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Decarbonization Commitments:
Signals, Substance, or Spin?

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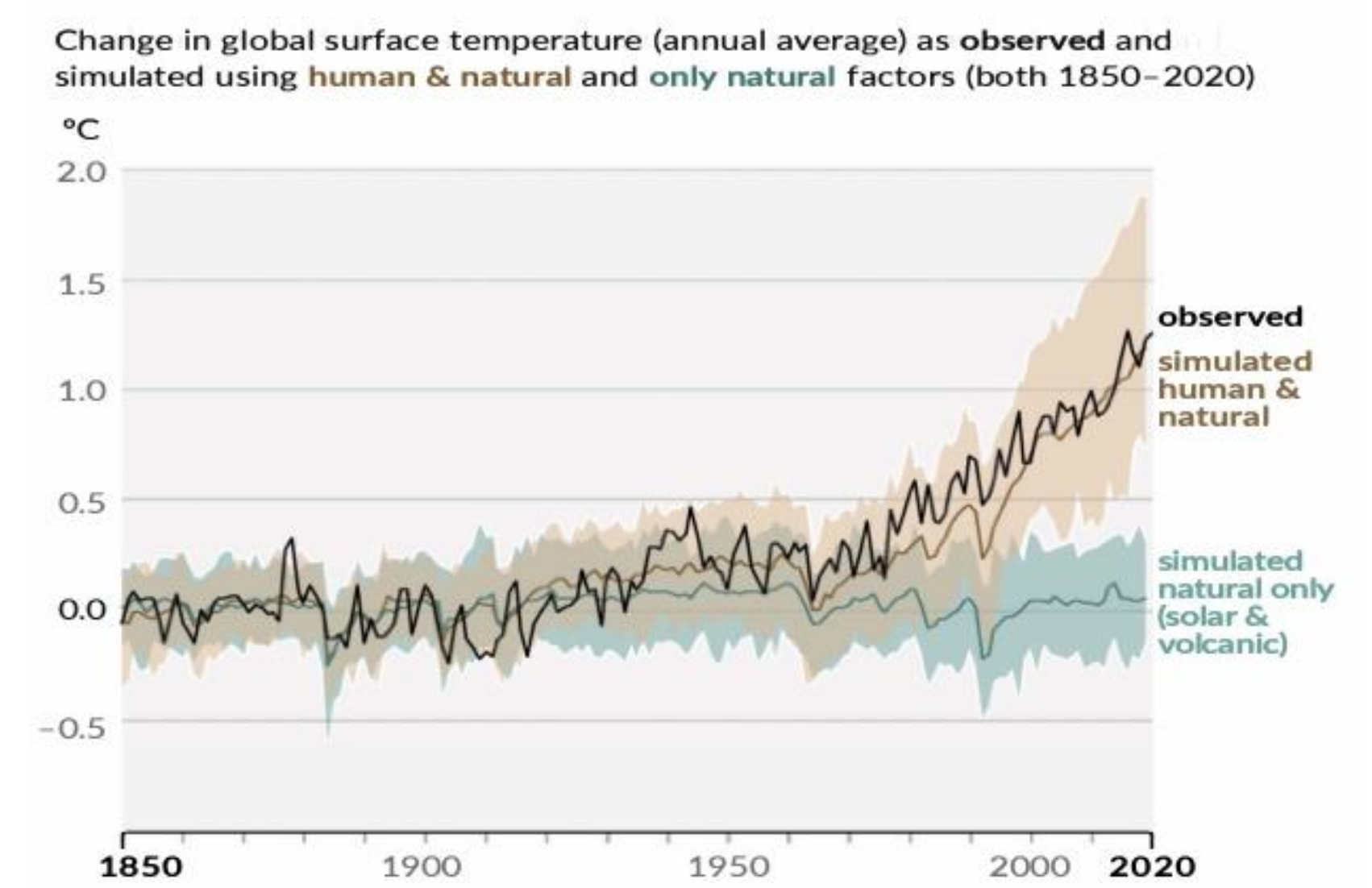
Setting the Stage: Climate Problem



Net-zero Commitments

- Commitments manifest coalitions of the willing
- Follow a broad scientific climate model
- Implemented at different levels of granularity

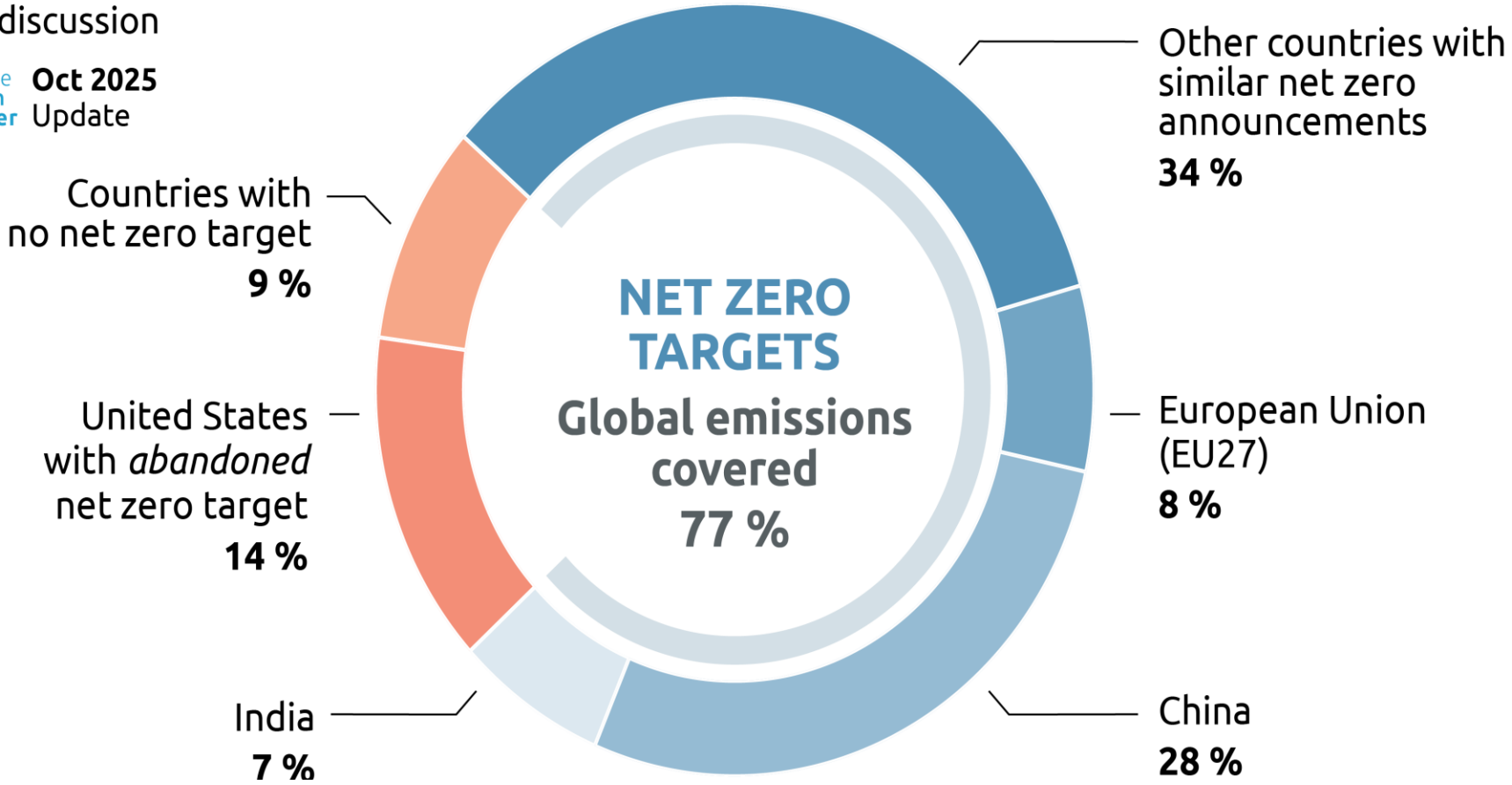
- **Do commitments convey credible information about future emissions or are they strategic marketing?**

Net-zero Commitments

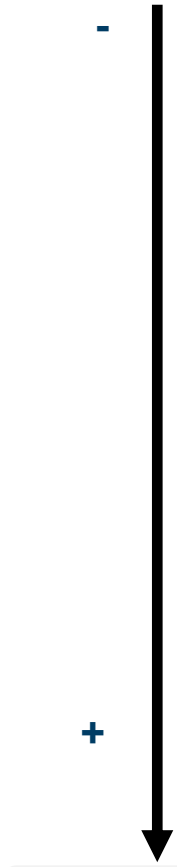
Net zero emissions target announcements

Agreed in law, as part of an initiative, or under discussion

Climate Action Tracker **Oct 2025** Update



IEA and SBTi: To Engage with Corporates



IPCC

Scientists:
- **Carbon budget for a 50% probability of 2° increase**

IEA

Think tank allocates "carbon budgets" within each sector based on:
- ***Their possible technological shifts***
- ***A maximization of growth***
- ***A subsequent CCS level***

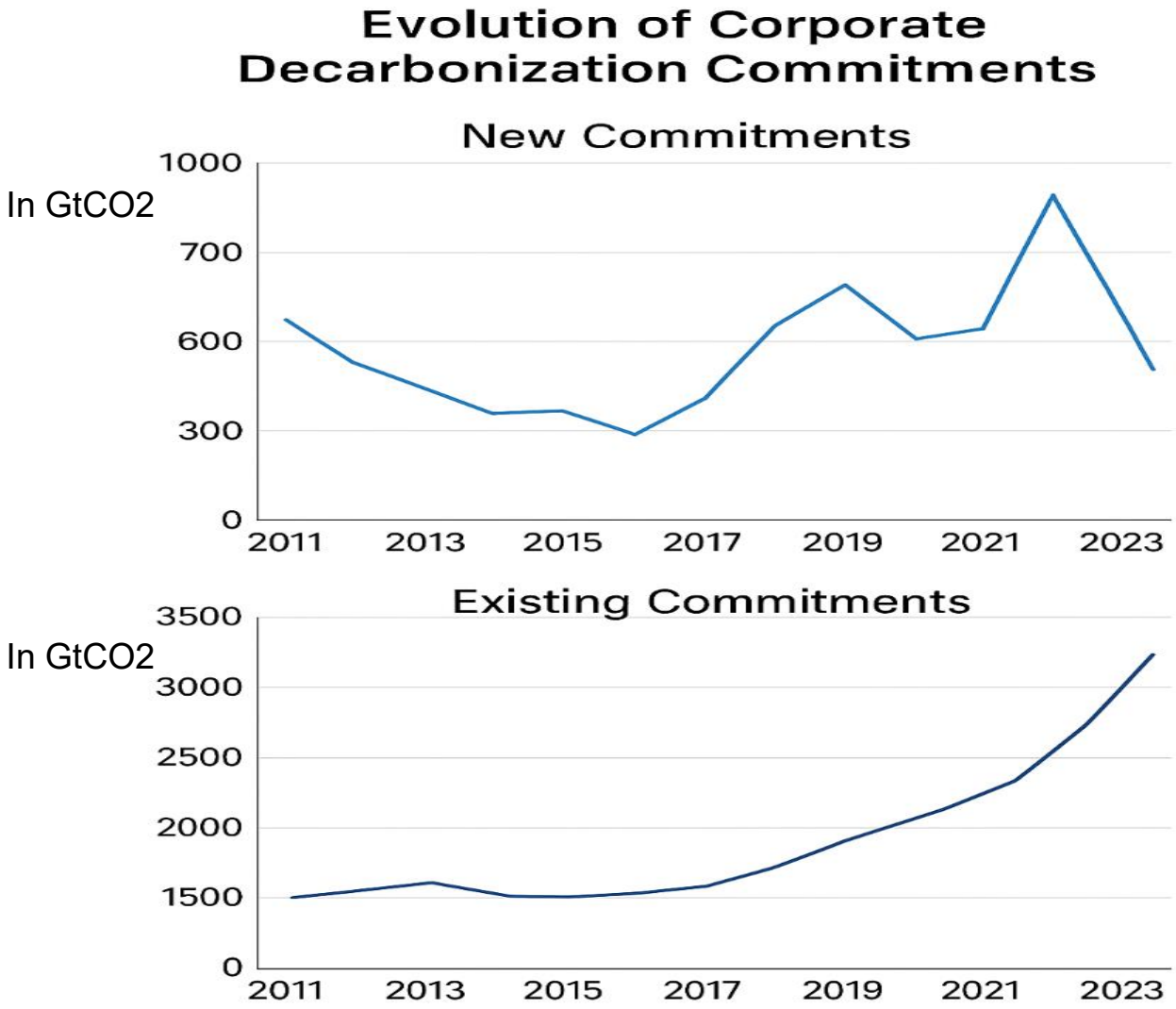
SBTi

NGO:
- ***Normalizes the different messages from corporates***
- ***Compares them with the IEA budget allocation with each sector***

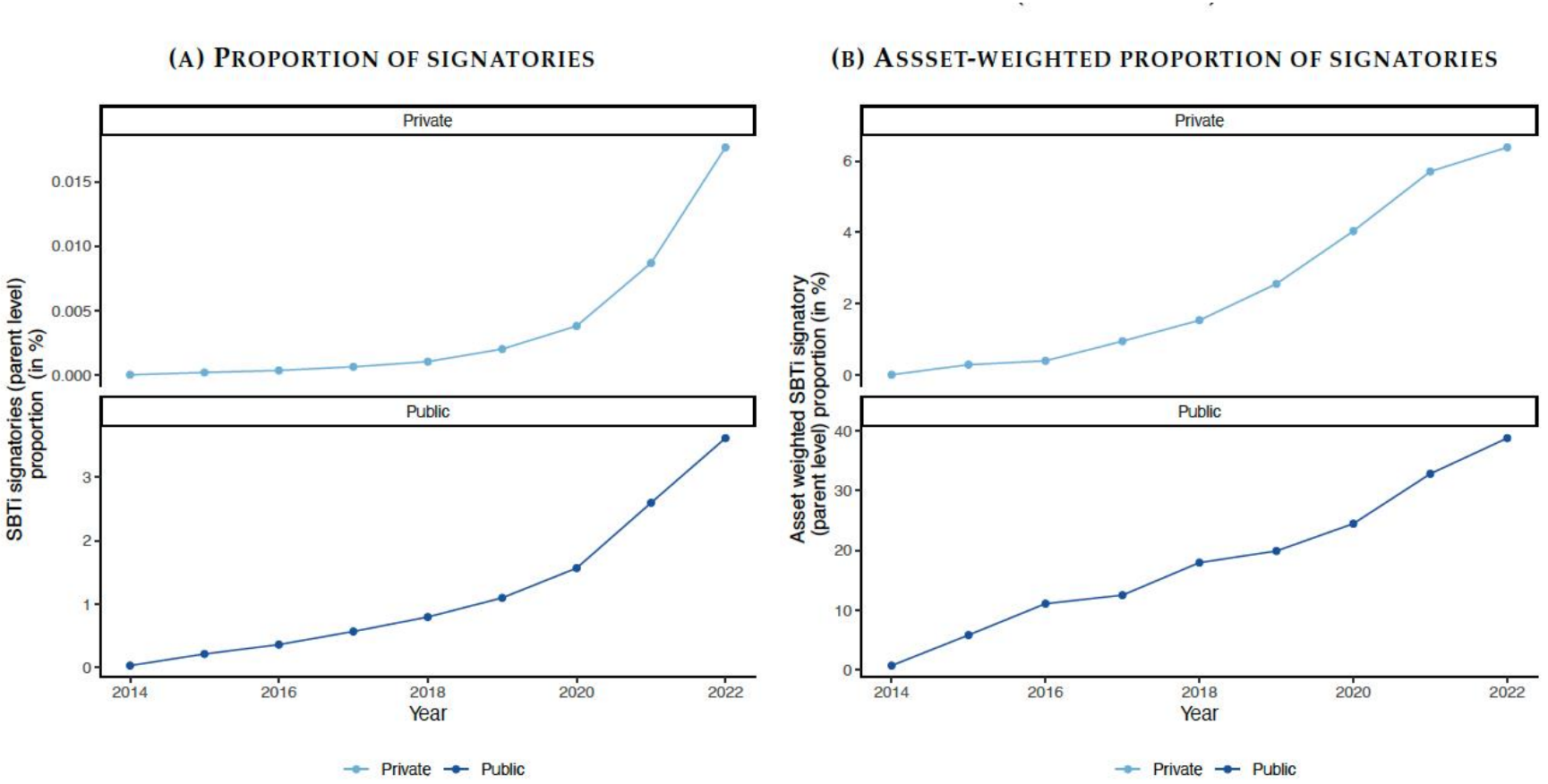
Tool built to engage with corporates on their commitments

Firm Commitments: CDP & SBTi

Evolution of Firm Commitments

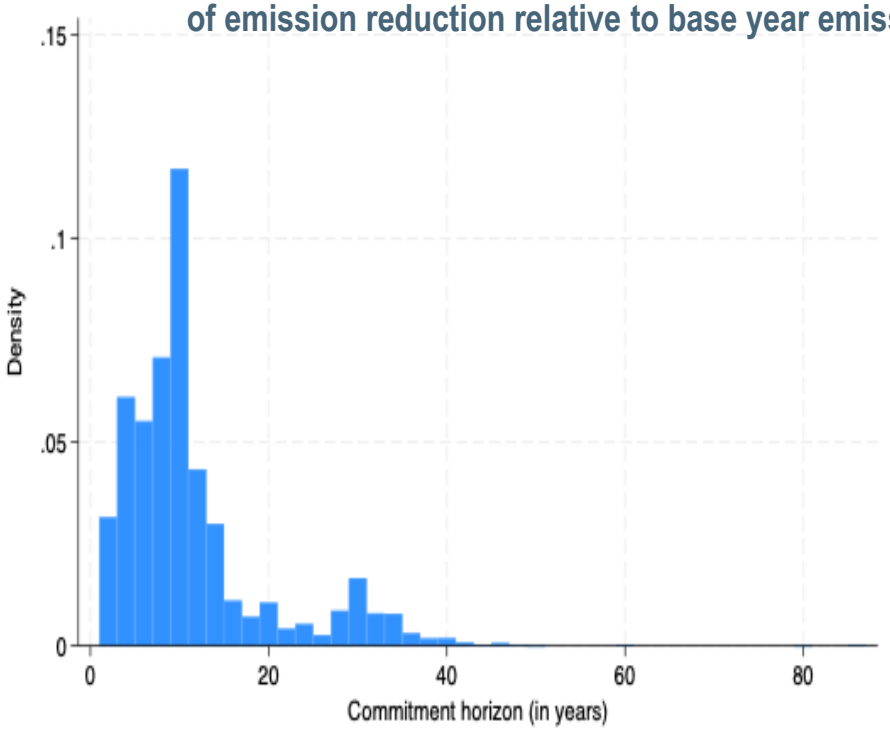


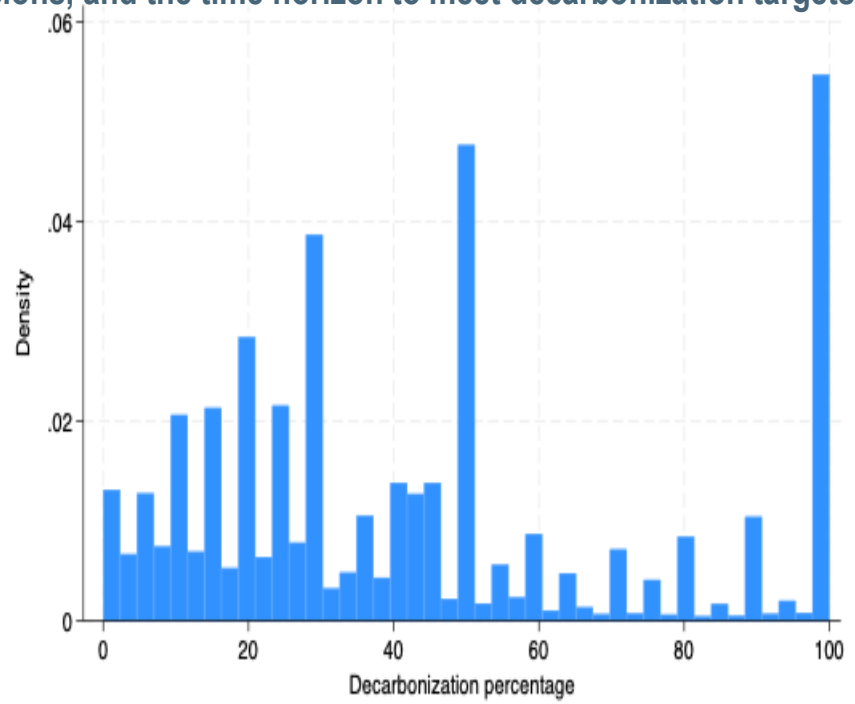
Evolution of Commitments



Commitments Attributes

- CDP decarbonization pledges include two commitment attributes: **the target rate of emission reduction relative to base year emissions, and the time horizon to meet decarbonization targets**





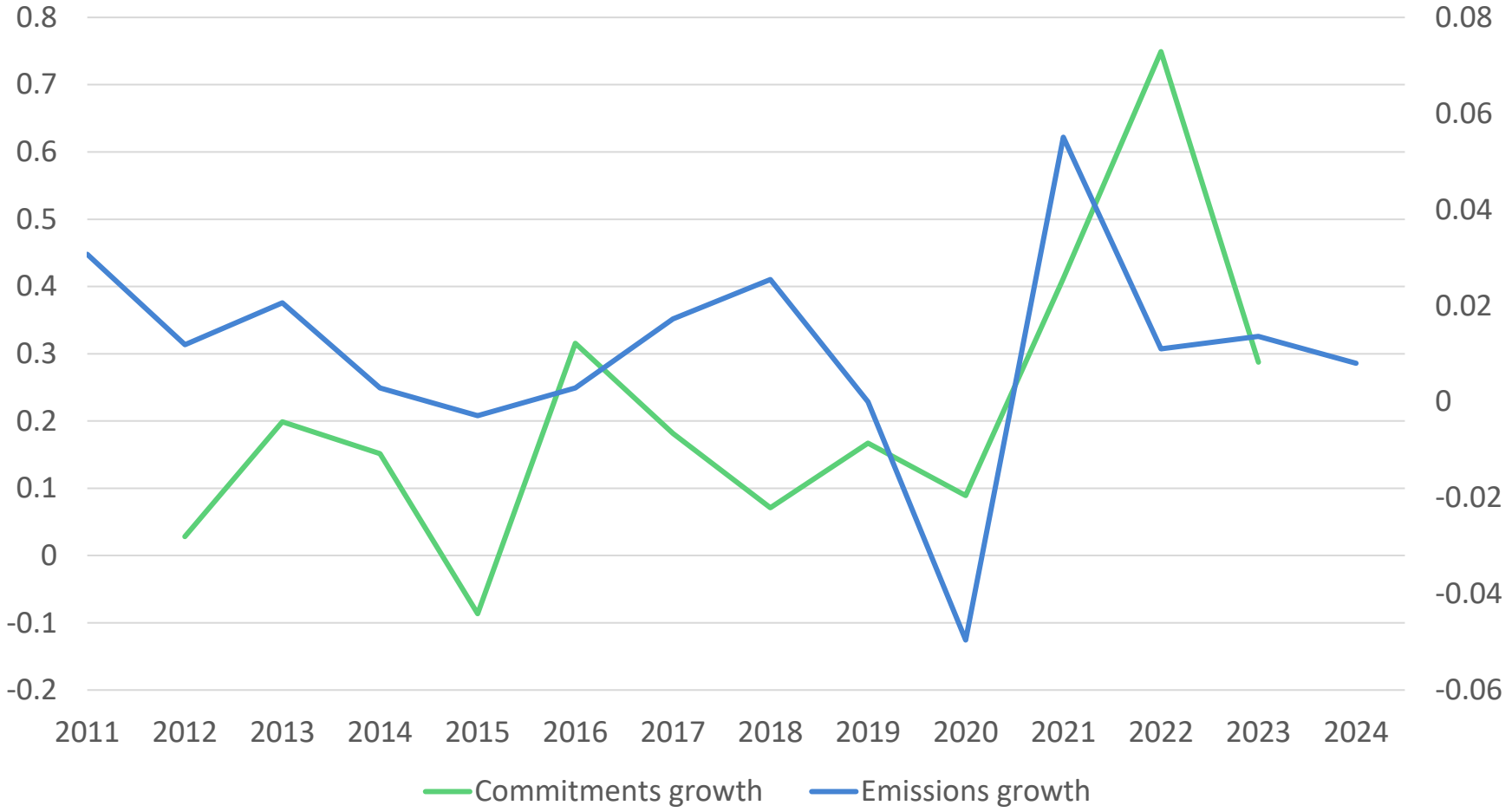
- Most corporate pledges have a short horizon, with close to 50% having a target date less than 8 years away
- Only 9% of corporate pledges have set a carbon emission target date of 2050 or after
- Pledged reductions are widely dispersed, with 70% of pledges committing to a less than 50% total reduction relative to base year
- Only 12% of companies in our sample have pledged to completely decarbonize

Emissions: The Aggregate Problem

- How do commitments correlate with emissions in aggregate data?

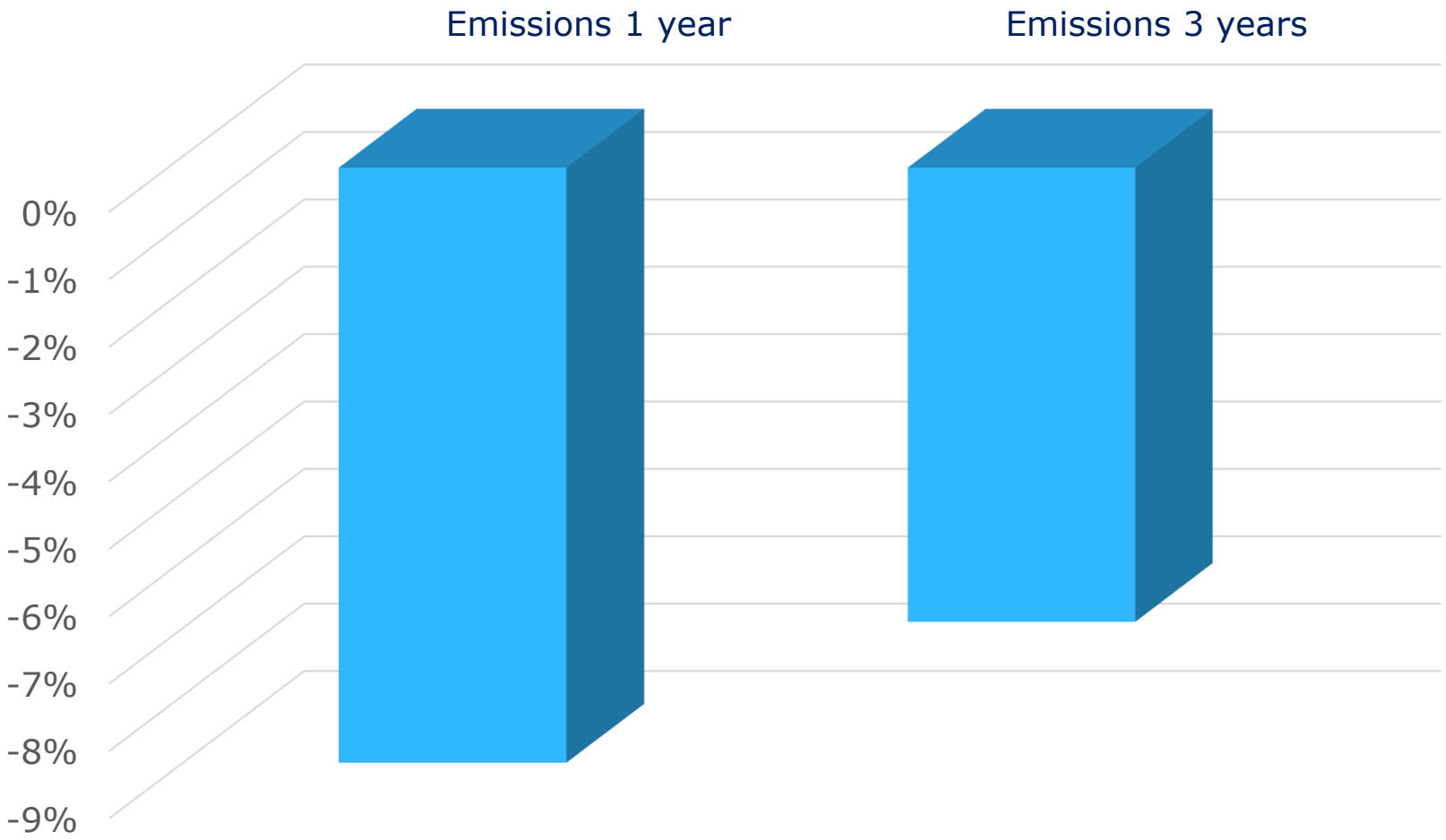
- How much does a firm's N-Z commitment affect its future emissions?

Aggregate Emissions and Commitments

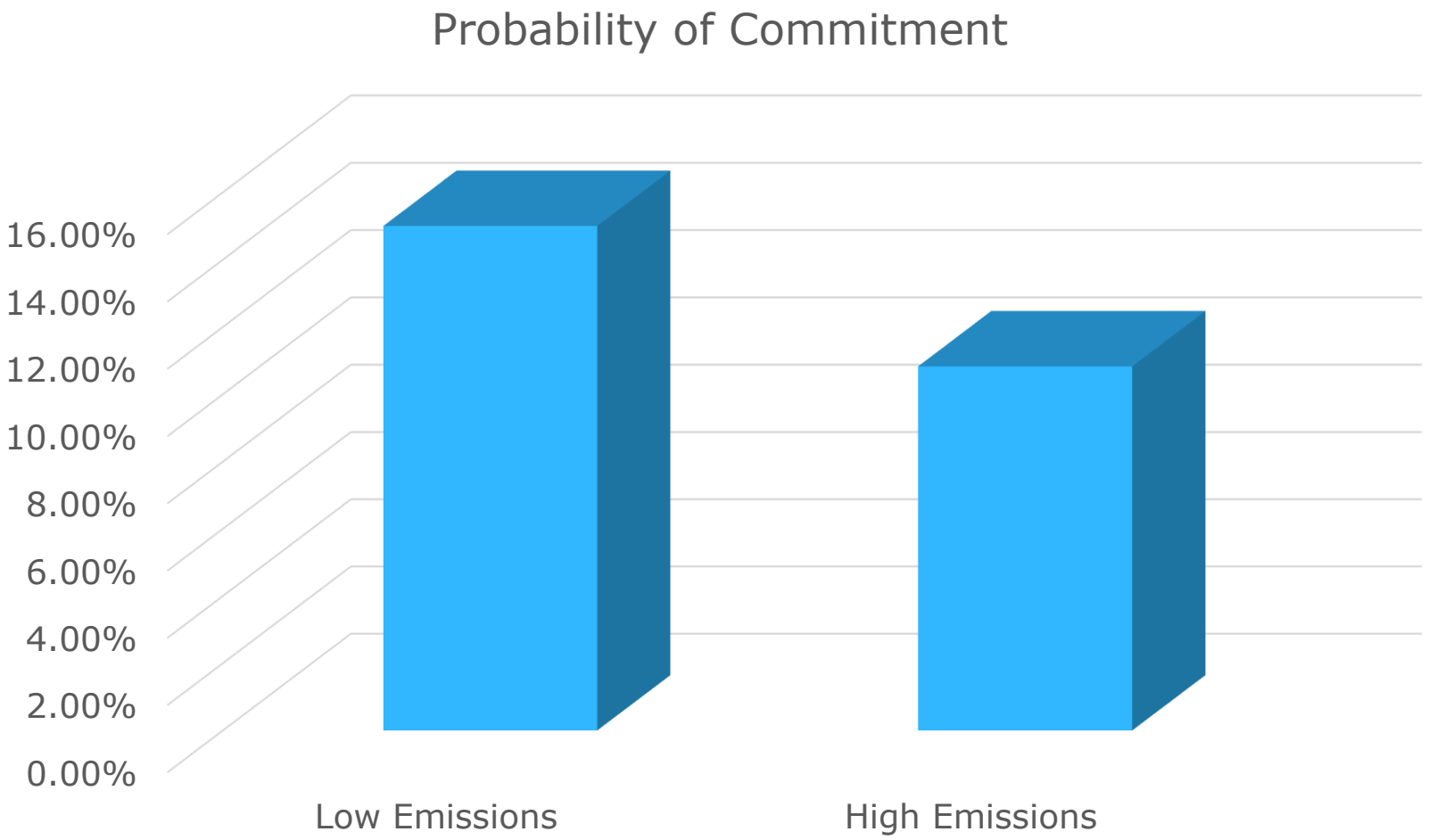


Correlation between commitments and emissions growth = 0.32

Commitments and Future Emissions



Commitments and Past Emissions

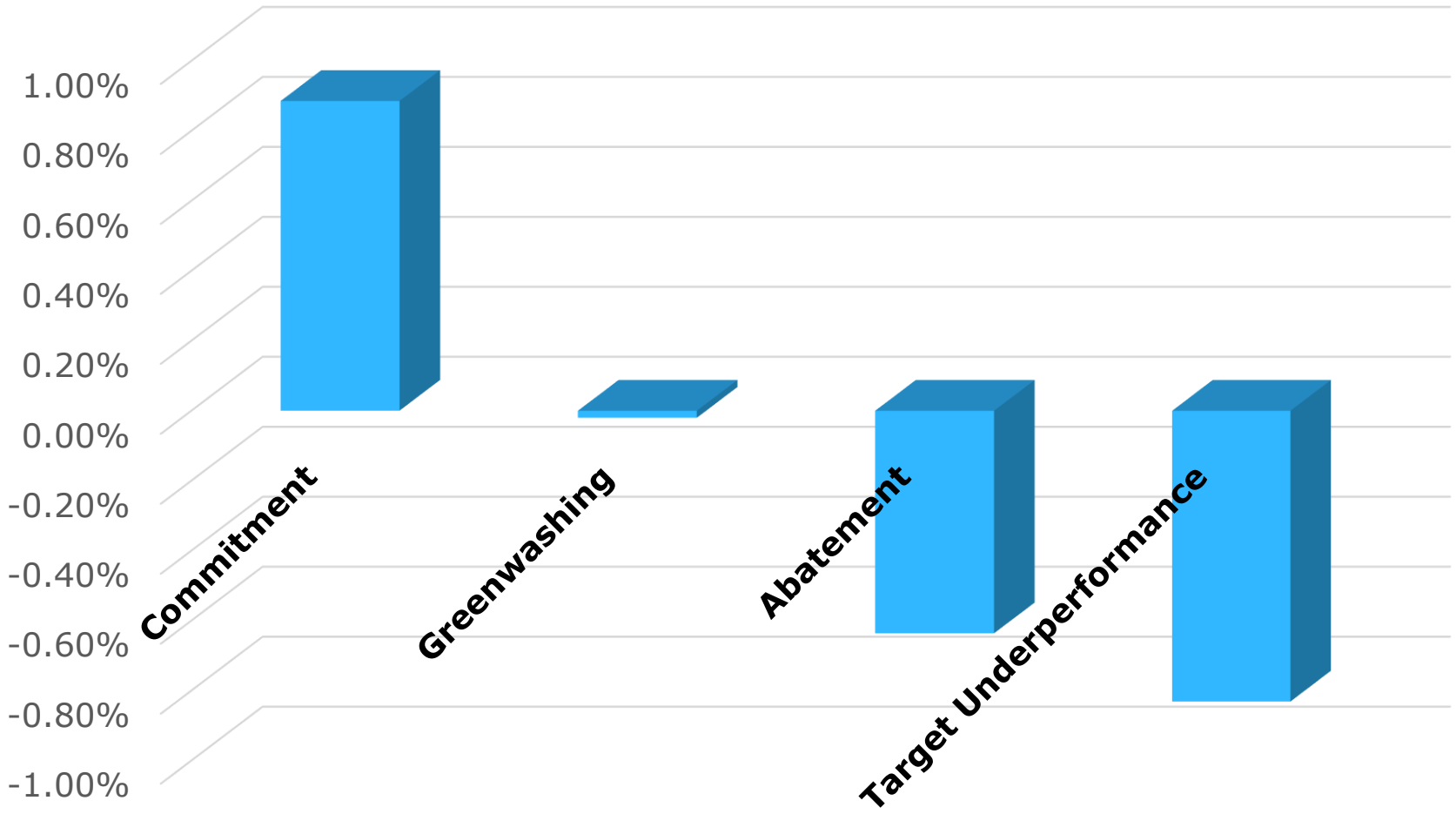


Commitments: Conceptual Framework

- Commitment can serve as a signaling/advertisement of firms' intentions
- Lower financing costs

- Companies that join are incurring costs by curbing their emissions
- Breaking the commitment could lead to reputational costs

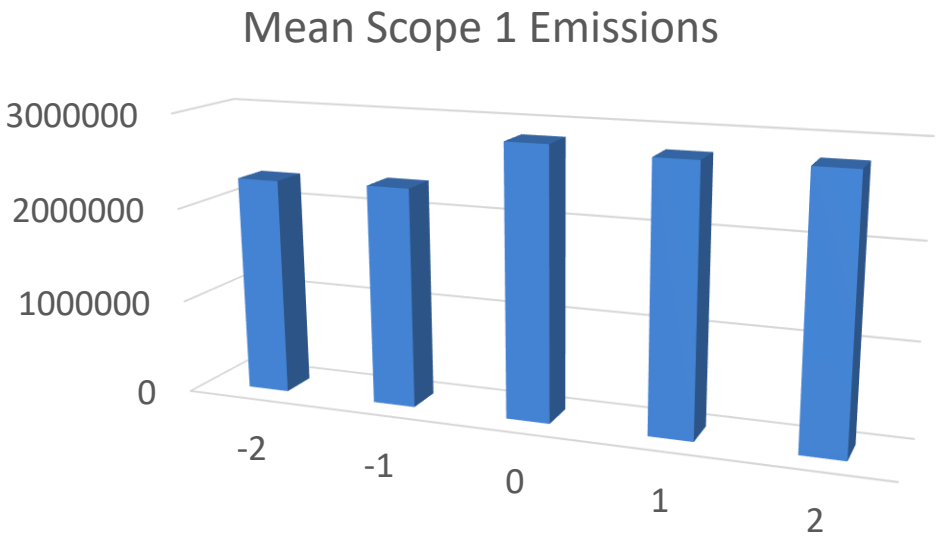
Commitments and Firm Value (M/B)

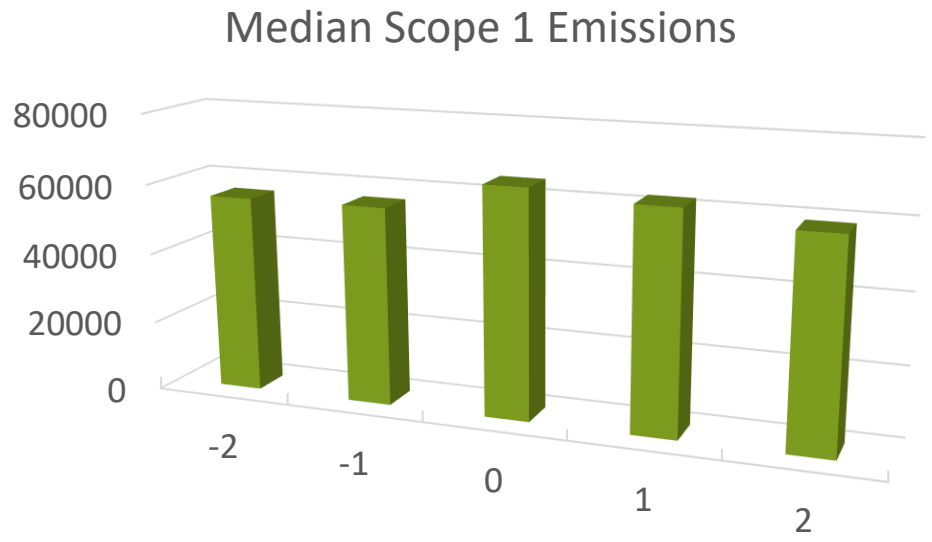


The Cost of Commitment: Emissions Backdating

- Companies set their emission reduction targets with the starting (baseline) year being before the date of commitment.
- Do companies strategically choose the date of baseline year?
- Relate carbon emissions to the window of 5 years (2 years before; base year; and 2 years after) around the baseline year

Evidence of Emissions Backdating



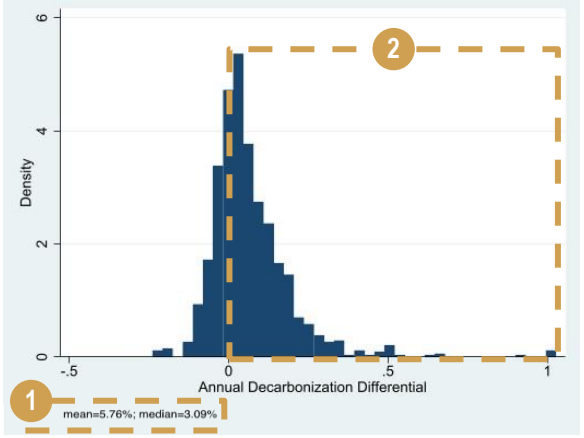


Most Companies Have Fallen Behind on their Commitment Trajectories

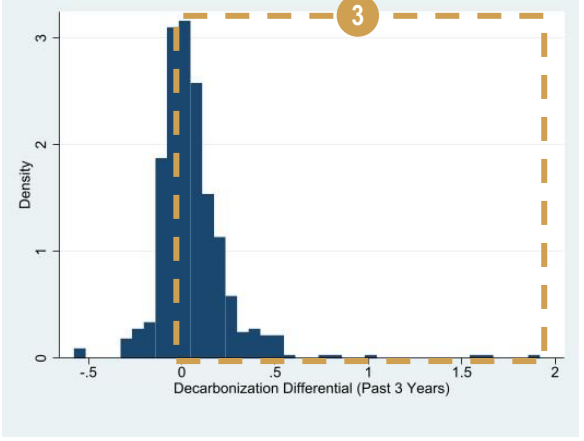
Source: Lazard proprietary research, S&P Global Trucost, (11/23/2021), CDP
Aldy et al., (2023). Show and Tell: an Analysis of Corporate Climate Messaging and its Financial Impacts

- **Define a firm's commitment failure as the positive difference between its historical rate of Scope 1 emission reductions and the annual emissions abatement rate implied by its pledged target with longest time horizon**

- **10-Year Average Commitment Differentials**



- **3-Year Average Commitment Differentials**



1. The average emission reduction rate for pledging firms is 5.8 percentage points below the trajectory rate required by pledges; the median shortfall of 3.1 percentage points highlights the disproportionately large failures of a small number of companies
2. Over the past 10 years, 72% of companies are behind schedule and will have to accelerate their emission reductions to meet their targets
3. Over the past 3 years, 56% of pledging companies are behind schedule, suggesting some improvement in recent years

Which Characteristics Cause Firms to Fall Behind on Commitments?

- Isolate differences in emission failure rates across several corporate characteristics, to identify meaningful indicators of future commitment failures

Commitment Failure Differentials by Firm Characteristic

Subgroup Std. Dev.	21%	30%	29%	22%	28%	24%	24%	29%
Subgroup	Below Median	Above Median	Below Median	Above Median	Below Median	Above Median	Below Median	Above Median

Observations

1. **Companies with higher sales growth are more likely to fall behind on pledges**
   - Companies should account for potential future growth when setting targets
2. **Companies that set longer target horizons observe lower margins of failure**
   - Gradual decarbonization pathways may be more realistic to achieve net zero
3. **Companies with higher Scope 3 Upstream emissions are likely to fall behind by a slightly larger margin**
   - We find no significant differences across subgroups for firms with different ROE, market capitalizations, and book-to-market ratios

Source: Lazard proprietary research, S&P Global Trucost, (11/23/2021), CDP

External Pressure: Financial Intermediaries

- Financial intermediaries have strong position to affect emitting companies (external governance)

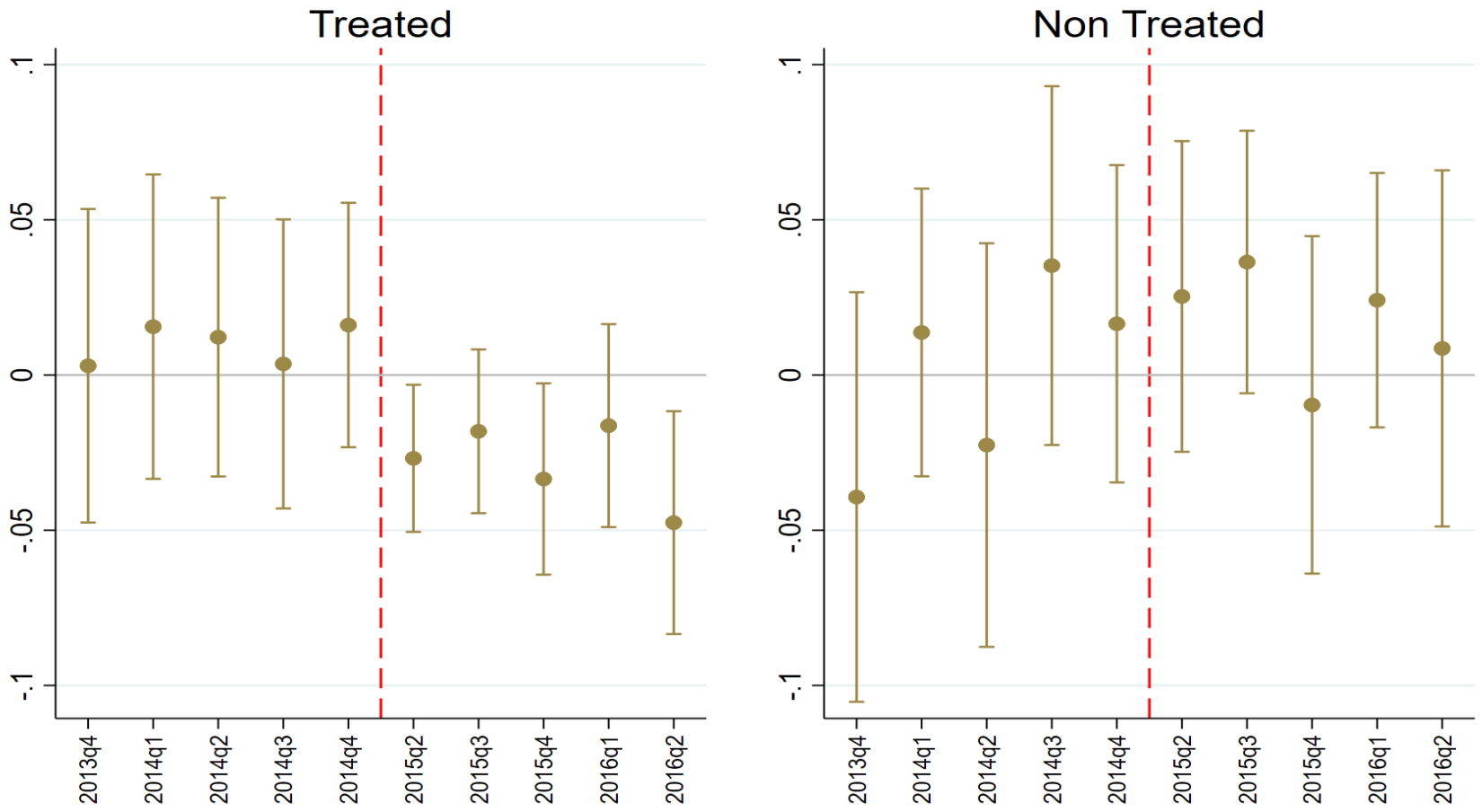
- Financial institutions committing through CDP/SBTi as well as specialized coalitions: NZAMI, NZAO, and NZBA

- Recent pushback against these initiatives
  - Pause to NZAMI operations: 13.01.2025

Bank Commitments

- Some banks formally commit to carbon net neutrality
- We call a firm committed if at least one of its (previous) lenders commits to SBTi
- 22 banks during our sample period have made SBTi commitments to reduce carbon emissions

Bank Debt to High-Low Emission Firms



Do Firms Internalize Shocks in their Decisions?

VARIABLES	(1) Bank Debt	(2) Total Debt	(3) Leverage	(4) Assets	(5) Equity	(6) CAPEX	(7) LIQAT	(8) ROA
$Post_{f,t}$ * Log-$S1_f$	-0.0545**	-0.0269***	-0.0024**	-0.0081**	0.0001	-0.0160**	0.0013**	0.0010***
	(0.0253)	(0.0087)	(0.0012)	(0.0040)	(0.0060)	(0.0080)	(0.0006)	(0.0080)
$Post_{f,t}$	-0.2232	0.0978	0.0317	0.1364	0.0965	-0.0511	0.0035	0.0015
	(0.4774)	(0.2223)	(0.0262)	(0.0863)	(0.1258)	(0.1759)	(0.0152)	(0.0052)
$Post_t$ * Log-$S1_f$	0.0003	-0.0057	-0.0002	-0.0077**	-0.0067	-0.0198**	-0.0198**	-0.0006***
	(0.0184)	(0.0085)	(0.0011)	(0.0035)	(0.0051)	(0.0079)	(0.0079)	(0.0002)
Observations	32,828	41,450	41,450	41,450	40,316	38,126	38,126	38,126
R-squared	0.7456	0.9054	0.8276	0.9722	0.9267	0.8896	0.8896	0.3446
Econ effect 1sd	-.138	-.068	-.006	-.02	0	-.043	.003	.002
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

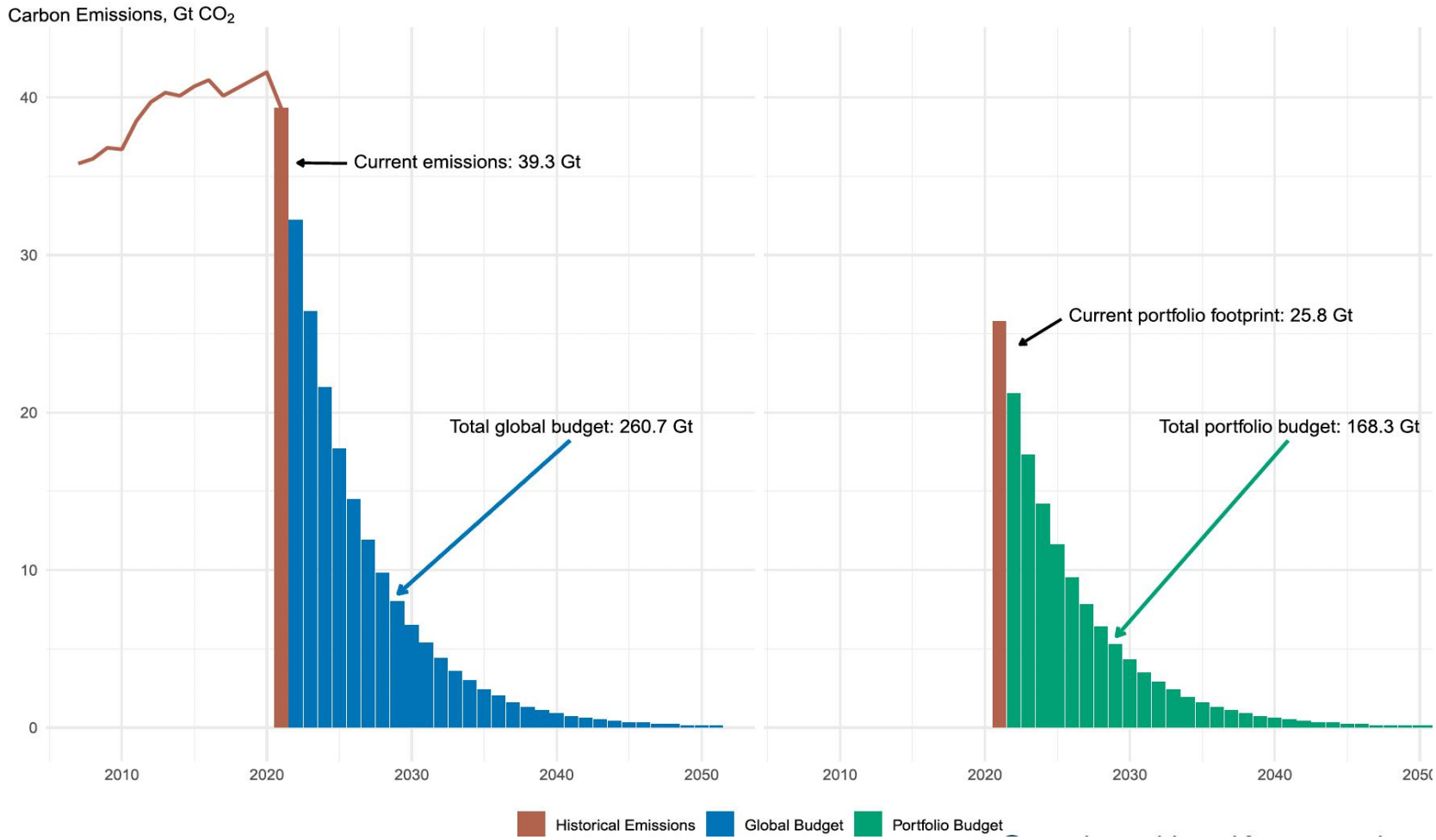
Results consistent with a model of financial inflexibility (e.g., Bolton et al. 2019) due to external finance shocks

- Leverage, investments, and assets go down
- Liquid assets go up
- Auxiliary prediction: ROA goes up (least profitable projects are cut)

ESG Sub-Components

VARIABLES	(1) ESG	(2) Env	(3) Soc	(4) Gov	(5) Climate	(6) Natural Res	(7) Waste	(8) Env Ops.	(9) Carbon
$Post_{f,t}$* Log-$S1_f$	0.0090	0.0362**	0.0138	0.0074	0.0286	-0.0429*	-0.0105	0.0732***	-0.0102
	(0.0104)	(0.0184)	(0.0192)	(0.0242)	(0.0277)	(0.0252)	(0.0199)	(0.0220)	(0.0262)
$Post_{f,t}$	-0.0316	0.4246	-0.3034	-0.3941	0.4837	-0.3337	-0.7551	0.7134	0.7986
	(0.2106)	(0.4332)	(0.3571)	(0.4999)	(0.6441)	(0.5880)	(0.4982)	(0.5046)	(0.5963)
$Post_t$ * Log-$S1_f$	0.0442***	0.0140	-0.0331	-0.0399	-0.0273	-0.1304***	-0.1731***	0.0471**	-0.0512**
	(0.0107)	(0.0168)	(0.0202)	(0.0277)	(0.0249)	(0.0258)	(0.0203)	(0.0210)	(0.0248)
Observations	31,668	31,668	31,668	31,666	29,247	24,570	23,933	13,413	26,582
R-squared	0.8455	0.8568	0.7607	0.5967	0.8595	0.8008	0.8519	0.8027	0.8774
Econ effect 1sd	.024	.097	.037	.02	.076	-.114	-.028	.195	-.027
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Incentives in the Market: Net-Zero Portfolios



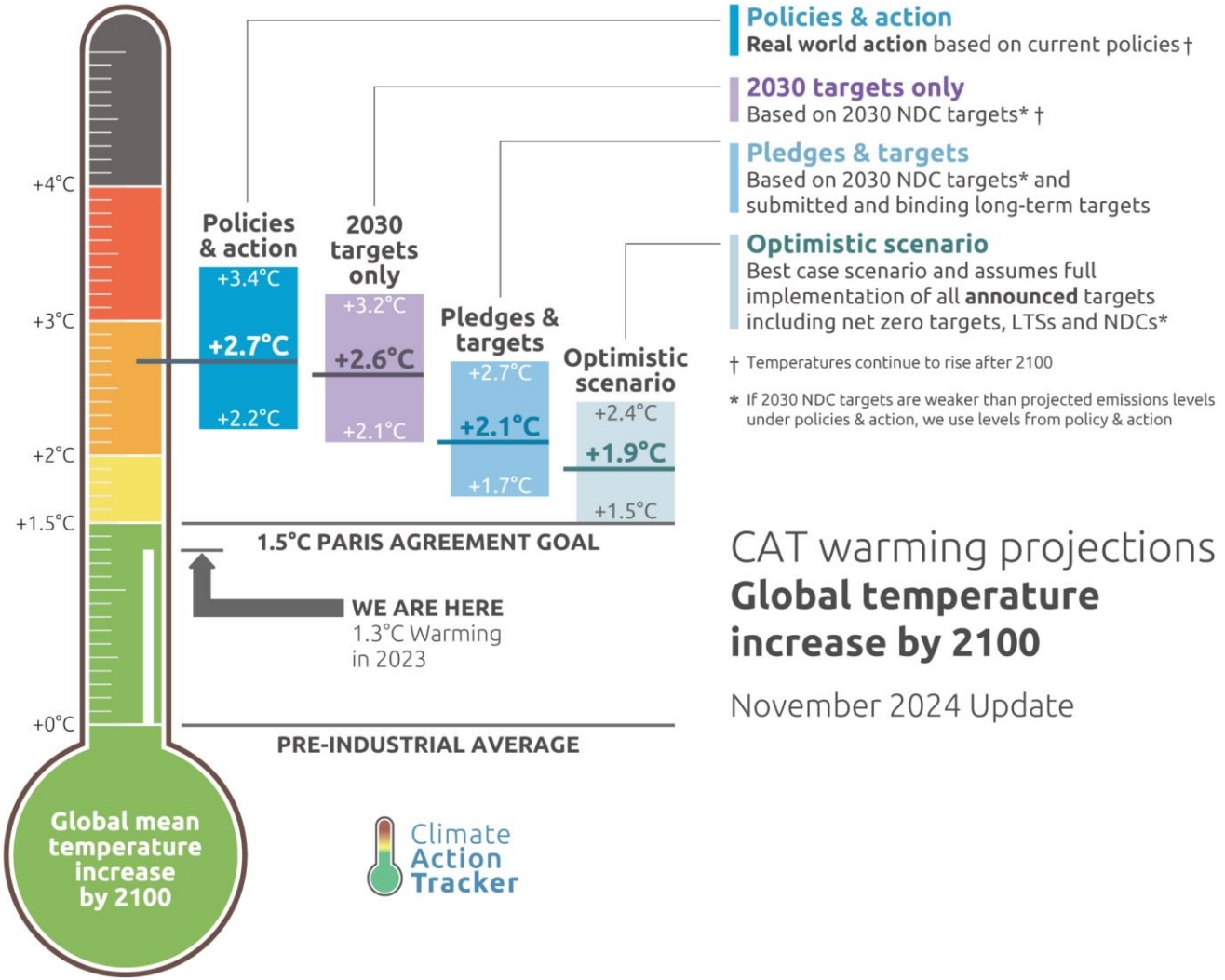
Net-Zero Asset Management Initiative (NZAMI)

- Key NZAMI developments:

Date	Event	AUM
11/12/2020	NZAMI launched with 30 firms	$9 trillion
20/04/2021	BlackRock, Vanguard, State Street join	$37 trillion
31/05/2022	*(AUM peak)*	*$61.3 trillion*
07/12/2022	Vanguard exits	Not updated
05/01/2025	*(Last reported AUM)*	*$57.5 trillion*
09/01/2025	BlackRock exits	Not updated
21/03/2025	JPMorgan exits	Not updated

The coordination equilibrium may unravel if leading intermediaries defect

Global Temperature Scenarios (CAT, 2024)



How to Handle Failing Decarbonization Commitments?

- There are multiple avenues for firms to address failing commitments, such as reforming pledges, increasing disclosure, and enacting other corporate sustainability policies

Multiple Causes for Failed Commitments

Few corporate commitments align with the 1.5° C or 2° C Paris Agreement goals

Firms falling behind on their pledges are likely to miss their decarbonization targets

An uncertain future and supply chain disruptions may impede emission reduction plans

Pledges relying on offsets are at risk due to environmental integrity and permanence challenges

Most listed firms have yet to make formal reduction commitments

Towards a Second Generation of Pledges

Science-based targets should account for inter-industry variations of firm attributes

Investors can tie executive compensation or cost of capital to decarbonization targets

Pledges should be stress-tested against adverse shocks and could include force majeure clauses

Firms should disclose specific offset usage and announce both net and gross emission targets

Firms unable to commit to hard decarbonization KPI can appoint Chief Sustainability Officers

Concluding Remarks

- Addressing global warming requires prompt decarbonization
- Coalitions of countries and firms: growing strongly over time
- Firm commitments are highly heterogeneous and reflect strong cost-benefit incentives
- Several companies are falling behind on their promises
- Commitments without credible enforcement mechanisms risk eroding the information value of pledges