

DLT-Based Capital Market Report

Size and Growth of the Global
DLT Wholesale Market
2024



Scope and Key Findings	3
Global DLT Fixed Income Market	8
Secondary Market and Valuations	18
European DLT Fixed Income Market	22
Global DLT Repo Transactions	32
Global Tokenised Funds	35
Other Tokenised Assets	40
Glossary	42

The use of Distributed Ledger Technology (DLT) in wholesale capital markets is evolving rapidly, yet consistent and reliable data remains scarce.

This report is the first of a semi-annual series which aims to bridge a data gap by offering timely insights into the evolution of the Global DLT market.

Developed by AFME, this report provides a comprehensive overview of primary DLT fixed income market, secondary markets and valuations, repo transactions, and offers an overview on the size of the tokenised fund industry and other tokenised assets.

We have not covered in the report other important capital markets use cases such as record-keeping and workflow undertaken on blockchain of syndicated loan transactions.

Although the adoption of DLT in capital markets is currently limited relative to the size of the global industry, its recent rapid growth and the emergence of new market participants and product offering present substantial opportunities for future expansion.

The data reflects the market evolution as of December 2024.

Future editions will continue to provide updates on a semi-annual basis.

Key numbers

€3bn

in Global DLT fixed income
issuance in 2024FY

\$50bn+

in average daily Global DLT
repo transactions

€2bn

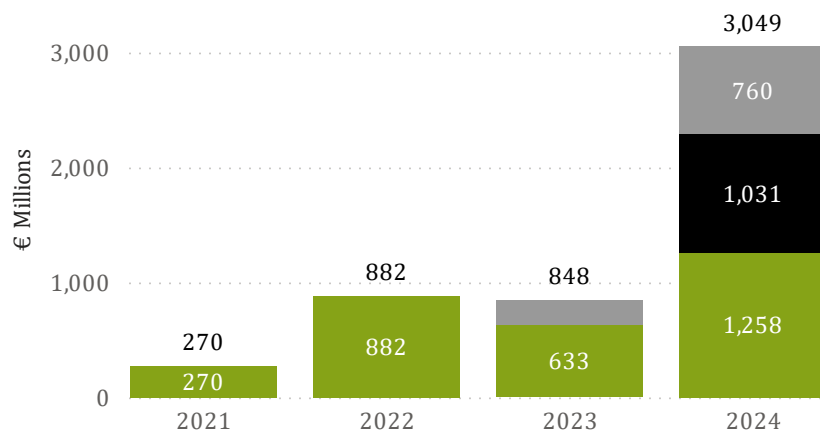
in Global Tokenised funds
assets under management

€30bn+

in Other Tokenised Assets
including ABS, Equity, Private
Credit and Real Estate

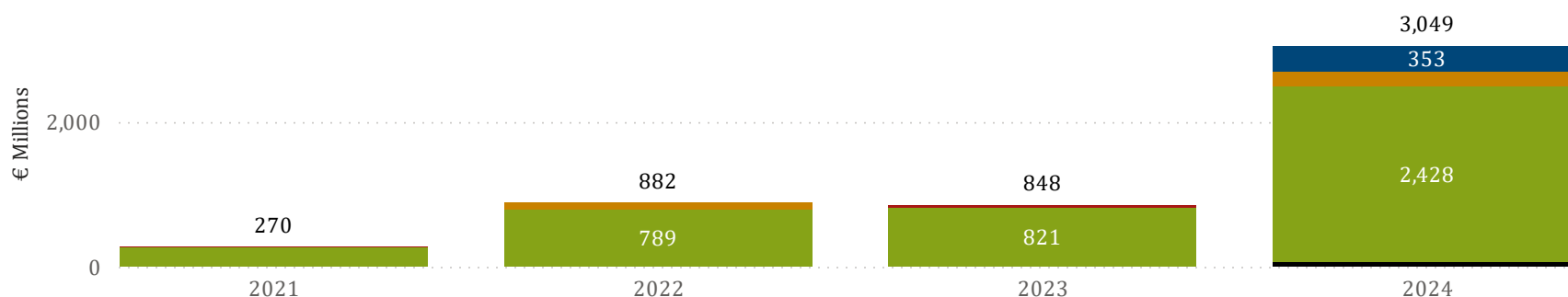
1.1 Global DLT Fixed Income Issuance

● Rest ● ECB trials ● SNB trials



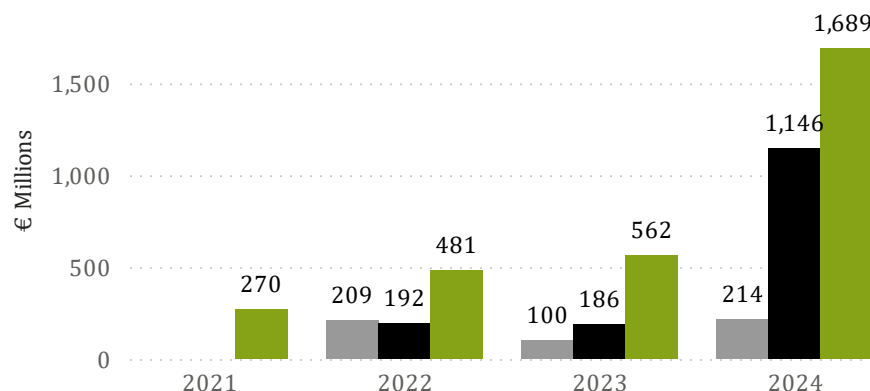
1.3 Global DLT Fixed Income Issuance by Instrument

● Bill ● Bond ● Commercial Paper ● Covered Bond ● Structured Instrument



1.2 Global DLT Fixed Income Bond Issuance by Region of Issuer

● Americas ● Asia ● Europe



ECB and SNB DLT Trials led the strong DLT fixed income issuance in 2024

In 2024, **€3bn of DLT fixed income instruments** were issued globally, a 260% increase from €848mn issued in 2023.

Fixed income issuance includes bonds, bills, commercial paper, covered bonds, and structured notes.

Issuers based in Europe and Asia led by issued amount in 2024, originating €1.7bn and €1.1bn respectively.

The European issued amount was strongly led by the **DLT trials* undertaken by the ECB and the Swiss National Bank (SNB)**, accumulating jointly a total of €1.8bn in 2024**.

A total of €483mn was issued in the form of green DLT bonds, representing 16% of the global DLT fixed income amount issued in 2024.

By platform of issuance, in 2024 **SIX Digital Exchange (SDX)** and **HSBC Orion** led by market share followed by D-FMI and SWIAT.

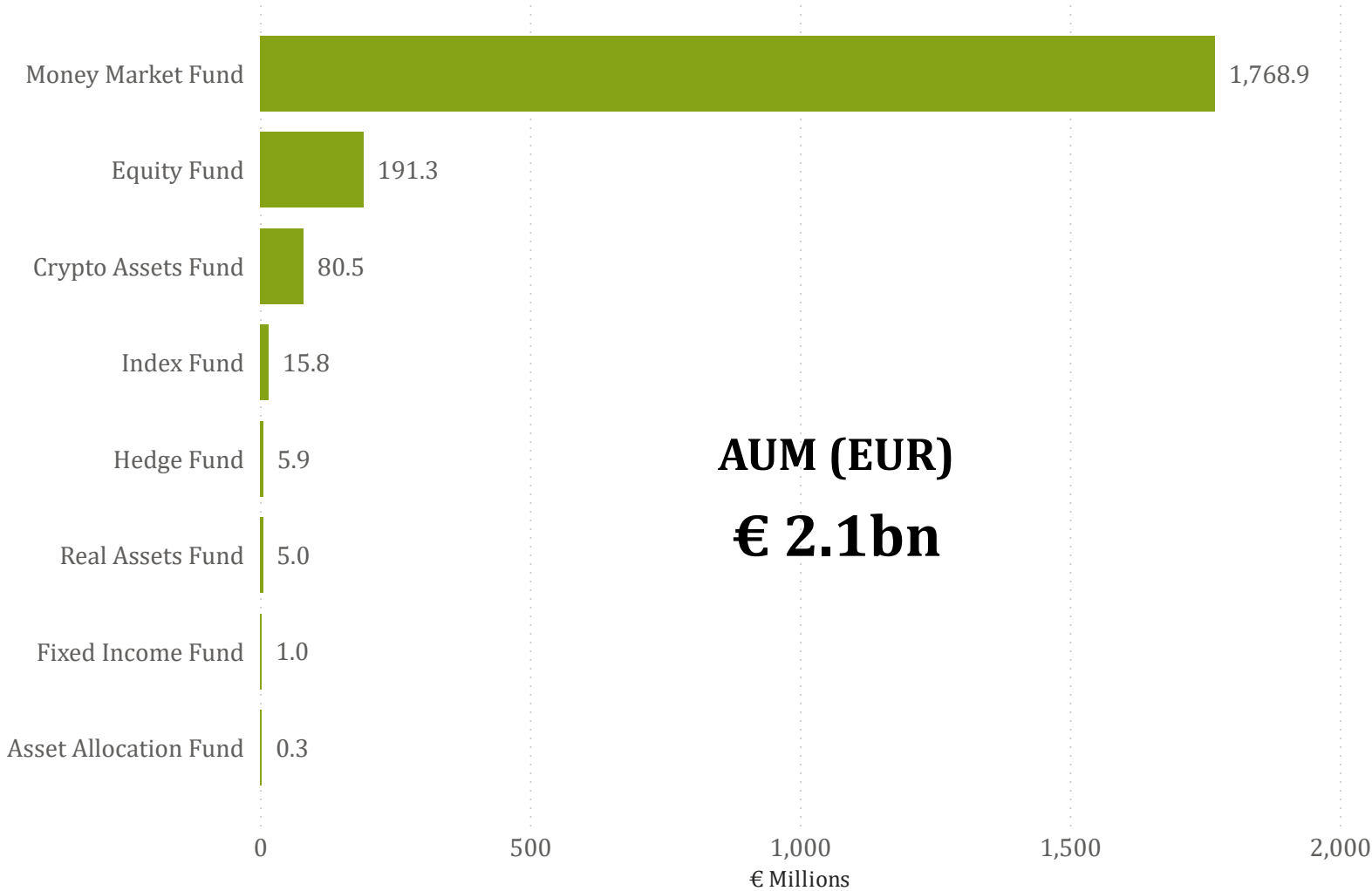
Deals issued by EDF, American Municipality, Bitcoin Suisse, BayernLB, Sparkasse Dortmund, and BNP Paribas are excluded due to missing Deal Value.

*The Eurosystem processed over 200 transactions and a total value of €1.59bn, which included primary fixed income issuances, repo transactions, secondary market transactions, cross-border payments, intrabank payments, and other transactions.

**The World Bank issuance (€203mn) was part of the SNB trials, but it is included as a US (Americas) deal.

Sources: AFME, multiple sources

1.4 AUM of Global Tokenised Funds by Asset Class



As of 2024, global tokenised funds accumulated €2.1bn in assets under management

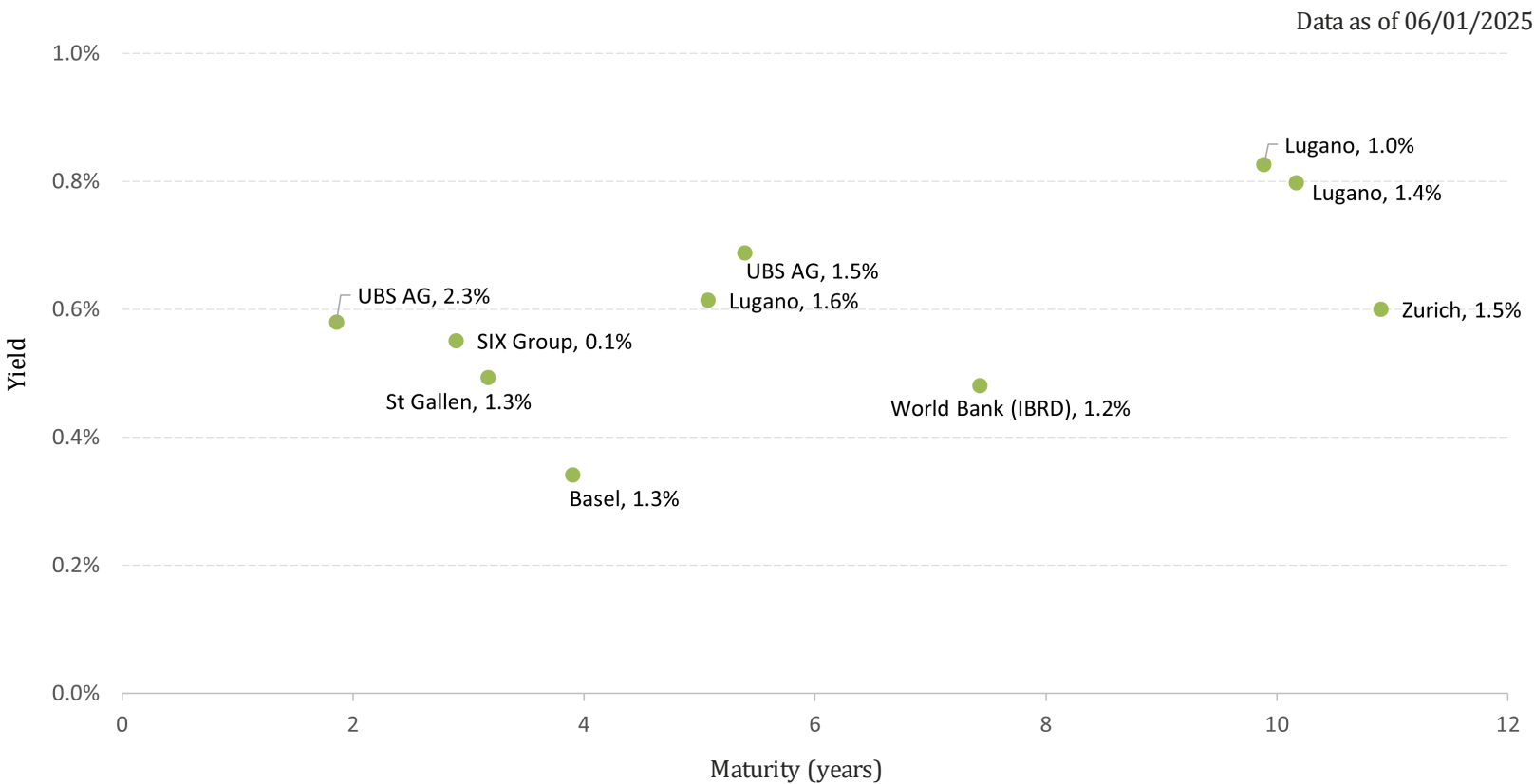
Across all the tokenised funds, €1.8bn was invested in EU and US Government securities, while the remaining €0.3bn was invested in Equity, Cryptocurrencies, Real Assets, and other instruments.

More than 70% of the AUM are held by three asset managers, Hashnote (€569mn), BlackRock (€500mn) and Franklin Templeton (€406mn), which predominantly invest in short-term US Treasuries.

WisdomTree launched 13 tokenised funds, the highest number across asset managers, with €27mn invested mostly in US Treasuries and Equity.

The Asset Class classification reflects the fund's predominant investment category, although many funds maintain diversified, multi-asset investment portfolio.
Sources: Security Token Market, RWA.xyz, multiple sources

1.5 Yield to Maturity of DLT Fixed Income Issuance in SDX



The chart shows the Yield to Maturity of DLT Fixed Income Securities issued on SDX. Instruments' issuer and coupon rate are displayed in the label.

DLT Fixed Income Trading and Price Discovery Trading Characteristics

DLT bonds primarily operate as buy-and-hold investments, with secondary market liquidity remaining notably limited.

To enhance liquidity and market access some DLT bonds have established **dual-listing arrangements**. This includes SDX-issued bonds that are also listed on the Swiss Stock Exchange, nine blockchain-based fixed income instruments that are listed on the Luxembourg Stock Exchange, and a bond listed on the Hong Kong Stock Exchange.

Price Discovery and Valuation

Price discovery in the DLT bond market faces constraints due to limited trading activity. Observable pricing data is predominantly available for instruments with traditional exchange listings.

Available yield data suggests that DLT bond yields generally align with comparable conventional instruments, with limited instances of **yield divergence of a temporary “e-premia” spread differential**.

Repo Trial and Test Transactions conducted by Global Central Banks

European Central Bank	Singapore Monetary Authority	Swiss National Bank
5	1	1

Repo Transactions Average Daily Volume by Major Platforms

Broadridge DLR

\$50bn

The ECB trials included 2 test transactions that were executed with mock settlement in a test environment.
Sources: Ledger Insights, Broadridge (<https://www.broadridge.com/article/capital-markets/dlr-transacts-1-trillion-a-month>)

Repo transactions

The DLT framework has enhanced the development of repo transactions facilitating an almost instantaneous settlement execution.

Consolidated data on DLT-based repo transactions are scarce. However, platforms such as Broadridge DLR have indicated processing c\$50bn per day. Other platforms such as JP Morgan's Kinexys process c\$2bn per day across all its applications, including intraday repo transactions and other digital payments.

Additionally, as part of Central Bank DLT repo trials, the ECB, the Swiss National Bank, and Singapore's Monetary Authority concluded **7 trial and experiment repo transactions in 2024**.

Most of the 2024 repo transactions participating to the ECB Trial were executed on **Clearstream D7**, (owned by Deutsche Borse), and by **SWIAT**, (the German platform created by a consortium of financial institutions).

Other private repo transactions not related to central bank trials were executed in 2024 using tokenised assets such as DLT-based bonds or commercial paper as collateral.

Global DLT Fixed Income Market

Europe leads in DLT Fixed Income Issuance

In 2024, €3bn in DLT fixed income instruments were issued globally, a 260% increase compared to 2023. The total amount includes bonds (€2,428mn), bills (€67mn), commercial paper (€203mn), and covered bonds (€353mn). The issued amount, albeit small relative to the c€23tn in fixed income instruments issued globally per year, offers a promising platform for future growth.

The annual increase was mainly driven by the ECB DLT trials and the Swiss National Bank (SNB) Helvetia Pilot deals, which accumulated respectively a total of €1bn and €760mn in issued amount.

European issuers including corporates, supranationals, and sovereigns, accumulated a total of €1.7bn in 2024 (from €562mn in 2023), or 55% of the world's total issued amount. Issuers based in Asia originated a total €1.1bn, predominantly from supply by the Hong Kong Authority. The US exhibited limited supply with only €214mn issued in 2024 (predominantly from a €211mn issued by the World Bank), albeit its highest issued amount on records.

Financial issuers contributed with the largest issued amount with 47% of the 2024 total. Once considered together, Supranational, Sovereigns and Agency (SSA) issuers contributed 43% of the total, while corporates contributed with the remaining 10%.

Green bond issuance accumulated a total of €483mn in issued amount in 2024. This was predominantly driven by the Hong Kong Authority in a series of multi-currency tranches issued on HSBC's Orion platform.

Platform and blockchain of choice

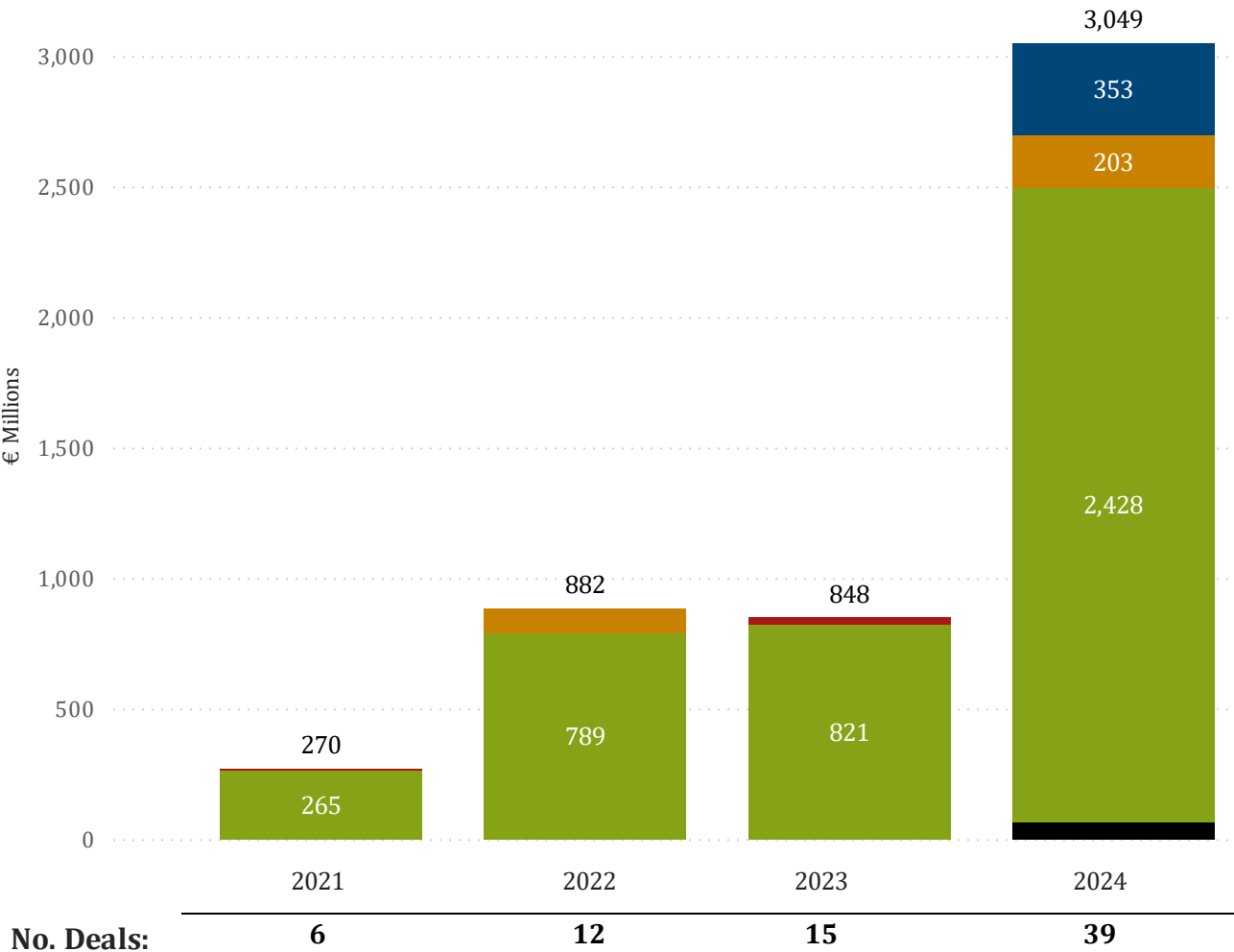
Most of the issuance was originated on public-permissioned blockchains with €2.3bn, followed by private-permissioned blockchains contributing €509mn and public-permissionless blockchains with the remaining €275mn. The Corda and Canton blockchains were the most frequent platform of choice with €1.3bn and €0.9bn respectively.

SIX Digital Exchange (SDX) and HSBC's Orion contributed with the largest share of digital issuance in 2024, with €760mn and €698mn respectively.

In 2024, platforms managed by credit institutions issued €837mn in fixed income instruments, followed by Stock Exchange and CSD Swiss-based platforms issuing €760mn, and CSD EU-based platforms with €677mn. Non-regulated FinTech based platforms issued instead €683mn on 12 deals.

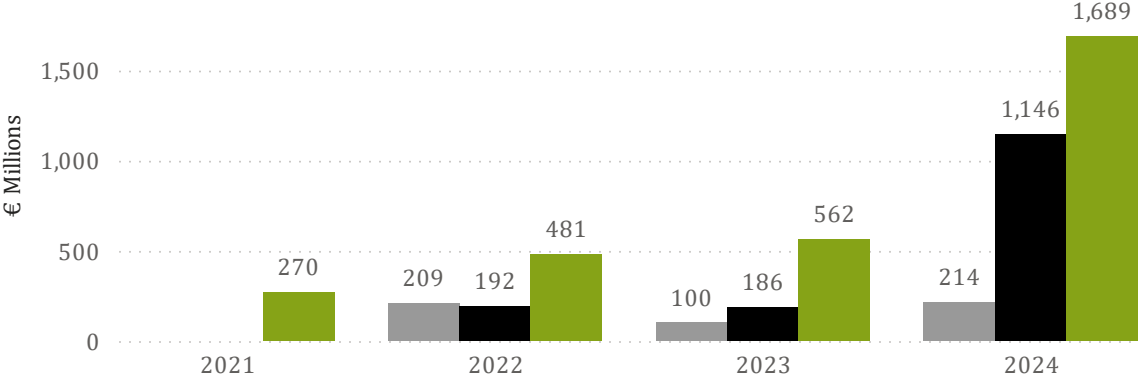
2.1 Global DLT Fixed Income Issuance by Instrument

● Bill ● Bond ● Commercial Paper ● Covered Bond ● Structured Instrument

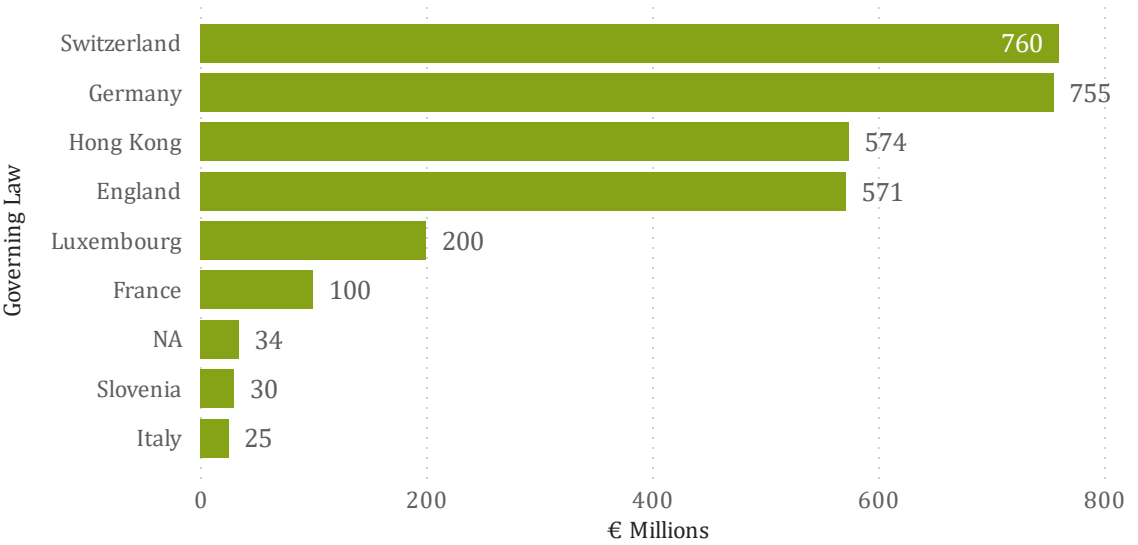


2.2 Global DLT Fixed Income Issuance by Region of Issuer

● Americas ● Asia ● Europe



2.3 Global DLT Fixed Income Issuance by Governing Law in 2024

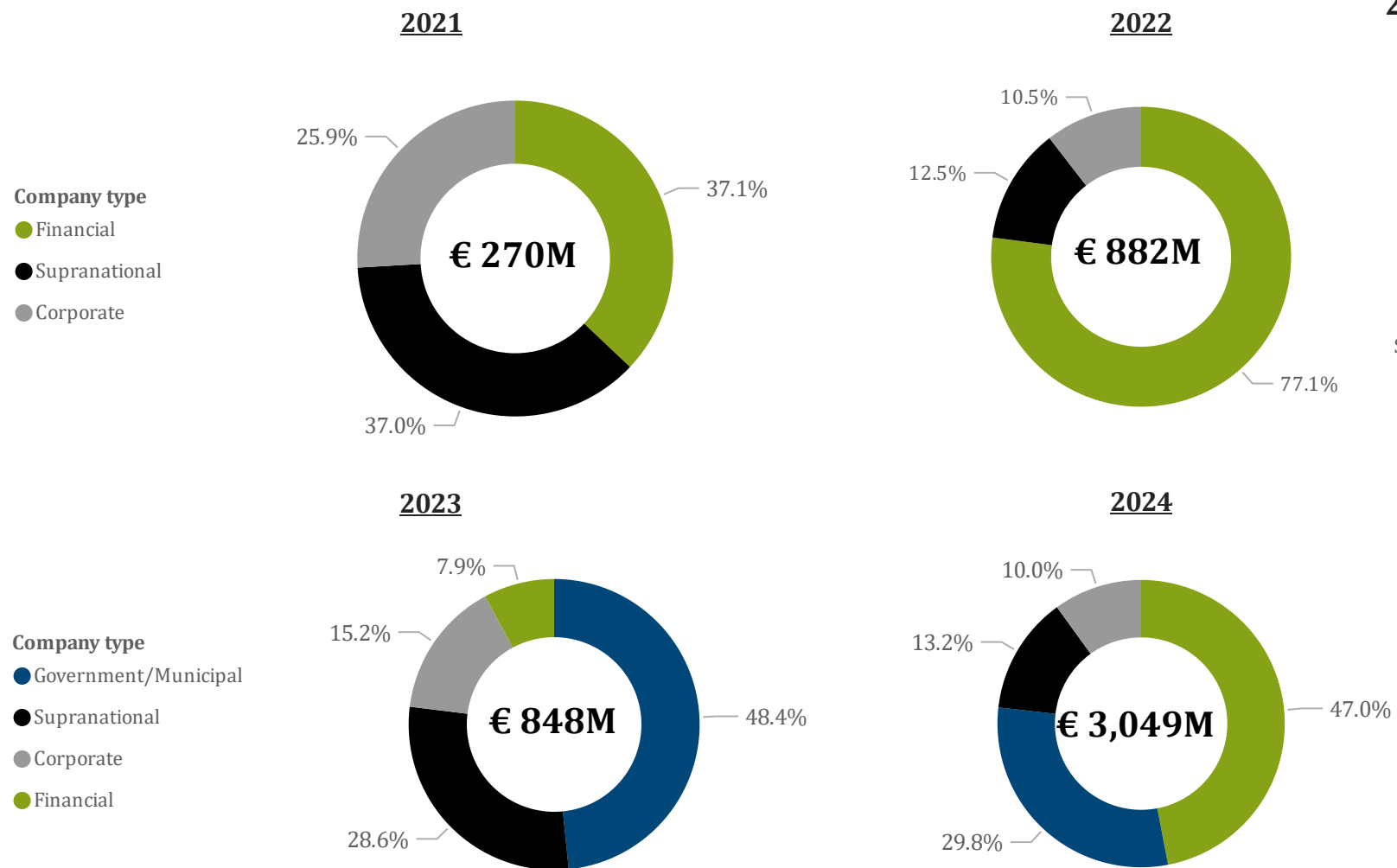


Deals issued by EDF, American Municipality, Bitcoin Suisse, BayernLB, Sparkasse Dortmund, and BNP Paribas are excluded due to missing Deal Value.
Sources: AFME, multiple sources

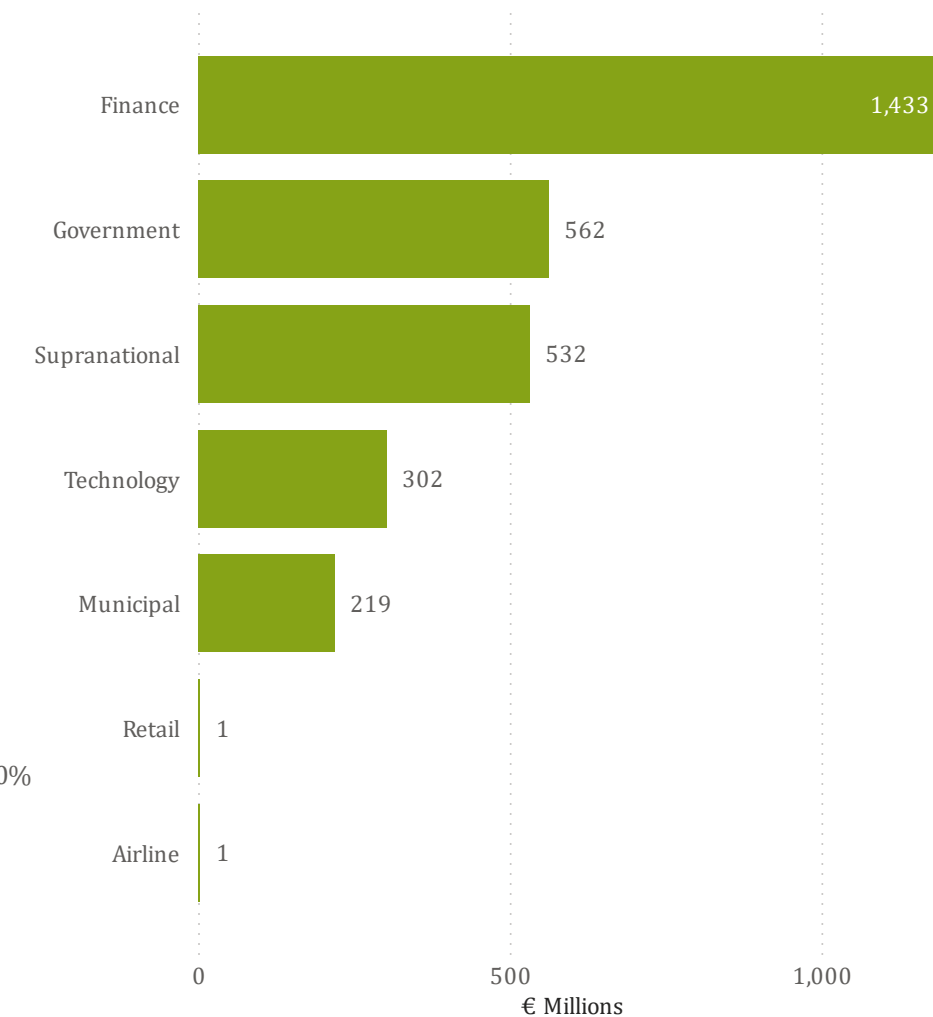
afme/Global DLT Fixed Income Issuance by Company Type

Finance for Europe

2.4 Share of Global DLT Fixed Income Issuance by Company Type and Year of Issuance



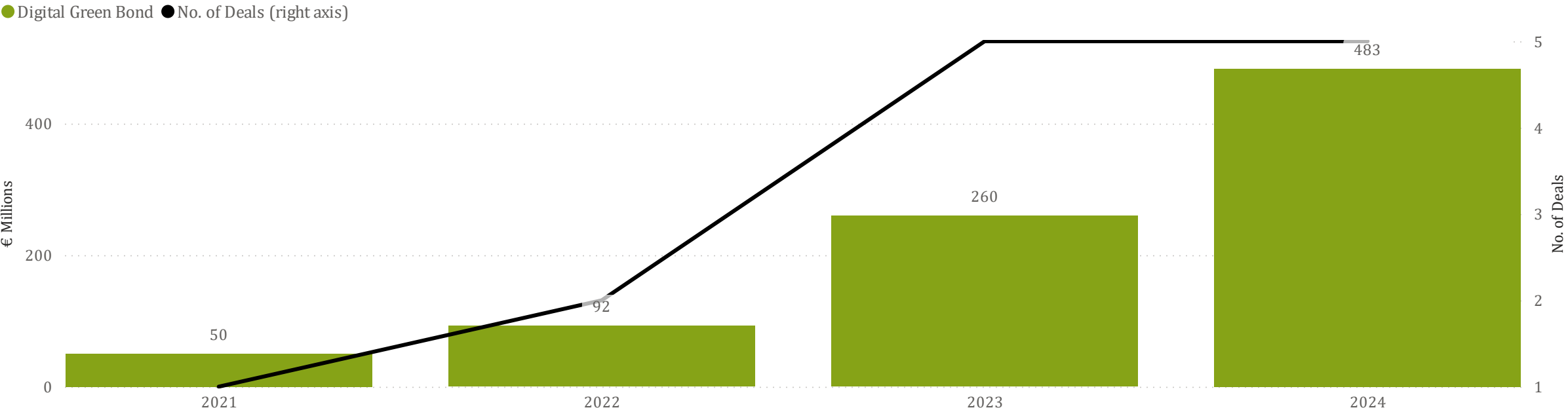
2.5 Global DLT Fixed Income Issuance by Issuer Type in 2024



Deals issued by EDF, American Municipality, Bitcoin Suisse, BayernLB, Sparkasse Dortmund, and BNP Paribas are excluded due to missing Deal Value.

Sources: AFME, multiple sources

2.6 Global DLT Issuance of Digital Green Bond

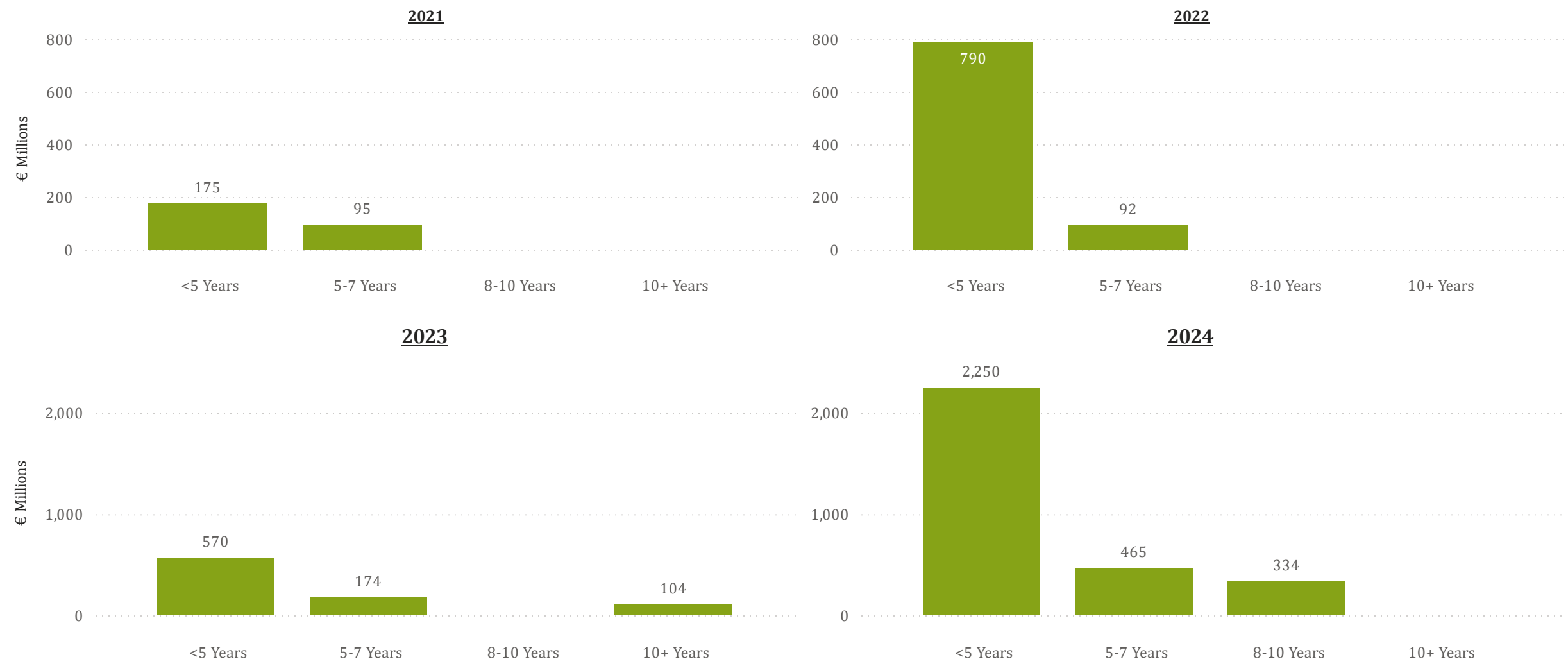


2.7 Top 5 Global Digital Green Bond Issues

Company	Company Nationality	Company type	Currency	Year	Region	Deal Value EUR (million)	Platform	Blockchain	Coupon
Hong Kong	Hong Kong (China)	Government/Municipal	CNY	2024	Asia	193.38	HSBC Orion	Canton	2.90%
Hong Kong	Hong Kong (China)	Government/Municipal	USD	2024	Asia	185.28	HSBC Orion	Canton	4.63%
Hong Kong	Hong Kong (China)	Government/Municipal	HKD	2023	Asia	95.18	Goldman Sachs DAP	Canton	4.05%
Singtel Group Treasury Pte Ltd	Singapore	Corporate	USD	2022	Asia	92.33	ADDX	Polygon	3.56%
European Investment Bank - EIB	Luxembourg	Supranational	SEK	2023	Europe	85.75	Credit Agricole & SEB so bond		3.64%

The deal issued by EDF is excluded due to missing Deal Value.
Sources: AFME, multiple sources

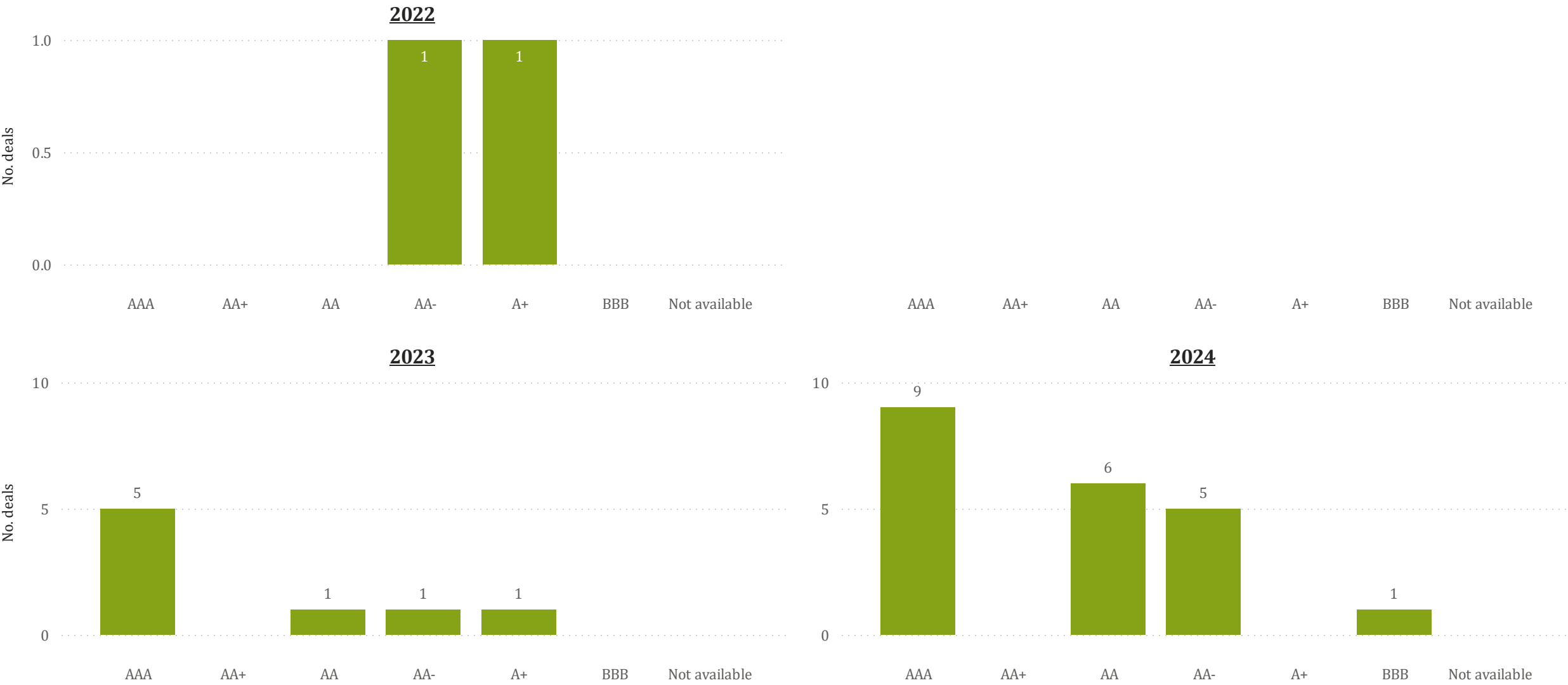
2.8 Global DLT Fixed Income Issuance by Tenor and Year of Issuance



Deals issued by EDF, American Municipality, Bitcoin Suisse, BayernLB, Sparkasse Dortmund, and BNP Paribas are excluded due to missing Deal Value.
Sources: AFME, multiple sources

Global DLT No. of Deals by Rating

2.9 Global DLT No. of Deals by Rating and Year of Issuance

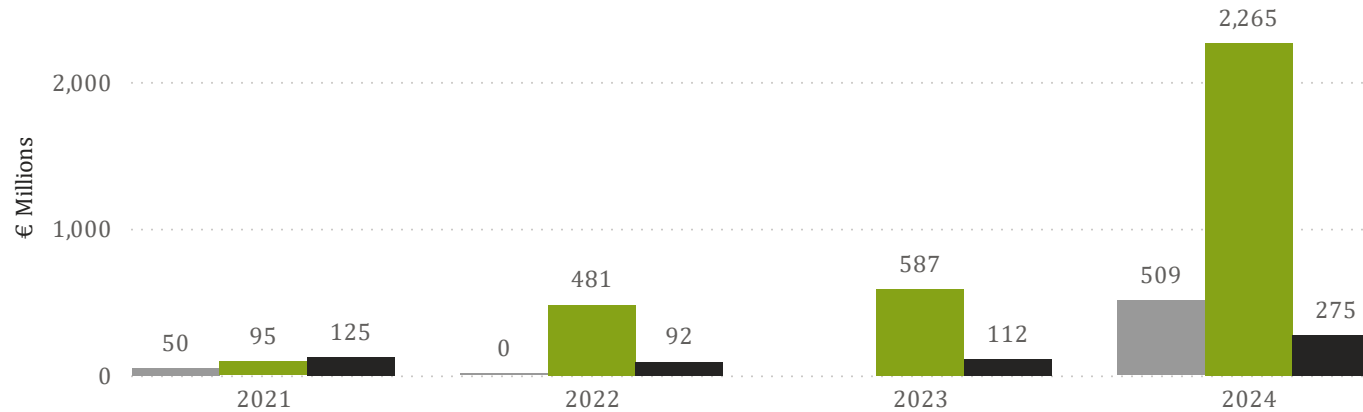


afme / Global DLT Fixed Income Issuance by Blockchain

Finance for Europe

2.10 Global DLT Fixed Income Issuance by Blockchain Type

● Private - Permissioned ● Public - Permissioned ● Public - Permissionless



1) Private - Permissioned Blockchains include: Alphaledger, Hyperledger (Besu/ Fabric), ibet for Fin and Quorum;

2) Public - Permissioned Blockchains include: bond-i, Canton, Corda R3 and Hyperledger (Besu);

3) Public - Permissionless Blockchains include: Ethereum, Polygon, Stellar and Tezos

2.11 Global DLT Fixed Income Issuance by Regulatory Status of the Platform in 2024

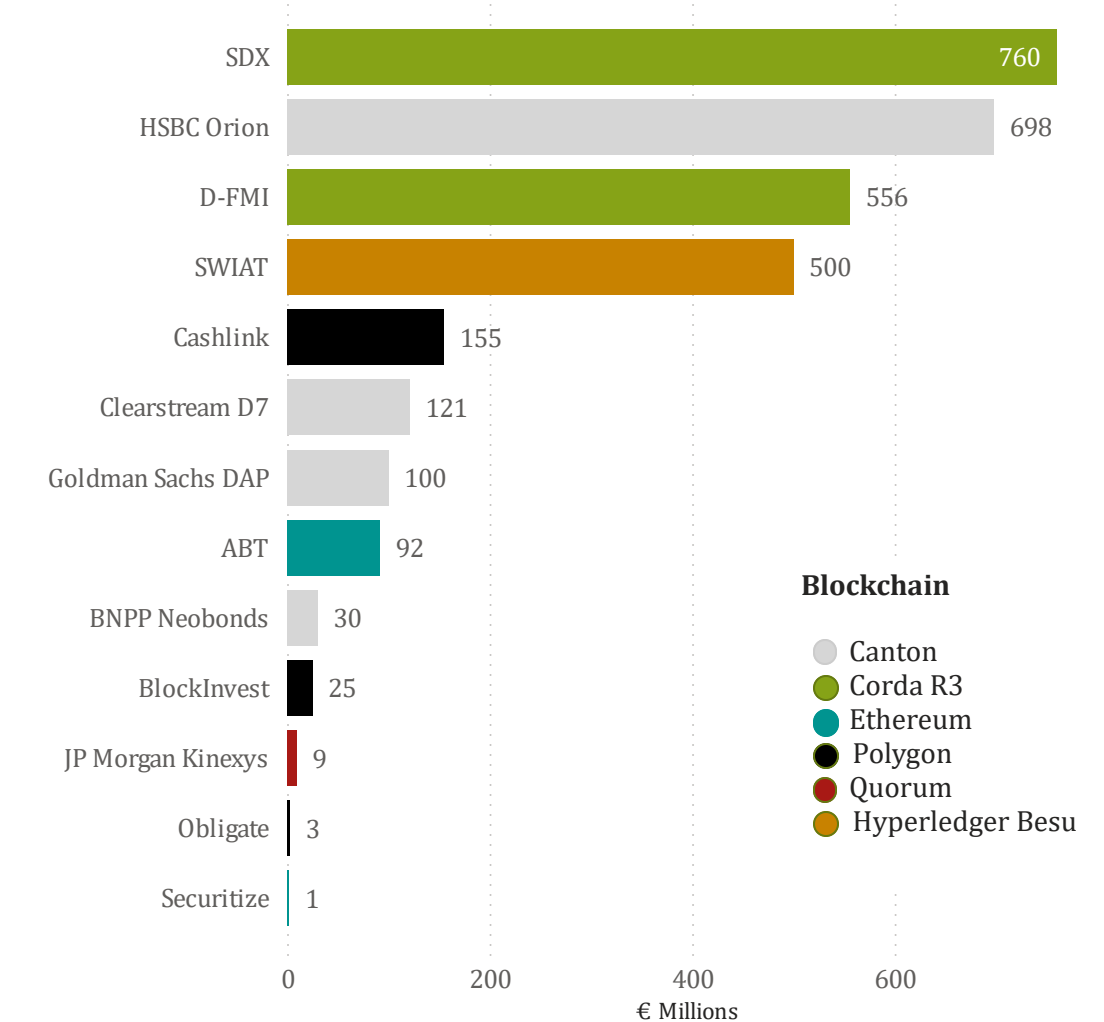
Issue Regulatory Status	Deal Value EUR (million)	No. of Deals
Credit Institution	837	10
Stock Exchange and CSD (CH)	760	6
FinTech - not a regulated financial institution	683	12
CSD (EU)	677	9
Registered Market Maker of CME and EUREX	92	1
Registered broker - dealer (FINRA)	1	1
Total	3,049	39

Deals issued by EDF, American Municipality, Bitcoin Suisse, BayernLB, Sparkasse Dortmund, and BNP Paribas are excluded due to missing Deal Value.

Three of the deals in 2024 were executed through a FinTech, non regulated financial institution, holding crypto custody and crypto securities registrar licenses (DE).

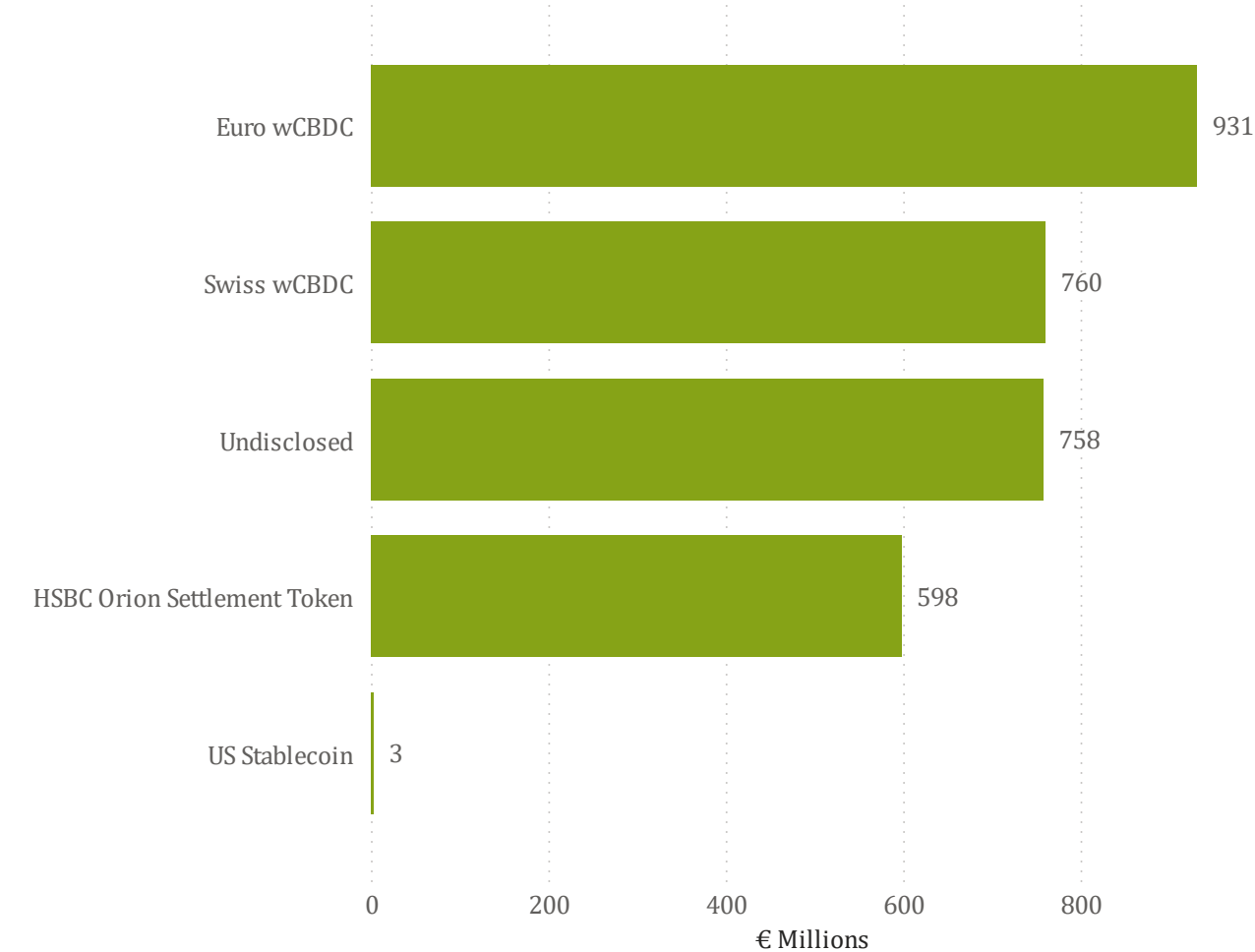
Sources: AFME, multiple sources

2.12 Global DLT Fixed Income Issuance by Platform and Blockchain in 2024

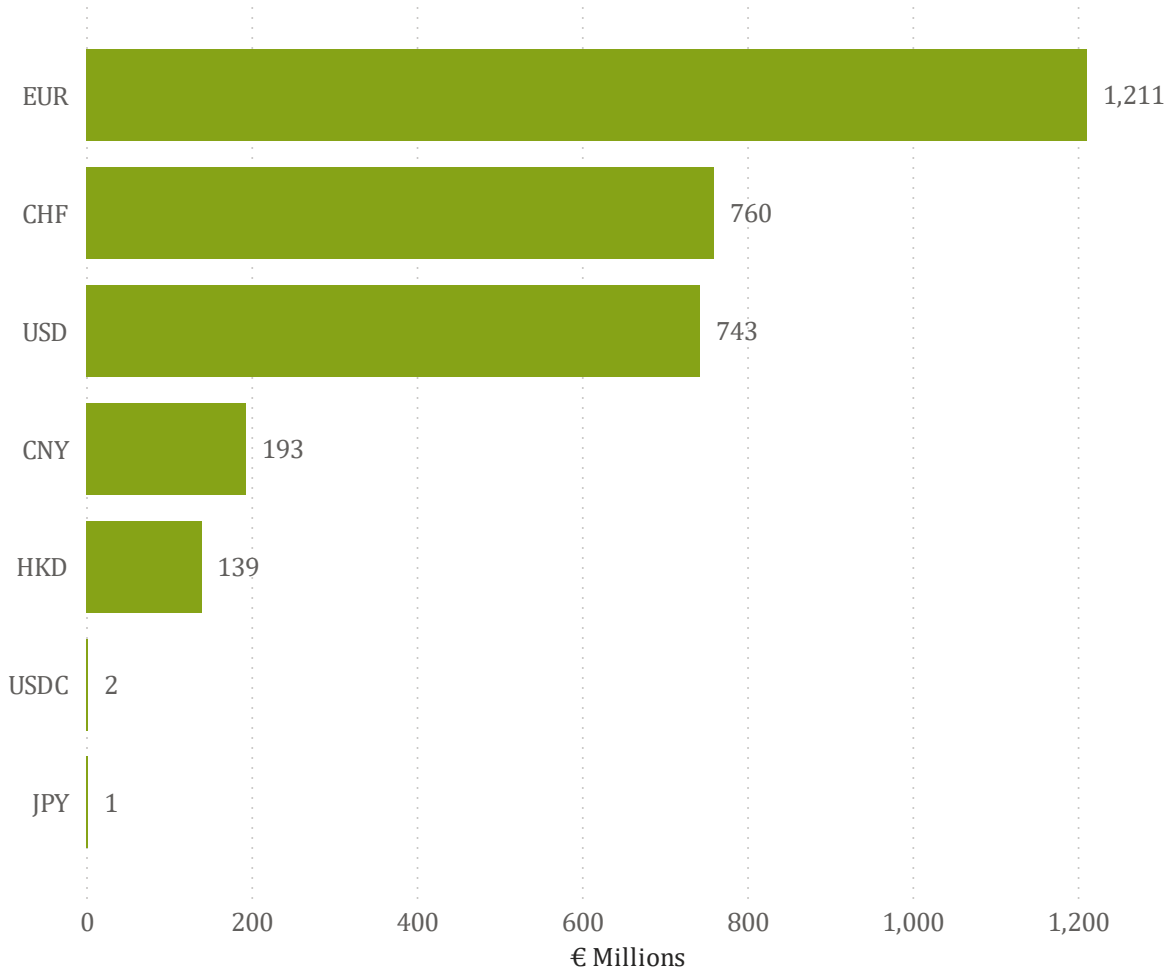


Global DLT Fixed Income Issuance by Settlement Asset

2.13 Global DLT Fixed Income Issuance by Settlement Asset in 2024



2.14 Global DLT Fixed Income Issuance by Currency in 2024



Deals issued by EDF, American Municipality, Bitcoin Suisse, BayernLB, Sparkasse Dortmund, and BNP Paribas are excluded due to missing Deal Value.
Euro wCBDC includes tokenised Central Bank Money (CeBM) as issued by Banca d'Italia, Banque de France and Bundesbank during the ECB trial.
Sources: AFME, multiple sources

2.15 Latest 20 Global DLT Fixed Income Issued

Company	Company type	Company Nationality	Pricing Date	Deal Value EUR (million)	Instrument	Coupon	Rating	Maturity (years)	Platform	Blockchain	Governing Law
European Investment Bank - EIB	Supranational	Luxembourg	22/11/2024	100.00	Bond	2.55%	AAA	5.00	Goldman Sachs DAP	Canton	Luxembourg
European Investment Bank - EIB	Supranational	Luxembourg	19/11/2024	100.00	Bond	2.36%	AAA	3.00	HSBC Orion	Canton	Luxembourg
Intesa Sanpaolo	Financial	Italy	08/11/2024	10.00	Commercial Paper		Na		Clearstream D7	Canton	NA
Caisse des Dépôts et Consignations	Financial	France	07/11/2024	100.00	Bond	3.33%	Na	10.00	D-FMI	Corda R3	France
City of Lugano	Government/Municipal	Switzerland	04/11/2024	128.17	Bond	1.00%	AA-	9.00	SDX	Corda R3	Switzerland
Asian Infrastructure Investment Bank	Financial	China	25/10/2024	183.42	Bond	4.00%	AAA	2.20	D-FMI	Corda R3	England
L-Bank	Financial	Germany	25/10/2024	50.00	Commercial Paper		AAA		Clearstream D7	Canton	Germany
WIBank	Financial	Germany	08/10/2024	5.00	Bond		Na		Cashlink	Polygon	NA
ABN AMRO	Financial	Netherlands	07/10/2024	1.10	Commercial Paper		Na		Clearstream D7	Canton	NA
HSBC	Financial	Hong Kong (China)	24/09/2024	115.54	Bond	3.60%	AA-	1.00	HSBC Orion	Canton	England
Federal State of Saxony-Anhalt	Government/Municipal	Germany	11/09/2024	50.00	Commercial Paper		AA		Clearstream D7	Canton	Germany
Siemens	Corporate	Germany	01/09/2024	300.00	Bond	3.25%	AA-	1.00	SWIAT	Hyperledger Besu	Germany
KfW	Financial	Germany	28/08/2024	50.00	Bond	3.46%	AAA	0.25	Cashlink	Polygon	Germany
Natixis Pfandbriefbank	Financial	Germany	28/08/2024	100.00	Covered Bond		Na		SWIAT	Hyperledger Besu	Germany
Asian Infrastructure Investment Bank	Financial	China	23/08/2024	272.36	Bond	4.00%	AAA	2.40	D-FMI	Corda R3	England
Berlin Hyp	Financial	Germany	06/08/2024	100.00	Covered Bond	2.75%	AAA	3.00	SWIAT	Hyperledger Besu	Germany
Republic of Slovenia	Government/Municipal	Slovenia	26/07/2024	30.00	Bond	3.65%	Na	0.33	BNPP Neobonds	Canton	Slovenia
Cassa Depositi e Prestiti	Financial	Italy	18/07/2024	25.00	Bond	3.63%	BBB	0.33	BlockInvest	Polygon	Italy
KfW	Financial	Germany	04/07/2024	100.00	Bond	3.13%	AAA	1.50	Cashlink	Polygon	Germany

Secondary Market and Valuations

DLT Fixed Income Trading and Price Discovery Trading Characteristics

DLT bonds primarily operate as buy-and-hold investments, with secondary market liquidity remaining notably limited. Many issuances are structured as private placements, targeting specialized investors who have developed both the expertise and infrastructure connectivity to the primary market platform.

Exchange Listings and Market Access

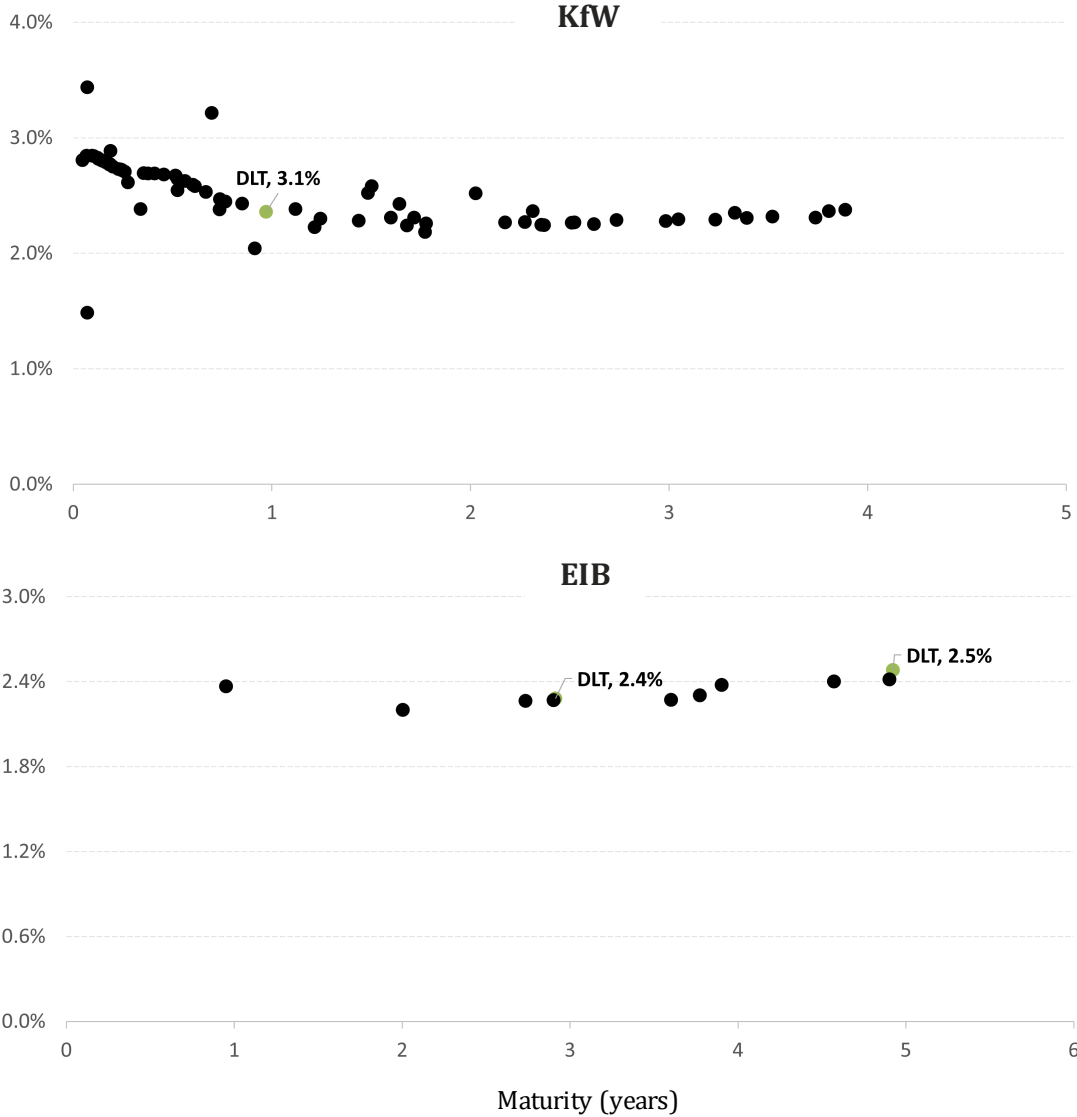
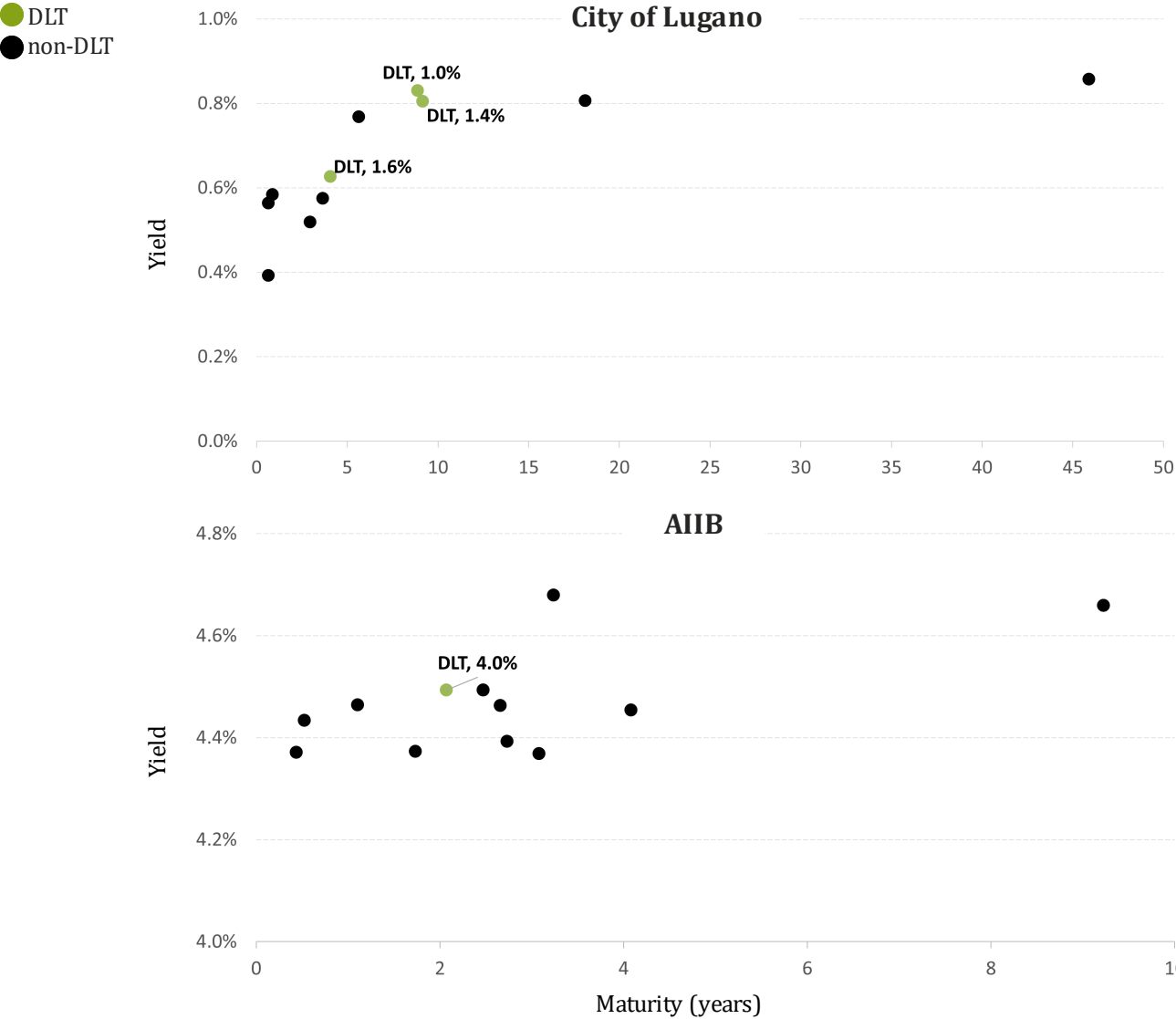
Some DLT bonds have established dual-listing arrangements to enhance liquidity and market access: SDX-issued Swiss DLT bonds maintain parallel listings on the Swiss Stock Exchange (SIX Swiss), enabling trading outside the blockchain infrastructure. Nine blockchain-based fixed income instruments have been listed on the Luxembourg Stock Exchange, including: Societe Generale, World Bank, European Investment Bank, and Asian Infrastructure Investment Bank. Additionally, one digitally native bond issued by HSBC was listed on the Hong Kong Stock Exchange.

Price Discovery and Valuation

Price discovery in the DLT bond market faces constraints due to limited trading activity. Observable pricing data is predominantly available for instruments with traditional exchange listings.

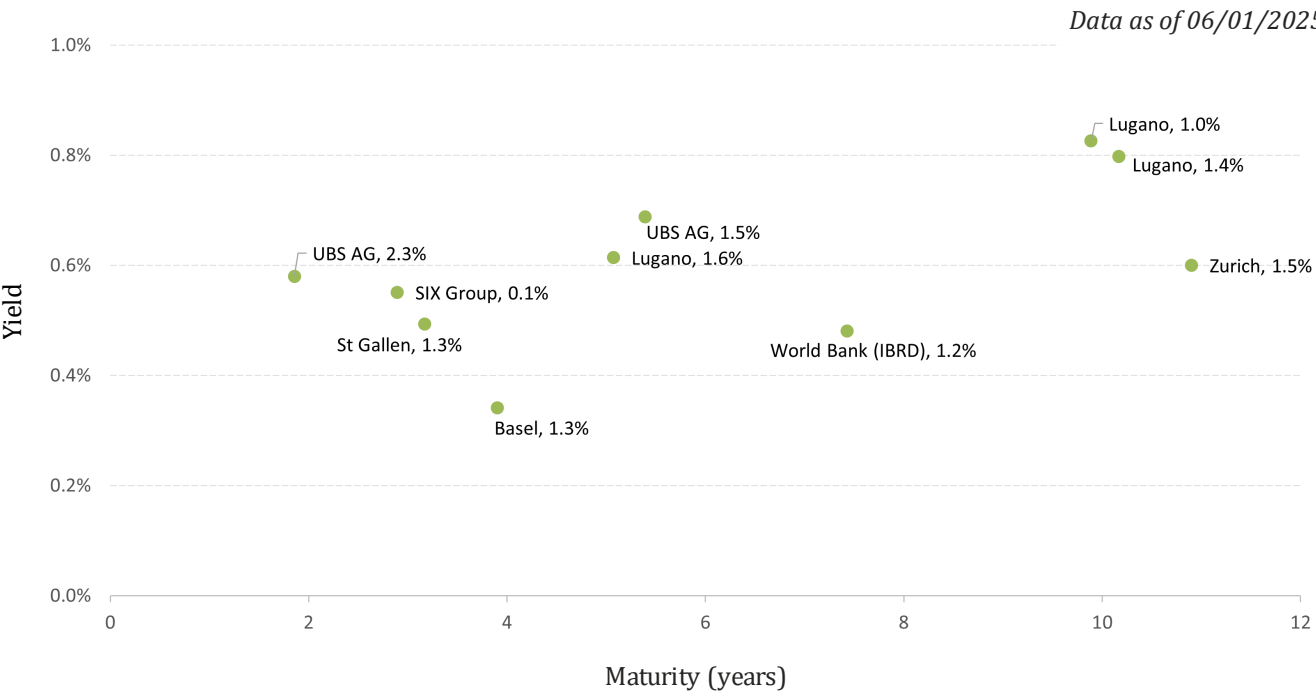
Available yield data suggests that DLT bond yields generally align with comparable conventional instruments, with limited instances of yield divergence of a temporary “e-premia” spread differential. For the case of the twin (digital and conventional) pair issued by SDX with exact same characteristics but with a digital and conventional parts, we observed only temporary episodes of an "e-premia" yield differential of between 1 to 3bps with a marginally higher yield for the digital part. See relevant chart in this section.

3.1 Yield Curve of DLT and non-DLT Fixed Income Issuance for selected entities



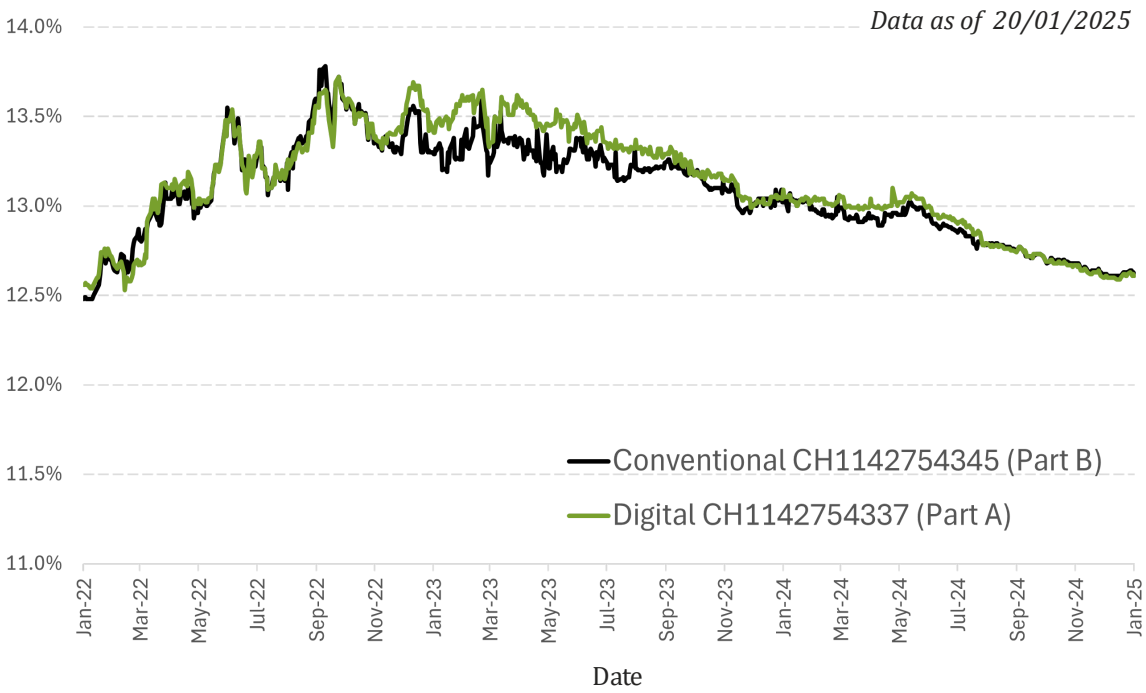
The label shows DLT Fixed Income Instruments, and their coupon rate

3.2 Yield to Maturity of DLT Fixed Income Issuance in SDX



The chart shows the Yield to Maturity of DLT Fixed Income Securities issued on SDX. Instruments' issuer and coupon rate are displayed in the label.

3.3 Yield of SIX Group Bond issued in SDX and SIX



The chart compares the yield's evolution of the SIX Group's deal issued in digital form (Part A) on SDX, with the security issued in traditional form (Part B) on SIX.

European DLT Fixed Income Market

European DLT issuance

In 2024, European DLT fixed income issuance reached its highest level on records, generating €1.7bn in proceeds on 27 deals. This represents the highest amount on record, representing a 200% increase compared to the €562mn issued in 2023.

The strong increase was primarily driven by the ECB DLT trials, that generated a total of €1bn in issued amount in a combination of bond, commercial paper, covered bonds, and other fixed income instruments. In December 2023, a similar project was launched by the Swiss National Bank, the Helvetia Pilot which contributed €760mn in fixed income supply in 2024, following the €215mn already originated in 2023.

As part of the ECB trials, the Eurosystem processed over 200 transactions and a total value of €1.59bn, which included various use cases including primary fixed income issuances, repo transactions, secondary market transactions, cross-border payments, intrabank payments, and other wholesale transactions.

In 2024, German issuers led by issued amount (€765mn), followed by Switzerland (€557mn) and Luxembourg (€200mn).

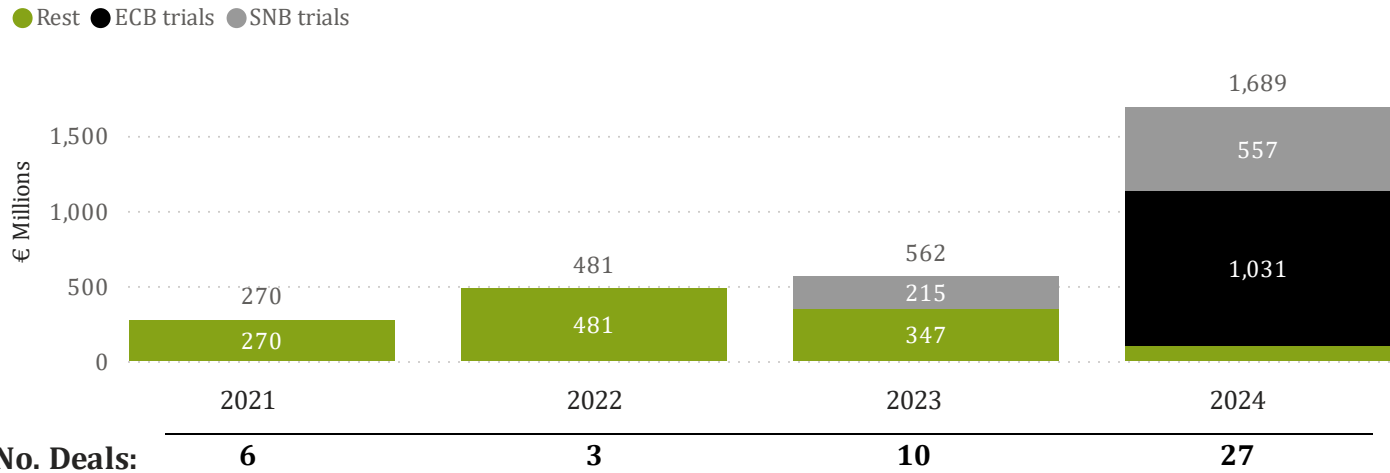
In 2024, no Digital Green Bonds were issued in Europe, while in 2023 a total amount of €101 million was issued by the European Investment Bank, Société Générale and Vesteda.

Blockchain

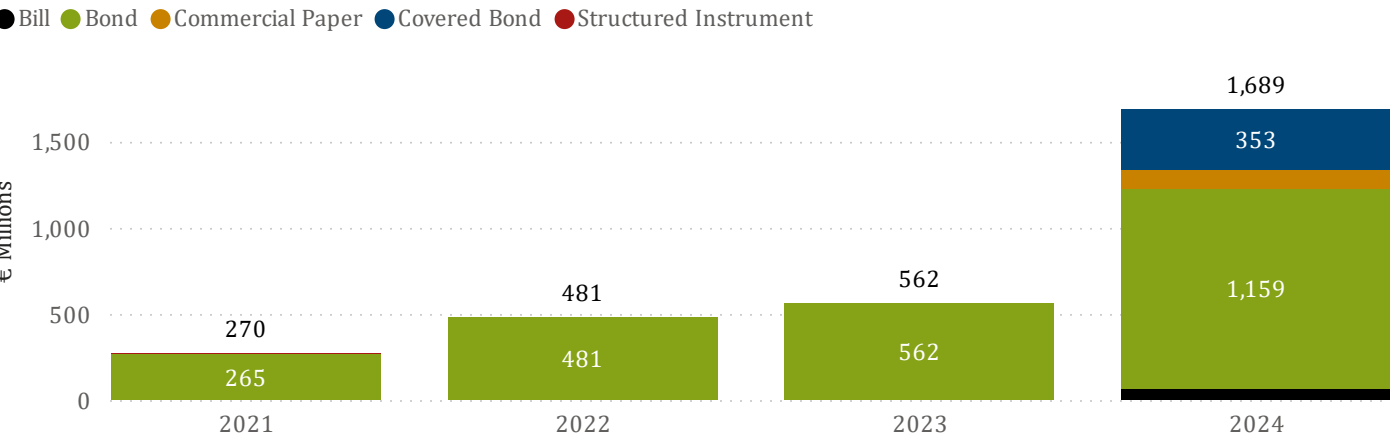
In 2024, €1,008mn was issued on public-permissioned blockchains, while only €682mn were issued in remaining platforms. Most of the supply was issued on SDX (€557mn), the Swiss-based platform, followed by SWIAT (€500mn), the permissioned platform owned by DekaBank, LBBW and SC Ventures.

DLT platforms managed by non-regulated FinTech issued €682mn in 2024, followed by Stock Exchange and CSD Swiss-based platforms with €557mn. The remaining was issued through Credit Institutions and CSD EU-based platforms, with €230mn and €221mn respectively.

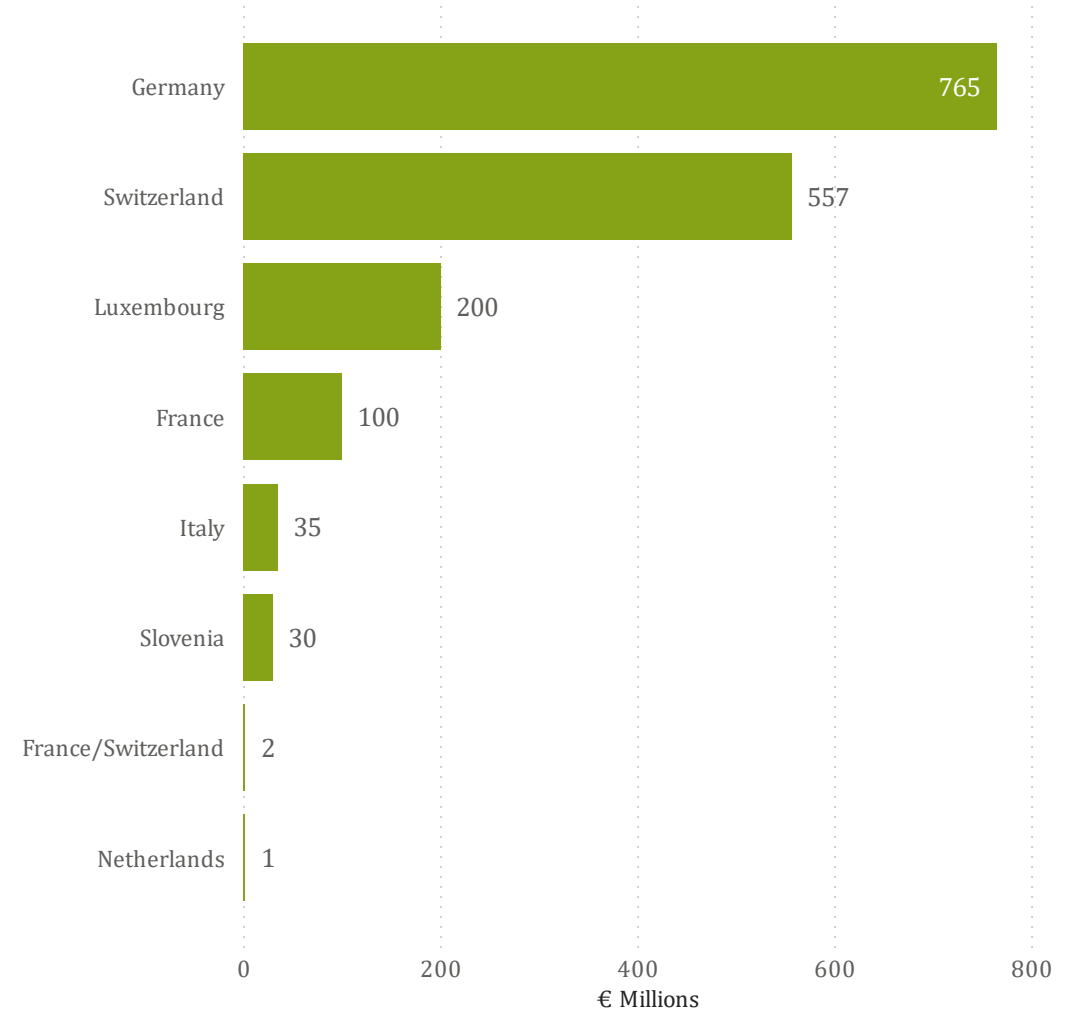
4.1 European DLT Fixed Income Issuance



4.2 European DLT Fixed Income Issuance by Instrument



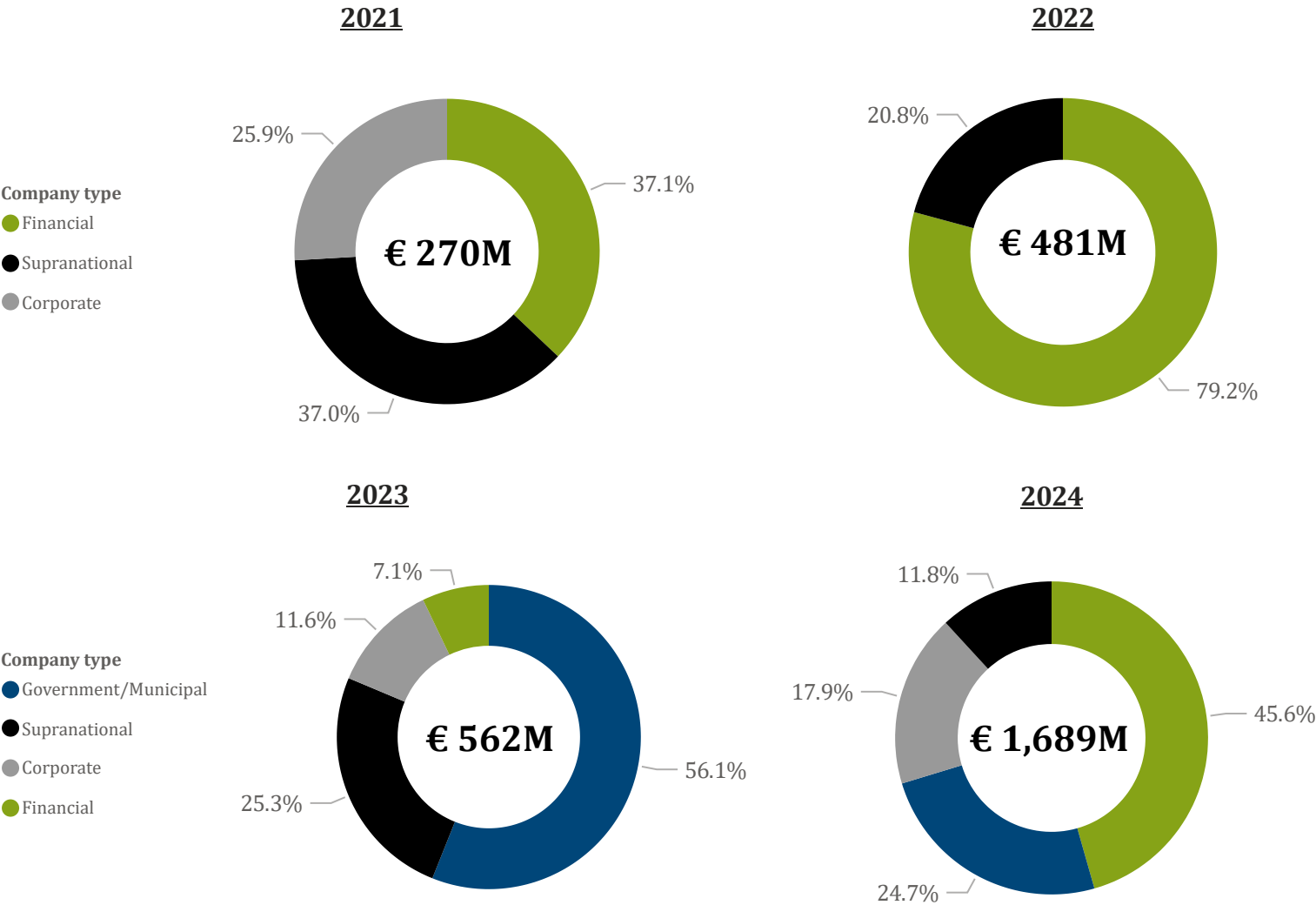
4.3 European DLT Fixed Income Issuance by Issuer Nationality in 2024



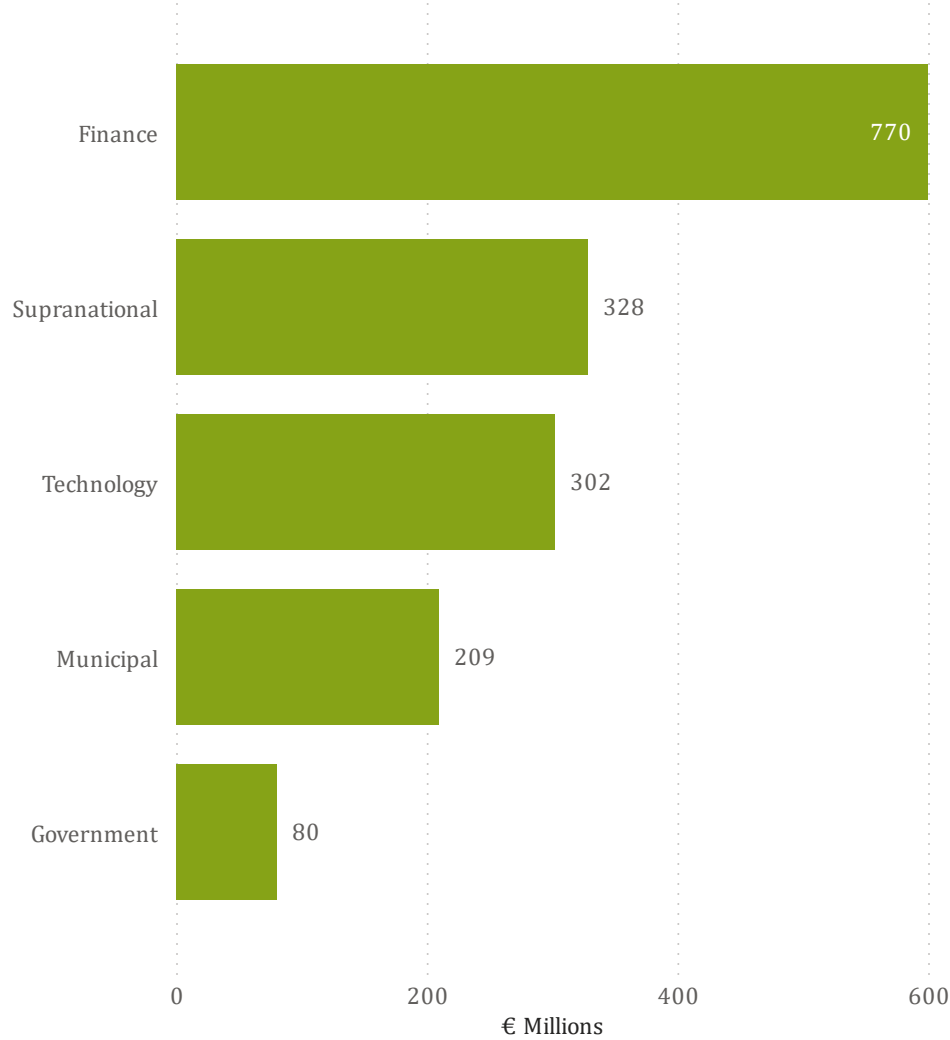
The SNB Pilot Helvetia's value excludes the deal issued in May 2024 by the World Bank (€210.5mn).
Deals issued by EDF, Bitcoin Suisse, BayernLB, Sparkasse Dortmund, and BNP Paribas are excluded due to missing Deal Value.
Sources: AFME, multiple sources

European DLT Fixed Income Issuance by Company Type

4.4 Share of European DLT Fixed Income Issuance by Company Type and Year of Issuance



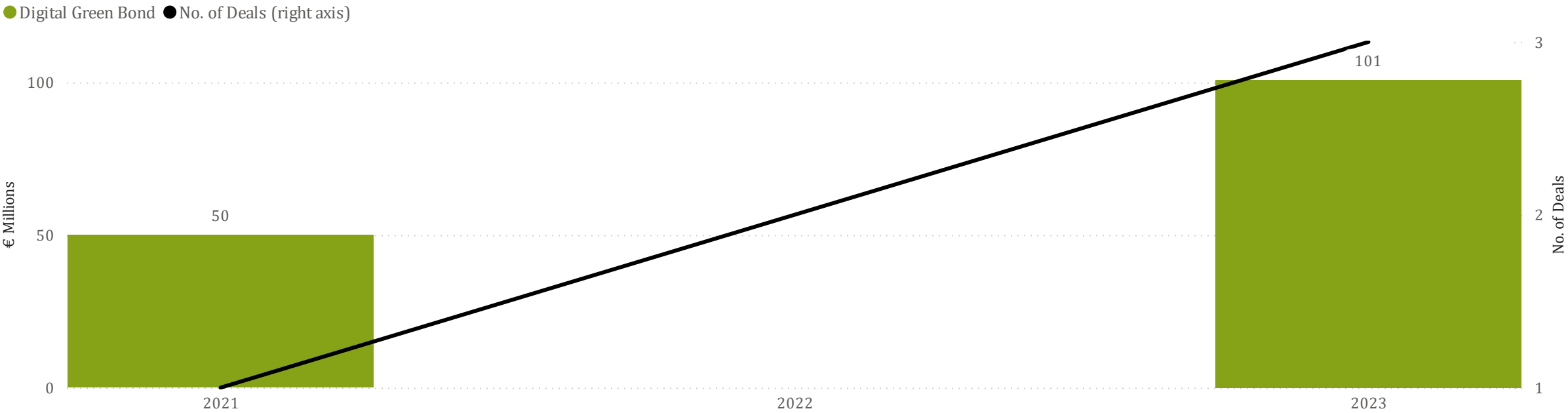
4.5 European DLT Fixed Income Issuance by Company Type in 2024



Deals issued by EDF, Bitcoin Suisse, BayernLB, Sparkasse Dortmund, and BNP Paribas are excluded due to missing Deal Value.
Sources: AFME, multiple sources

European DLT Issuance of Digital Green Bond

4.6 European DLT Issuance of Digital Green Bond



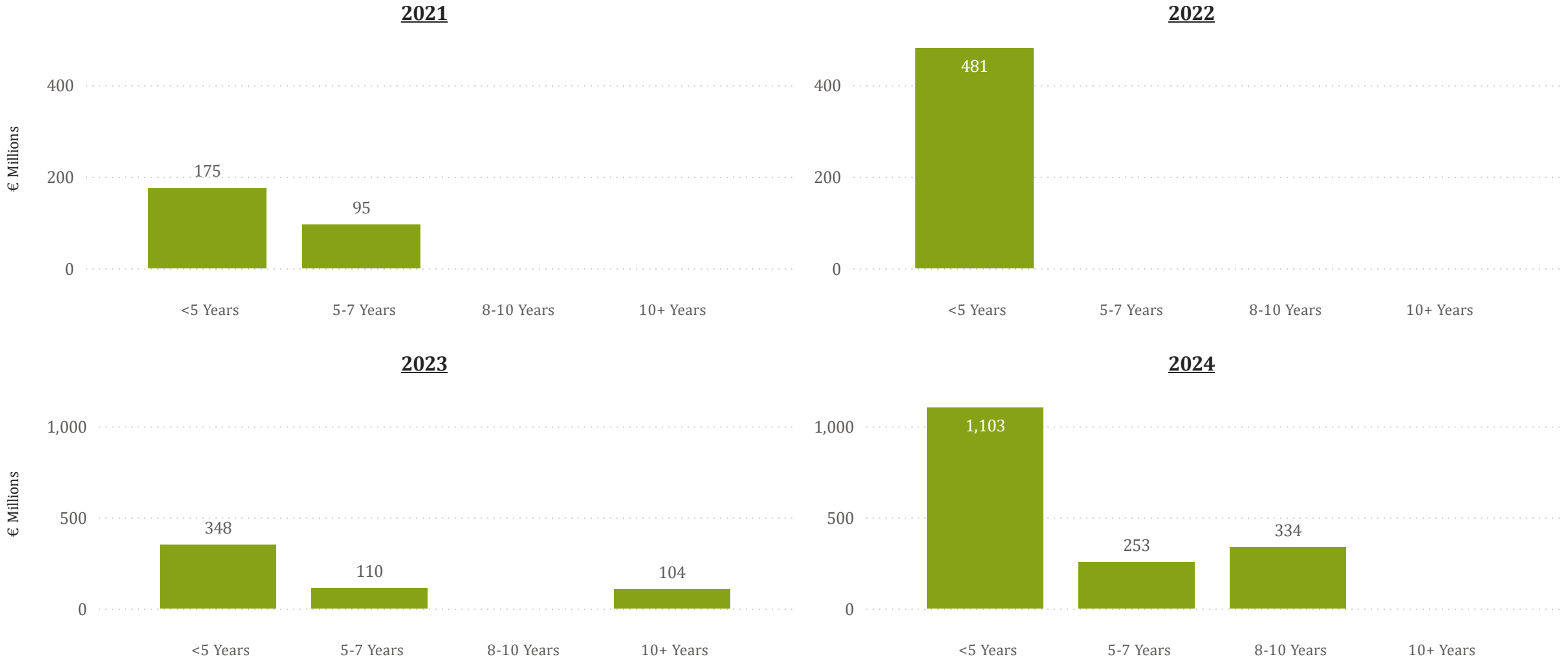
4.7 Top 5 European Digital Green Bond Issues

Company	Company Nationality	Company type	Currency	Year	Region	Deal Value EUR (million)	Platform	Blockchain	Coupon
European Investment Bank - EIB	Luxembourg	Supranational	SEK	2023	Europe	85.75	Credit Agricole & SEB so bond		3.64%
Societe Generale	France	Financial	EUR	2023	Europe	10.00	Societe Generale Forge	Ethereum	4.02%
Vesteda	Netherlands	Corporate	EUR	2023	Europe	5.00		Polygon	
Vasakronan	Sweden	Corporate	Not Available	2021	Europe	50.00	SWIAT	Hyperledger Besu	

The deal issued by EDF is excluded due to missing Deal Value.
Sources: AFME, multiple sources

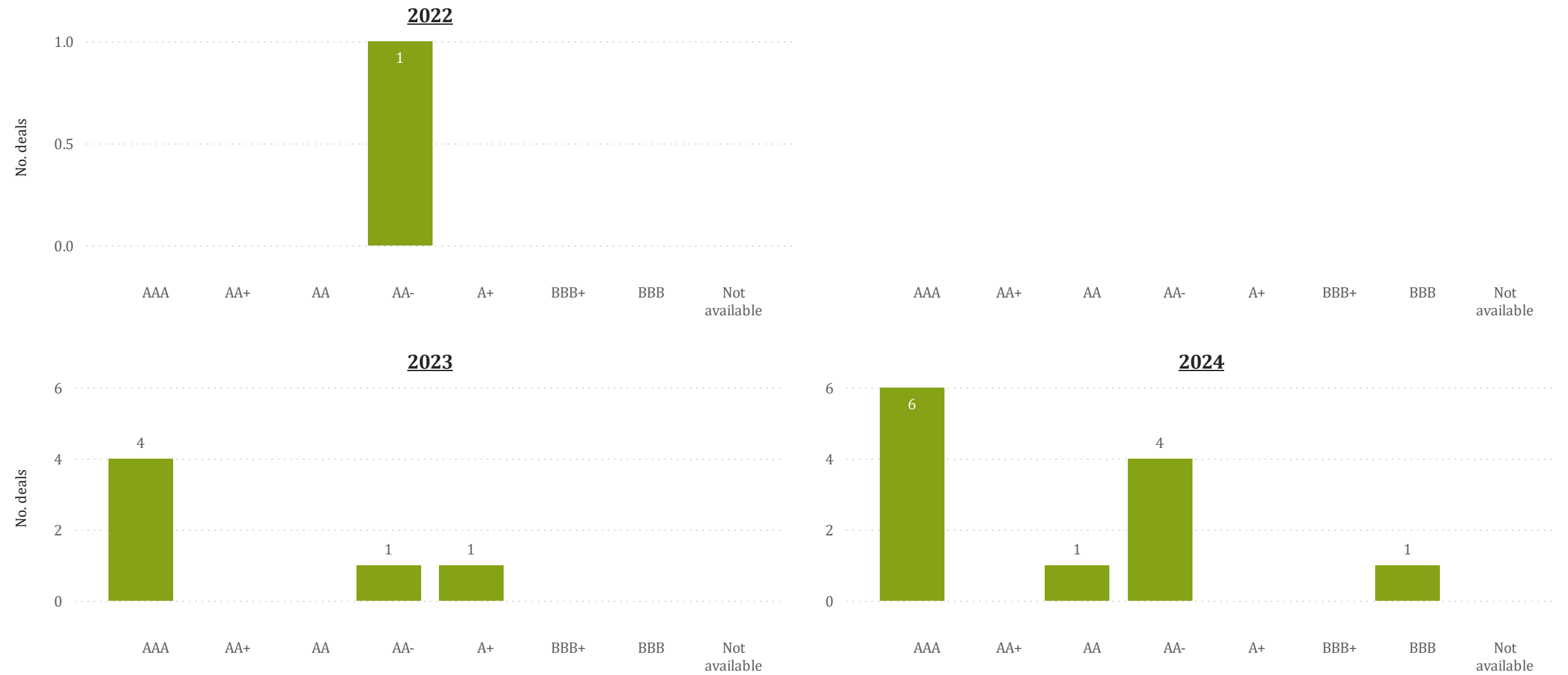
European DLT Fixed Income Issuance by Tenor

4.8 European DLT Fixed Income Issuance by Tenor and Year of Issuance

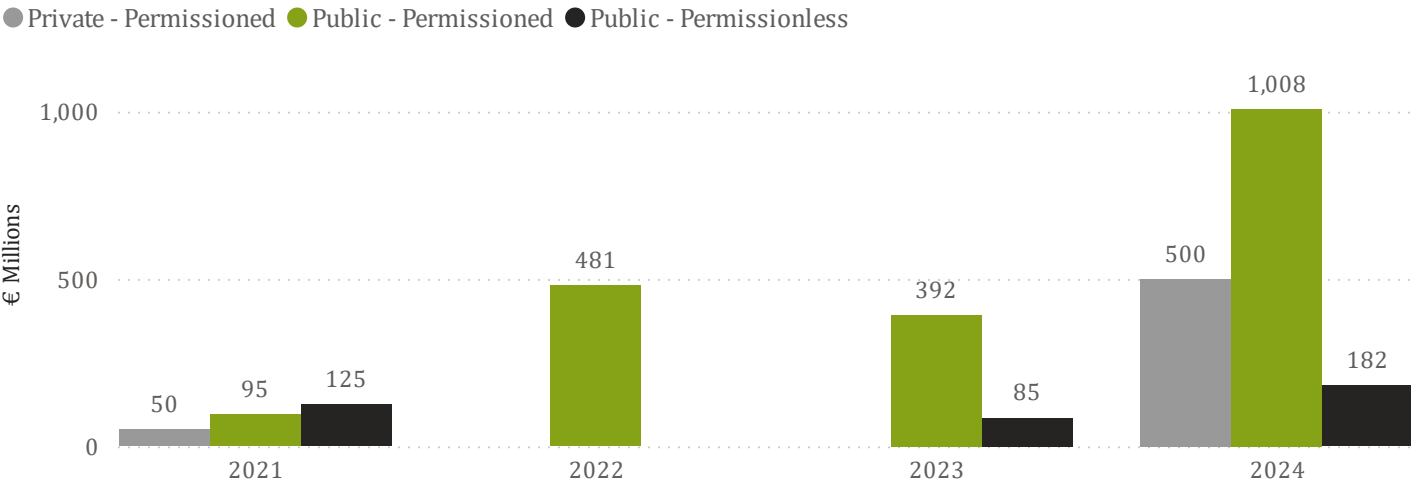


Deals issued by EDF, Bitcoin Suisse, BayernLB, Sparkasse Dortmund, and BNP Paribas are excluded due to missing Deal Value.
Sources: AFME, multiple sources

4.9 European DLT No. of Deals by Rating and Year of Issuance



4.10 European DLT Fixed Income Issuance by Blockchain Type



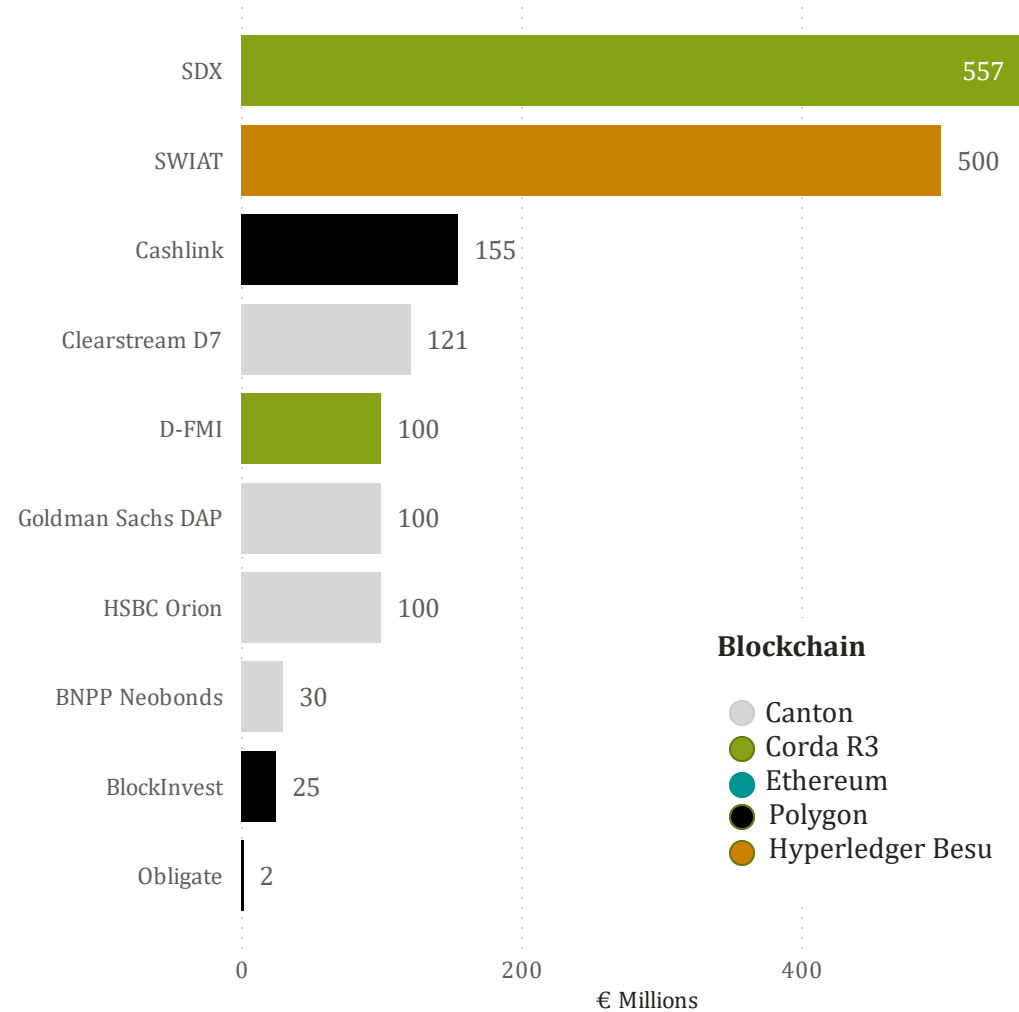
- 1) Private - Permissioned Blockchains include: Hyperledger (Besu/ Fabric);
- 2) Public - Permissioned Blockchains include: Canton, Corda R3 and Hyperledger (Besu);
- 3) Public - Permissionless Blockchains include: Ethereum, Polygon, Stellar and Tezos

4.11 European DLT Fixed Income Issuance by Regulatory Status of the Platform in 2024

Issue Regulatory Status	Deal Value EUR (million)	No. of Deals
FinTech - not a regulated financial institution	682	11
Stock Exchange and CSD (CH)	557	5
Credit Institution	230	4
CSD (EU)	221	7
Total	1,689	27

Deals issued by EDF, Bitcoin Suisse, BayernLB, Sparkasse Dortmund, and BNP Paribas are excluded due to missing Deal Value.
Three of the deals in 2024 were executed through a FinTech, non regulated financial institution, holding crypto custody and crypto securities registrar licenses (DE).
Sources: AFME, multiple sources

4.12 European DLT Fixed Income Issuance by Platform and Blockchain in 2024



4.13 DLT Fixed Income Issuance participating to the ECB wholesale DLT trial

Company	Company Nationality	Company type	Instrument	Platform	Blockchain	Maturity (years)	Coupon	Governing Law	Settlement Asset	Deal Value EUR (million)
Siemens	Germany	Corporate	Bond	SWIAT	Hyperledger Besu	1.00	3.25%	Germany	Euro wCBDC	300.0
Berlin Hyp	Germany	Financial	Covered Bond	SWIAT	Hyperledger Besu	3.00	2.75%	Germany	Euro wCBDC	100.0
Caisse des Dépôts et Consignations	France	Financial	Bond	D-FMI	Corda R3	10.00	3.33%	France	Euro wCBDC	100.0
European Investment Bank - EIB	Luxembourg	Supranational	Bond	Goldman Sachs DAP	Canton	5.00	2.55%	Luxembourg	Euro wCBDC	100.0
European Investment Bank - EIB	Luxembourg	Supranational	Bond	HSBC Orion	Canton	3.00	2.36%	Luxembourg	Euro wCBDC	100.0
Natixis Pfandbriefbank	Germany	Financial	Covered Bond	SWIAT	Hyperledger Besu			Germany	Undisclosed	100.0
Federal State of Saxony-Anhalt	Germany	Government/Municipal	Commercial Paper	Clearstream D7	Canton			Germany	Euro wCBDC	50.0
KfW	Germany	Financial	Bond	Cashlink	Polygon	0.25	3.46%	Germany	Euro wCBDC	50.0
L-Bank	Germany	Financial	Commercial Paper	Clearstream D7	Canton			Germany	Euro wCBDC	50.0
Republic of Slovenia	Slovenia	Government/Municipal	Bond	BNPP Neobonds	Canton	0.33	3.65%	Slovenia	Euro wCBDC	30.0
Cassa Depositi e Prestiti	Italy	Financial	Bond	BlockInvest	Polygon	0.33	3.63%	Italy	Euro wCBDC	25.0
Intesa Sanpaolo	Italy	Financial	Commercial Paper	Clearstream D7	Canton			NA	Euro wCBDC	10.0
DekaBank	Germany	Financial	Bond	Clearstream D7	Canton			Germany	Euro wCBDC	5.0
DZ Bank	Germany	Financial	Bond	Clearstream D7	Canton			NA	Euro wCBDC	5.0
WIBank	Germany	Financial	Bond	Cashlink	Polygon			NA	Euro wCBDC	5.0
ABN AMRO	Netherlands	Financial	Commercial Paper	Clearstream D7	Canton			NA	Euro wCBDC	1.1
Total										1,031.1

4.14 DLT Fixed Income Issuance participating to the SNB Helvetia Pilot

Company	Company Nationality	Company type	Instrument	Platform	Blockchain	Maturity (years)	Coupon	Governing Law	Settlement Asset	Deal Value EUR (million)
World Bank (IBRD)	United States	Supranational	Bond	SDX	Corda R3	7.00	1.16%	Switzerland	Swiss wCBDC	203.5
UBS AG	Switzerland	Financial	Covered Bond	SDX	Corda R3	5.00	1.51%	Switzerland	Swiss wCBDC	152.6
City of Lugano	Switzerland	Government/Municipal	Bond	SDX	Corda R3	9.00	1.00%	Switzerland	Swiss wCBDC	128.2
City of Basel	Switzerland	Government/Municipal	Bond	SDX	Corda R3	4.00	1.30%	Switzerland	Swiss wCBDC	111.2
City of Lugano	Switzerland	Government/Municipal	Bond	SDX	Corda R3	10.00	1.42%	Switzerland	Swiss wCBDC	105.7
City of Zurich	Switzerland	Government/Municipal	Bond	SDX	Corda R3	11.00	1.45%	Switzerland	Swiss wCBDC	103.7
City of St Gallen	Switzerland	Government/Municipal	Bond	SDX	Corda R3	3.00	1.25%	Switzerland	Swiss wCBDC	103.6
Swiss National Bank	Switzerland	Financial	Bill	SDX	Corda R3	0.02		Switzerland	Swiss wCBDC	66.5
Total										974.9

The Helvetia Pilot was launched in December 2023 and in June 2024, was further extended and will continue until June 2026.

Sources: AFME, SDX, multiple sources

Global DLT Repo Transactions

DLT Repo Market

The DLT framework has enhanced the development of repo transactions facilitating an almost instantaneous settlement execution.

Consolidated data on DLT-based repo transactions are scarce. However, platforms such as Broadridge DLR have indicated processing c\$50bn per day. Other platforms such as JP Morgan's Kinexys process c\$2bn per day across all its applications, including intraday repo transactions and other digital payments.

Additionally, as part of Central Bank DLT repo trials, the ECB, the Swiss National Bank, and Singapore's Monetary Authority concluded **7 trial and experiment repo transactions in 2024**.

Most of the 2024 repo transactions participating to the ECB Trial were executed on **Clearstream D7**, which is fully owned by Deutsche Borse, and by **SWIAT**, the German platform created by a consortium of financial institutions including DekaBank, LBBW, SC Ventures and Comyno.

Other private repo transactions not related to central bank trials were executed in 2024 using tokenised assets such as DLT-based bonds or commercial paper as collateral. Details of these transactions are on the next page.

Notwithstanding the participation of leading platforms and the recent central bank trials, the use of DLT in repo transactions continues small relative to the global size of the repo market of c€3-4tn transactions per day.

Repo Trial and Test Transactions conducted by Global Central Banks

European Central Bank	Singapore Monetary Authority	Swiss National Bank
5	1	1

Repo Transactions Average Daily Volume by Major Platforms

Broadridge DLR

\$50bn

The ECB trials included 2 test transactions that were executed with mock settlement in a test environment.

Sources: AFME, Ledger Insights, Broadridge (<https://www.broadridge.com/article/capital-markets/dlr-transacts-1-trillion-a-month>)

5.1 Latest 20 DLT Repo Transactions

Date	Participants	Collateral	Participation	Settlement Asset	Platforms
13/12/2024	Societe Generale - FORGE, ECB	Digital Bond		Euro wCBDC	
26/11/2024	Goldman Sachs, Clearstream		ECB trials	Euro wCBDC	Clearstream D7, HQLAx, Eurex Repo F7
22/11/2024	DekaBank, NatWest Markets N.V.	Native Digital Security	ECB trials	Euro wCBDC	SWIAT
20/11/2024	Swiss National Bank		SNB trials		CO:RE, SDX, TPA
11/11/2024	DekaBank, LBBW	Non-native Digital Security	ECB trials	Euro wCBDC	SWIAT
30/10/2024	JP Morgan, OCBC	Tokenised Securities			JPMorgan Kinexys
30/10/2024	OCBC, JP Morgan				JPMorgan Kinexys
22/10/2024	ABN AMRO		ECB trials	Euro wCBDC	Clearstream D7
16/09/2024	Canadian Bank				Broadridge DLR
12/09/2024	DZ Bank		ECB trials	Euro wCBDC	Clearstream
27/02/2024	HSBC, Bank of East Asia	Digital Green Bond			HSBC Orion
15/11/2023	UBS, SBI, DBS	Digital Bond	MAS Project Guardian	JPY Stablecoin	
23/05/2023	DRW, Societe Generale, Third Bank				Broadridge DLR
03/04/2023	UBS & Asian Bank				Broadridge DLR
05/12/2022	Santander, Goldman Sachs and UBS				Fnality Payment System, HQLAx
23/11/2022	DBS Bank			JPM Coin	JPMorgan Kinexys
06/10/2022	HQLAx, JPMorgan, Ownera and Wematch				JPMorgan Kinexys, HQLAx, Wematch
20/07/2022	BNY Mellon, Goldman Sachs	Loaned Securities			HQLAx
16/05/2022	BNP Paribas				JPMorgan Kinexys
13/09/2021	Societe Generale - FORGE, German Asset Manager	Ethereum-based issued Digital Bond			

The deals executed by 1) DZ Bank, 2) DekaBank and NatWest Markets, and 3) HQLAx, JP Morgan, Ownera and Wematch, were simulations to test the DLT environment.
Sources: AFME, Ledger Insights

Global Tokenised Funds

Global Tokenised Funds

As of 2024, market data indicates more than €2.1bn in assets under management (AUM) registered globally on 31 tokenised funds. The amount, notwithstanding the promising growth, continues small relative to the c€140tn of the global fund management industry's AUM.

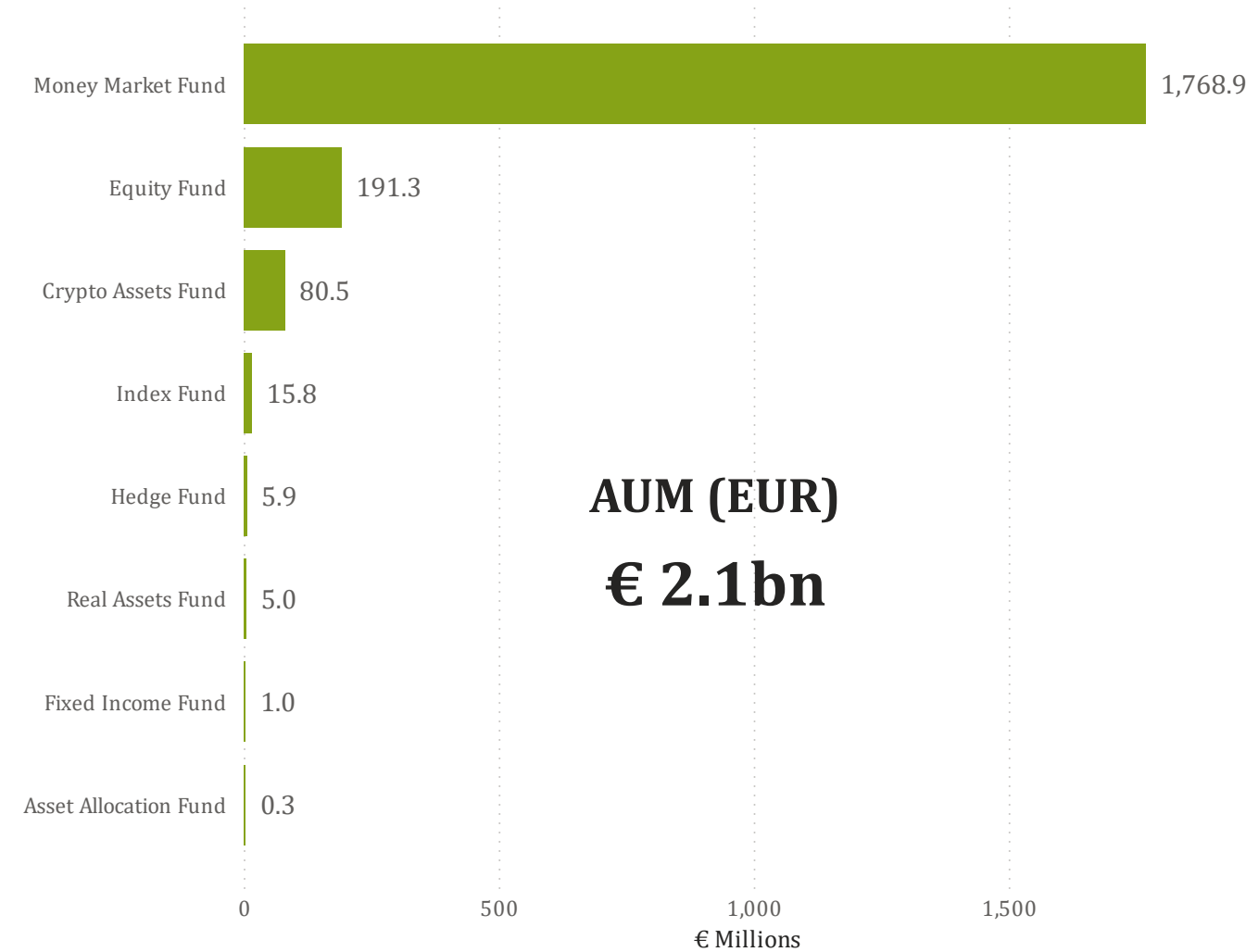
More than 80% of the AUM was allocated into US and EU Government securities (€1,769mn), while only a small portion invested in other asset classes, such as Equity (€191mn), Crypto Assets (€81mn), Real Estate (€5mn), among others.

The three largest funds held by Hashnote (AUM standing at €569mn), BlackRock (€500mn), and Franklin Templeton (€406mn) invested in US Treasuries and represented over 70% of the total assets under management. The three funds were available in several public chains, such as Ethereum, Stellar, Polygon, and Canton.

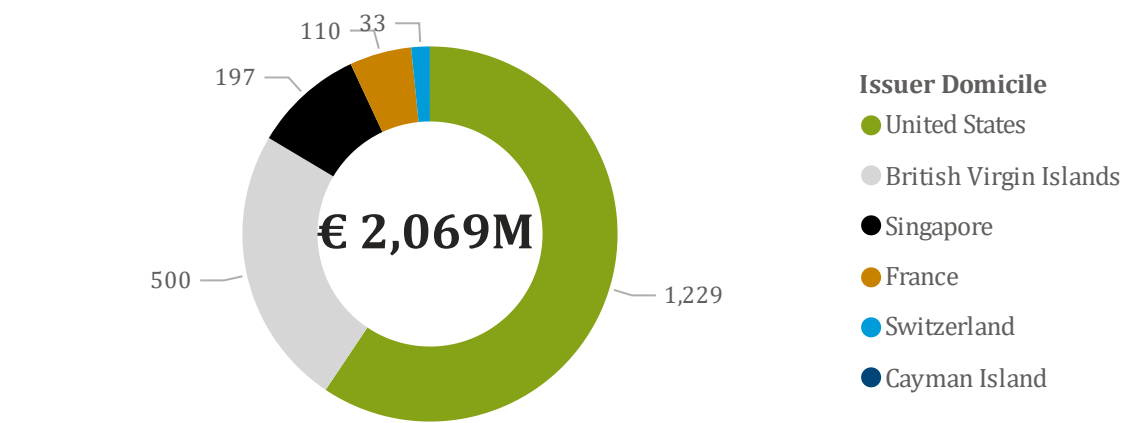
The asset manager with the highest number of tokenised funds was WisdomTree with €27mn on 13 funds mostly investing in US Treasuries. Backed Assets (JE) Limited reached €29mn on 3 funds investing in US Treasuries, Equity and Eurozone Government Bonds.

The United States leads globally as the main country domicile for tokenised funds both when measured by value and by number of funds.

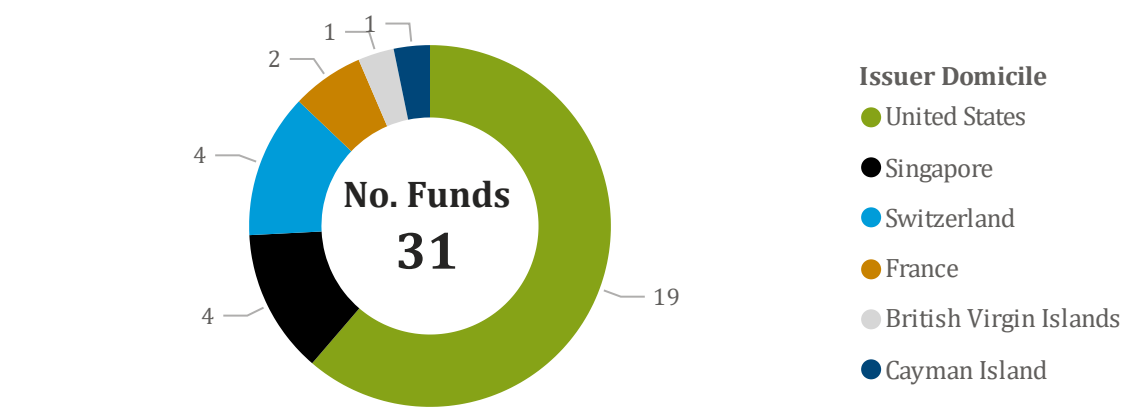
6.1 AUM of Global Tokenised Funds by Asset Class



6.2 AUM of Global Tokenised Funds by Issuer Domicile (EUR mn)

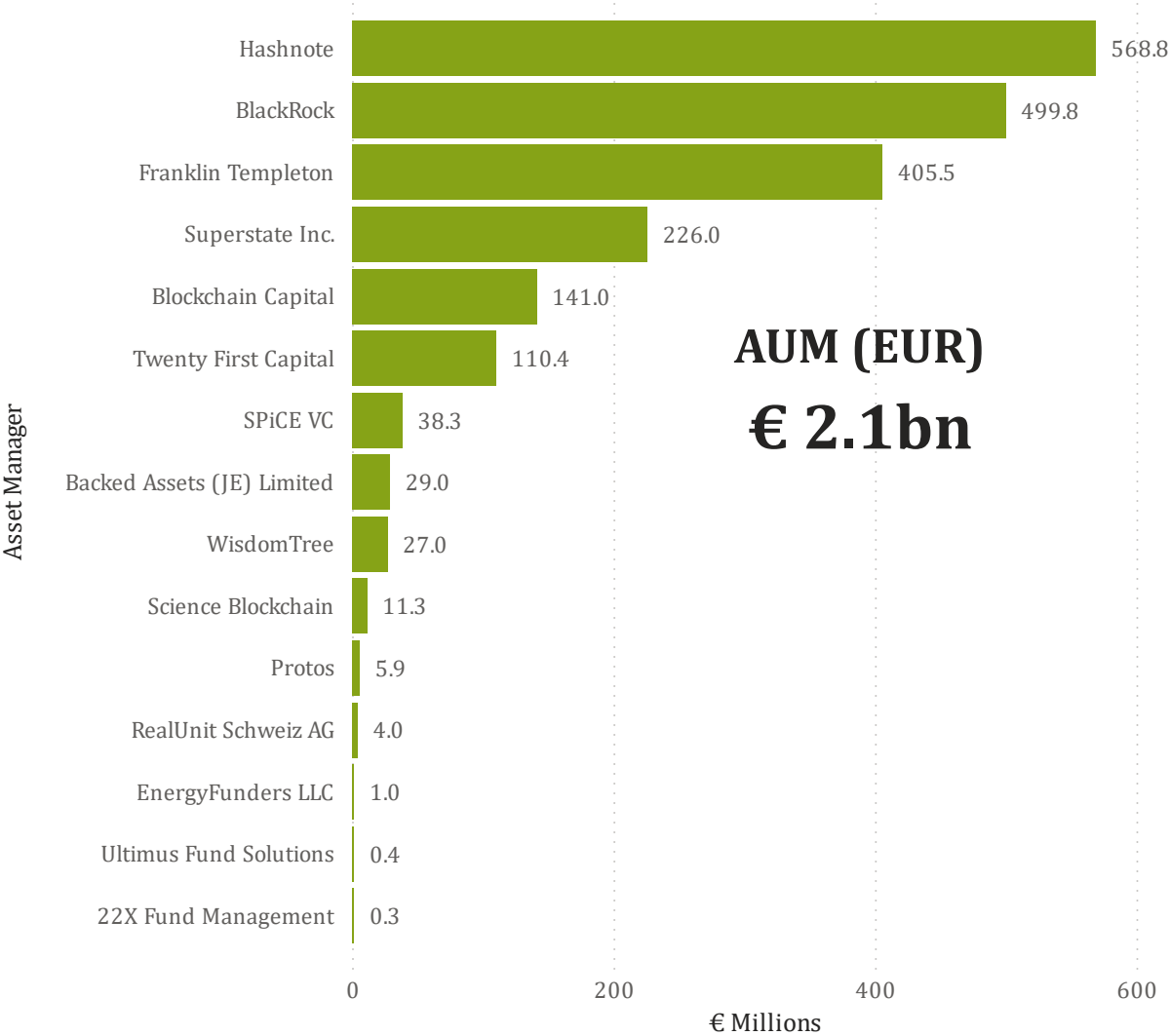


6.3 No. of Global Tokenised Funds by Issuer Domicile

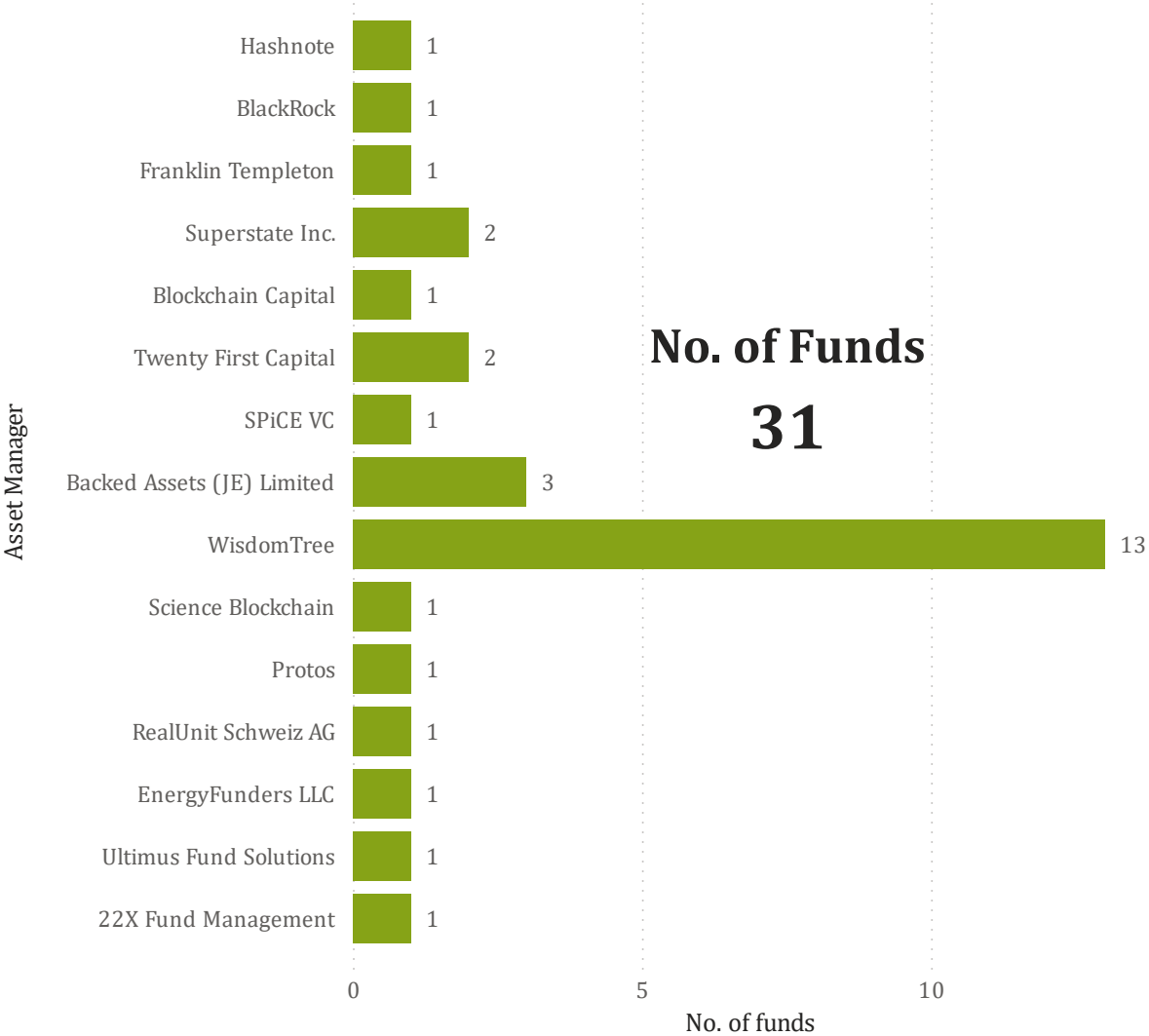


The Asset Class classification reflects the fund's predominant investment category, although many funds maintain diversified, multi-asset investment portfolio.
Sources: Security Token Market, RWA.xyz, multiple sources

6.4 AUM of Global Tokenised Funds by Asset Manager



6.5 No. of Global Tokenised Funds by Asset Manager



Sources: Security Token Market, RWA.xyz, multiple sources

6.6 List Global Tokenised Funds by AUM

Fund	Asset Manager	Issuer Domicile	Fund Type	Asset Class	Currency	AUM EUR (million)
Hashnote US Yield Coin Token	Hashnote	United States	Money Market Fund	US Treasuries	USD	568.8
BlackRock USD Institutional Digital Liquidity Fund Token	BlackRock	British Virgin Islands	Money Market Fund	US Treasuries	USD	499.8
Franklin OnChain U.S. Government Money Fund Token	Franklin Templeton	United States	Money Market Fund	US Treasuries	USD	405.5
Superstate Short Duration US Government Securities Fund Token	Superstate Inc.	United States	Money Market Fund	US Treasuries	USD	145.5
Blockchain Capital III Digital Liquid Venture Fund	Blockchain Capital	Singapore	Equity Fund	Blockchain Projects	USD	141.0
Superstate Crypto Carry Fund	Superstate Inc.	United States	Crypto Assets Fund	Crypto Assets	USD	80.5
Spiko EU T-Bills Money Market Fund Token	Twenty First Capital	France	Money Market Fund	Eurozone Government Bond	EUR	69.1
Spiko US T-Bills Money Market Fund Token	Twenty First Capital	France	Money Market Fund	US Treasuries	USD	41.3
SPiCE VC Token	SPiCE VC	Singapore	Equity Fund	Blockchain Projects	USD	38.3
Backed IB01 \$ Treasury Bond 0-1yr	Backed Assets (JE) Limited	Switzerland	Money Market Fund	US Treasuries	CHF	17.2
WisdomTree Government Money Market Digital Fund Token	WisdomTree	United States	Money Market Fund	US Treasuries	USD	11.4
Science Blockchain Fund	Science Blockchain	Singapore	Equity Fund	Blockchain Projects	USD	11.3
Backed GOVIES 0-6 Months Euro Investment Grade Token	Backed Assets (JE) Limited	Switzerland	Money Market Fund	Eurozone Government Bond	EUR	8.4
Protos	Protos	Singapore	Hedge Fund	Blockchain Projects		5.9
WisdomTree Technology & Innovation 100 Digital Fund	WisdomTree	United States	Index Fund	Index Fund	USD	4.0
RealUnit Schweiz AG	RealUnit Schweiz AG	Switzerland	Real Assets Fund	Real Assets	CHF	4.0
WisdomTree 500 Digital Fund	WisdomTree	United States	Index Fund	Index Fund	USD	3.9
Backed CSPX Core S&P 500 Token	Backed Assets (JE) Limited	Switzerland	Index Fund	Corporates	CHF	3.3
WisdomTree Floating Rate Treasury Digital Fund	WisdomTree	United States	Money Market Fund	US Treasuries	USD	1.5
WisdomTree Short-Duration Income Digital Fund	WisdomTree	United States	Fixed Income Fund	Fixed Income	USD	1.0
Total						2,061.7

Other Tokenised Assets

Market data indicates other use cases of tokenised instruments, including private assets and tokenisation of publicly traded shares.

Tokenised Asset Backed Securities (ABS)

Market Cap of tokenised ABS stood at \$11.5bn as of November 2024, with the two primary instruments originating from United States and China.

Tokenised Equity

As of November 2024, the market cap of tokenised equity reached \$17.3bn, primarily driven by the commodity-focused company Enegra, which tokenised 100% of its equity, valued at \$15.9bn. The remaining \$1.4bn corresponds predominantly of tokenisation of publicly traded shares.

Tokenised Real Estate

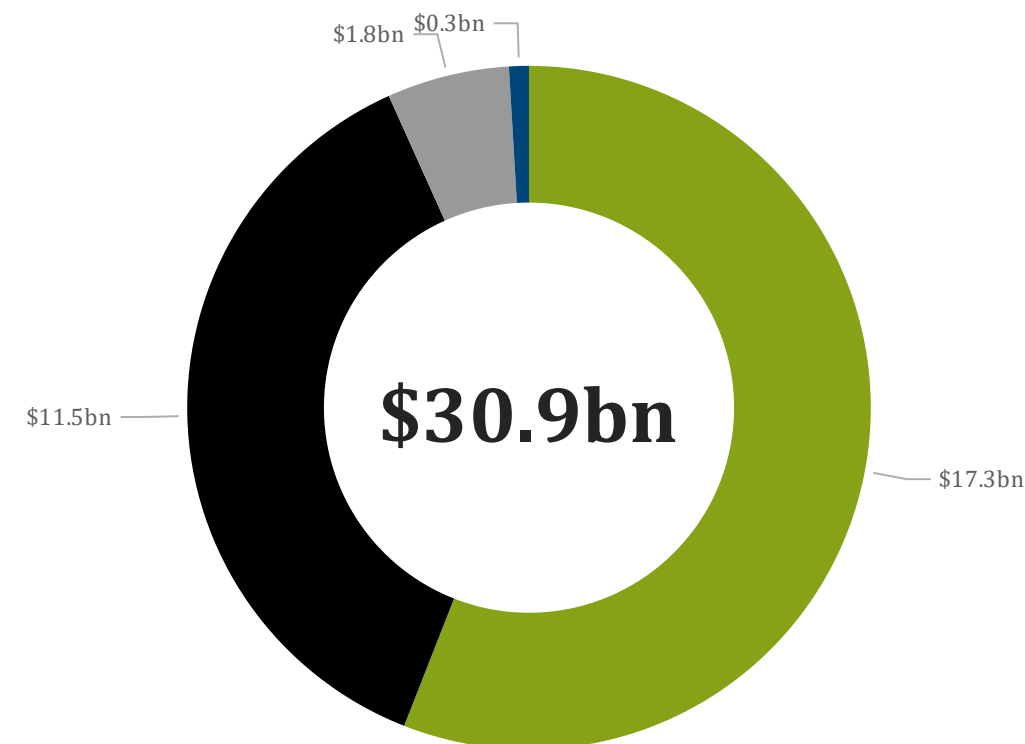
Real estate tokenisation enables properties to be represented as tradable digital security tokens that are secured by blockchain technology. As of November 2024, the market cap stood at \$0.3bn, mostly represented by US properties.

Tokenised Private Credit

As of the end of 2024, the market cap of tokenised private credit reached \$1.8bn. The majority of deals originated in North America and Singapore, with a smaller share issued in Latin America.

7.1 Market Cap by Tokenised Asset Class

● Equity ● ABS ● Private Credit ● Real Estate



Glossary

- **Distributed Ledger Technology (DLT):** DLT is a database construct that brings together existing approaches around distributed computing networks and data encryption. It enables everyone involved to access the transaction's details.
- **Blockchain:** a form of distributed ledger in which details of transactions are held in the ledger in form of blocks of information. Blockchains can be:
 - a. Private-permissioned: a centralised authority controls the access to the network and actors that can perform actions on the network
 - b. Public-permissioned: allows public access to the network and centralised authority controls actors that can perform on the network
 - c. Public-permissionless: allows unrestricted access to the network and anyone can perform actions
- **Virtual asset:** a digital representation of value that can be digitally traded, or transferred, and can be used for payment or investment purposes.
- **Tokenisation:** digital representation of regulated financial instruments and money on a distributed ledger, reflecting an ownership right of the underlying asset.
- **Tokenised Commercial Bank Money:** digital tokens reflecting a deposit ownership claim reflected on DLT for a fixed amount of fiat money.
- **Tokenised Security:** issued and custodied traditionally, but are converted onto a distributed ledger through a digital twin token representing the underlying traditional security.
- **Native digital asset:** a security that was originally issued, recorded and kept in a DLT-based system.
- **Wholesale Central Bank Digital Currency (wCBDC):** specialised, limited purpose digital tokens representing a claim on central bank for fixed amount of fiat money denominated in single currency. These tokens are primarily used among banks and other licensed financial institutions for interbank payments and securities transactions.
- **Smart contracts:** self-executing contract with the terms of agreement written into code and deployed on a blockchain.

Contacts

Research

Virginia Pagliero
Graduate, Research
Virginia.Pagliero@afme.eu
+32 2 883 55 55

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

Advocacy

Stefano Mazzocchi
Managing Director and Deputy
Head, Advocacy
Stefano.Mazzocchi@afme.eu
+32 2 883 55 46

Technology & Operations

Coen ter Wal
Director, Technology & Operations
Coen.terWal@afme.eu
+44 20 3828 2727

Coco Chen
Associate Director, Technology & Operations
Coco.Chen@afme.eu
+44 20 3828 2749

Fixed Income

Victoria Webster
Managing Director, Fixed Income
Victoria.Webster@afme.eu
+44 20 3828 2689

Rupert Warmington
Senior Advisor, Fixed Income
Rupert.Warmington@afme.eu
+44 20 3828 2701

London Office	Brussels Office	Frankfurt Office
Level 10 20 Churchill Place London E14 5HJ United Kingdom +44 (0)20 3828 2700	Rue de la Loi, 82 1040 Brussels Belgium +32 (0)2 788 3971	AFME c/o SPACES, Große Gallusstraße 16-18, 60312 Frankfurt am Main, Germany +49 69 153 258 963

• **Follow AFME on X** • •
@AFME_EU

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 <https://www.afme.eu/About-Us/Terms-of-use>) 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