

**6.2 Average Daily Trading Volumes: European ESG Corporate Bonds** 

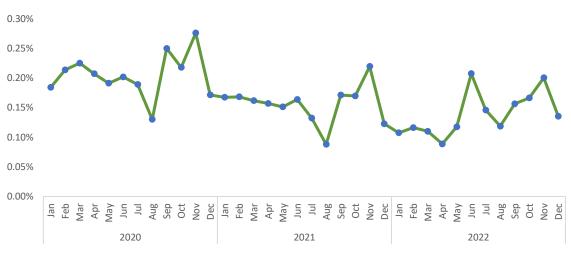


6.4 Average Daily Trading Volumes: European ESG ABS and Covered Bonds

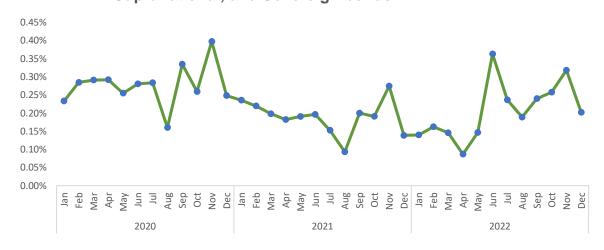


### afme/ ESG Bond Turnover Ratios Finance for Europe

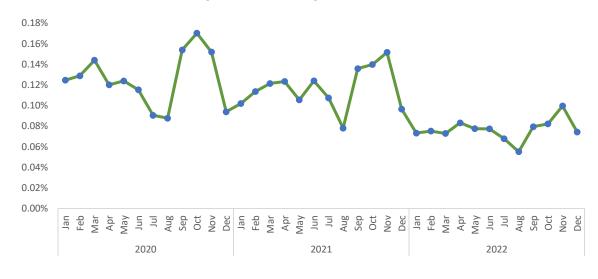
6.5 European ESG Bond Turnover Ratio (all issuers)



6.7 Turnover Ratio: European ESG Government, Agency, Supranational, and Sovereign bonds



### 6.6 Turnover Ratio: European ESG Corporate Bonds



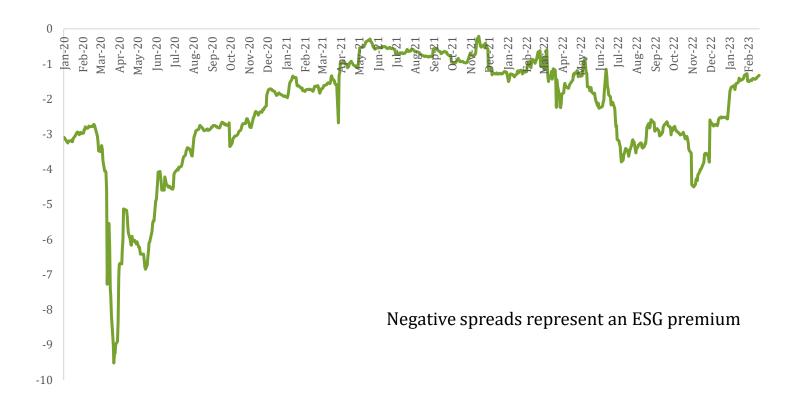
<sup>\*</sup> Turnover Ratio has been calculated by dividing the outstanding amount by the average daily trading volume



## Valuations

# afme/ ESG premia

### 7.1 Spreads (OAS) of EUR-denominated corporate ESG bonds against non-ESG corporate benchmarks (bps)



\* Spread between EUR-denominated ESG corporate bonds and EUR corporate bonds

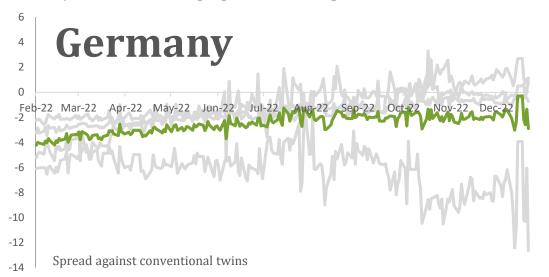
Spreads of corporate ESG bonds against non-sustainable benchmarks widened in the second half of the year from c1bps at the start of the year November 2022, before returning c1bps in early 2023.

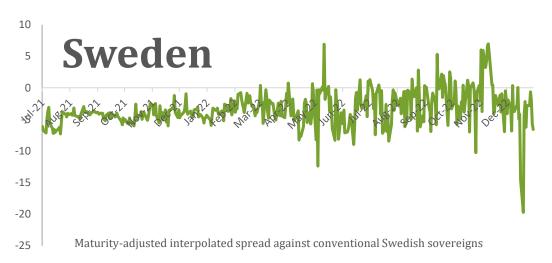
As shown on pages 36 and 37, the green premia (i.e. greenium) for sovereign bonds varies by issuer and by instrument, suggesting that addition sustainability features of the sovereign benchmarks, other technical factors such as liquidity may influence yield premia against conventional bonds.

As shown on chart 7.2, the greenium spreads of French, Dutch and some of the German green bond references have widened by between 2 to 4 bps during the year.

# afme/ Sovereign green premia

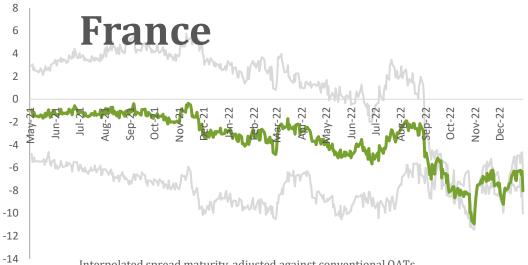
7.2 Spreads of sovereign green bonds against conventional reference (bps)





Source: Refinitiv Eikon and Datastream

### Negative spreads represent a green premium

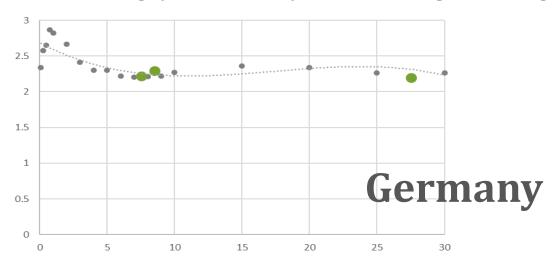


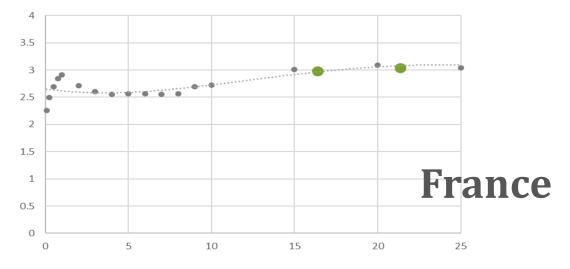
Interpolated spread maturity-adjusted against conventional OATs

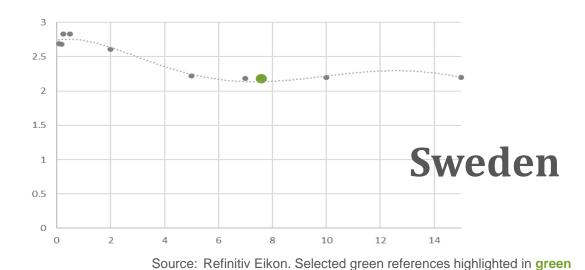


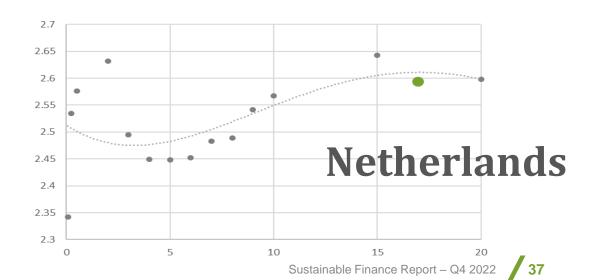
# afme/ Sovereign green premia

### 7.3 Sovereign yield curves and yields for selected green sovereign bonds. 9 Feb 2022









### afme/ ESG Bond Spreads





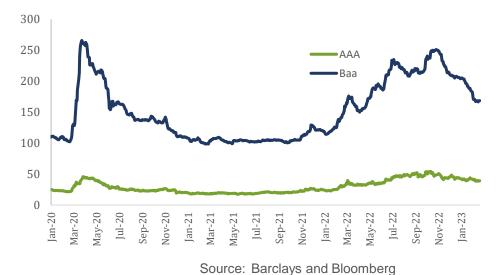
Source: Barclays and Bloomberg

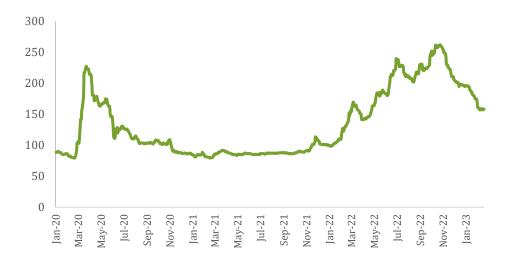
# afme/ Green Bond Spreads

### 7.6 Green bond spreads by currency (OAS, bps)



7.8 Global Green bond spreads by credit rating (bps)





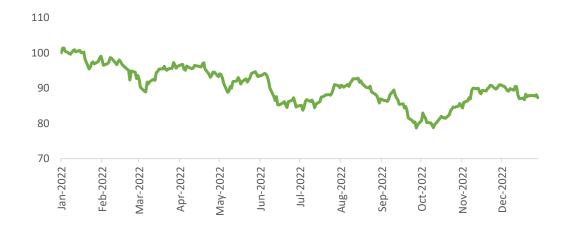
7.7 EUR Corporate green bond spread (OAS, bps)

### afme/ ESG Equity Indices Finance for Europe

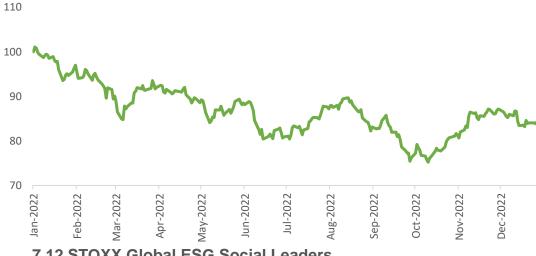
7.9 MSCI Europe SRI Net Index EUR and EUR STOXX 600 (1 Jan 2022=100)



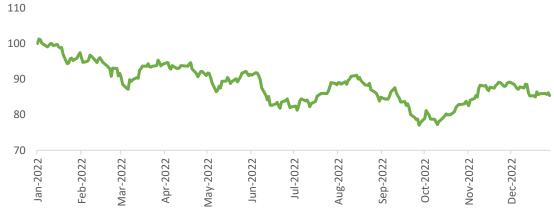
7.11 STOXX Global ESG Governance Leaders



7.10 STOXX Global ESG Environmental Leaders



7.12 STOXX Global ESG Social Leaders



# afme/ Methodology and Criteria

<u>Green Bonds:</u> Green bonds fund projects that have positive environmental and/or climate benefits. Most of the green bonds issued are green "use of proceeds" or asset-linked bonds. Proceeds from these bonds are earmarked for green projects but are backed by the issuer's entire balance sheet. There are also green "use of proceeds" revenue bonds, green project bonds and green securitized bonds. The Green Bond Principles (GBP) are voluntary process guidelines that recommend transparency and disclosure and promote integrity in the development of the Green Bond market by clarifying the approach for issuance of a Green Bond.

<u>Carbon Pricing:</u> Carbon pricing is an instrument that captures the external costs of greenhouse gas (GHG) emissions—the costs of emissions that the public pays for, such as damage to crops, health care costs from heat waves and droughts, and loss of property from flooding and sea level rise—and ties them to their sources through a price, usually in the form of a price on the carbon dioxide (CO<sub>2</sub>) emitted. Carbon pricing can take the form of a carbon tax or fee, or a cap-and-trade system that depends on government allotments or permits.

<u>ESG:</u> ESG stands for Environmental Social and Governance. It refers to the three key factors when measuring the sustainability and ethical impact of an investment in a business or company

<u>ETS:</u> Emissions trading system is a market-based approach to controlling pollution by providing economic incentives for reducing the emissions of pollutants. The EU emissions trading system (EU ETS) is a cornerstone of the European Union's policy to combat climate change and its key tool for reducing industrial greenhouse gas emissions cost-effectively

<u>EUA</u>: A European Union allowance (EUA) is the official name for Europe's emission allowances, which in 2008 was defined as the official Kyoto allowance for countries in the EU. One EUA entitles the holder to emit one ton of carbon dioxide or carbon-equivalent greenhouse gas.

<u>Europe:</u> Countries included: Austria, Belgium, Bulgaria, Croatia, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, France, German Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Switzerland, United Kingdom.

<u>Social Bonds</u>: Social Bonds are bonds' whose proceeds are used to raise funds for new and existing projects that tackle a specific social issue and/or seek to achieve positive social outcomes. The reference framework for issuance of Social Bonds is the Social Bond Principles (SBP). The SBP promote integrity in the Social Bond market through guidelines that recommend transparency, disclosure and reporting Social objectives may include, but are not limited to affordable housing, affordable basic infrastructure, employment generation and sustainable food systems.

**SRI**: Socially responsible investing or SRI, is a strategy that emphasizes not only the financial gains from an investment but also ethical or social change.

Sustainable Bonds: Proceeds of Sustainable Bonds are split between green projects and social projects.

### Contacts

#### Research

#### Julio Suarez

Director, Research Julio.Suarez@afme.eu +32 2 883 55 50

#### **Kevin Mushi**

Graduate, Research Kevin.Mushi@afme.eu +32 2 883 55 41

#### Sustainable Finance

#### Oliver Moullin

Managing Director, Sustainable Finance Oliver.Moullin@afme.eu +44 (0)20 3828 2717

#### Giorgio Botta

Senior Associate, Sustainable Finance Giorgio.Botta@afme.eu +44 (0)20 3828 2736

#### **Pablo Portugal**

Managing Director, Advocacy Pablo.Portugal@afme.eu +32 (0) 479 027 993

#### Carlo De Giacomo

Manager, Advocacy Carlo.DeGiacomo@afme.eu +32 (0) 478 09 51 98

#### **London Office**

39th Floor 25 Canada Square London E14 5LQ United Kingdom +44 (0)20 3828 2700

#### **Brussels Office**

Rue de la Loi, 82 1040 Brussels Belgium +32 (0)2 788 3971

#### Frankfurt Office

Neue Mainzer Straße 75, 60311 Frankfurt am Main, Germany +49 69 153 258 963

### Disclaimer and Methodology

Your receipt of this document is subject to paragraphs 3, 4, 5, 9, 10, 11 and 13 of the Terms of Use which are applicable to AFME's website (available at <a href="https://www.afme.eu/About-Us/Terms-of-use">https://www.afme.eu/About-Us/Terms-of-use</a>) and, for the purposes of such Terms of Use, this document shall be considered a "Material" (regardless of whether you have received or accessed it via AFME's website or otherwise).

AFME is registered on the EU Transparency Register, registration number 65110063986-76







