Course 2024–2025 in Sustainable Finance
Lecture 4. Sustainable Financial Products

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[1] The opinions expressed in this presentation are those of the authors and are not meant to represent the opinions or official positions of Amundi Asset Management.

Agenda

- Lecture 1: Introduction
- Lecture 2: ESG Scoring
- Lecture 3: Impact of ESG Investing on Asset Prices and Portfolio Returns
- **Lecture 4: Sustainable Financial Products**
- Lecture 5: Impact Investing
- Lecture 6: Biodiversity
- Lecture 7: Engagement & Voting Policy
- Lecture 8: Extra-financial Accounting
- Lecture 9: Awareness of Climate Change Impacts
- Lecture 10: The Ecosystem of Climate Change
- Lecture 11: Economic Models & Climate Change
- Lecture 12: Climate Risk Measures
- Lecture 13: Transition Risk Modeling
- Lecture 14: Climate Portfolio Construction
- Lecture 15: Physical Risk Modeling
- Lecture 16: Climate Stress Testing & Risk Management

Regulation

"Today it is difficult for consumers, companies and other market actors to make sense of the many environmental labels and initiatives on the environmental performance of products and companies. There are more than 200 environmental labels active in the EU, and more than 450 active worldwide; there are more than 80 widely used reporting initiatives and methods for carbon emissions only. Some of these methods and initiatives are reliable, some not; they are variable in the issues they cover" (European Commission, 2020).

Source: `https://ec.europa.eu/environment/eussd/index.htm`

Sustainable finance disclosure regulation (SFDR)

Article 6	Article 8	Article 9
These funds do not integrate or promote sustainability factors in their investment decisions. This means that they can invest in assets regardless of their ESG practices. They do not face ESG constraints. Article 6 is the default category. It can be seen as the traditional investment approach before the advent of ESG.	These funds integrate environmental, social and governance factors into their investment decisions. This means that their investment policy depends on some ESG criteria. For example, they may exclude some assets from their investment universe because of their poor extra-financial score. However, financial performance remains the primary objective of these funds, ahead of sustainability.	These funds have sustainable investing as their primary objective. Like Article 8 funds, they incorporate ESG criteria. The difference is that they allocate capital based on the impact of these assets on the development of economic sustainability. In simple terms, these funds can be assimilated to the impact investing category of the ESG strategy classification.

Sustainable finance disclosure regulation (SFDR)

SFDR

- Article 6: Non-ESG funds (standard funds)
- Article 8: ESG funds (funds that promote E or S characteristics)
- Article 9: Sustainable funds (funds that have a sustainable investment objective: impact investing or reduction of carbon emissions)

Sustainable finance disclosure regulation (SFDR)

To maintain their Article 9 designation, funds must meet three requirements on an ongoing basis:

1. **Positive impact**
   The fund's investments must actively contribute to a specific environmental or social objective. This objective should be consistent with the overall objectives of the fund and pursued through a clear and transparent investment strategy.
2. **Do no harm**
   The fund must carefully assess and mitigate any potential negative social or environmental impacts of the companies in which it invests.
3. **Strong governance**
   Companies in the fund's portfolio must demonstrate strong governance practices. This ensures accountability and ethical behavior by the companies in which the fund invests.

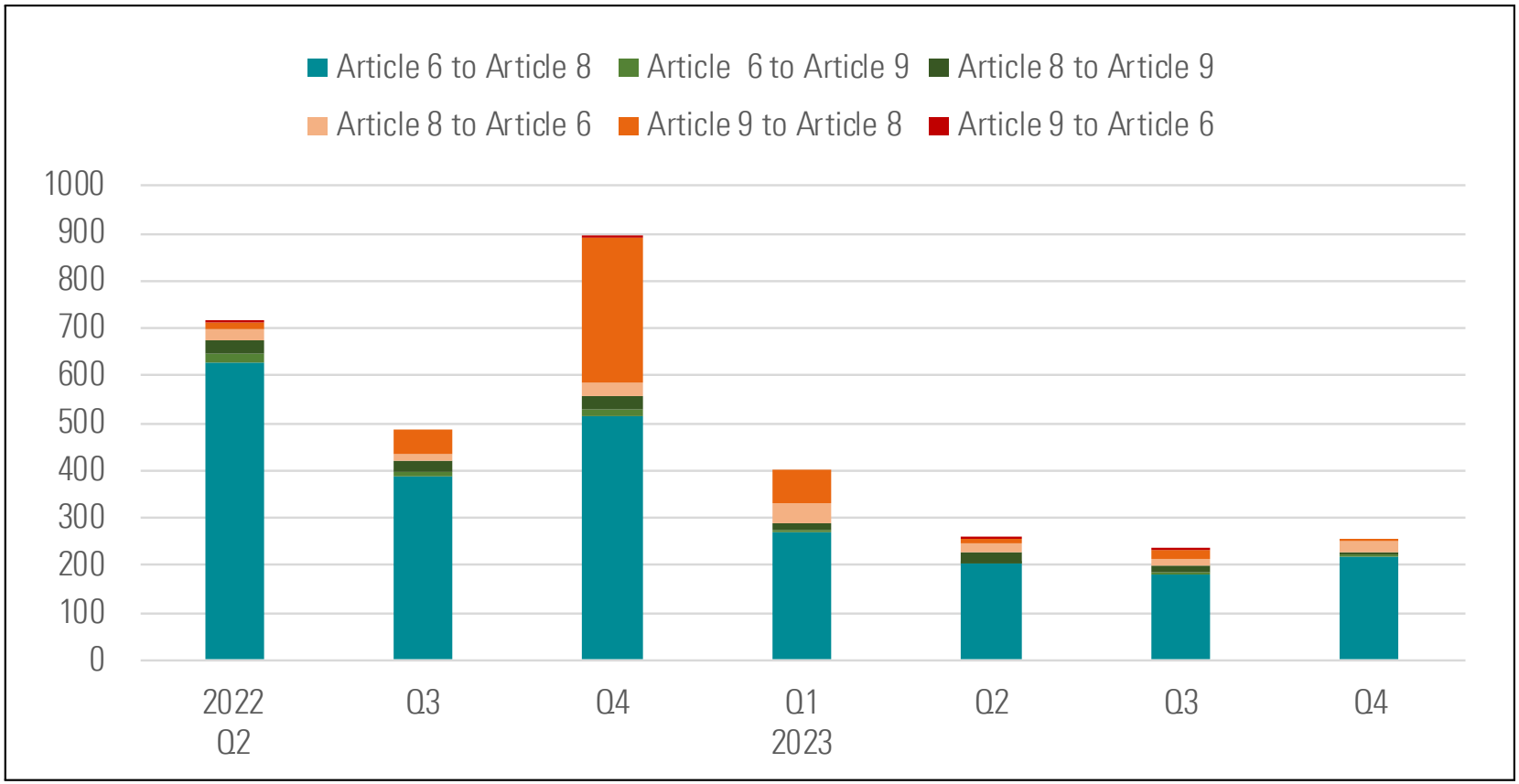
Sustainable finance disclosure regulation (SFDR)

Table 1: Pre-contractual information disclosure for Art. 9 financial products

- What is the sustainable investment objective of this product?
  - How does this product measure that the sustainable investment objective will be met?
  - What investments are not sustainable, what is their purpose and are there any minimum environmental or social safeguards?
- Has a reference benchmark been designated for the purpose of ensuring consistency with the sustainable investment objective of the product and how the consistency is monitored?
  - How does the benchmark used differ from a relevant broad market index?
- What type of investments does this product make and what is the minimum proportion of sustainable investments?
  - What are the objectives of the sustainable investments?
  - How is significant harm to the environment and people avoided by the sustainable investments made?
- What is the minimum proportion of EU Taxonomy-aligned investments?
- Does this product commit to consider the most significant negative impacts of its investments on the environment and people (principal adverse impacts)?
- Does this product aim to decrease the greenhouse gas (GHG) emissions from the activities the product invests in?
  - What is the greenhouse gas emission reduction target of the product?
  - Is the greenhouse gas emission reduction target of the product compatible with the objective to limit global warming to $1.5^{\circ}\mathrm{C}$?

Sustainable finance disclosure regulation (SFDR)

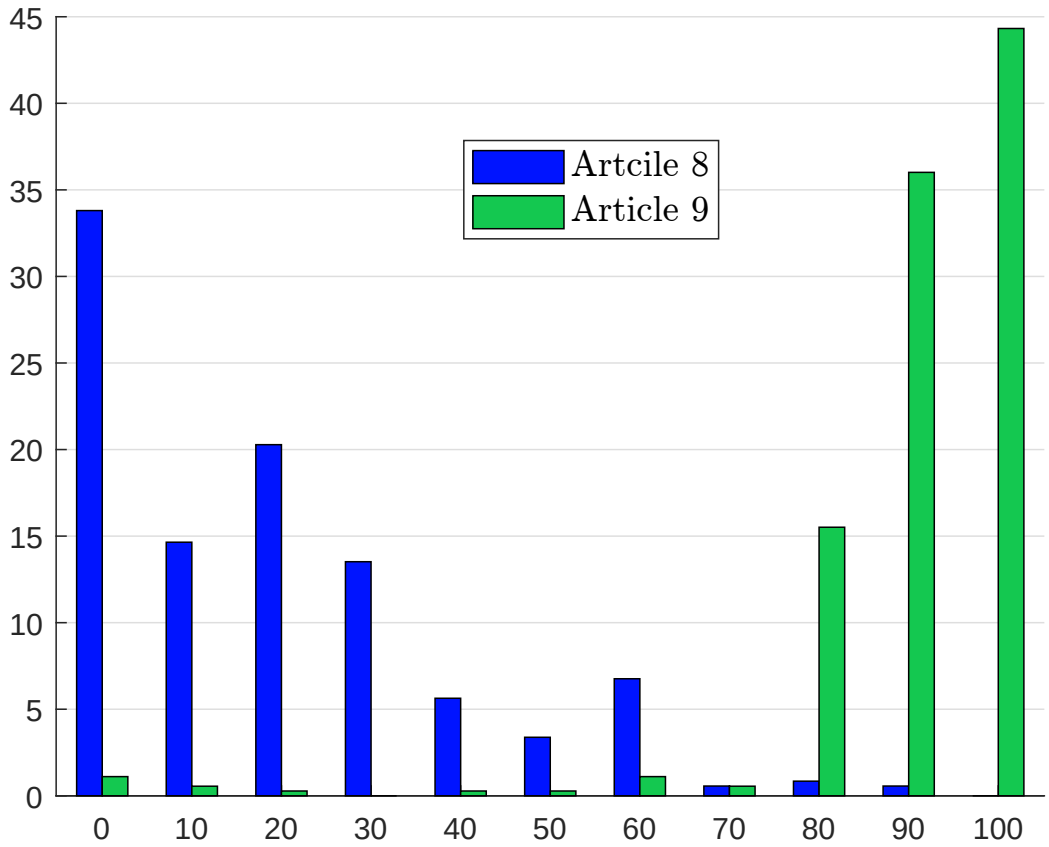
Figure 1: Reclassification of Article 6, 8 and 9 funds



Source: Morningstar (2024).

Sustainable finance disclosure regulation (SFDR)

Figure 2: Distribution of minimum sustainable investment percentages (Article 8 vs. Article 9 funds, December 2023)



Source: Morningstar (2024).

Sustainable finance disclosure regulation (SFDR)

Table 2: Number of principal adverse indicators (PAI) in the SFDR

		Corporates	Sovereigns	Real estate assets	Total
Mandatory	E	9	1	2	12
	S	7	1	0	8
	Total	16	2	2	20
Voluntary	E	17	1	5	23
	S	21	4	0	25
	G	3	3	0	6
	Total	41	8	5	54
Total		57	10	7	74

Source: ESMA (2023) & Author's calculations.

Sustainable finance disclosure regulation (SFDR)

Table 3: Statement on principal adverse impacts of investment decisions on sustainability factors

Indicator	AXA IM Paris July 2023	Amundi Luxembourg June 2023	BlackRock Ireland June 2023	DWS GmbH 2023	JP Morgan AM Europe June 2023	Schroder IM Europe June 2023	Nordea 1 GCE Fund Q4 2023	Handelsbanken GIC Fund 2023
1. Total GHG emissions	60887445	16688741	233064529	117087045	88112702	41176662	739486	1773122
2. Carbon footprint	497	91.6	271	489.4	221	374.77	83.3	305.33
3. GHG intensity	1 109	286.9	597	1 087.9	864	1 014.03	290.5	860.39
4. Fossil fuel exposure (corporates)	5.43%	11.7%	9%	17.07%	1.2%	6.59%	8.1%	2.64%
5. Non-renewable energy share	60.01%	77.7/64.2%	64/60%	75.15%	0.97/0.83%	80.99%	77.6%	68.24/15.14%
6. Energy consumption intensity	0.15-3.80	0.2/2.6	0.7	0.21-14.26	0-1.39	29.22	2.4	0.17/1117
7. Impact on biodiversity	4.86%	0.0%	2%	0.08%	1.12%	0.06%	0.0%	4.73%
8. Emissions to water	0.02	256.2	0	238.59	1.57	2.29	0.1	0.25
9. Hazardous waste	5.72	22.6	57	8.29	2.64	3.52	0.4	33.36
10. Non-respect for human rights	0.07%	0.7%	10%	0.17%	0.03%	1.03%	0.0%	0.0%
11. Gender pay gap	14.87%	9.6%	15%	14.27%	8.29%	12.74%	6.7%	15.13%
12. Board gender diversity	36%	29.4%	32%	32.94%	4.92%	35.39%	33.0%	30.35%
13. Non-cooperative tax jurisdictions								
14. Exposure to controversial weapons	0%	0.0%	<0.01%	0%	0.01%	0%	0.0%	0.04%
15. Tobacco exposure								
16. Lack of adequate wage								
17. Sovereign GHG intensity	387	451.6	51	294.7	32.01	362.68		
18. Country social violations	1	8	4	6	1	2		
19. Fossil fuel exposure (real estate)		0%	0%					
20. Energy-inefficient real estate		44.90%	0%					

Source: Asset managers' websites & Author's calculations.

UK sustainability disclosure requirements (SDRs)

- An **anti-greenwashing rule** for all firms authorised by the FCA to reinforce that sustainability-related claims must be fair, clear and not misleading
- **Rules on the naming and marketing** of investment products to ensure that the use of sustainability-related terms is accurate
- **Four labels** to help consumers navigate the investment product landscape and increase consumer confidence
- Consumer-facing information to provide consumers with better, **more accessible information** to help them understand the key sustainability features of a product
- Detailed information targeted at institutional investors and consumers seeking **more information** in pre-contractual, ongoing product-level, and entity-level disclosures
- **Requirements for distributors** to ensure that product-level information (including labels) is made available to consumers

UK sustainability disclosure requirements (SDRs)

The four voluntary sustainability labels are:

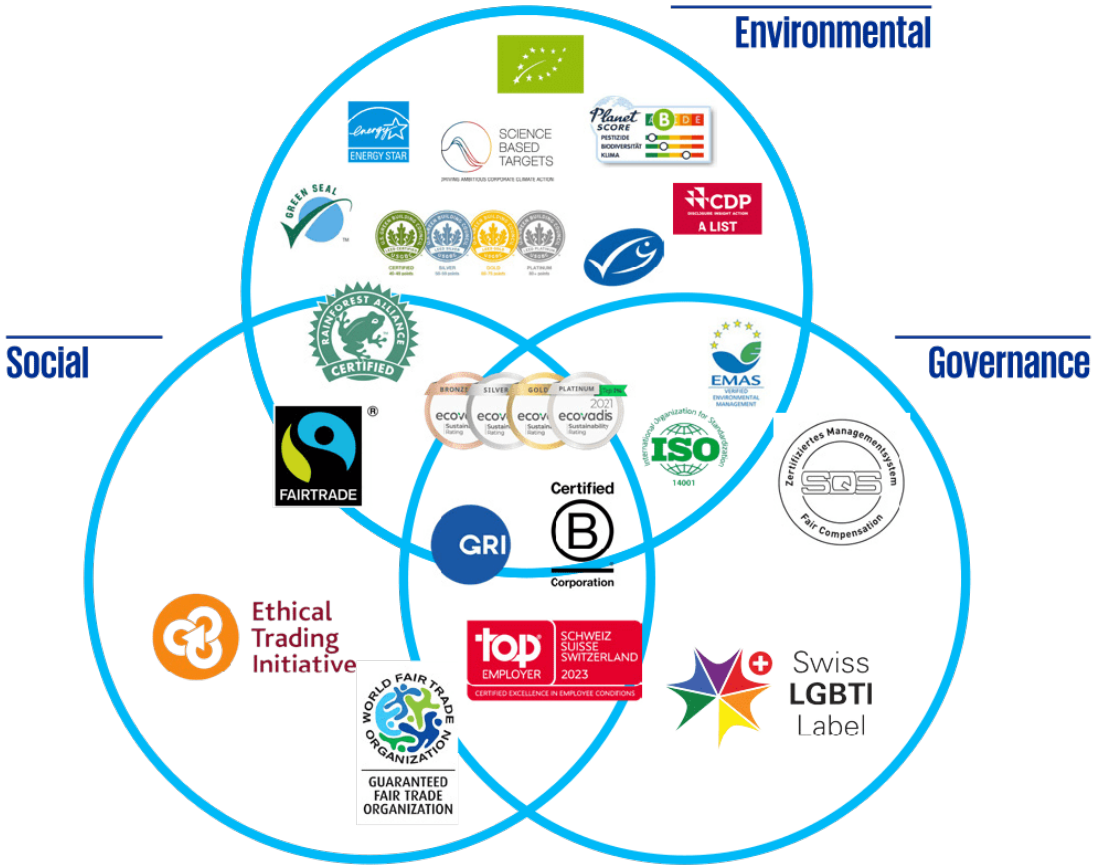
1. **Sustainability Focus** funds invest in assets that are environmentally or socially sustainable, determined by a robust, evidence-based standard of sustainability
2. **Sustainability Improvers** funds invest in assets that have the potential to become more sustainable over time, determined by their potential to meet a robust, evidence-based standard of sustainability over time
3. **Sustainability Impact** funds seek to achieve a predefined, positive, measurable environmental and/or social impact
4. **Sustainability Mixed Goals** funds invest in assets that meet or have the potential to meet a robust, evidence-based standard for sustainability, and/ or invest with an aim to achieve positive impact

Other regulations

- United States
  On September 20, 2023, the SEC introduced new rules aimed at preventing the misleading use of ESG terms in mutual fund names and combating greenwashing
- Japan
  On March 2023, the Financial Services Agency of Japan issued new guidelines for ESG investment funds. Again, the aim of these guidelines is to combat greenwashing
- Malaysia
  On February 2023, the Securities Commission of Malaysia released a revised version of the Guidelines for Sustainable and Responsible Investment Funds, which sets out the reporting and disclosure requirements for a fund to qualify as a Sustainable and Responsible Investment (SRI) fund and an ASEAN Sustainable and Responsible Fund (SRF)

Sustainable labels

Figure 3: The jungle of sustainability labels



www.kpmg.com/ch/en/home/insights/2023/03/sustainability-eco-label.html.

Sustainable labels

Table 4: Main sustainable labels

	Name	website	Type	Country	Sponsor
	FNG-Siegel	www.fng-siegel.org	ESG	Austria, Germany, Switzerland	FNG: Forum Nachhaltige Geldanlagen
	Label Greenfin	www.ecologie.gouv.fr/label-greenfin	Green	France	French Gov.
	Label ISR	www.lelabelisr.fr	ESG	France	French Gov.
	LuxFLAG Climate Finance	www.luxflag.org/labels//climate-finance	ESG	Luxembourg	LuxFLAG
	LuxFLAG Environment	www.luxflag.org/labels/environment	ESG	Luxembourg	LuxFLAG
	LuxFLAG ESG	www.luxflag.org/labels/esg	ESG	Luxembourg	LuxFLAG
	LuxFLAG Microfinance	www.luxflag.org/labels/microfinance	ESG	Luxembourg	LuxFLAG
	Nordic Swan Ecolabel	www.nordic-swan-ecolabel.org	Green	Nordics	Nordic Council
	Towards Sustainability	www.towardssustainability.be	Green	Belgium	Febelfin
	Umweltzeichen	www.umweltzeichen.at	ESG	Austria	Austrian Gov.

Greenwashing issues

The big issue for an investor is:

How to avoid Greenwashing (& ESG washing)?

Greenwash (also greenwashing)

- Activities by a company or an organization that are intended to make people think that it is concerned about the environment, even if its real business actually harms the environment
- A common form of greenwash is to publicly claim a commitment to the environment while quietly lobbying to avoid regulation

Source: **Oxford English Dictionary (2020)**, https://www.oed.com

In finance, greenwashing is understood as making misleading claims about environmental practices, performance or products

Greenwashing issues

We must distinguish two types of risk:

- Explicit & deliberate greenwashing

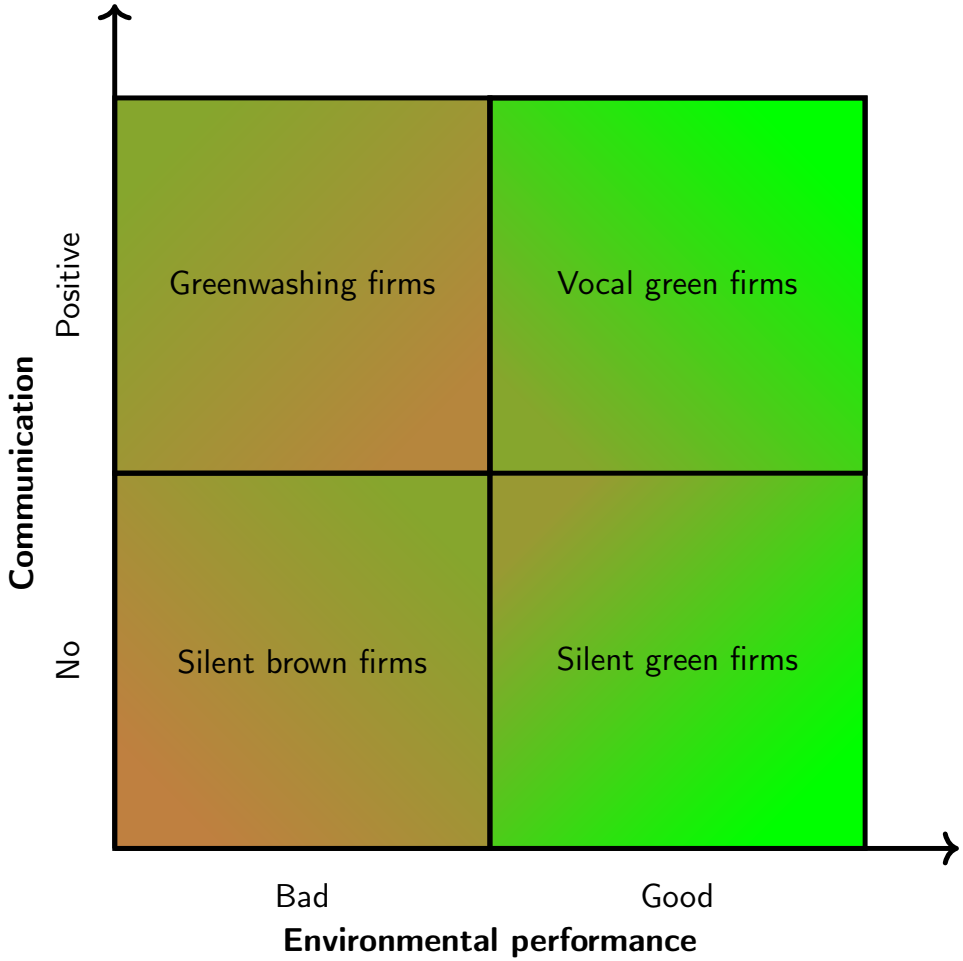
  Deliberate greenwashing = mis-selling risk

- Unintentional greenwashing

  Unintentional greenwashing = misinterpretation risk

Greenwashing issues

Figure 4: A typology of firms based on environmental performance and communication (Delmas and Burbano, 2011)



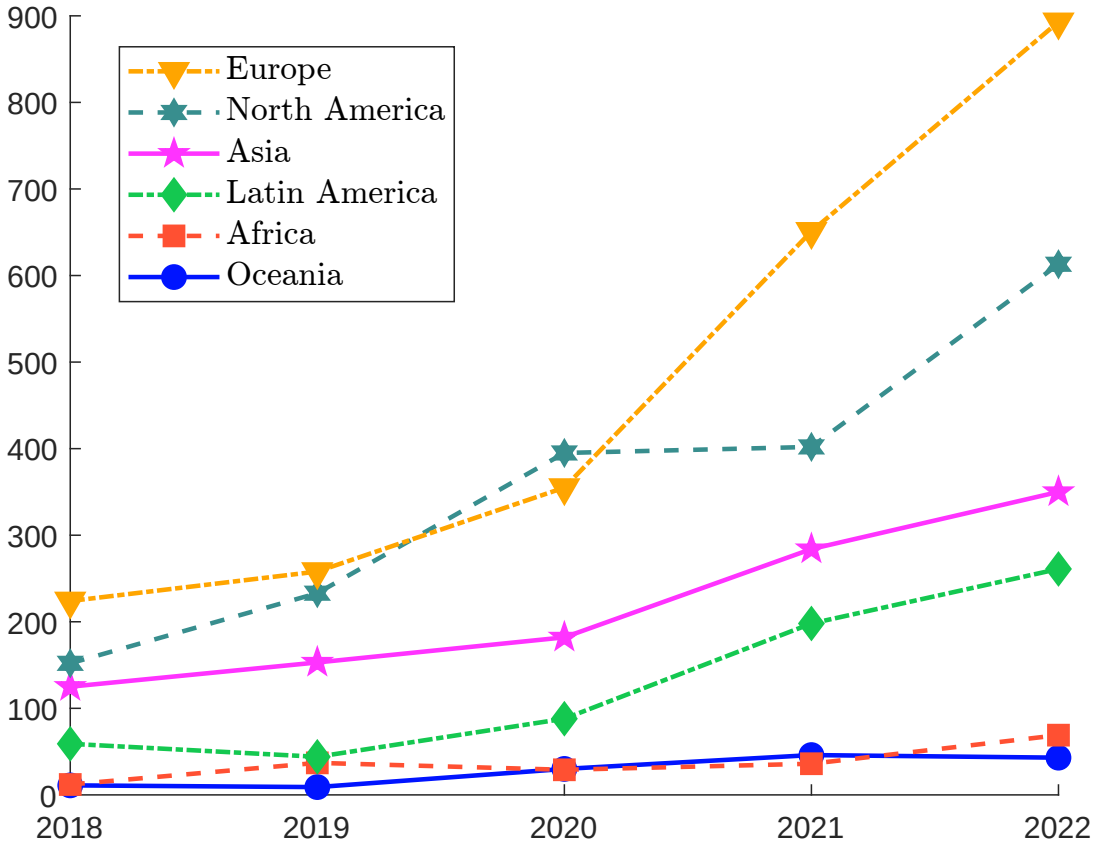
Greenwashing issues

According to Delmas and Burbano (2011), "*a greenwashing firm engages in two behaviors simultaneously: poor environmental performance and positive communication about its environmental performance*" and there are two ways by which a non-greenwashing firm can become a greenwashing firm:

- "*First, a vocal firm can alter its environmental performance.*"
- "*Second, a brown firm can alter communication about its environmental performance.*"

Greenwashing issues

Figure 5: Count of unique entities with at least one ESG risk incident linked to both environmental footprint and misleading communication



Source: RepRisk (2023).

Greenwashing issues

Table 5: Breakdown of sectors linked to climate greenwashing (in %)

Sector	2018–2022	2023
Banking and financial services	13.1	15.5
Food and beverage	9.2	8.2
Industrials and construction	8.1	9.5
Mining	5.0	3.9
Oil and gas	26.1	19.3
Retail, personal, and household goods	7.7	6.8
Travel and airlines	5.4	9.7
Utilities	11.6	10.0
Other	13.7	17.2

Source: RepRisk (2023).

Greenwashing issues

Planet Tracker identifies six types of greenwashing activities:

1. "***Greencrowding*** *is built on the belief that you can hide in a crowd to avoid discovery*
2. ***Greenlighting*** *occurs when company communications (including advertisements) spotlight a particularly green feature of its operations or products, however small, in order to draw attention away from environmentally damaging activities being conducted elsewhere*
3. ***Greenshifting*** *is when companies imply that the consumer is at fault and shift the blame on to them*
4. ***Greenlabelling*** *is a practice where marketers call something green or sustainable, but a closer examination reveals that their words are misleading*
5. ***Greenrinsing*** *refers to when a company regularly changes its ESG targets before they are achieved*
6. ***Greenhushing*** *refers to the act of corporate management teams under-reporting or hiding their sustainability credentials in order to evade investor scrutiny*"

Two types of labelling

- ESG labels: Umweltzeichen Ecolabel (Austria), Label ISR (France), LuxFLAG ESG (Luxembourg), FNG-Siegel (Germany), Towards Sustainability (Belgium)
- Green labels: Nordic Swan (Nordic countries), LuxFLAG Environment (Luxembourg), Label Greenfin (France), EU Ecolabel

Umweltzeichen Ecolabel (Austria)

- The Austrian eco-label (UZ 49) for sustainable financial products was established by the Austrian government in 2004
- It is the oldest financial eco-label in Europe
- Certification is carried out by the Federal Ministry for Climate Protection (BMK)
- It is a **pass-or-fail system**
- The maximum score is 66 for equity funds, 55 for bond funds, and 35 for real estate funds

Section	Title	Equity	Bond	Real estate	Bonus
2.3.1	Selection criteria	30	33	18	
2.3.2	Implementation of Selection criteria	22	10	12	
2.3.4	Degree of selection investment universe	5	5	5	
2.3.5	Requirements EU taxonomy				10%
2.3.6	Engagement	9	7	0	
2.3.7	Bonus section				3%
	Total	66	55	35	

- The minimum threshold is set at 75% of the maximum total score

Label ISR (France)

- Label ISR is an ESG label sponsored by the French government
- Certified by one of three external auditors: Afnor Certification, EY France and Deloitte
- It was introduced in 2016 and covers equity, bond and real estate funds
- Exclusion policy
- In addition to exclusions, the label offers asset managers two options:
  1. They can reduce their ESG investable universe by 30% compared to the fund's original investment universe. This reduction involves eliminating the 30% of investments with the lowest ESG scores
  2. They can ensure that the average weighted ESG score of the portfolio is significantly higher than that of the original investment universe

LuxFLAG ESG (Luxembourg)

- LuxFLAG (Luxembourg Finance Labelling Agency) is a non-profit association created in Luxembourg in July 2006 to support sustainable finance
- The LuxFLAG ESG label is launched in May 2014 and is a **pass-or-fail system**
- It requires 100% of the portfolio to be screened against one of the ESG strategies
- Standard exclusion policy
- The certification process is conducted by a LuxFlag committee dedicated to the label.

FNG-Siegel (Germany)

- Forum Nachhaltige Geldanlagen (FNG) is the Sustainable Investment Forum (SIF) in the German-speaking countries (Germany, Austria and Switzerland)
- It launched the FNG-Siegel, also known as the FNG label, in 2015
- It is a **grading system**, but it also includes some mandatory criteria and minimum requirements
- Exclusions are related to weapons, nuclear energy, fossil fuels and UN Global Compact
- The weighting of the grading system is: Institutional credibility (10%), Product standards (20%), Selection strategy (35%), Dialogue strategy (25%), ESG key performance indicators (10%)
- Label grades: Basic (score less than 24.99%), One Star (score between 25% and 49.99%), Two Star (score between 50% and 69.99%), and Three Star (score greater than 70.00%)

Towards Sustainability (Belgium)

- In 2019, the Federation of the Belgian Financial Sector (Febelfin) developed a new ESG label called Towards Sustainability
- It is a **pass-or-fail system**
- A sustainable financial portfolio must employ the following four strategies: ESG integration, normative screening, exclusion, and an additional core strategy

Nordic Swan (Nordic countries)

- Established in 1989 as a voluntary labeling scheme for the Nordic countries of Denmark, Finland, Iceland, Norway and Sweden
- The Nordic Swan covers 58 different product groups, from alternative dry cleaning to windows and exterior doors
- It covers equity funds, bond funds, balanced funds and investment products
- Funds must meet requirements within four sustainability strategies:
  - Exclude the worst companies and industries in coal, oil, gas, nuclear, tobacco, weapons, and non-compliance with international standards
  - Include more sustainable companies by rewarding companies with strong sustainability performance from an ESG and EU taxonomy perspective
  - Exercise active ownership
  - Disclose all holdings in the portfolio and publish an annual sustainability report

Nordic Swan (Nordic countries)

- The Nordic Swan label is an ESG **grading system** with extra points for environmental focus
- Out of a maximum of 14 and 11 points for equity and bond funds respectively, a minimum of 6 points for equity funds and 5 points for bond funds is required to obtain the Nordic Swan label
- Below is the weighting scheme for equity funds:

Section	Title	Points
Inclusion criteria	EU Taxonomy alignment	6
Inclusion criteria	Enhanced analysis and inclusion	2
Active ownership	Systematic and targeted engagement	3
Active ownership	Regular voting	3

Nordic Swan (Nordic countries)

For example, the portfolio alignment with the EU taxonomy is calculated using the formula:

$$\mathcal{G} = \sum_{i=1}^{n} w_i \cdot \min\left(\frac{\mathcal{GT}_i + \mathcal{GC}_i + \mathcal{GO}_i}{T_i}, 1\right)$$

where:

- w_i is the weight of holding i in the portfolio
- $\mathcal{GT}_i$ is the green turnover of company i in the last year, $\mathcal{GC}_i$ is the highest annual green capex of company i in the last 3 years, $\mathcal{GO}_i$ is the highest annual green opex of company i in the last 3 years
- T_i is the turnover of company i in the last year

The number of points is 1 if $\mathcal{G} \geq 5\%$, 2 if $\mathcal{G} \geq 10\%$, 3 if $\mathcal{G} \geq 20\%$, 4 if $\mathcal{G} \geq 30\%$, 5 if $\mathcal{G} \geq 40\%$ and 6 if $\mathcal{G} \geq 50\%$

LuxFLAG Environment (Luxembourg)

- Launched in July 2011
- The LuxFLAG Environment label requires a portfolio of investments in environmentally related sectors representing at least 75% of the fund's total assets
- A company is considered to be an environmental company if its turnover in environment-related sectors is at least 20% of its total turnover
- The portfolio allocation in environmental companies, weighted by the proportion of each company's turnover in environment-related sectors, must be at least 33%

Label Greenfin (France)

- The Greenfin label is a public certification program launched in 2015 by the French Ministry of Ecological Transition and Territorial Cohesion
- The certification is guaranteed by three external auditors: Novethic, EY France and Afnor Certification
- The activities eligible for the Greenfin label are initially based on the Climate Bond Initiative's taxonomy and cover 8 themes, *e.g.*, energy; building; circular economy; energy-efficient products, transport, agriculture & forestry.

EU Ecolabel

- The EU Ecolabel, established in 1992, is a European Union label for green products and services
- It can be seen as the equivalent of the Nordic Swan label for the countries of the European Union
- As of March 2024, 95 758 products and services have been awarded the EU Ecolabel and 2 743 licenses have been granted to companies
- Not finalized

Labeled European funds

Table 6: Overview of European sustainable labels as of 31 July 2023

Label	Number of funds	Multiple labels	AUM € bn	No. of funds (in %)	AUM (in %)
Label ISR	1 354	205	783	42.54%	47.83%
FNG-Siegel	291	39	94	9.14%	5.74%
LuxFLAG ESG	246	43	112	7.73%	6.84%
LuxFLAG Microfinance	28	1	4	0.88%	0.24%
Towards Sustainability	771	492	539	24.22%	32.93%
Umweltzeichen	304	192	64	9.55%	3.91%
Nordic Swan	60	8	18	1.89%	1.10%
LuxFLAG Environment	9	1	1	0.28%	0.06%
Label Greenfin	120	23	22	3.77%	1.34%
Total	2 733	333	1 307		

Source: `www.novethic.fr` & Author's calculations.

Article 8 and 9 European investment funds

Table 7: Market share of SFDR funds (UCITS and AIFs)

Period	Article 6	Article 8	Article 9
Q1 2021	72.7%	25.0%	2.3%
Q4 2022	52.6%	45.0%	2.4%

Table 8: Number of funds and breakdown of assets under management at the end of 2023

Statistics	Article 6	Article 8	Article 9
Number of funds	52.5%	43.4%	4.0%
Assets under management	41.0%	55.5%	3.5%

Source: EFAMA (2023) & Morningstar (2024).

Article 8 and 9 European investment funds

Table 9: The SFDR Article 8 and Article 9 market by country of domicile

Country	Domestic breakdown		Article 8 market		Article 9 market		Market share
	Article 8	Article 9	in € bn	in %	in € bn	in %	by country (in %)
Austria		2.5	77.0	1.20	5.0	1.46	1.21
Belgium	65.6	5.2	120.0	1.86	9.6	2.81	1.11
Croatia	36.9	0.3	1.0	0.02	0.0	0.00	0.02
Denmark	40.3	2.5	114.0	1.77	7.1	2.08	1.71
Finland	87.0	10.4	120.0	1.86	14.4	4.22	0.84
France	50.3	3.4	903.0	14.03	61.3	17.95	12.71
Germany	15.8	0.2	410.0	6.37	5.0	1.46	15.71
Greece	3.9		0.5	0.01	0.0	0.00	0.08
Hungary	2.3		0.5	0.01	0.0	0.01	0.14
Ireland	36.1	0.9	1 015.0	15.77	24.4	7.14	22.15
Italy	26.1	2.0	89.0	1.38	6.9	2.02	2.07
Liechtenstein	55.8	3.0	39.0	0.61	2.1	0.61	0.43
Luxembourg	53.8	4.3	2 194.0	34.09	175.4	51.36	30.50
Malta	1.0	0.1	0.2	0.00	0.0	0.01	0.12
Netherlands		1.7	662.0	10.29	12.9	3.78	4.69
Norway	65.2	4.3	103.0	1.60	6.7	1.96	0.96
Poland	0.8	0.1	0.5	0.01	0.1	0.03	0.35
Portugal	47.7	0.3	14.0	0.22	0.1	0.03	0.18
Slovakia	5.1		0.5	0.01	0.0	0.00	0.05
Slovenia	2.6		0.1	0.00	0.0	0.00	0.03
Spain	31.1	0.8	100.0	1.55	2.7	0.79	1.96
Sweden	95.6	1.6	473.0	7.35	7.8	2.28	3.00
Total			6 436.3	100.00	341.5	100.00	100.00

Article 8 and 9 European investment funds

Table 10: The 20 largest Article 8 funds (as of end 2023)

Name	Category	AUM	Passive
Flossbach von Storch SICAV - Multiple Opportunities	Allocation	24.9	
Morgan Stanley Global Brands Fund	Global Equity	20.5	
AB FCP I - American Income Portfolio	US Fixed Income	20.2	
DWS Top Dividende	Global Equity	19.5	
Fidelity Funds - Global Technology Fund	Technology Sector	18.6	
Deka-ImmobilienEuropa	Real Estate	18.5	
JPMorgan Global Income Fund	Allocation	17.5	
hausInvest	Real Estate	17.3	
UniImmo: Deutschland	Real Estate	16.7	
UniImmo: Europa	Real Estate	14.8	
DWS Concept Kaldemorgen	Allocation	14.0	
iShares MSCI USA ESG Enhanced ETF	US Equity	13.3	✓
DWS VermÃűgensbildungsfonds I	Global Equity	13.0	
AB FCP I - Global High Yield Portfolio	Global Fixed Income	12.9	
Mercer Multi Asset Growth Fund	Allocation	12.6	
BlackRock World Healthscience Fund	Healthcare Sector	11.9	
Flossbach von Storch - Multiple Opportunities II	Allocation	11.9	
Swedbank Robur Technology	Technology Sector	11.9	
Morgan Stanley Global Opportunity Fund	Global Equity	11.6	
Pictet - Global Megatrend Selection	Global Equity	11.3	

Source: Morningstar (2024).

Article 8 and 9 European investment funds

Table 11: The 20 largest Article 9 funds (as of end 2023)

Name	Category	AUM	Passive
Nordea 1 - Global Climate and Environment Fund	Global Equity	9.1	
Handelsbanken Global Index Criteria	Global Equity	8.7	✓
Pictet-Water	Thematic Equity	8.1	
Pictet - Global Environmental Opportunities	Global Equity	7.4	
BlackRock Global Funds - Sustainable Energy Fund	Energy Sector	6.1	
Handelsbanken USA Index Criteria	US Equity	4.9	✓
Mirova Global Sustainable Equity Fund	Global Equity	4.7	
Pictet - Clean Energy Transition	Energy Sector	4.6	
Handelsbanken Norden Index Criteria	Europe Equity	3.9	✓
BNP Paribas Funds Aqua	Thematic Equity	3.7	
BNP Paribas Aqua	Thematic Equity	3.6	
RobecoSAM Smart Energy Equities	Energy Sector	3.4	
RobecoSAM Sustainable Water Equities	Thematic Equity	3.2	
DPAM L - Bonds Emerging Markets Sustainable	EM Fixed Income	3.2	
BNP Paribas Funds Climate Impact	Global Equity	2.8	
AB SICAV I - Sustainable Global Thematic Portfolio	Global Equity	2.8	
Impact ES Actions Europe	Europe Equity	2.5	
Goldman Sachs Green Bond	Europe Fixed Income	2.4	
Goldman Sachs - Green Bond	Europe Fixed Income	2.4	
Candriam Sustainable Bond Euro Corporate	Europe Fixed Income	2.3	

Source: Morningstar (2024).

Sustainable funds

- The SFDR market is a purely European market
- To get a global view, we need to use criteria other than Article 8, Article 9 or even ESG labels
- Three main databases to analyze sustainable investment funds
  1. Broadridge (`www.broadridge.com`)
  2. LSEG Lipper (`www.lseg.com`)
  3. Morningstar (`www.morningstar.com`)

Sustainable funds

European mutual fund assets under management (excluding money market funds) are:

- €7.3 tn if we use the Broadridge Responsible Investment funds category
- €5.8 tn if we use the Morningstar Article 8 & 9 funds category
- €2.5 tn if we use the Morningstar sustainable funds category

Sustainable funds

Table 12: Global sustainable fund statistics (as of December 2023)

Region	Funds		AUM		Fund size
	#	in %	$ bn	in %	$ mn
Europe	5 433	72.59	2 492	83.99	459
United States	647	8.64	324	10.92	501
Asia ex-Japan	595	7.95	62	2.09	104
Australasia	263	3.51	33	1.11	125
Japan	235	3.14	25	0.84	106
Canada	312	4.17	31	1.04	99
Total	7 485	100.00	2 967	100.00	396

Source: Morningstar (2024) & Author's calculations.

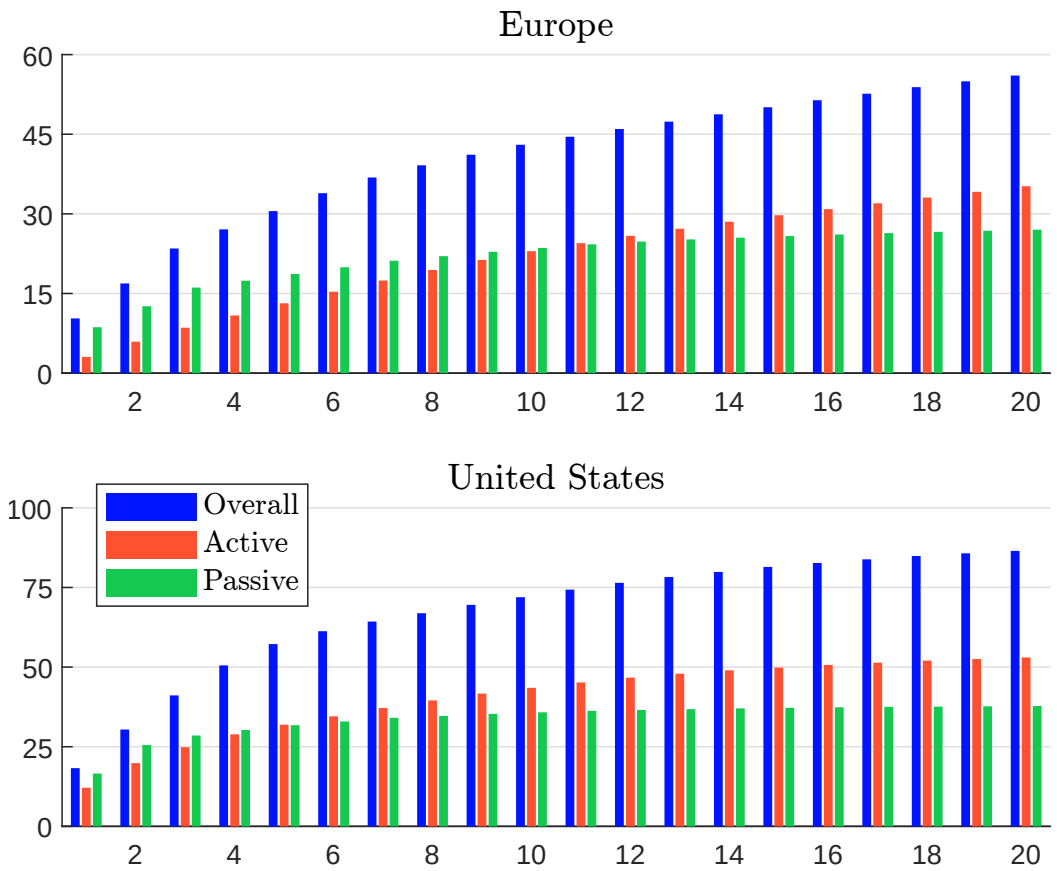
Sustainable funds

Table 13: Top asset managers by sustainable fund assets (in $ bn)

Firm	Global			Europe			United States		
	Total	Active	Passive	Total	Active	Passive	Total	Active	Passive
BlackRock	318.1	46.8	271.3	256.8	41.5	215.3	59.2	5.5	53.7
UBS	164.7	66.0	98.7	164.2	65.6	98.5			
Amundi	161.0	84.1	76.9	164.0	76.3	87.7	8.5	8.5	
DWS	93.1	56.0	37.2	89.7	57.4	32.2	5.2	4.9	0.3
BNP Paribas	85.8	54.4	31.4	85.8	54.4	31.4			
Swisscanto	84.0	52.3	31.7	84.0	52.3	31.7			
Natixis	74.5	72.0	2.5	73.8	71.3	2.5			
Nordea	57.2	57.2		57.2	57.2				
Pictet	49.7	49.7		49.7	49.7				
Vanguard	47.2	2.8	44.4			13.1	30.5	1.4	29.0
Allianz GI	46.6	46.6		46.7	46.7				
Parnassus	39.3	39.3					39.3	39.3	
Eaton Vance	34.7	25.0	9.7						
Royal London	34.7	28.6	6.1	34.7	28.6	6.1			
Calvert							34.7	25.0	9.7
Eurizon	34.2	34.2		34.3	34.3				
Goldman Sachs	34.2	34.1	0.1	30.7	30.6	0.1			
Handelsbanken	33.8	4.8	29.0	36.2	5.5	30.7			
AXA	33.4	33.4		32.9	32.9				
KBC	33.2	33.2		33.2	33.2				

Sustainable funds

Figure 6: Cumulative market share in % of the top 20 asset managers in the sustainable funds market



Source: Morningstar (2024) & Author's calculations.

Sustainable funds

Table 14: Largest climate funds (As of June 2023)

Country	Name	Category	AUM ($ bn)
Europe	ACS Climate Transition World Equity Fund	Climate Transition	12.8
	iShares MSCI USA ESG Enhanced ETF	Climate Transition	12.2
	Nordea 1 Global Climate and Environment Fund	Climate Solutions	10.8
	Blackrock ACS World ESG Equity Tracker Fund	Low Carbon	10.2
	Pictet Global Environmental Opportunities	Climate Solutions	8.4
	Handelsbanken Global Index Criteria	Climate Transition	8.0
	iShares Environment & Low Carbon Tilt Real Estate	Low Carbon	7.9
	Blackrock ACS World Low Carbon Equity Tracker Fund	Low Carbon	7.5
	BlackRock Sustainable Energy Fund	Clean Technology	7.3
	Amundi MSCI USA SRI PAB	Climate Transition	6.3

Source: Morningstar (2023).

Sustainable funds

Table 15: Largest climate funds (As of June 2023)

Country	Name	Category	AUM ($ bn)
United States	iShares Global Clean Energy ETF	Clean Technology	4.2
	Impax Global Environmental Markets Fund	Climate Solutions	2.4
	iShares Climate Conscious & Transition MSCI USA ETF	Climate Transition	2.2
	Xtrackers MSCI USA Climate Action Equity ETF	Climate Transition	2.2
	Invesco Solar ETF	Clean Technology	2.1
	First Trust NASDAQ Clean Edge Green Energy Index Fund	Clean Technology	1.6
	iShares Paris-Aligned Climate MSCI USA ETF	Climate Transition	1.5
	BlackRock U.S. Carbon Transition Readiness ETF	Climate Transition	1.5
	TIAA-CREF Social Choice Low Carbon Equity Fund	Low Carbon	1.2
	GMO Climate Change Fund	Clean Technology	1.0

Source: Morningstar (2023).

Sustainable funds

Table 16: Largest climate funds (As of June 2023)

Country	Name	Category	AUM ($ bn)
China	Orient Secs Green Energy Car Alloc	Climate Solutions	2.3
	Huatai-PB CSI Photovoltaic Industry ETF	Clean Technology	2.3
	ABC-CA New Energy Theme Hybrid Fund	Clean Technology	2.1
	ChinaAMC New Energy Fund	Clean Technology	2.0
	TianHong CSI Photovoltaic Industry Idx	Clean Technology	1.9
	China Universal New Eneg Car Ind Index LOF	Climate Solutions	1.9
	ChinaAMC CSI New En Car Ind ETF	Climate Solutions	1.6
	Fullgoal China Secs New Energy Vehicles	Climate Solutions	1.5
	Cinda New Energy Ind Stk Fd	Clean Technology	1.3
	E Fund Pro-Environment Alloc	Climate Solutions	1.1

Source: Morningstar (2023).

Sustainable funds

Table 17: Largest climate funds (As of June 2023)

Country	Name	Category	AUM ($ bn)
Japan	iShares MSCI Japan Climate Action ETF	Climate Transition	0.818
Taiwan	Cathay Global Autonomous and Electric Vehicles ETF	Climate Solutions	0.808
Australia	Russell Investments Low Carbon Global Shares Fund	Low Carbon	0.611
Australia	Russell Invest. Low Carbon Global Shares Fund AUDH	Low Carbon	0.559
Canada	Fidelity Climate Leadership Fund	Climate Transition	0.400
Canada	Desjardins SocieTerra Cleantech Fund	Clean Technology	0.340
Australia	State Street Climate ESG International Equity Fund	Low Carbon	0.243
South Korea	NH-Amundi Century Enterprise Green Korea Equity	Climate Solutions	0.240
Japan	NZAM ETF S&P/JPX Carbon Efficient Index	Low Carbon	0.236
Australia	SPDRÂő S&P World ex Australia Carbon Control Fund	Low Carbon	0.217

Source: Morningstar (2023).

Sustainable fixed-income products

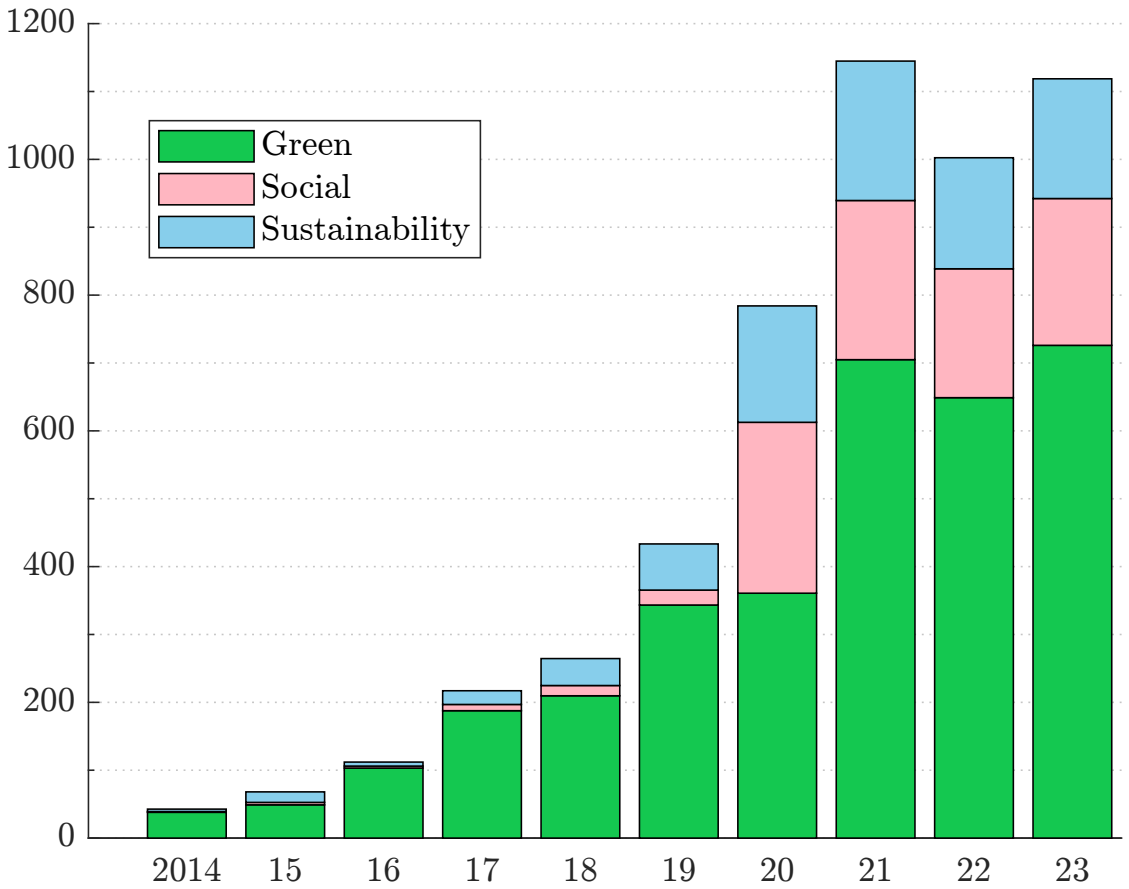
Table 18: Sustainable fixed-income market

Theme		Label	Format
GSS+	GSS	Green	Use of proceeds
		Social	Use of proceeds
		Sustainability	Use of proceeds
	Transition	Sustainability-Linked	Entity KPI-linked
		Transition	Use of proceeds

Source: CBI (2022).

Sustainable fixed-income products

Figure 7: Issuance of GSS securities (in $ bn)



Source: `https://www.climatebonds.net/market/data`.

Definition

Definition

Green bonds are any type of bond instrument where the proceeds or an equivalent amount will be exclusively applied to finance or re-finance, in part or in full, new and/or existing eligible **green projects** and which are aligned with the four core components of the Green Bond Principles (GBP).

Source: ICMA (2021).

$\Rightarrow$ Green bonds are "*regular*" bonds[2] aiming at funding projects with positive environmental and/or climate benefits

[2] A regular bond pays regular interest to bondholders

Green Bonds Principles

Green Bonds Principles (GBP)

The 4 core components of the GBP are:

1. Use of proceeds
2. Process for project evaluation and selection
3. Management of proceeds
4. Reporting

https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks

Green Bonds Principles

The use of proceeds includes:

- Renewable energy
- Energy efficiency
- Pollution prevention (e.g. GHG control, soil remediation, waste recycling)
- Sustainable management of living natural resources (e.g. sustainable agriculture, sustainable forestry, restoration of natural landscapes)
- Terrestrial and aquatic biodiversity conservation (e.g. protection of coastal, marine and watershed environments)
- Clean transportation
- Sustainable water management
- Climate change adaptation
- Eco-efficient products
- Green buildings

Green Bonds Principles

With respect to the **process for project evaluation and selection** (component 2), the issuer of a green bond should clearly communicate:

- the environmental sustainability objectives
- the eligible projects
- the related eligibility criteria

The **management of proceeds** (component 3) includes:

- The tracking of the "*balance sheet*" and the allocation of funds[3]
- An external review (not mandatory but highly recommended)

[3] The proceeds should be credited to a sub-account

Green Bonds Principles

The **reporting** (component 4) must be based on the following pillars:

- Transparency
- Description of the projects, allocated amounts and expected impacts
- Qualitative performance indicators
- Quantitative performance measures (e.g. energy capacity, electricity generation, GHG emissions reduced/avoided, number of people provided with access to clean power, decrease in water use, reduction in the number of cars required)

Several standards

Standardization is strongly required by investors and regulators

- Green Bond Principles[4] (ICMA, 2021)
- China Green Bond Principles (PBOC, CBIRC, July 2022)
- Climate Bonds Standard[5] (CBI, 2019)
- Asean Green Bond Standards (ACMF, 2018)
- EU Green Bond Standard (2021)

[4] The first version is published in January 2014
[5] The first version is published in November 2011

Types of debt instruments

Asset-linked bond structures

- Regular bond
- Revenue bond
- Project bond
- Green loans

Asset-backed bond structures

- Securitized bond
- Project bond
- ABS/MBS/CLO/CDO
- Covered bond

Certification

- Second party opinion from ESG rating agencies (ISS, Sustainalytics, Vigeo-Eiris)
- Certification by green bond specialists (CBI, CICERO, DNV);
- Green bond assessment by statistical rating organizations (Moody's, S&P).

Examples

- Solar bond by the City of San Francisco in 2001
- Equity-linked climate awareness bond by the European Investment Bank (EIB) in 2007
- First green bond issued by the World Bank (in collaboration with Skandinaviska Enskilda Banken) in November 2008
- First corporate green bonds: French utility company EDF ($1.8 bn) and Swedish real estate company Vasakronan ($120 bn)
- Toyota introduced the auto industry's first-ever asset-backed green bond in 2014 ($1.75 bn)
- The Commonwealth of Massachusetts issued the first municipal green bond in 2013 ($100 mn)
- The first sovereign green bonds are: Poland in December 2016 ($1 bn) and France[6] in January 2017 ($10 bn)

[6] Green OAT 1.75% 25 June 2039.

The green bond market

Green bond issuers

- Sovereigns (agencies, municipals, governments)
- Multilateral development banks (MDB)
- Energy and utility companies
- Banks
- Other corporates

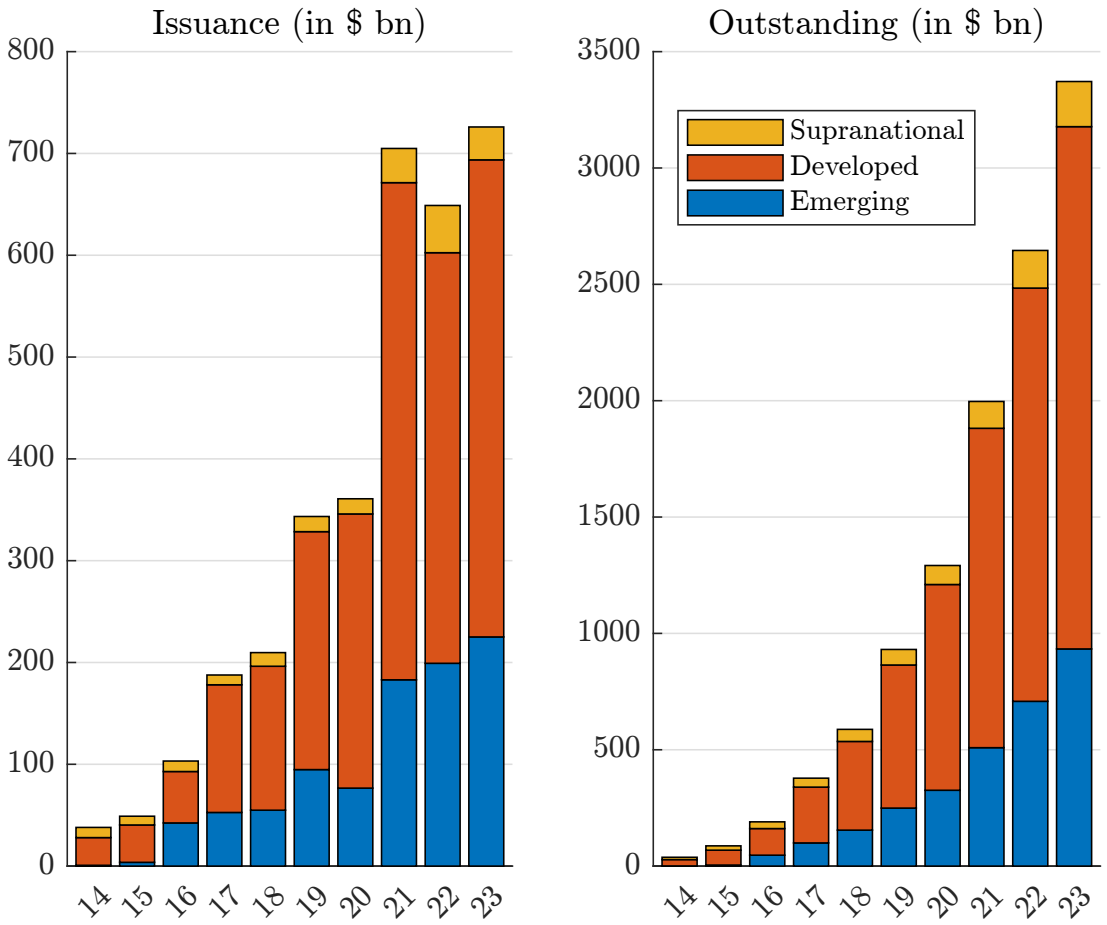
Green bond investors

- Pension funds
- Sovereign wealth funds
- Insurance companies
- Asset managers
- Retail investors (e.g. employee savings plans)

Strong imbalance between supply and demand

The green bond market

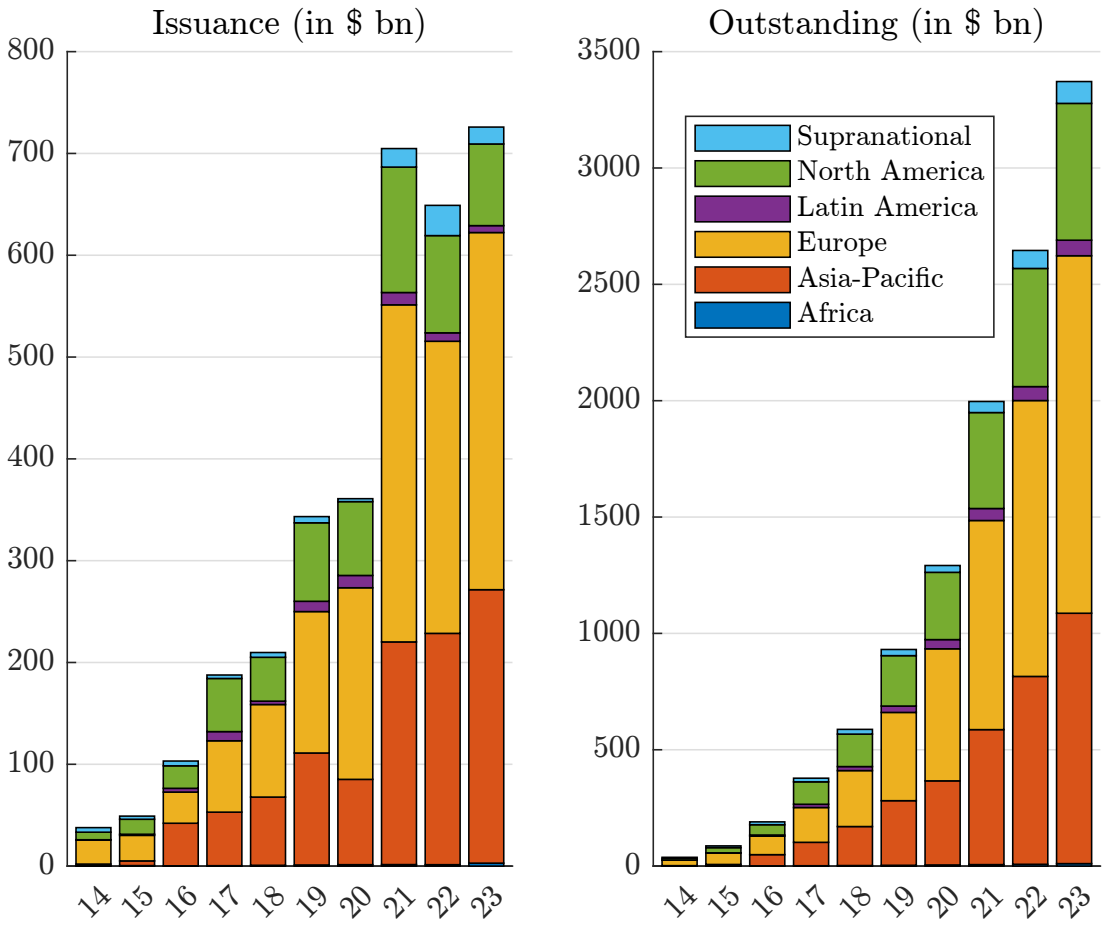
Figure 8: Issuance and notional outstanding of green debt by market type



Source: `https://www.climatebonds.net/market/data`.

The green bond market

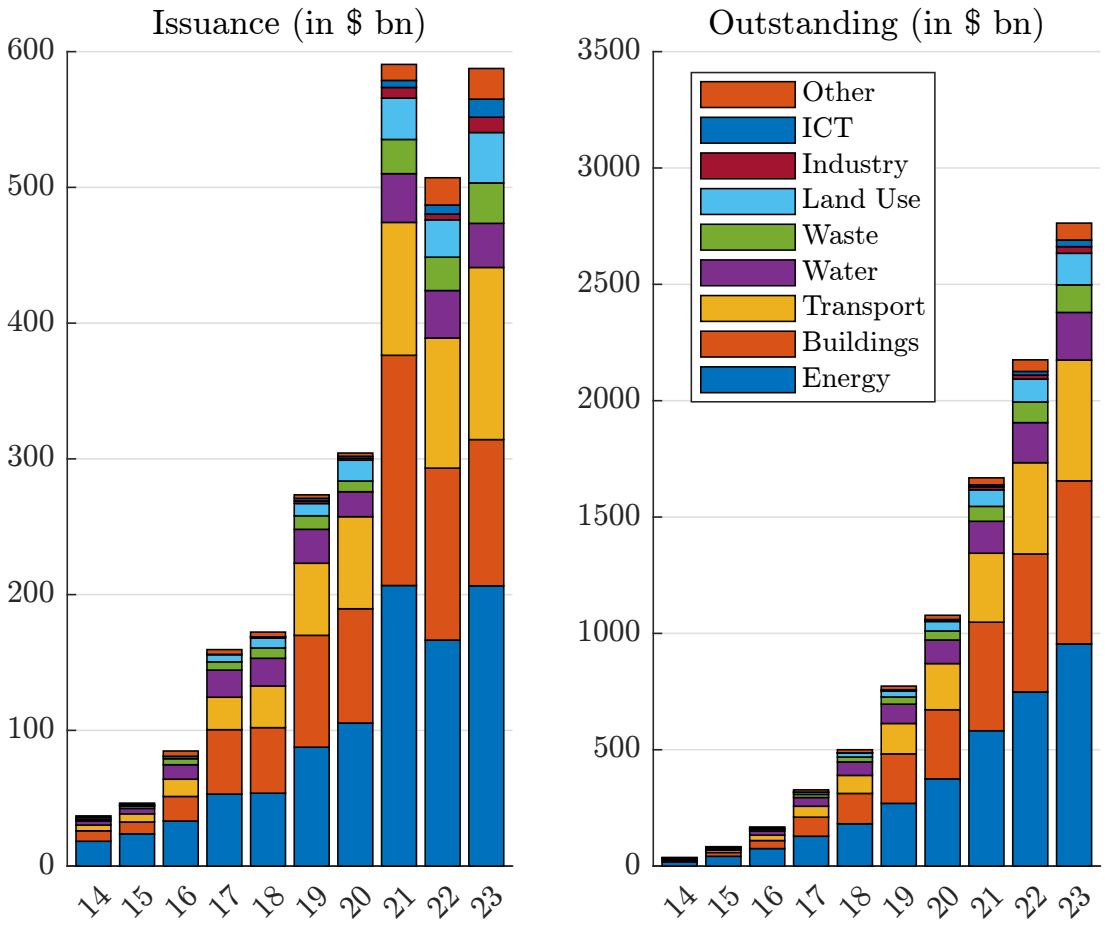
Figure 9: Issuance and notional outstanding of green debt by region



Source: https://www.climatebonds.net/market/data.

The green bond market

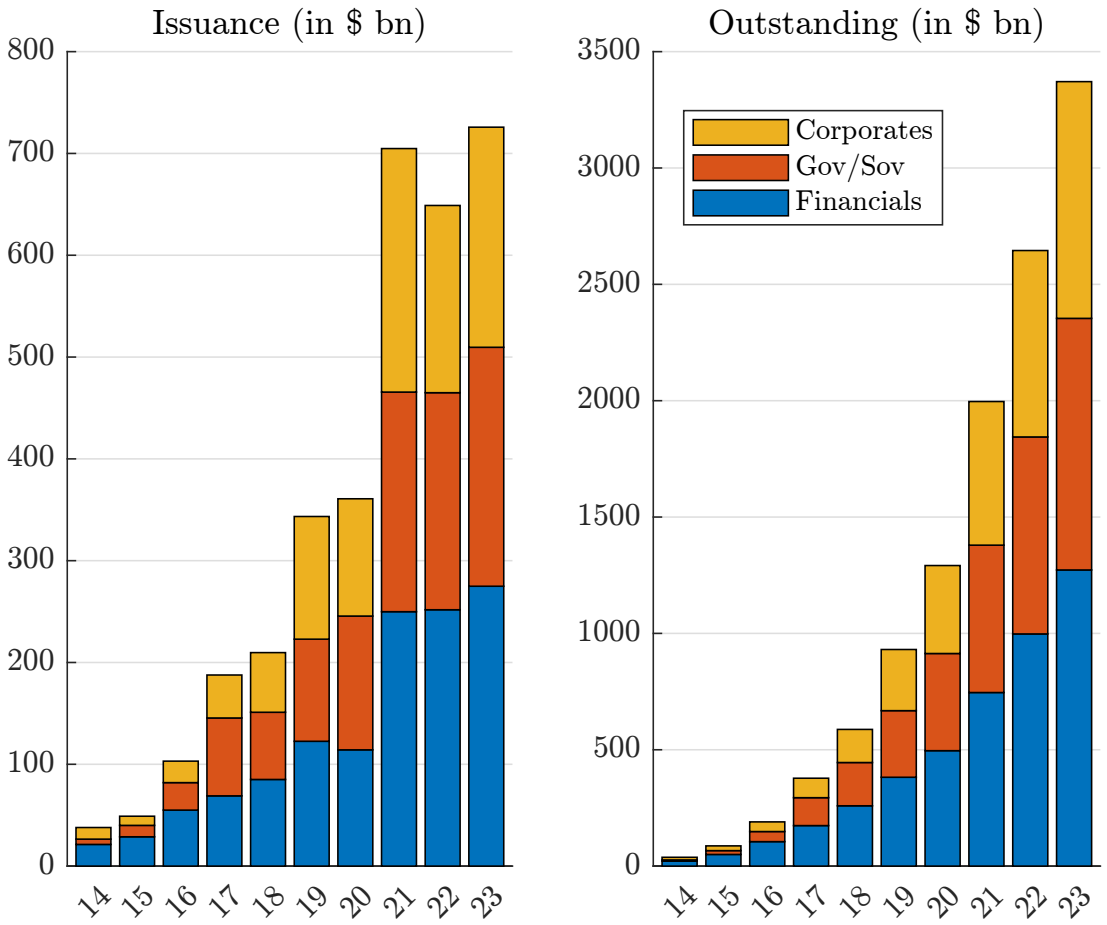
Figure 10: Issuance and notional outstanding of green debt by use of proceeds



Source: `https://www.climatebonds.net/market/data`.

The green bond market

Figure 11: Issuance and notional outstanding of green debt by issuer type



Source: https://www.climatebonds.net/market/data.

How to investing in green bonds

Example of green bond funds:

- Allianz IG green bond fund
- Amundi RI impact green bonds
- AXA WF ACT green bonds
- BNP Paribas green bond
- Calvert green bond fund
- Mirova global green bond fund
- TIAA-CREF green bond fund
- Etc.

How to investing in green bonds

List of green bond indices:

- Bloomberg MSCI Global Green Bond Index (global green bonds)
- S&P Green Bond Index (global green bonds)
- Solactive Green Bond Index (global green bonds)
- ChinaBond China Climate-Aligned Bond Index (chinese green bonds)
- SSE Green Corporate Bond Index and SSE Green Bond Index (green bonds listed on the Shanghai Stock Exchange)
- ICE BofA Green Index (global green bonds)

$\Rightarrow$ ETF and index funds

The economics of green bonds

"[...] I show that investors respond positively to the issuance announcement, a response that is stronger for first-time issuers and bonds certified by third parties. The issuers improve their environmental performance post-issuance (i.e., higher environmental ratings and lower CO_2 emissions) and experience an increase in ownership by long-term and green investors. Overall, the findings are consistent with a ***signaling argument*** *– by issuing green bonds, companies credibly signal their commitment toward the environment." (Flammer, 2021, page 499).*

The economics of green bonds

Green bonds = second-best instrument

The green bond premium

Definition

- The green bond premium (or greenium) is the difference in pricing between green bonds and regular bonds
- The greenium is defined as:

$$\boldsymbol{g} = y(\mathrm{GB}) - y(\mathrm{CB})$$

where $y(\mathrm{GB})$ is the yield (or return) of the green bond and $y(\mathrm{CB})$ is the yield (or return) of the conventional twin bond

The green bond premium

- From the issuer's point of view, a green bond issuance is more expensive than a conventional issuance due to the need for external review, regular reporting and impact assessments
- From the investor's point of view, there is no fundamental difference between a green bond and a conventional bond, meaning that one should consider a negative green bond premium as a market anomaly

The green bond premium

Green twin bonds

- Introduced in 2020 by Germany
- Issuance of a green and conventional bond at the same time with the same characteristics
- Investors may swap the green bond with the conventional bond any time, but not vice-versa
- Liquidity of the green bond market ↗

The green bond premium

Examples of twin bonds:

- On 3 September 2020, the 10-year German green bond with a coupon of 0.00% was priced 1 basis point below the 10-year conventional German bond
- On 19 January 2022, Denmark issued a 10-year green bond with the same maturity, interest payment dates and coupon rate as the conventional 2031 Danish bond. The effective yield of the green bond was 5 basis points below the twin regular bond

The green bond premium

Example #1

We consider a 10-year green bond GB_1 whose current price is equal to 91.35. The corresponding conventional twin bond is a 20-year regular bond, whose remaining maturity is exactly equal to ten years and its price is equal to 90.07%. We assume that the two bonds have the same coupon level, which is equal to 4%.

The green bond premium

Computation of the greenium with the current yield

- We have:

$$y(\text{GB}) = \frac{4}{91.35} = 4.379\%$$

and:

$$y(\text{CB}) = \frac{4}{90.07} = 4.441\%$$

- We deduce that the greenium is equal to:

$$\boldsymbol{g} = 4.441\% - 4.379\% = -6.2 \text{ bps}$$

The green bond premium

Computation of the greenium with the yield to maturity

- We solve the equation:

$$\sum_{t=1}^{10} 4e^{-ty} + 100e^{-10y} = 91.35$$

  and find $y(\text{GB}) = 5\%$
- We solve the equation:

$$\sum_{t=1}^{10} 4e^{-ty} + 100e^{-10y} = 90.07$$

  and find $y(\text{CB}) = 5.169\%$
- We deduce that the greenium is equal to:

$$g = 5\% - 5.169\% = -16.9 \text{ bps}$$

The green bond premium

Figure 12: Greenium in bps of the German green (twin) bond (DBR 0% 15/08/2030)

The green bond premium

What about the greenium
when the green bond is not a twin bond?

$\Rightarrow$ We must distinguish primary and secondary markets

The green bond premium

- In the primary market, the greenium is negative (≈ -10 to -5 bps on average)
- How to measure the persistence of the greenium in the secondary market?

The green bond premium

There are two approaches:

1. Bottom-up approach
   - Compares the green bond of an issuer with a synthetic conventional bond of the same issuer
   - Same characteristics in terms of currency, seniority and duration
2. Top-down approach
   - Compare a green bond index portfolio to a conventional bond index portfolio
   - Same characteristics in terms of currency, sector, credit quality and maturity

The green bond premium

Bottom-up approach

1. We filter all the conventional bonds, which has the same issuer, the same currency, and the same seniority of the green bond GB
2. We select the two conventional bonds CB_1 and CB_2 which are the nearest in terms of modified duration:

$$\left|\mathrm{MD}\left(\mathrm{GB}\right) - \mathrm{MD}\left(\mathrm{CB}_j\right)\right|_{j\neq 1,2} \geq \sup_{j=1,2} \left|\mathrm{MD}\left(\mathrm{GB}\right) - \mathrm{MD}\left(\mathrm{CB}_j\right)\right|$$

3. We perform the linear interpolation/extrapolation of the two yields $y\left(\mathrm{CB}_1\right)$ and $y\left(\mathrm{CB}_2\right)$:

$$y\left(\mathrm{CB}\right) = y\left(\mathrm{CB}_1\right) + \frac{\mathrm{MD}\left(\mathrm{GB}\right) - \mathrm{MD}\left(\mathrm{CB}_1\right)}{\mathrm{MD}\left(\mathrm{CB}_2\right) - \mathrm{MD}\left(\mathrm{CB}_1\right)} \left(y\left(\mathrm{CB}_2\right) - y\left(\mathrm{CB}_1\right)\right)$$

The green bond premium

Example #2

- We consider a green bond, whose modified duration is 8 years. Its yield return is equal to 132 bps
- We can surround the green bond by two conventional bonds with modified duration 7 and 9.5 years. The yield is respectively equal to 125 and 148 bps
- The interpolated yield is equal to:

$$\begin{aligned} y(\text{CB}) &= 125 + \frac{8-7}{9.5-7}(148-125) \\ &= 134.2 \text{ bps} \end{aligned}$$

- It follows that the greenium is equal to -2.2 bps:

$$\boldsymbol{g} = 132 - 134.2 = -2.2 \text{ bps}$$

The green bond premium

Top-down approach

1. We consider a portfolio $w = (w_1, \ldots, w_n)$ of green bonds.
2. We perform a clustering analysis by considering the 4-uplets (Currency $\times$ Sector $\times$ Credit quality $\times$ Maturity)
3. Let (C_h, S_j, R_k, M_l) be an observation for the 4-uplet (e.g. EUR, Financials, AAA, 1Y-3Y). We compute its weight:

$$\omega_{h,j,k,l} = \sum_{i \in (C_h, S_j, R_k, M_l)} w_i$$

4. The greenium is then defined as the weighted excess yield:

$$\boldsymbol{g} = \sum_{h,j,k,l} \omega_{h,j,k,l} \left(y_{h,j,k,l}(\mathrm{GB}) - y_{h,j,k,l}(\mathrm{CB}) \right)$$

The green bond premium

Main result (Ben Slimane *et al.*, 2023)

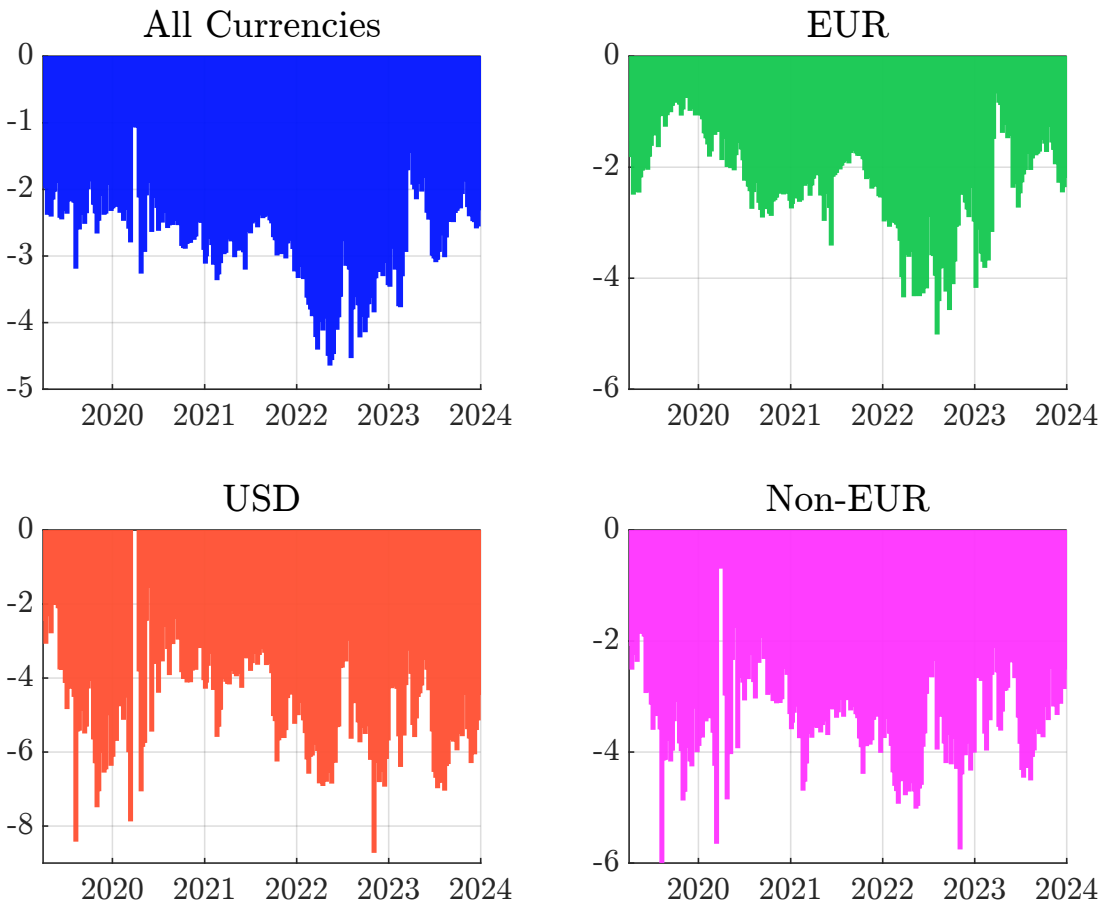
The greenium is negative between -5 and -2 bps on average

Other results:

- Differences between sectors, currencies, maturities, regions and ratings
- Transatlantic divided between US and Europe
- The volatility of green bond portfolios are lower than the volatility of conventional bond portfolios $\Rightarrow$ identical Sharpe ratio since the last four years
- Time-varying property of the greenium

The green bond premium

Figure 13: Evolution of the greenium (in bps)



Source: Ben Slimane *et al.* (2023)

The green bond premium

Table 19: Average greenium (in bps) relative to issuer category

Issuer	Currency	2019	2020	2021	2022	2023	2019–2023
AS	AC	−1.2	−1.8	−2.2	−2.5	−2.0	−2.0
CORP		−3.9	−3.9	−3.8	−7.2	−2.9	−4.5
FIN		−0.8	−1.4	−2.7	−1.4	−2.8	−2.0
SN		−4.9	−2.5	−2.2	−1.6	−1.2	−2.2
SSA	AC	−2.4	−2.0	−2.2	−2.3	−1.8	−2.1
	EUR	−1.2	−1.2	−1.2	−2.2	−0.8	−1.3
	Non-EUR	−3.2	−2.6	−3.0	−2.4	−2.9	−2.8

Source: Ben Slimane *et al.* (2023)

The green bond premium

Green financing $\Leftrightarrow$ green investing

1. Bond issuers have a competitive advantage to finance their environmental projects using green bonds instead of conventional bonds
2. Another premium? the "green bond issuer premium"

Social bonds

Definition

Social Bonds are any type of bond instrument where the proceeds, or an equivalent amount, will be exclusively applied to finance or re-finance in part or in full new and/or existing eligible **social projects** and which are aligned with the four core components of the Social Bond Principles (SBP).

Source: ICMA (2021), `https://www.icmagroup.org/sustainable-finance`

Social Bonds Principles

Social Bonds Principles (SBP)

The 4 core components of the SBP are:

1. Use of proceeds
   1. Eligible social project categories
   2. **Target populations**
2. Process for project evaluation and selection
3. Management of proceeds
4. Reporting

https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks

Social Bonds Principles

The **eligible social projects categories** (component 1) are:

- Affordable basic infrastructure (e.g. clean drinking water, sanitation, clean energy)
- Access to essential services (e.g. health, education)
- Affordable housing (e.g. sustainable cities)
- Employment generation (e.g. pandemic crisis)
- Food security and sustainable food systems (e.g. nutritious and sufficient food, resilient agriculture)
- Socioeconomic advancement and empowerment (e.g. income inequality, gender inequality)
- Etc.

Social Bonds Principles

The **target populations** (component 1) are:

- Living below the poverty line
- Excluded and/or marginalised populations/communities
- People with disabilities
- Migrants and /or displaced persons
- Undereducated
- Unemployed
- Women and/or sexual and gender minorities
- Aging populations and vulnerable youth
- Etc.

Social Bonds Principles

With respect to the **process for project evaluation and selection** (component 2), the issuer of a social bond should clearly communicate:

- the social objectives
- the eligible projects
- the related eligibility criteria

The **management of proceeds** (component 3) includes:

- The tracking of the "*balance sheet*" and the allocation of funds[7]
- An external review (not mandatory but highly recommended)

[7] The proceeds should be credited to a sub-account

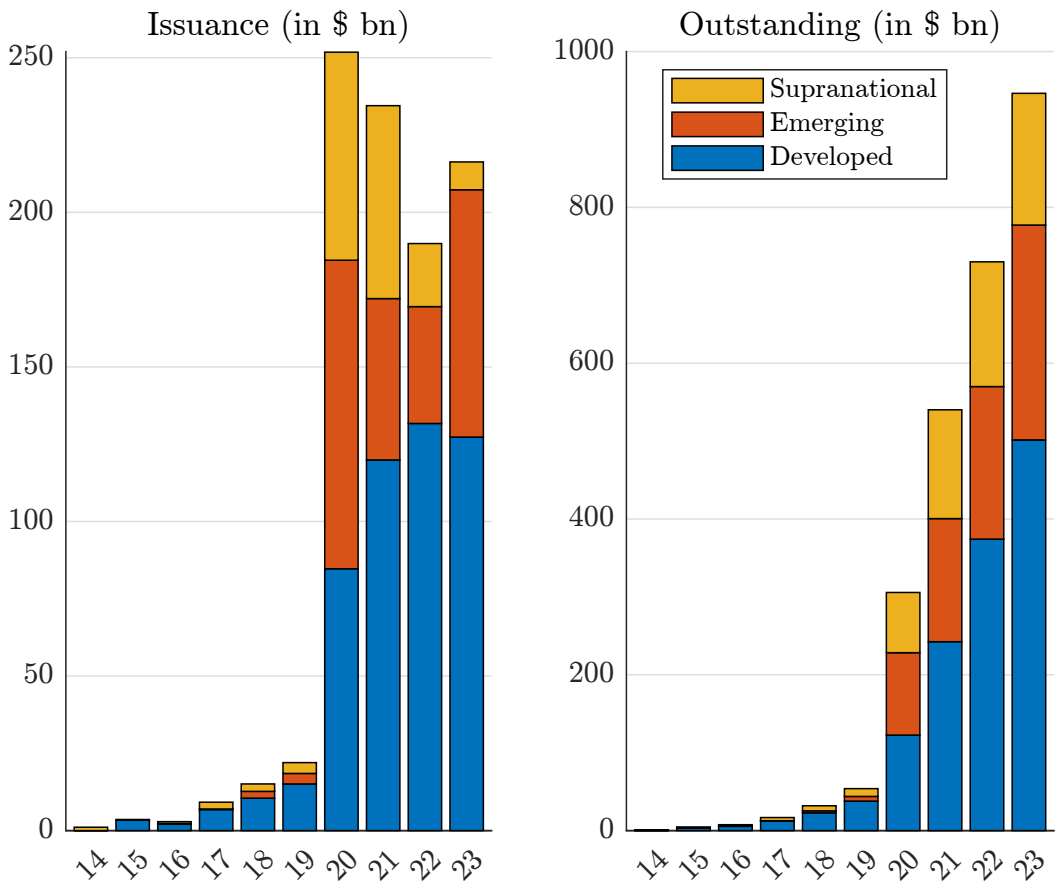
Social Bonds Principles

The **reporting** (component 4) must be based on the following pillars:

- Transparency
- Description of the projects, allocated amounts and expected impacts
- Qualitative performance indicators
- Quantitative performance measures (e.g. number of beneficiaries)

Social bond market

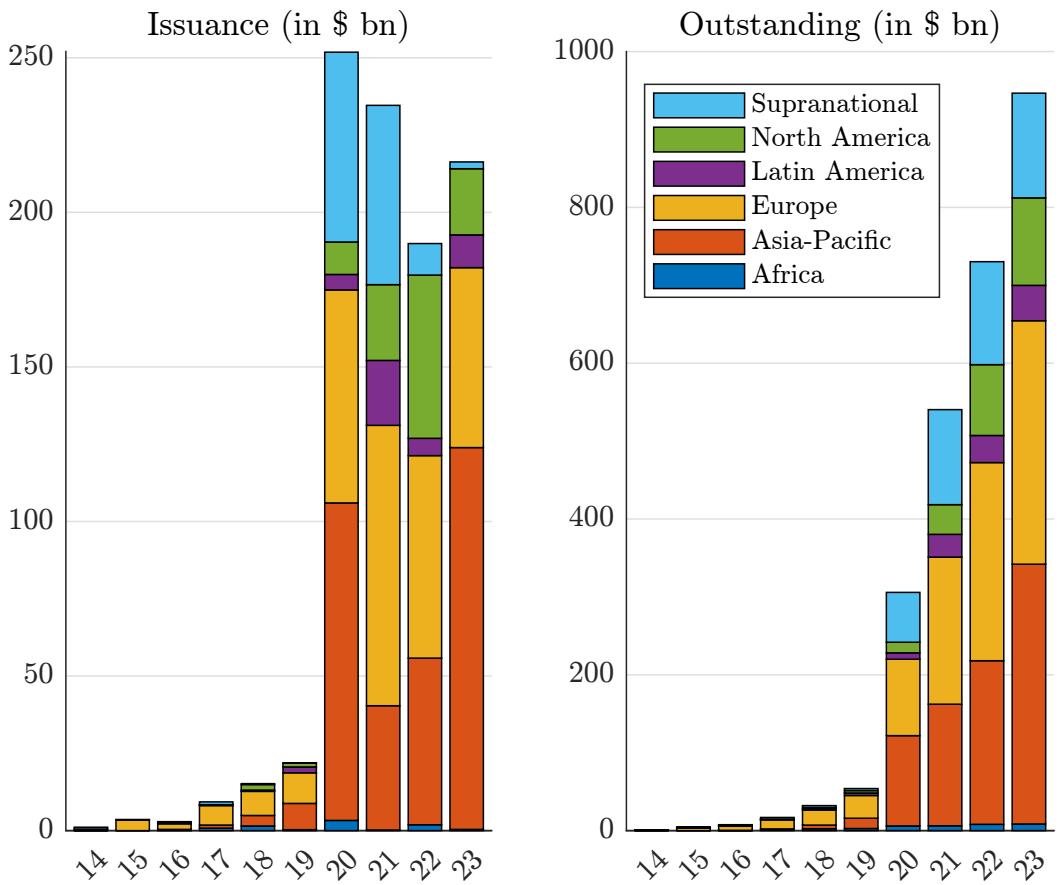
Figure 14: Issuance and notional outstanding of social bonds by market



Source: `https://www.climatebonds.net/market/data`.

Social bond market

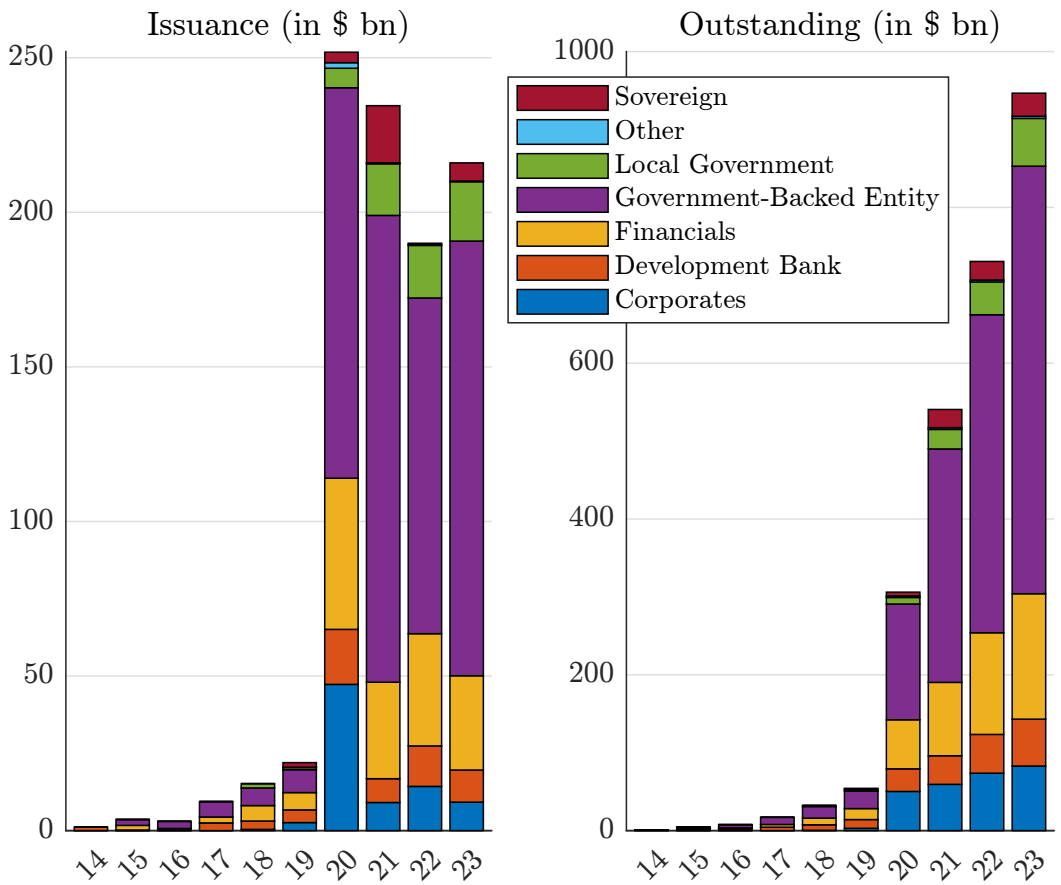
Figure 15: Issuance and notional outstanding of social bonds by region



Source: `https://www.climatebonds.net/market/data`.

Social bond market

Figure 16: Issuance and notional outstanding of social bonds by type of issuer



Source: `https://www.climatebonds.net/market/data`.

Examples

- **Instituto de Crédito Oficial** (Spanish state-owned bank, March 2020)
  "*The Social Bond proceeds under ICO's Second – Floor facilities will be allocated to loans to finance small, medium and micro enterprises with an emphasis on employment creation or employment retention in: (1) specific economically underperforming regions of Spain; (2) specific municipalities of Spain facing depopulation; (3) regions affected by a natural disaster. [...] The target populations are SMEs in line with European Union's standards.*"

Examples

- **Pepper Money** (non-bank lender in Australia and New Zealand, April 2022)
  "*The positive social impact of a Pepper Money eligible social project derives from its direct contribution to improving access to financial services and socio-economic empowerment, by using proprietary systems to make flexible loan solutions available to applicants who are not served by traditional banks. [...] Pepper Money is seeking to achieve positive social outcomes for a target population of Australians that lack access to essential financial services and experience inequitable access to and lack of control over assets. Pepper Money directly aims to address the positive social outcome of home ownership for borrowers who may have complexity in their income streams, gaps in their loan documentation or have adverse credit history. Traditionally, this cohort has been underserved by banks that rely on inflexible algorithmic loan application processing.*"

Examples

- **Danone** (French multinational food-products corporation, March 2018)
  "*The eligible project categories are: (1) research & innovation for advanced medical nutrition (target populations: infants, pregnant women, patients and elderly people with specific nutritional needs), (2) social inclusiveness (target poputions: farmers, excluded and/or marginalised populations and/or communities, people living under the poverty line, rural communities in developing countries), (3) responsible farming and agriculture (target populations: milk producers, farmers), etc.*"

Examples

- **Korian** (European care group, October 2021)
  "*The proceeds of any instrument issued under the framework will be used [...] to provide services, solutions, and technologies that will enable Korian to meet at least one of its social objectives: (1) to increase and improve long-term care nursing home capacity for dependent older adults; (2) to increase and improve medical capacity for people in need of medical support; (3) to increase and improve access to alternative, nonmedical services, technologies, and housing solutions that facilitate the retention of older adults' autonomy; and (4) to improve the daily provision of care to and foster a safer living environment for its patients. [...] Furthermore, Korian's target populations are older adults, which Korian defines as being over 65 years of age, and those who are dependent on others for some degree of care, which is defined by the health authorities or insurance system of the respective country.*"

Examples

- **JASSO** (Japan Student Services Organization, July 2022)
  "*The social project categories concern the financing of the 'Category 2 Scholarship Loans' (interest-bearing scholarship loans that have to be repaid) while the target population is made up of students with financial difficulties.*"

Sustainability bonds

$$\text{Sustainability bond} = \text{GBP} + \text{SBP}$$

Remark

According to CBI, the cumulative issuance of sustainability bonds reaches \$620 bn at the end of June 2022

Sustainability-linked bonds (SLB)

Sustainability-linked bond (SLB)

- Two principles:
  - = a sustainability bond (green/social)
  - + a step up coupon if the KPI is not satisfied

  $\Rightarrow$ forward-looking performance-based instrument
- The financial characteristics of the bond depends on whether the issuer achieves predefined ESG objectives
- Those objectives are:
  1. measured through predefined Key Performance Indicators (KPI)
  2. assessed against predefined Sustainability Performance Targets (SPT)

Sustainability-linked bonds (SLB)

ENEL General Purpose SDG Linked Bond

- SDG: 7 (affordable and clean energy), 13 (climate action), 9 (industry, innovation and infrastructure) and 11 (sustainable cities and communities)
- SDG 7 target: renewables installed capacity as of December 31, 2021 $\geq 55\%$ (confirmed by external verifier)
- One time step up coupon of 25 bps if SDG 7 is not achieved
- On April 2022, the independent report produced by KPMG certifies that "*the renewables installed capacity percentage as of December 31, 2021 is equal to* 57.5%".

Sustainability-linked bonds (SLB)

H&M sustainability-linked bond

- 18 February 2021
- €500 mn, maturity of 8.5 years, the annual coupon rate is 25 bps
- The objectives to achieve by 2025 are:

  KPI_1 Increase the share of recycled materials used to 30% (SPT_1)

  KPI_2 Reduce emissions from the Group's own operations (scopes 1+2) by 20% (SPT_2)

  KPI_3 Reduce scope 3 emissions from fabric production, garment manufacturing, raw materials and upstream transport by 10% (SPT_3)
- The global KPI is equal to $40\% \times \text{KPI}_1 + 20\% \times \text{KPI}_2 + 40\% \times \text{KPI}_3$
- The step-up of the coupons can consequently be 0%, 20%, 40%, 60%, 80% or 100% of the total step-up rate

Sustainability-linked bonds (SLB)

According to Berrada *et al.* (2022), "*the SLB market has grown strongly since its inception. [...] Bloomberg identifies a total of* 434 *outstanding bonds flagged as 'sustainability-linked' as of February 2022. In contrast, in 2018, there was only a single SLB. The amount raised through the single 2018 SLB issue was $0.22 bn, whereas the total amount raised through all SLBs issued in 2021 was approximately $160 bn*".

- The large majority of SLB issues address exclusively E issues (65%) or a combination of E, S and G issues (17%) or E and G issues (3%)
- The most frequent KPI concerns GHG emissions (40 %), followed by the issuer's global ESG score (14 %)

Transition bonds

- Financial instruments to support the transition of an issuer, which has significant current carbon emissions
- Fund projects such as renewable energy developments, energy efficiency upgrades, etc.
- The final objective of the bond issuer is always to reduce their carbon emissions
- For example, transition bonds can be used to switch diesel powered ships to natural gas or to implement carbon capture and storage.

Sustainable alternative assets

Table 20: Breakdown of private markets AUM (as of June 2023)

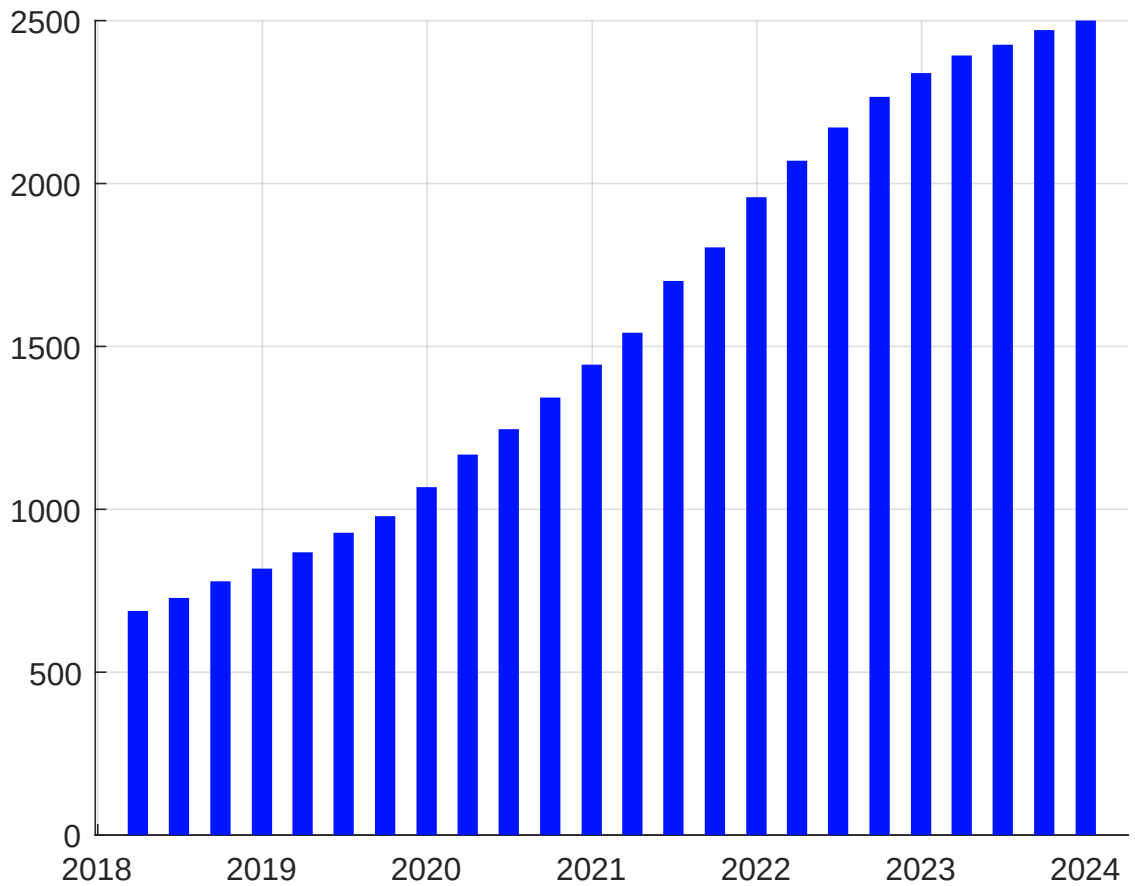
Asset class	North America	Europe	Asia	Other regions	World
Buyout	18.2%	7.6%	2.9%	0.7%	29.5%
Venture capital	8.2%	1.6%	9.9%	0.9%	20.6%
Growth	4.8%	1.0%	3.9%	0.7%	10.5%
Other	1.8%	0.0%	0.3%	0.0%	2.2%
Private debt	8.0%	3.4%	0.9%	0.7%	12.9%
Real estate	7.5%	2.9%	1.7%	0.6%	12.8%
Infrastructure*	5.5%	3.7%	1.2%	1.1%	11.5%
Private equity	33.1%	10.3%	17.0%	2.4%	62.8%
Private assets	41.0%	13.7%	17.9%	3.1%	75.7%
Real assets	13.1%	6.6%	2.9%	1.7%	24.3%
Total	54.1%	20.3%	20.8%	4.8%	100.0%

*It includes natural resources.

Source: Prequin database, McKinsey (2024) & Author's calculations.

Sustainable alternative assets

Figure 17: GP PRI signatories



Source: https://pitchbook.com.

Sustainable alternative assets

Table 21: Strategy representation among Article 8 funds (as of December 2023)

Category	Article 8 funds		Private markets	
	Number of funds	Capital raised	Number of funds	Capital raised
Private equity (buyout)	25.80%	34.50%	21.92%	37.62%
Venture capital	14.60%	4.40%	46.49%	15.96%
Private debt	20.50%	16.80%	7.08%	14.46%
Real estate	23.20%	14.20%	12.60%	12.34%
Real assets*	12.60%	29.90%	4.16%	9.69%

*Real assets = infrastructure & natural resources.

Source: PitchBook (2024) & Author's calculations.

Sustainable alternative assets

Table 22: Strategy representation among impact investing funds (as of December 2023)

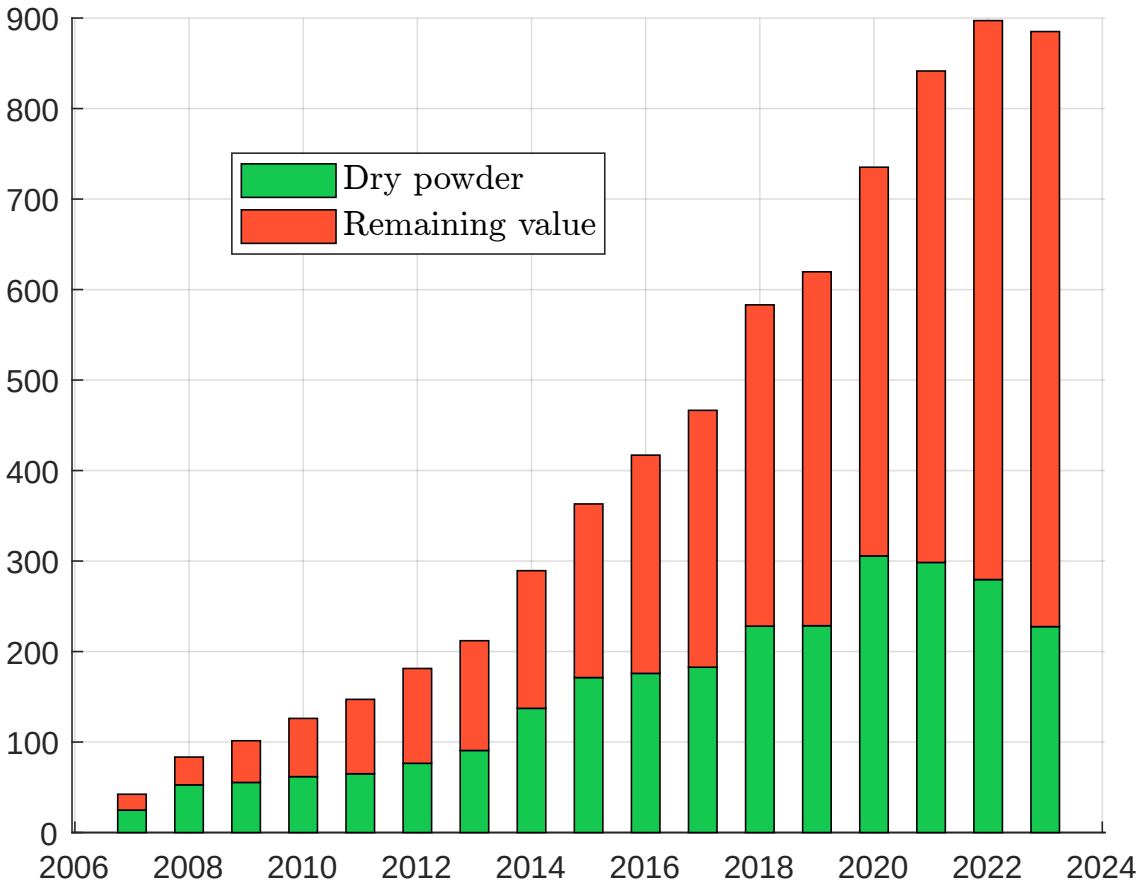
Category	Impact funds		Private markets	
	Number of funds	Capital raised	Number of funds	Capital raised
Private equity (buyout)	21.90%	14.49%	21.92%	37.62%
Venture capital	40.18%	7.03%	46.49%	15.96%
Private debt	7.16%	6.26%	7.08%	14.46%
Real estate	5.80%	3.93%	12.60%	12.34%
Real assets*	20.55%	66.96%	4.16%	9.69%

*Real assets = infrastructure & natural resources.

Source: PitchBook (2024), `https://pitchbook.com` & Author's calculations.

Sustainable alternative assets

Figure 18: Assets under management of impact investing funds (in $ bn)



Source: PitchBook (2024), `https://pitchbook.com` & Author's calculations.

Sustainable alternative assets

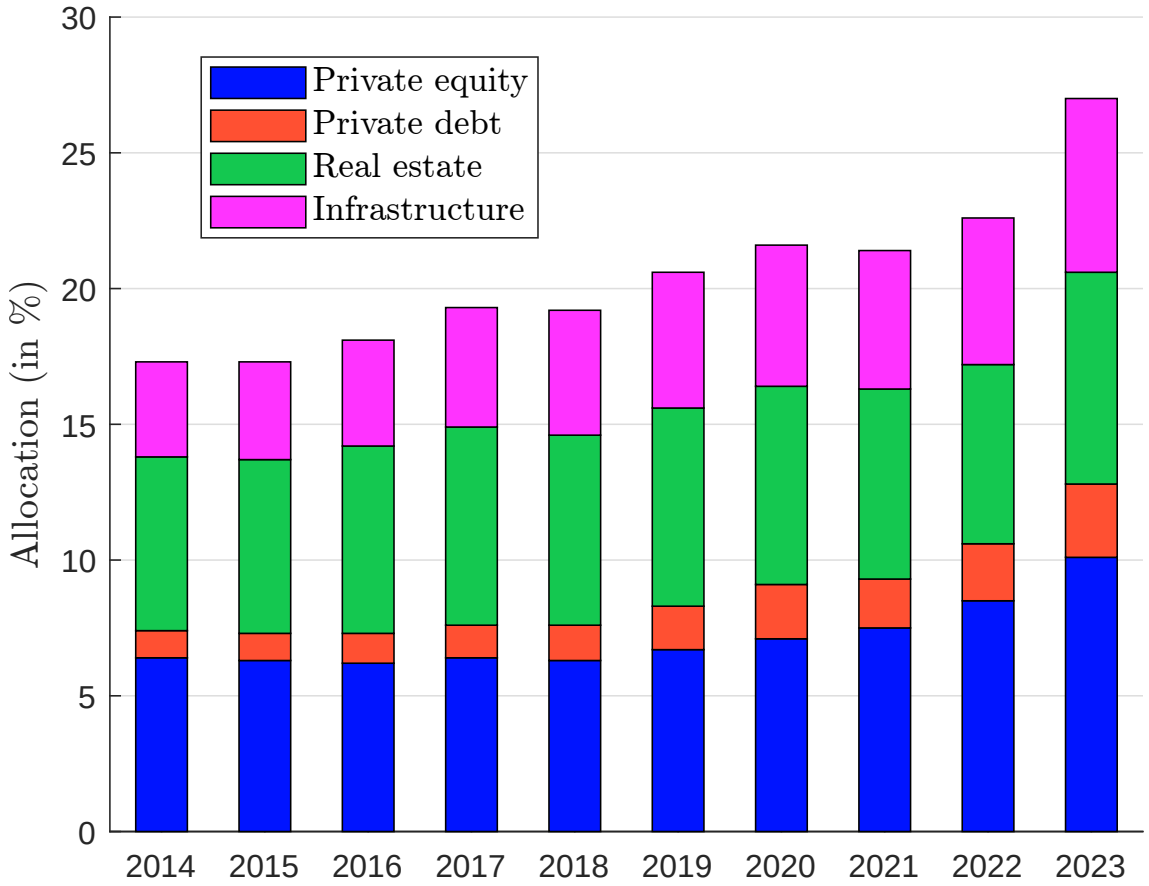
Table 23: Top 10 impact investing firms by capital raised (as of December 2023)

Investor	Location	Aggregate capital (in $ bn)	Number of impact funds
Brookfield Corporation	Ontario, Canada	61.40	6
Global Infrastructure Partners	New York, US	55.62	7
Macquarie Asset Management	Australia	37.78	13
Kohlberg Kravis Roberts	New York, US	36.48	7
EQT	Stockholm, Sweden	35.61	4
China Development Bank	Beijing, China	30.00	2
Stonepeak	New York, US	29.72	5
Actis	England, UK	28.63	37
Copenhagen Infrastructure Partners	Denmark	21.22	7
I Squared Capital	Miami, US	18.31	2
Total		354.76	90

Source: PitchBook (2024).

ESG private equity and debt funds

Figure 19: Allocation of institutional investors to alternative assets (in %)



Source: McKinsey (2024).

Sustainable infrastructure

- **Economic infrastructure**: industrial parks, manufacturing facilities, shipping terminals, etc.
- **Energy**: power plants, electricity grids, oil and gas pipelines, refineries, storage facilities, renewable energy facilities, wind farms, etc.
- **Other utilities**: water and wastewater systems, waste management systems, telecommunications networks, etc.
- **Social infrastructure**: schools, hospitals, prisons, etc.
- **Transportation**: roads, bridges, railways, airports, ports, public transit systems, etc.

Sustainable real estate

Some tools

- *Accounting and Reporting of GHG Emissions from Real Estate Operations* developed by PCAF, CRREM and GRESB, `www.crrem.eu/accounting-and-reporting-of-ghg-emissions`
- *CRREM Risk Assessment Reference Guide* prepared by the Institute for Real Estate Economics (Austria) in collaboration with the University of Ulster, GRESB BV, University of Alicante and Tilburg University, `www.crrem.eu/tool/reference-guide`
- *CRREM Risk Assessment Tool* with updated CRREM-SBTi Aligned Decarbonization Pathways, `www.crrem.eu/tool`
- *EU Building Stock Observatory (BSO)* under the umbrella of the EU Commission to monitor the implementation of the Energy Performance of Buildings Directive (EPBD), `https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficient-buildings_en`

Sustainable real estate

Some tools

- *PCAF European Building Emission Factor Database*, `https://building-db.carbonaccountingfinancials.com/login.php`
- *SBTi Buildings Guidance and Tool* developed by the Science Based Targets initiative, `www.sciencebasedtargets.org/sectors/buildings`
- *US Commercial Buildings Energy Consumption Survey (CBECS) database* developed by the US Energy Information Administration (EIA), `https://www.eia.gov/consumption/commercial`
- *US Residential Energy Consumption Survey (RECS) database* developed by the US Energy Information Administration (EIA), `https://www.eia.gov/consumption/residential`