

Assessing ESG Risks & Opportunities in Portfolio Construction

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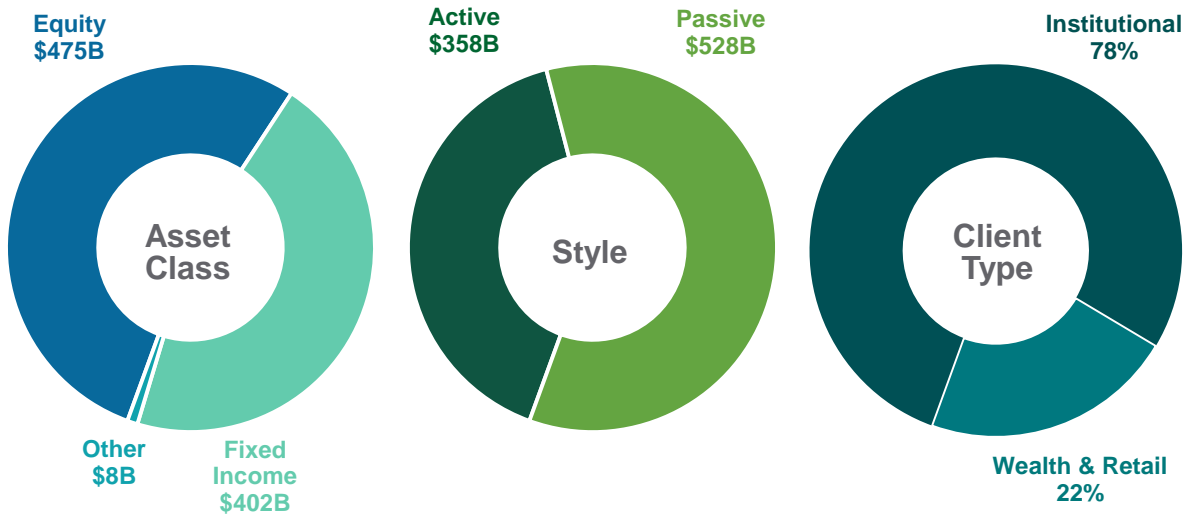
NORTHERN TRUST

Northern Trust Asset Management - Overview

NORTHERN TRUST ASSET MANAGEMENT

A leading global investment manager with a client-centric culture rooted in a fiduciary heritage.

TOTAL ASSETS UNDER MANAGEMENT



A TRUSTED PARTNER

Leveraging the strength of Northern Trust

Global network of investment professionals with deep expertise

Demonstrated ability to thrive in various market environments

Progressive thought leadership and unique insights

Solving complex global challenges with innovative solutions

Focused on placing the needs of our clients above all else

\$885 billion | World's **16th largest** asset manager
TOTAL AUM*

*Assets under management as of December 31, 2018. For the Northern Trust Asset Management entities included in AUM total, please see disclosure at end of this document. The above rankings are not indicative of future performance. Unless otherwise noted, rankings are based on total worldwide assets under management of \$961 billion as of December 31, 2017 by *Pensions & Investments* magazine's 2018 Special Report on the Largest Money Managers.

SUSTAINABLE INVESTING OVERVIEW

Innovative solutions across the spectrum of ESG criteria and using quantitative strategies seeking to achieve competitive risk-adjusted returns

FAST FACTS

30+ years of expertise

\$80.8 Billion AUM¹

Manage 4 of the top 20 largest ESG index funds globally²

Principles for Responsible Investing (PRI) member since 2009

OUR ADVANTAGE

Unique approach that combines investor values with leading market expertise

Innovative solutions that leverage our deep expertise in passive and factor-based investing

Pioneering low-carbon strategy, advanced governance screening for emerging market equities and ESG integration into REITs

OUR SPECTRUM OF ESG CAPABILITIES SOLUTIONS

Exclusion		Integration		
VALUE-BASED	NORMS BASED	BEST-IN-CLASS ³	ESG INTEGRATION	THEMATIC INVESTING
Exclusion of stocks in specific industries or geographic areas	Exclusion based on compliance with principles such as the UN Global Compact	Strategies that select companies that are leaders in implementing ESG	Incorporating ESG considerations across business activities and investments	Investing in broad ESG themes, such as clean technologies

Proxy Voting Policies & Engagement

Represents total assets managed by Northern Trust as of 06/30/18. Gross returns

¹ All data as of December 31, 2018.

² Source: eVestment. Data as of June 30, 2018. Universe for comparison consists of 32 total products with “investment focus” of “Environmental Social Governance” and “portfolio management strategy” as “passive.”

³ Best-in-class ESG is industry terminology referring to an investment approach that selects companies that are leaders in implementing ESG.

Past performance is no guarantee of future results. Index performance returns do not reflect any management fees, transaction costs or expenses. It is not possible to invest directly in any Index.

EMEA SUSTAINABLE INVESTING FUNDS AND STRATEGIES

Our comprehensive range of passive and factor-based ESG strategies seeks to enable investors to be impactful across their entire portfolio. We have **\$19.6bn** in AUM in EMEA ESG pooled funds

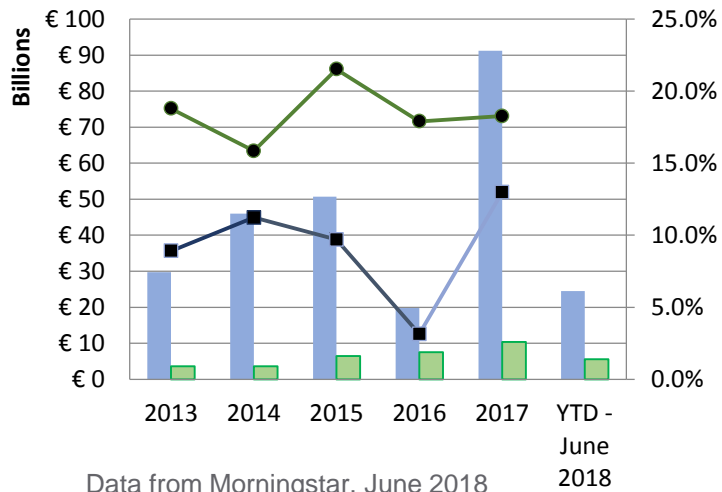
World Custom ESG \$4.34 billion	World Custom ESG Euro Hedged \$1.99 billion	North America Custom ESG \$2.15 billion	Europe Custom ESG Index \$2.32 billion	All Country Asia ex Japan ESG \$873 million
EM Custom ESG \$3.04 billion	EM Custom Low Carbon ¹ \$993 million	Developed Real Estate ESG \$273 million	World ESG Leaders \$626 million	Emerging Markets ESG Leaders \$158 million
North America / Europe Value ESG strategy \$831 million	Sustainable Euro Investment Grade / Global HY Credit funds <i>Pending launch</i>	World Quality ESG Strategy <i>Pending launch</i> (\$870 million in US)	World High Dividend ESG Strategy <i>Pending launch</i>	Passive, Exclusions-based
				Passive, Best-in-Class
				Active, Factor-based ESG

Assets under Management as at December 31, 2018

¹ Is currently transitioning to become active Quality Low Carbon fund

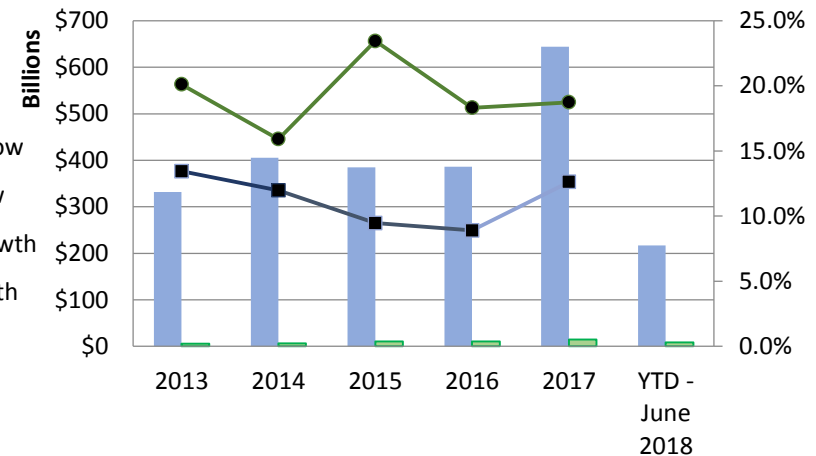
GROWTH OF GLOBAL ESG FUNDS AND NTAM POOLED FUNDS

European Passive Funds

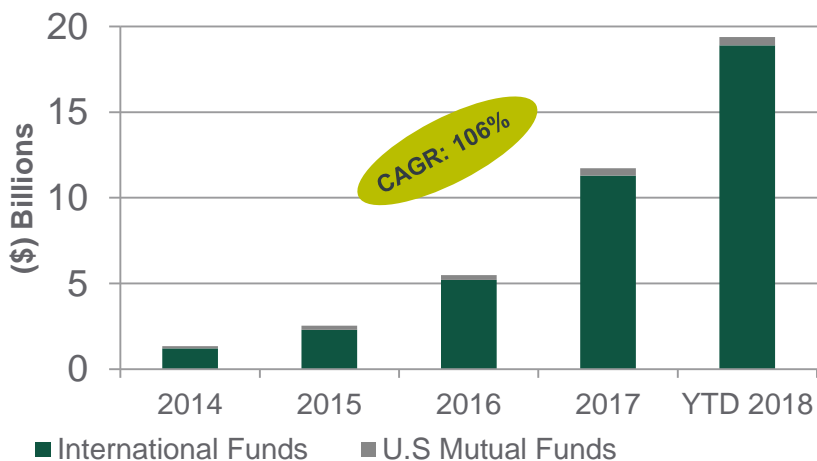


Europe ESG CAGR : 36%
Global ESG CAGR : 32%

Global Passive Funds



NTAM ESG Pooled Fund AUM Growth



Data from Northern Trust, June 2018

The average size of the NTAM ESG pooled funds is \$1.6 billion as of December 2018

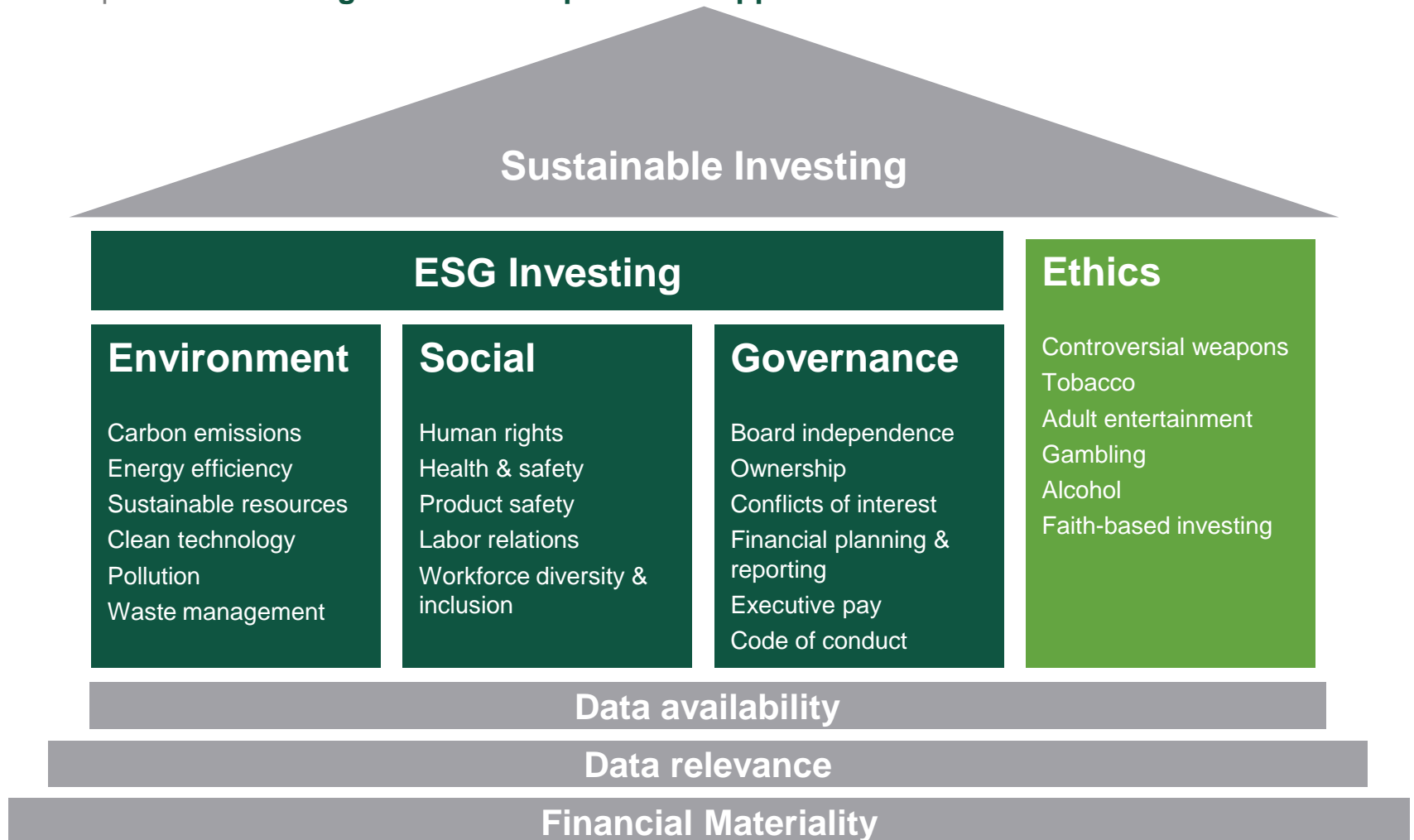
In 2018, NT was #2 among European passive ESG funds both by net AUM growth and by net ESG AUM, according to Broadridge

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What we mean by ESG &
Sustainability

SUSTAINABILITY SPECTRUM

Northern Trust Asset Management policy : **Sustainable Investing** is an **investment solution** based on the philosophy that **ESG analytics** can complement quantitative or fundamental investment techniques so as to **mitigate risks or capture new opportunities**



CONCEPT OF FINANCIAL MATERIALITY

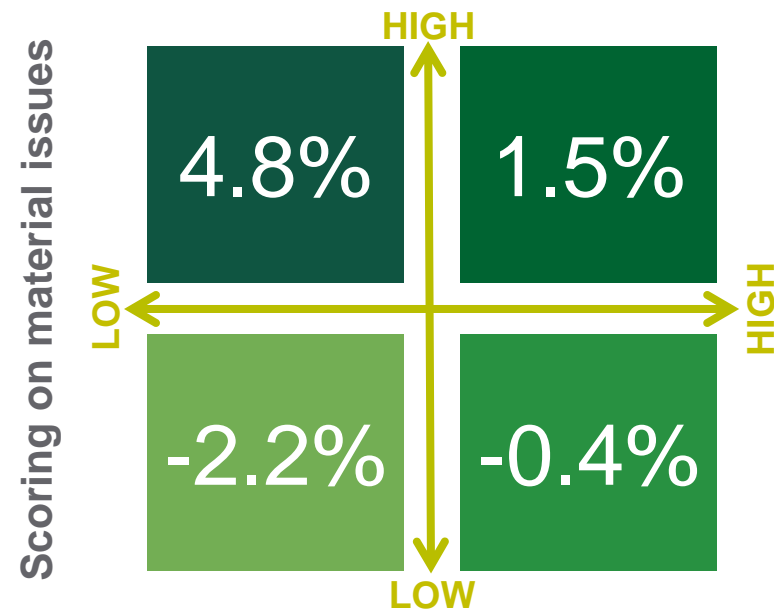
- Financially material ESG factors impact returns
- Many ESG scores include 'noise' data
- Disclosure of financially material data is to become mandatory

Effect of sustainability on stock returns; annualized data

SASB 5-factor test:

1. Direct Financial Impacts and Risk
2. Legal, Regulatory, and Policy Drivers
3. Industry Norms, Best Practices, and Competitive Drivers
4. Stakeholder Concerns and Social Trends
5. Opportunities for Innovation.

Scoring on immaterial issues

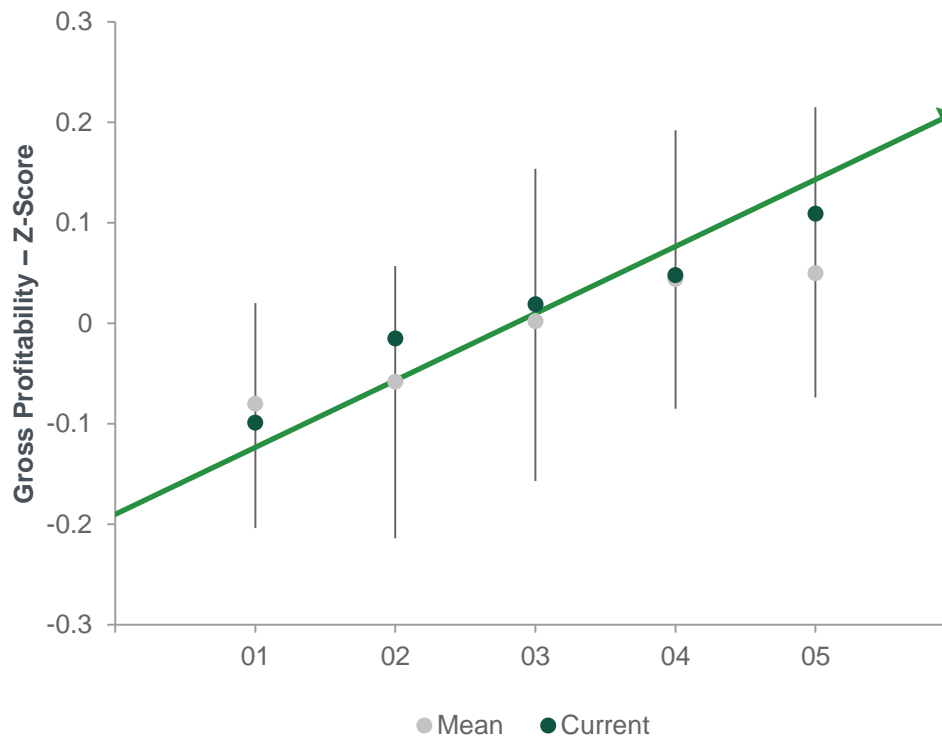


Source: M.Khan, G. Serafeim, A.Yoon. "Corporate Sustainability: First Evidence on Materiality." *The Accounting Review*. 2016. Figures in boxes show stock performance over 10 years

MSCI ESG SCORES

A MSCI ESG Research study¹ found that companies with high ESG Ratings had higher profitability, lower tail risk and lower systematic risk on average based on 10 years of data

Companies with higher MSCI ESG scores had **HIGHER PROFITABILITY** and were more competitive



1. "Foundations of ESG Investing, Part 1: How ESG affects Equity Valuation, Risk and Performance," MSCI, November 2017. Giese, Lee, Melas, Nagy, Nishikawa.

SUSTAINABLE FUNDS TEND TO DELIVER GOOD RETURNS

Sustainable funds rank more often in top-quartiles within their investment category (peer funds)

	1 year return		3-year return		5-year return		10-year return	
top quartile	624	32%	437	27%	395	28%	274	27%
2nd quartile	574	30%	490	30%	417	30%	289	29%
4th quartile	401	21%	399	25%	357	25%	249	25%
bottom quartile	332	17%	301	19%	235	17%	198	20%

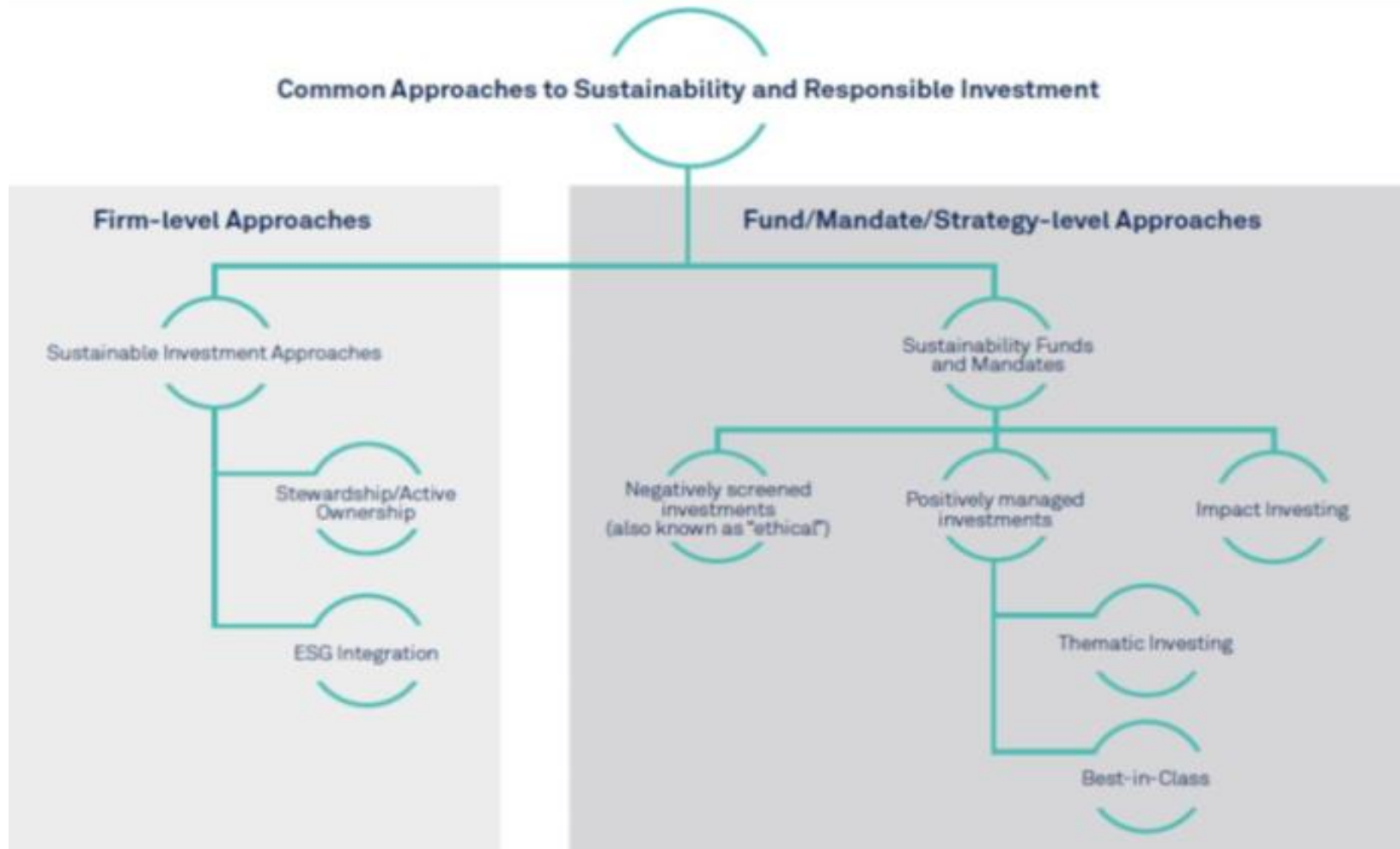
Why not 100%?

- Financial materiality
- Availability of data
- Various biases of ESG-based selection (sector, value, size)

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Different shades – to what extent?

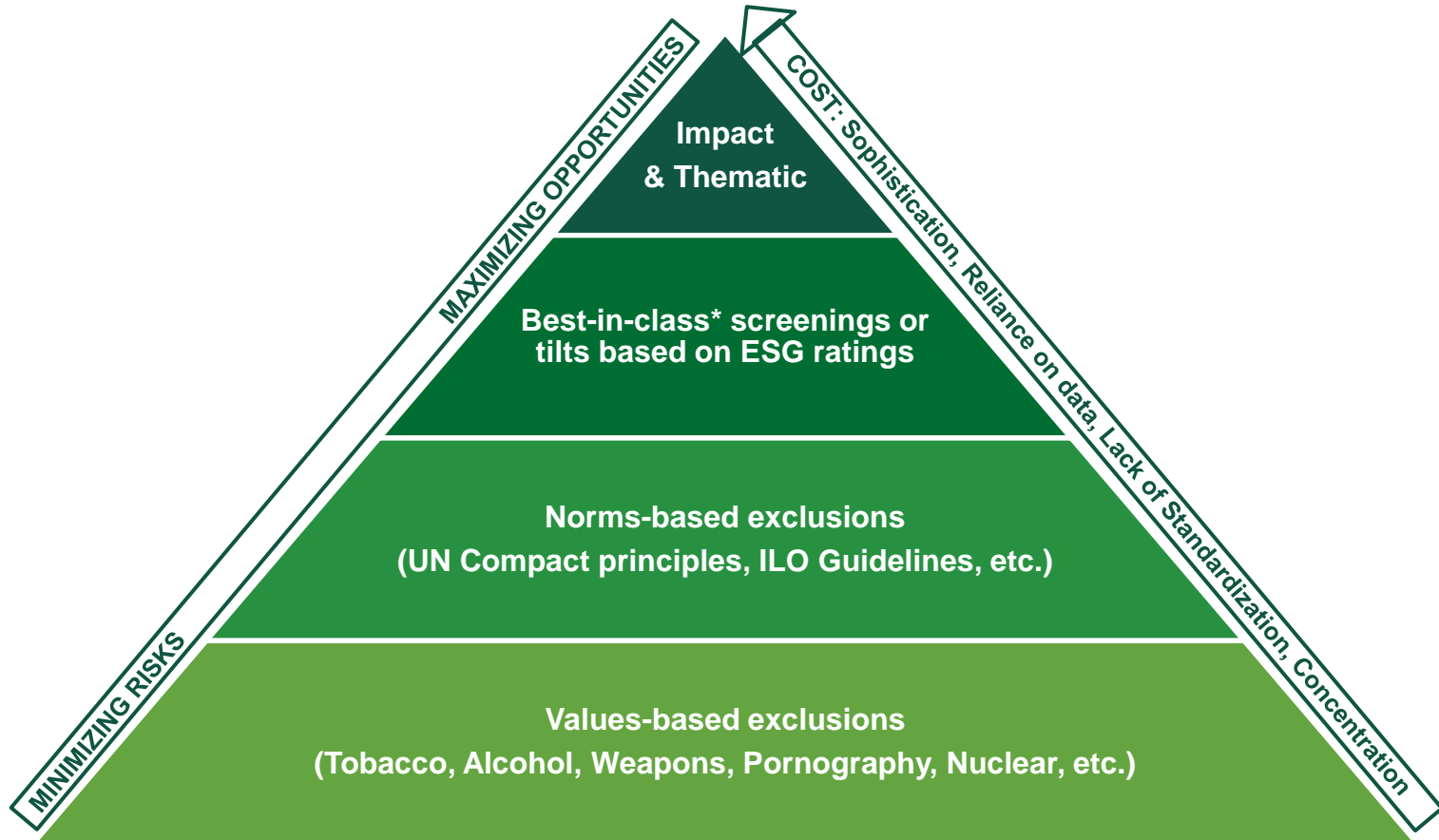
IMPLEMENTING SUSTAINABLE INVESTMENT APPROACHES



Schematic of UK Investor Association's proposed 'definitional framework'. IA (fund management body) is seeking its members' views on proposals for industry-agreed definitions and a product labelling system for UK retail investors

TYPES OF ESG INVESTMENT STRATEGIES: HOW FAR DO WE GO?

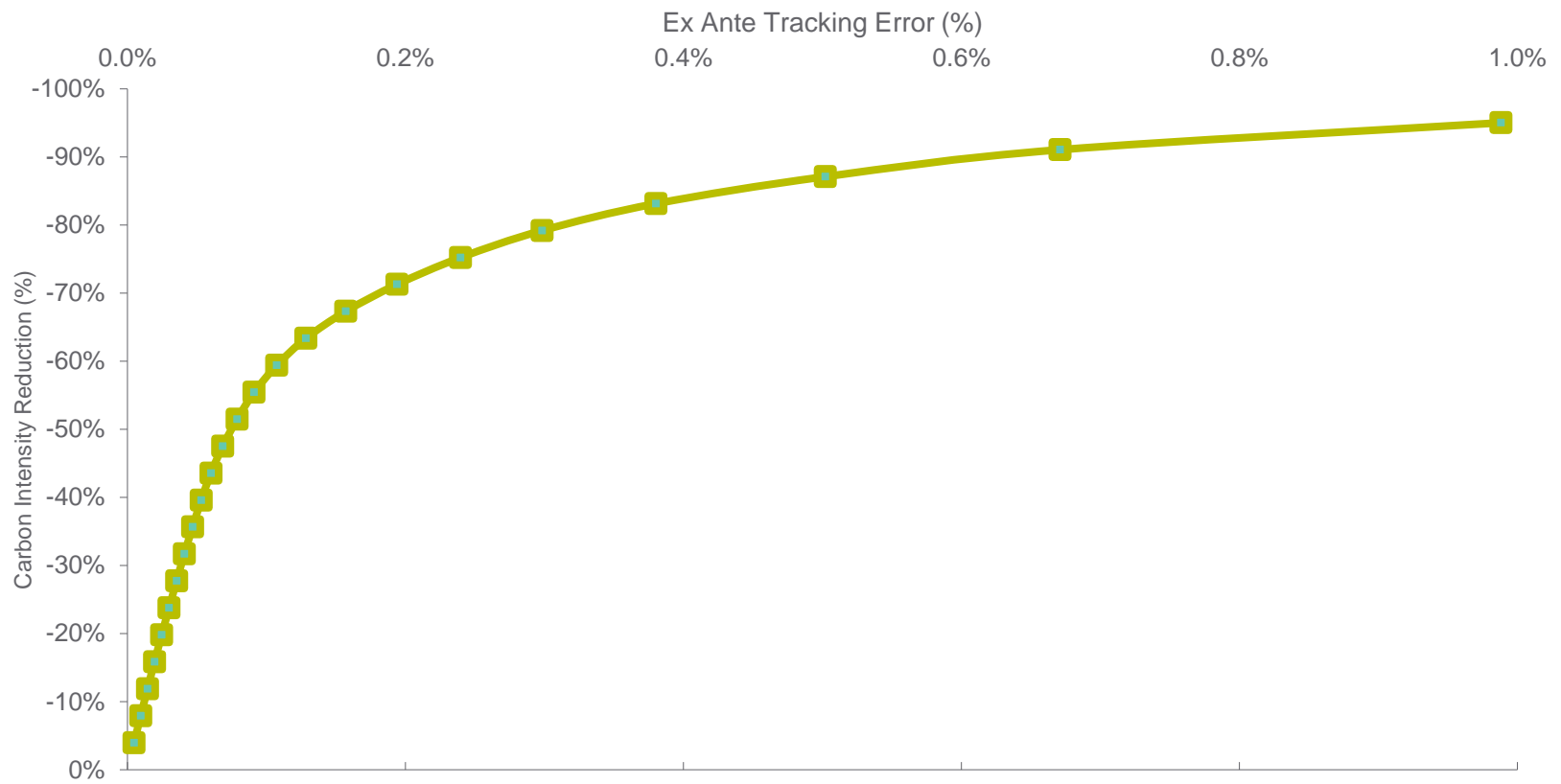
Higher ESG impact goes hand in hand with higher sophistication and concentration, i.e., active risk



*Best-in-class ESG is industry terminology referring to an investment approach that selects companies that are leaders in implementing ESG

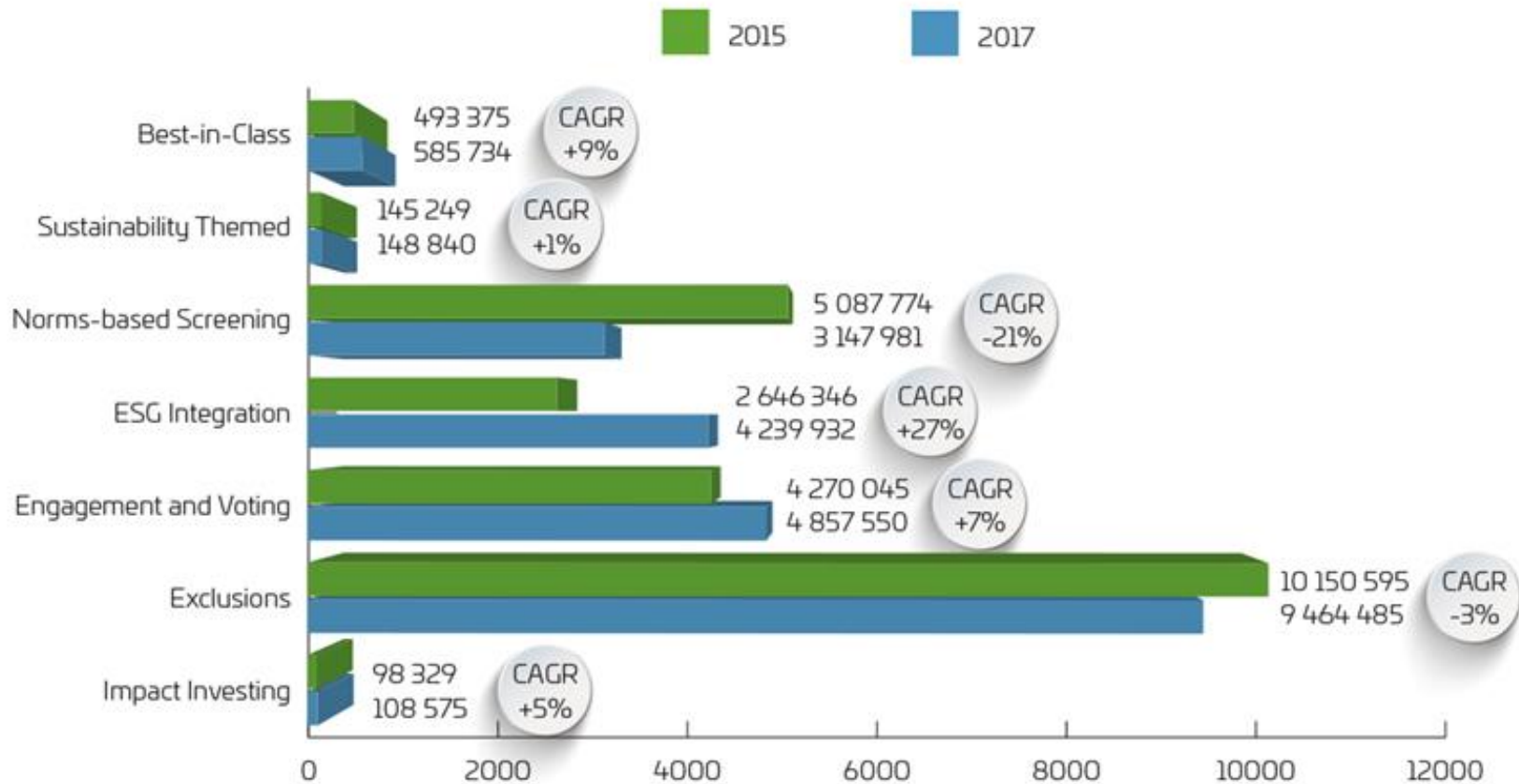
'TRAGEDY OF TRACKING ERROR'

Higher ESG impact (in this example, carbon intensity) goes hand in hand with higher active risk (tracking error)



As of March 31, 2016. Source: Northern Trust, MSCI. For illustrative purposes, we create a frontier of 25 portfolios that each minimizes tracking error for a given level of Carbon Intensity reduction (starting with zero reduction and ending with 95% reduction. No other constraints were applied.

SUSTAINABLE INVESTING DYNAMICS IN EUROPE



Assets in EUR million

Data from the 2018 EuroSIF report

LOW TRACKING ERROR: NT EM CUSTOM ESG EQUITY INDEX FUND

Approach: Ethical and Norms-Based exclusions aiming to align with investors' values plus governance filters aiming to capture key risks

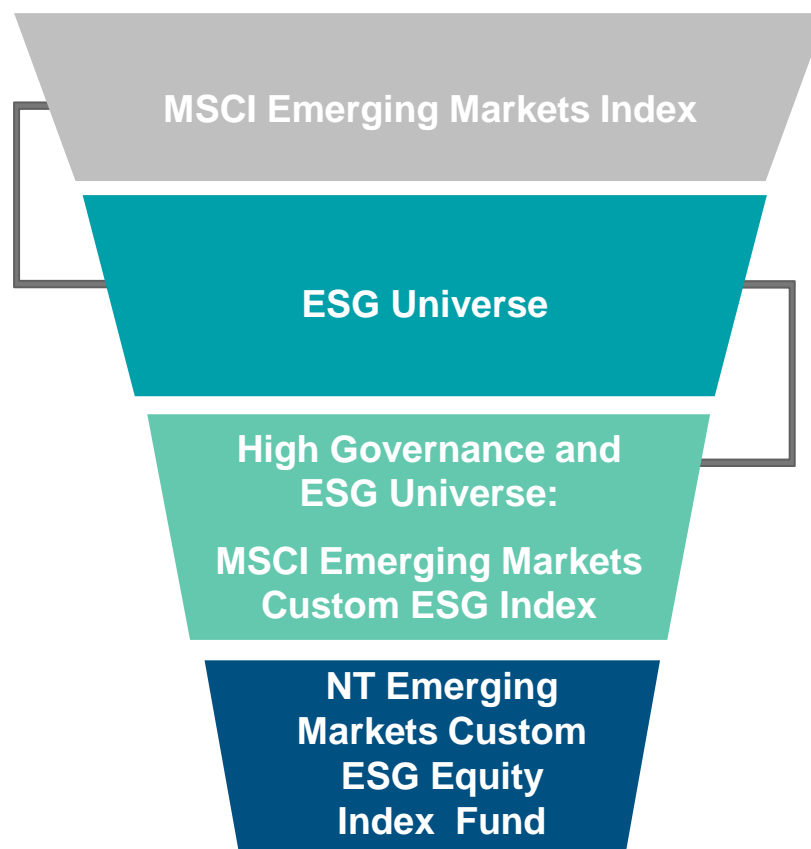
Custom ESG Screens

- Controversial Weapons
- Tobacco
- Conventional Weapons & Civilian Firearms*
- UN Global Compact 10 Principles

Custom Governance Screens

- 30% or more owned companies
- Less than 50% Independence of the Board
- Less than 50% Independence of the Audit and Remuneration committees
- Qualified Auditor Opinions

Applied together



No of co's

1,038

Tracking error

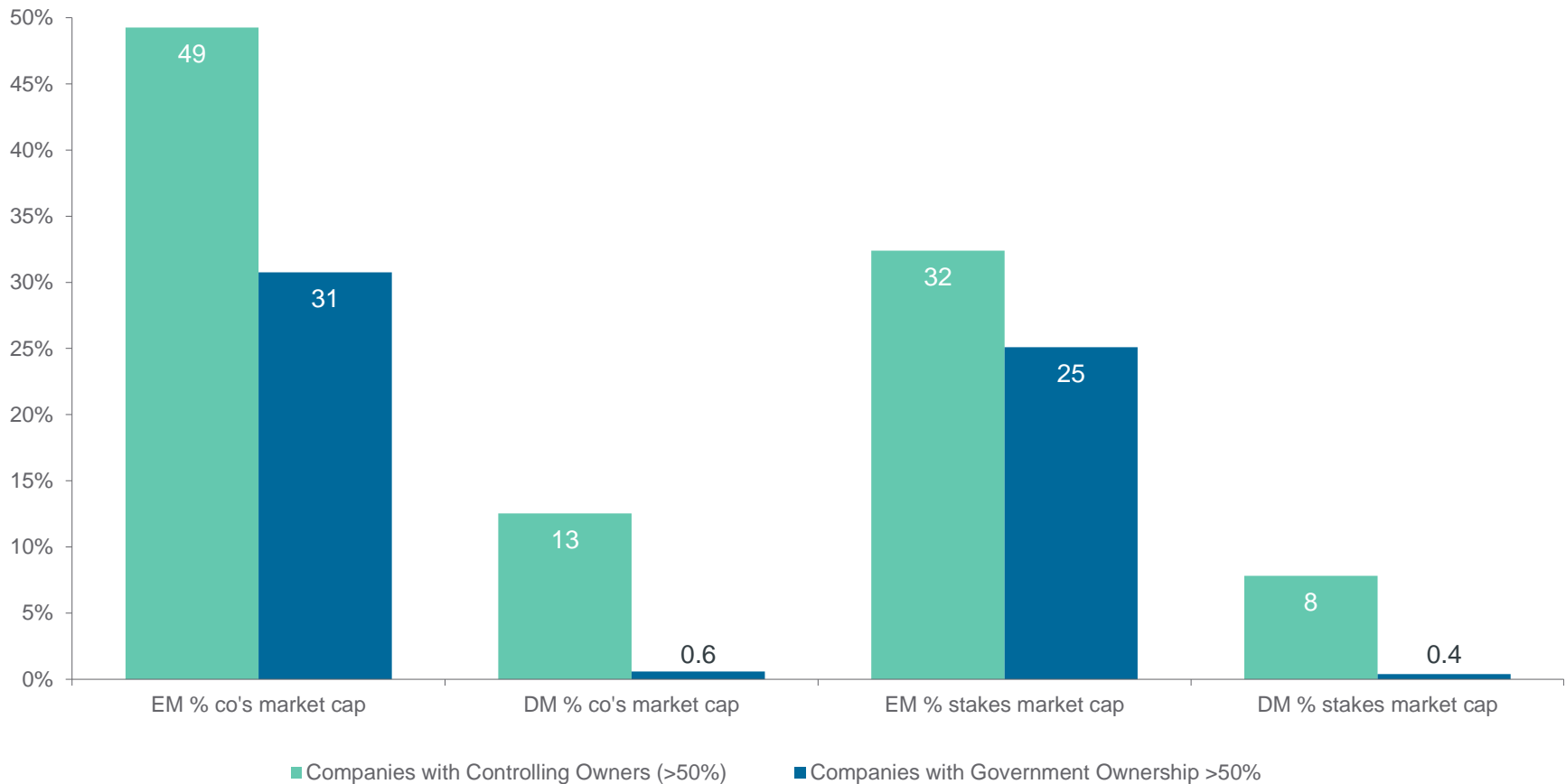
0.75%

Data as rebalancing in Q4, 2018. MSCI EM has 1,128 securities

* These exclusion factors are in the process of being added. Target date – February 2019

Past performance is no guarantee of future results. It is not possible to invest directly in any index.

CONCENTRATED OWNERSHIP PREVAILS IN EMERGING MARKETS



Source: MSCI ESG Manager, May 2017

INVESTOR CONCERNS ASSOCIATED WITH CONCENTRATED OWNERSHIP

Large controlling shareholders

- Large controlling shareholders exert disproportionate influence on management
- Management and control become effectively combined
- Corporate governance process may become largely dysfunctional

Companies that are partly owned by state entities

- Triple role of the government
- Favorable treatment granted to state-owned enterprises
- Potential conflicts of interest

Concerns about whether SOEs are always run for the benefit of all shareholders

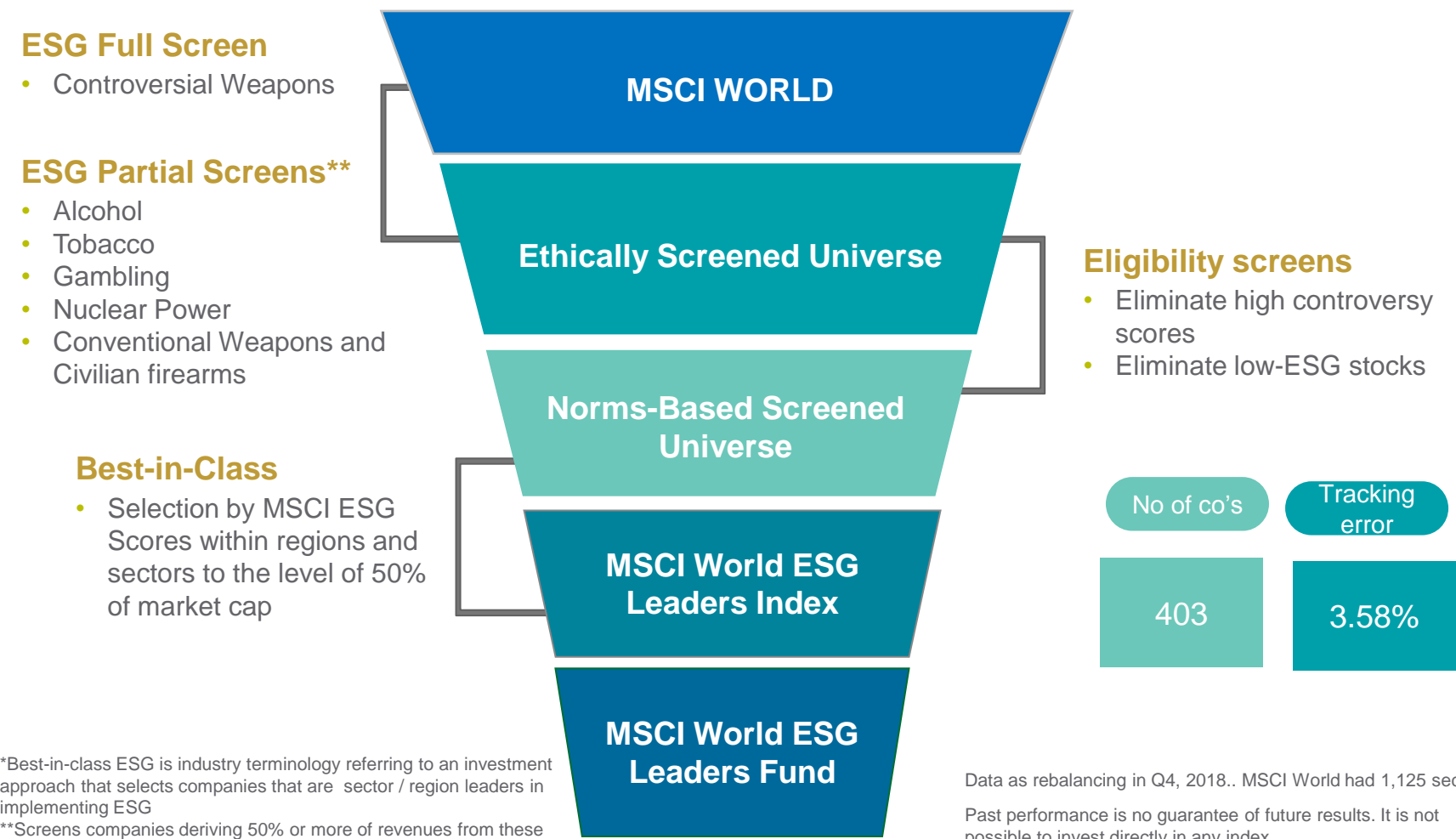
- Inferior performance*
 - *prioritize political, social or fiscal agendas in lieu of market share or profits*
 - *can be used as a government wallet*
 - *might lack entrepreneurial culture and drive for change*

* K. T. Wang, G. Shailer. Does Ownership Identity Matter? A Meta-analysis of Research on Firm Financial Performance in Relation to Government versus Private Ownership. A Journal of Accounting, Finance and Business Studies. DOI: 10.1111/abac. 12103. February 2017

The case studies presented are intended to illustrate products and services available at Northern Trust. They do not necessarily represent experiences of other asset managers nor do they indicate future performance. Individual results may vary

MEDIUM TRACKING ERROR: NT EM ESG LEADERS EQUITY INDEX FUND

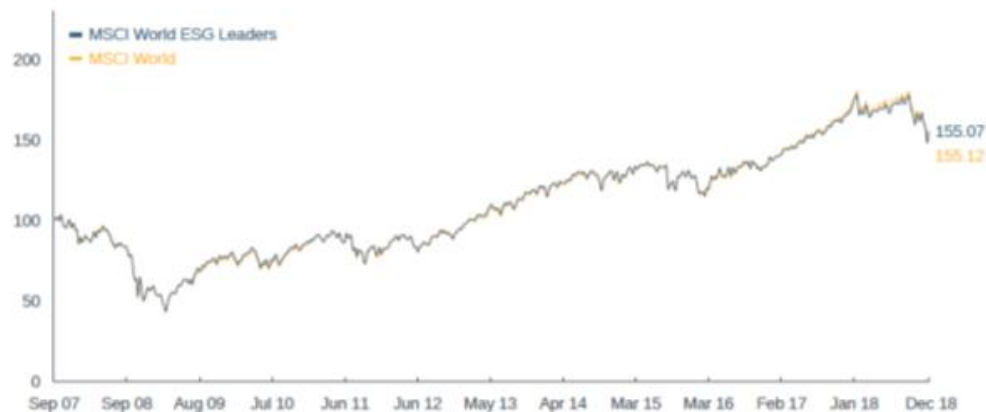
A sustainability Best-in-Class* approach integrated with ESG exclusion screens



Data as rebalancing in Q4, 2018.. MSCI World had 1,125 securities
Past performance is no guarantee of future results. It is not possible to invest directly in any index

MSCI ESG LEADERS EQUITY INDEX PERFORMANCE

CUMULATIVE INDEX PERFORMANCE - GROSS RETURNS (USD) (SEP 2007 – DEC 2018)



ANNUAL PERFORMANCE (%)

Year	MSCI World ESG Leaders	MSCI World
2018	-7.22	-8.20
2017	21.69	23.07
2016	7.93	8.15
2015	-0.55	-0.32
2014	5.42	5.50
2013	28.22	27.37
2012	15.18	16.54
2011	-4.90	-5.02
2010	11.22	12.34
2009	33.20	30.79
2008	-40.22	-40.33

CUMULATIVE INDEX PERFORMANCE - GROSS RETURNS (USD) (SEP 2007 – DEC 2018)



ANNUAL PERFORMANCE (%)

Year	MSCI EM ESG Leaders	MSCI Emerging Markets
2018	-14.65	-14.25
2017	40.90	37.75
2016	13.83	11.60
2015	-11.99	-14.60
2014	5.20	-1.82
2013	1.63	-2.27
2012	21.64	18.63
2011	-12.78	-18.17
2010	25.88	19.20
2009	76.07	79.02
2008	-48.32	-53.18

Source: MSCI. Data as of December 31, 2018

Past performance is no guarantee of future results. It is not possible to invest directly in any index

EM CUSTOM ESG FUND SUSTAINABLE IMPACTS

Active ownership; improvement in ESG quality aligned with investors' values and UN Sustainable Development Goals

CARBON DATA METRICS

Carbon footprint of the index constituents versus parent index



The index methodology on which the fund is based does not assume carbon overlay; therefore carbon reduction may or may not be seen, depending on other factors.



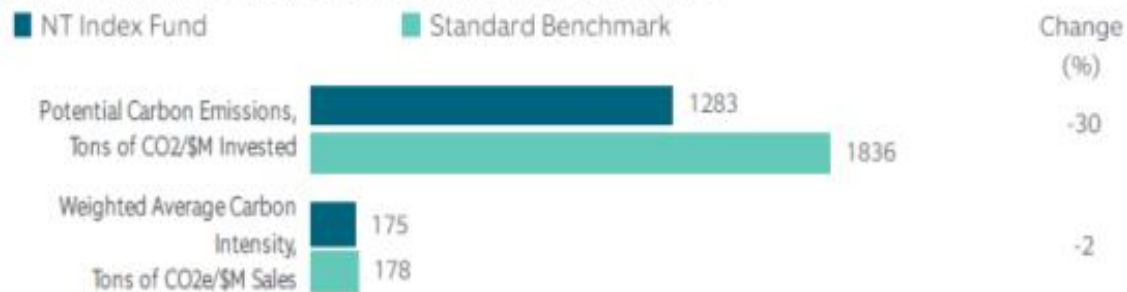
Data as of December 31, 2018

WORLD ESG LEADERS FUND SUSTAINABLE IMPACTS

Active ownership; considerable improvement in ESG quality aligned with investors' values and UN Sustainable Development Goals

CARBON DATA METRICS

Carbon footprint of the index constituents versus parent index



The index methodology on which the fund is based does not assume carbon overlay; therefore carbon reduction may or may not be seen, depending on other factors.



Data as of December 31, 2018

CONCLUSIONS

- **The range of sustainable / ESG criteria is broad. The key to linking it to financial performance is financial materiality**
- **Relevant data is not sufficiently standardized and not always available**
- **Portfolio construction can lead to various ESG shades, but concentration and tracking error have to be considered**
- **Even with small modifications you can achieve substantial ESG improvement**

Northern Trust Questions?

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***“You value your long-term performance,
and your principles. So do we.”***



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