

Climate Finance: the role of stakeholders

Stefano Lovo



Accuracy, August 25th 2026

- ▶ The effects of global warming are now visible to everyone.

- ▶ The effects of global warming are now visible to everyone.
- ▶ The cause of global warming is established since decades.

- ▶ The effects of global warming are now visible to everyone.
- ▶ The cause of global warming is established since decades.
- ▶ The remedies to global warming are known:

- ▶ The effects of global warming are now visible to everyone.
- ▶ The cause of global warming is established since decades.
- ▶ The remedies to global warming are known:
 - ▶ Adaptation: palliative care (often).
 - ▶ Effective as a short term patch but not necessarily acting on the causes.
 - ▶ Mitigation: Acting on the causes
 - ▶ Reduction of carbon-intensive human activities.
 - ▶ Effective in the long term but not in the short term
 - ▶ Require collective action

- ▶ Climate warming mitigation requires international coordination and cooperation.
- ▶ We cannot really count on supranational regulation because of:
 - ▶ Political cycle short-termism
 - ▶ Climate change skepticism
 - ▶ Weakening of multilateralism
- ▶ Can we count on the private sector?
 - ▶ Investors
 - ▶ Managers
 - ▶ Customers

Bibliography

This talk will be based on the following research performed at the HEC Center for Impact Finance Research

- ▶ The Moral Preferences of Investors: Experimental Evidence, by Bonnefon, Landier, Sastry and Thesmar. (Journal of Financial Economics 2025)
- ▶ Socially Responsible Investors: How to Maximize Impact, by Landier and Lovo (Review of Financial Studies 2025).
- ▶ ESG News, Future Cash Flows, and Firm Value, by Derrien, Krueger, Landier and Yao. (Journal of Finance 2025)
- ▶ The risk and return of impact investing funds, Jeffers, Lyu, Posenau, (Journal of Financial Economics 2024)
- ▶ ESG Incentives in Executive Compensation, by Eling, Ehmann, Kampkötter and Moritz.
- ▶ Carbon Information, Pricing, and Bans: Evidence from a Field Experiment, by Handziuk and Lovo.

Sustainability and the Individual: The Conundrum

- ▶ Do you care about the planet and/or the future generations?

Sustainability and the Individual: The Conundrum

- ▶ Do you care about the planet and/or the future generations?
- ▶ If yes, have you changed your lifestyle in order to reduce your carbon footprint?
 - ▶ Changed your diet habits,
 - ▶ Changed your travel habits,
 - ▶ Changed your investment style,
 - ▶ Changed your purchase habits,

Sustainability and the Individual: The Conundrum

- ▶ Do you care about the planet and/or the future generations?
- ▶ If yes, have you changed your lifestyle in order to reduce your carbon footprint?
 - ▶ Changed your diet habits,
 - ▶ Changed your travel habits,
 - ▶ Changed your investment style,
 - ▶ Changed your purchase habits,
- ▶ Why (or why not)?

Two Types of Sustainability Preferences

- ▶ **Value-alignment preference:** I care about the planet and **have** changed my behavior, because I want to live consistently with my values.
- ▶ **Consequentialist preference:** I care about the planet but have **not** changed my behavior, because my individual actions have negligible impact on global warming.

What are investors' sustainability preferences?

The Moral Preferences of Investors: Experimental Evidence (Bonnefon, Landier, Sastry & Thesmar)

Consider these three default-risk-free zero-coupon bonds that mature tomorrow.

Tomorrow:

Bond 1 the bond issuer pays 0.6 Euros to the bond holder

What are investors' sustainability preferences?

The Moral Preferences of Investors: Experimental Evidence (Bonnefon, Landier, Sastry & Thesmar)

Consider these three default-risk-free zero-coupon bonds that mature tomorrow.

Tomorrow:

Bond 1 the bond issuer pays 0.6 Euros to the bond holder

Bond 2 the bond issuer

- ▶ pays 0.6 Euros to the bond holder,
- ▶ donates 0.40 Euros to a philanthropic cause (of your choice)

What are investors' sustainability preferences?

The Moral Preferences of Investors: Experimental Evidence (Bonnefon, Landier, Sastry & Thesmar)

Consider these three default-risk-free zero-coupon bonds that mature tomorrow.

Tomorrow:

Bond 1 the bond issuer pays 0.6 Euros to the bond holder

Bond 2 the bond issuer

- ▶ pays 0.6 Euros to the bond holder,
- ▶ donates 0.40 Euros to a philanthropic cause (of your choice)

Bond 3 the bond issuer

- ▶ pays 0.6 Euros to the bond holder,
 - ▶ donates 0.40 Euros to a philanthropic cause (of your choice)
- IFF you buy the bond.**

What are investors' sustainability preferences?

The Moral Preferences of Investors: Experimental Evidence (Bonnefon, Landier, Sastry & Thesmar)

Consider these three default-risk-free zero-coupon bonds that mature tomorrow.

Tomorrow:

Bond 1 the bond issuer pays 0.6 Euros to the bond holder

Bond 2 the bond issuer

- ▶ pays 0.6 Euros to the bond holder,
- ▶ donates 0.40 Euros to a philanthropic cause (of your choice)

Bond 3 the bond issuer

- ▶ pays 0.6 Euros to the bond holder,
 - ▶ donates 0.40 Euros to a philanthropic cause (of your choice)
- IFF you buy the bond.**

How much would you pay today to purchase each bond?

- ▶ **Non-altruistic investors:** pay at most 0.60 for each bond
- ▶ **Value-alignment investors:** may pay $P > 0.60$ Euros for Bonds 2 or 3, because the donation itself yields utility.
- ▶ **Impact-driven investors:** pay above $P > 0.60$ Euros only if their purchase is pivotal for the donation (Bond 3) ; otherwise they pay 0.60 Euros (Bonds 1 and 2).

Evidence of value-alignment preferences

The Moral Preferences of Investors: Experimental Evidence (Bonnefon, Landier, Sastry & Thesmar)

- ▶ **Methodology:** Incentivized laboratory experiments to characterize investors' moral preferences.

Results: Based on responses from about 1,000 valid participants.

- ▶ Strong evidence of value alignment in participants' bidding behavior, rather than impact-seeking preferences.
- ▶ Relatively high willingness to pay: participants are willing to pay about \$0.70 more for a share when the firm donates an additional \$1 per share to charity.

Given investors value-alignment preference, can the finance sector help reducing CO_2 emissions?

Why do investors' preferences matter for the financial sector?

Socially Responsible Investors: How to Maximize Impact (Landier & Lovo)

- ▶ **Methodology:** General-equilibrium model of capital allocation with financial intermediaries.
- ▶ All investors care about returns, but some also value the environmental performance of their investments (value alignment).
- ▶ Financial intermediaries: maximize assets under management (capital raised from investors to finance entrepreneurs).
- ▶ Two sectors: brown and green.
- ▶ Brown-sector entrepreneurs can reduce emissions at a cost.

Mapping Investors' Preferences to Intermediaries' Strategies

Socially Responsible Investors: How to Maximize Impact (Landier & Lovo)

Which of the following fund investment strategy can induce a reduction in emission?

- ▶ **Exclusion:**
- ▶ **Activism:**
- ▶ **Scope 3 activism:**

Mapping Investors' Preferences to Intermediaries' Strategies

Socially Responsible Investors: How to Maximize Impact (Landier & Lovo)

- ▶ **Exclusion:** invest only in the green sector $\Rightarrow$ attracts value-aligned investors but has no effect on emissions, because brown firms remain financed by standard investors.
- ▶ **Activism:**
- ▶ **Scope 3 activism:**

Mapping Investors' Preferences to Intermediaries' Strategies

Socially Responsible Investors: How to Maximize Impact (Landier & Lovo)

- ▶ **Exclusion:** invest only in the green sector $\Rightarrow$ attracts value-aligned investors but has no effect on emissions, because brown firms remain financed by standard investors.
- ▶ **Activism:** invest in the brown sector while requiring entrepreneurs to reduce emissions $\Rightarrow$ reduces emissions but does not attract value-aligned investors.
- ▶ **Scope 3 activism:**

Mapping Investors' Preferences to Intermediaries' Strategies

Socially Responsible Investors: How to Maximize Impact (Landier & Lovo)

- ▶ **Exclusion:** invest only in the green sector $\Rightarrow$ attracts value-aligned investors but has no effect on emissions, because brown firms remain financed by standard investors.
- ▶ **Activism:** invest in the brown sector while requiring entrepreneurs to reduce emissions $\Rightarrow$ reduces emissions but does not attract value-aligned investors.
- ▶ **Scope 3 activism:** invest only in the green sector while requiring green firms to source only from brown suppliers that reduce emissions $\Rightarrow$ attracts both value-aligned and impact investors, and creates incentives for brown firms to abate emissions.

Empirical evidence about these strategies

- ▶ **Efficacy of Scope 3 activism:** Firms with higher ownership by sustainable funds experience a reduction in suppliers' carbon intensity.
Bisetti, Shi & Zaldokas, (Review of Financial Studies 2026).

Regardless of investors non pecuniary preference, what is the relation between ESG and financial performance?

ESG News, Future Cash Flows, and Firm Value (Derrien, Krueger, Landier & Yao)

- ▶ **Methodology:** Empirical study using a comprehensive RepRisk ESG-news dataset matched with analyst forecasts and market data (2007–2022).
- ▶ **Evidence:**
 - ▶ Negative ESG news shifts earnings forecasts over both short and long horizons.
 - ▶ ESG-induced changes in analysts' expectations are driven primarily by anticipated lower sales, rather than higher costs.
 - ▶ Realized earnings and sales decline following ESG incidents.

The risk and return of impact investing funds, (Jeffers, Lyu & Posenau)

Methodology: Empirical study comparing performance of Impact VC funds to other non-impact VC funds (1999-2015).

Evidence

- ▶ Impact VC funds tend to have lower β than average VC fund
⇒ lower financial returns
- ▶ A value-weighted portfolio long in matched funds and short impact yields a market risk-adjusted return of \$0.015, not statistically different from zero.

Regardless of investors non pecuniary preference, what is the relation between ESG and financial performance?

- ▶ **ESG performance is material** $\Rightarrow$ investors should care about it whether or not they care about the planet.
- ▶ **Seeking impact has 'small' cost compared to investors estimated willingness to pay**

Are managers' ESG incentives material or symbolic?

ESG Incentives in Executive Compensation (Efing, Ehmann, Kampkötter & Moritz)

- ▶ **Methodology:** Comprehensive European dataset on executive compensation covering 674 executives from 73 firms forming the EURO STOXX 50 and the STOXX Europe 50 in (2013–2020):
 - ▶ Ex-ante design of ESG performance-linked pay contracts.
 - ▶ Ex-post data on realized ESG performance and actual payouts.
 - ▶ ESG factors: emissions reduction, workforce diversity, product safety, ...

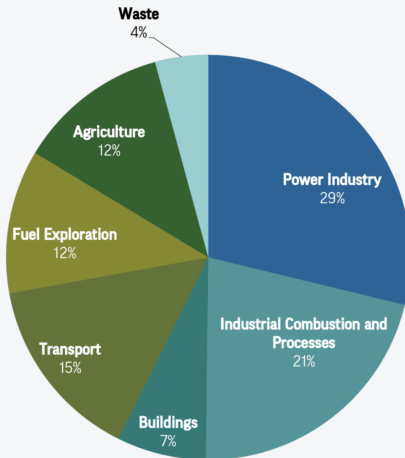
ESG Incentives in Executive Compensation

- ▶ The share of European executives with at least one ESG-linked performance measure in pay grew from 40% (2013) to 60% (2020).

ESG Incentives in Executive Compensation

- ▶ The share of European executives with at least one ESG-linked performance measure in pay grew from 40% (2013) to 60% (2020).
- ▶ Ex-ante: the weight of ESG metrics accounts for less than 5% of total performance-linked pay.
- ▶ Discretionary ESG metrics are the norm in practice, whereas non-ESG metrics are binding with predetermined weights set at the start of the fiscal year.
- ▶ Ex-post: ESG metrics account for only 1% of total pay risk, whereas non-ESG metrics (e.g., financial results, stock performance) account for 87%.
- ▶ **Pay–performance sensitivity:** strong for financial performance and negligible for ESG performance (with exceptions in industries where ESG is material).

How to induce sustainable habits in consumers?



NOTES

Globally, the three largest sectors of greenhouse gas emissions are the power industry (29%), industrial combustion and processes (21%), and transportation (15%).

SOURCE

GHG Emissions of All World Countries (European Commission, 2024)

Carbon Information, Pricing, and Bans: Evidence from a Field Experiment (Handziuk & Lovo)

► Research questions:

1. How to encourage sustainable consumption patterns?
2. Which policies are socially acceptable?

► Methodology:

1. Large field experiment at the HEC canteen, with access to all individual meal purchases over two academic years (over 140,000 meals by 4,000 distinct users):
 - Informing users of dishes' carbon footprint (CF).
 - Banning high-CF dishes from the canteen.
 - Changing relative prices to reflect relative CF.
2. Ex-post internet survey within the HEC community.

Only the wallet matters

Carbon Information, Pricing, and Bans: Evidence from a Field Experiment (Handziuk & Lovo)

- ▶ Over 80% of participants state they care about global warming . . .

Only the wallet matters

Carbon Information, Pricing, and Bans: Evidence from a Field Experiment (Handziuk & Lovo)

- ▶ Over 80% of participants state they care about global warming . . .
- ▶ Providing visible, reliable information about dishes' carbon footprint had **no significant effect** on purchasing behavior.

Only the wallet matters

Carbon Information, Pricing, and Bans: Evidence from a Field Experiment (Handziuk & Lovo)

- ▶ Over 80% of participants state they care about global warming . . .
- ▶ Providing visible, reliable information about dishes' carbon footprint had **no significant effect** on purchasing behavior.
- ▶ Red-meat-free days: canteen attendance fell by 15%.

Only the wallet matters

Carbon Information, Pricing, and Bans: Evidence from a Field Experiment (Handziuk & Lovo)

- ▶ Over 80% of participants state they care about global warming . . .
- ▶ Providing visible, reliable information about dishes' carbon footprint had **no significant effect** on purchasing behavior.
- ▶ Red-meat-free days: canteen attendance fell by 15%.
- ▶ When prices were aligned with CF (higher CF $\Rightarrow$ higher price), the average CF of purchased dishes fell by 27–42%.

Efficacy and popularity of policies

Treatment	Relative effect on carbon footprint of purchased dish	Relative effect on users' average spending	% of voters in favor of the policy
Do nothing	$\approx 0\%$	$\approx 0\%$	3.5%
Information only	$\approx 0\%$	$\approx 0\%$	6.5%
Bonus-malus Euro 0.10 / kg CO ₂ eq.	$\approx 0\%$	$\approx 0\%$	60%
Bonus-malus Euro 0.25 / kg CO ₂ eq.	-26.8%	-4.2%	
Bonus-malus Euro 0.50 / kg CO ₂ eq.	-32.9%	-7.1%	
Bonus-malus Euro 1.00 / kg CO ₂ eq.	-42.6%	-32.8%	
Red meat-free Thursday	-10%	$\approx 0\%$	30%

- ▶ **Even if consumers care about the planet as long as the green option is more expensive than the brown option they will opt for the latter.**
- ▶ **People vote in favor of policies that induce shift in behavior that they would not adopt without incentives**

Conclusion: Can the private sector & finance mitigate global warming?

- ▶ In principle people do care about the planet, this applies to investors consumers and managers, and would favor effective policies.
- ▶ But absent monetary incentives, preference alone do not translate into actions.
- ▶ Investors might find the monetary incentives in the materiality of ESG performance.
- ▶ But materiality of ESG is not immediately salient.

What should we do?

- ▶ **Make ESG directly material:** Align *prices* with carbon (CF-based pricing, internal carbon prices); link *financing terms* to emissions (sustainability-linked loans/bonds with credible step-ups).
- ▶ **Engage where it bites:** Prioritize *activism* and *Scope 3* procurement covenants; avoid pure exclusion as it leaves brown firms financed by others.
- ▶ **Design real incentives:** Use *binding, measurable, non-discretionary* ESG targets with *meaningful weight* (not token 5%); Easier for ESG metrics material to the industry.

Thank you !