

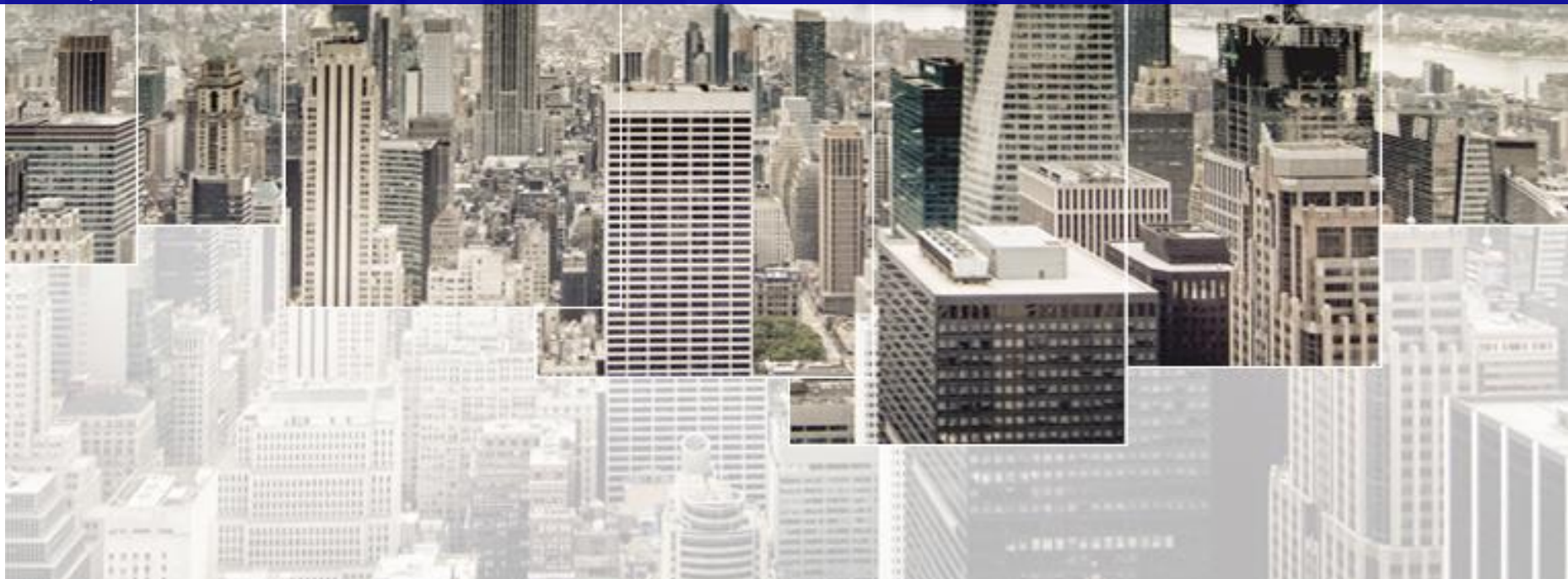
STOXX

 **DEUTSCHE BÖRSE
GROUP**

STOXX[®] Low Carbon Family of Indices

Overview

July 2019



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Introduction

Low Carbon investment: not a trend, rather a long-term commitment from both companies and investors

Over 700 companies joined the WE MEAN BUSINESS coalition ¹⁾

Commitments against climate change	Implications	Engaging with companies
<p>Investors can take action by making one or more of these commitments</p> <ul style="list-style-type: none"> ▪ Sign the Montréal Pledge for carbon transparency in investment portfolios ▪ Join the Portfolio Decarbonization Coalition ▪ Invest in low carbon assets ▪ Report climate change information in mainstream reports as a fiduciary duty 	<p>Investors making this commitment are expected to have invested or have made a new commitment in Low Carbon assets defined by LCI registry, e.g. investments in:</p> <ul style="list-style-type: none"> ▪ Agriculture & Forestry ▪ Buildings, e.g. energy efficiency improvements ▪ Energy e.g. solar, wind hydro ▪ Fixed income e.g. green bonds ▪ Information technology e.g. smart grids ▪ Low carbon funds e.g. public or private funds investing > 50% in low carbon assets 	<p>Encourage companies to commit to 1 or more of these initiatives:</p> <ul style="list-style-type: none"> ▪ Adopt a science-based emissions reduction budget ▪ Put a price on carbon ▪ Procure 100% of electricity from renewable sources ▪ Responsible corporate engagement in climate policy ▪ Report climate change information in mainstream reports as a fiduciary duty ▪ Remove commodity-driven deforestation from supply chains by 2020 ▪ Reduce short-lived climate pollutant emissions

1,203 Commitments
to bold action














731 Companies
leading the way

\$16.7 Trillion
market cap

1) Illustration and data: wemeanbusinesscoalition.org/ as of May 2018

STOXX offers a comprehensive set of low carbon indices (1/3)

Overview

Description	Covered regions
<p>Low Carbon indices</p> <ul style="list-style-type: none"> Same constituents as benchmark and blue chip indices. Tracks risk-return profile of the benchmarks, with reduced carbon footprint and tracking error. Uses both reported and estimated data¹⁾ 	<ul style="list-style-type: none">  Global, Global ex USA, ex Japan, ex Australia, ex Europe  Europe and Eurozone  Japan  USA
<p>Reported Low Carbon indices</p> <ul style="list-style-type: none"> Recognizes companies that report carbon emissions publicly Only stocks with reported data are eligible 	<ul style="list-style-type: none">  Global  Europe & Eurozone  USA
<p>Industry Leaders Low Carbon Indices</p> <ul style="list-style-type: none"> Select companies with lowest carbon intensities from each of the 10 ICB Industries, creating diversification and avoiding concentration in certain sectors Uses both reported and estimated data¹⁾ 	<ul style="list-style-type: none">  Global  Europe  USA  Japan
<p>Low Carbon Footprint Indices</p> <ul style="list-style-type: none"> Exclude 7 highest carbon emission supersectors and 10% of remaining highest emitters Lowest carbon footprint indices Uses both reported and estimated data¹⁾ 	<ul style="list-style-type: none">  Global  Europe

1) Carbon Intensity: ((Scope 1 + Scope 2 Greenhouse Gas Emissions (GHG)) / Revenue (\$1 million))

2) Description of emission data, see slide 13

STOXX offers a comprehensive set of low carbon indices (2/3)

Investment Case

Description

Low Carbon indices

- Same constituents as the benchmarks
- Carbon-tilt overweights low emitters and underweights high emitters
- Reduces carbon footprint **without** applying exclusions
- No adverse effects from weight optimization
- Low tracking error with similar risk-return profile compared to the benchmark
- Uses both reported and estimated carbon intensity data¹⁾

Reported Low Carbon indices

- Recognizes companies that are reporting carbon emissions and **only** companies that report carbon intensities are eligible for inclusion in the index
- Investors could urge companies to report in order to become part of the index
- After a steady increase in the number of companies reporting in Europe, a plateau has now been reached, while in Japan, reporting has increased significantly
- More large market capitalization companies have reported carbon emissions compared to small market capitalization companies
- Includes high emission sectors which have consistently been reporting their carbon emissions since 2011

1) Carbon Intensity: ((Scope 1 + Scope 2 Greenhouse Gas Emissions (GHG)) / Revenue (\$1 million))

STOXX offers a comprehensive set of low carbon indices (3/3)

Investment Case

Description

Industry Leaders Low Carbon Indices

- Significantly lower carbon footprint (>80%) with favorable risk-return profiles compared to the benchmark
- Represent the top ICB Industry leaders with the lowest carbon emissions
- Provides diversification across industries and avoids concentration in certain industries
- Uses both reported and estimated carbon intensity data¹⁾

Low Carbon Footprint Indices

- Significantly lower carbon footprint (>90%) with favorable risk-return profiles compared to the benchmark
- Excludes the 7 highest carbon emission supersectors as well as the remaining 10% of highest emitters
- Uses both reported and estimated carbon intensity data¹⁾

1) Carbon Intensity: ((Scope 1 + Scope 2 Greenhouse Gas Emissions (GHG)) / Revenue (\$1 million))

2) Description of emission data, see slide 13



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Methodology

Clear and transparent methodology with strict rules and a reliable data source (1/3)

Low Carbon indices

Reported Low Carbon indices

universe



- STOXX® Global 1800, excluding ICB subsector coal (1771)

- Select all stocks with Reported and Estimated Carbon Intensity¹⁾ data
- Sort by ICB Supersector
- Calculate a Z-Score per Supersector

- Select all stocks that has reported Carbon Intensity¹⁾ data
- Sort by ICB Supersector
- Calculate a Z-Score per Supersector

Selection



- Price weighted: free-float market cap multiplied by the corresponding Z-score carbon intensity factor of each constituent. Overweight stocks with lower carbon intensities, underweight those with higher emissions
- Component capping of 5%

- Price weighted: free-float market cap multiplied by the corresponding Z-score carbon intensity factor of each constituent. Overweight stocks with lower carbon intensities, underweight those with higher emissions
- Component capping of 5%

Weighting



1) Carbon Intensity: ((Scope 1 + Scope 2 Greenhouse Gas Emissions (GHG)) / Revenue (\$1 million))

Clear and transparent methodology with strict rules and a reliable data source (2/3)

Industry Leaders Low Carbon indices

Low Carbon Footprint indices

universe



- STOXX® Global 1800, excluding ICB subsector coal (1771)

Selection



- Select all stocks that has both Reported and Estimated Carbon Intensity¹⁾ data
- Sort by ICB Industry, rank in descending order
- Select the top 5 & 10 (Regional) and Top 10 & 40 (Global) stocks with lowest Carbon Intensity
- Calculate a Z-Score per ICB Industry
- Price weighted: free-float market cap multiplied by the corresponding Z-score carbon intensity factor of each constituent. Overweight stocks with lower carbon intensities, underweight those with higher emissions
- Equal weighted version also available
- Component capping of 5%

Weighting



- Exclude supersectors: Chemicals, Utilities, Oil & Gas, Construction & materials, Travel & Leisure, Real Estate and Basic Resources
- Rank stocks by Carbon Intensity¹⁾ and exclude 10% stocks with the highest Carbon Intensities
- Calculate a Z-Score per Supersector
- Price weighted: free-float market cap multiplied by the corresponding Z-score carbon intensity factor of each constituent. Overweight stocks with lower carbon intensities, underweight those with higher emissions
- Component capping of 5%

1) Carbon Intensity: ((Scope 1 + Scope 2 Greenhouse Gas Emissions (GHG)) / Revenue (\$1 million))

STOXX Low Carbon family of indices at a glance

1 Low Carbon

Global: STOXX® Global 1800

- Low Carbon
- Ex USA Low Carbon
- Ex Japan Low Carbon
- Ex Australia Low Carbon
- Ex Europe Low Carbon

Europe

- STOXX Europe 600 Low Carbon
- EURO STOXX 50 Low Carbon
- EURO STOXX Low Carbon

Americas

- STOXX USA Low Carbon

Asia/Pacific

- STOXX Japan Low Carbon

2 Reported data

Global

- STOXX Global Reported Low Carbon

Europe

- STOXX Europe Reported Low Carbon
- EURO STOXX Reported Low Carbon

Americas

- STOXX USA Reported Low Carbon

3 Industry Leaders¹

Global

- STOXX Global Low Carbon 100
- STOXX Global Low Carbon 400
- STOXX Global Low Carbon 100 Equal Weight
- STOXX Global Low Carbon 400 Equal Weight

Europe

- STOXX Europe Low Carbon 50
- STOXX Europe Low Carbon 100
- STOXX Europe Low Carbon 50 Equal Weight
- STOXX Europe Low Carbon 100 Equal Weight

Americas

- STOXX USA Low Carbon 50
- STOXX USA Low Carbon 50 Equal Weight

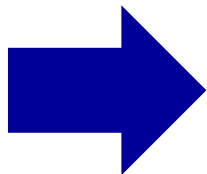
4 Low Carbon Footprint

Global

- STOXX Global Low Carbon Footprint

Europe

- STOXX Europe Low Carbon Footprint



- Price, Net and Gross return versions
- All EUR & USD
- STOXX Global 1800 Ex Japan & STOXX Japan Low Carbon indices in JPY
- STOXX Global 1800 ex Australia Low Carbon in AUD

1) ICB Industry

Trusted and reliable data sources

Data partners



- CDP holds the largest collection globally of self reported climate change, water and forest-risk data
- Ranked # 1 by investors in climate change research



Climate Solutions

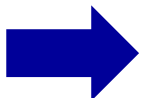
- ISS Ethix Climate Solutions specializes in carbon emission research and cooperates with CDP to provide robust estimated data

Emission data used for STOXX Low Carbon indices ¹⁾

- Scope 1 Direct GHG emissions are emissions from sources that are owned or controlled by the company
- Scope 2 Indirect GHG emissions from the generation of purchased electricity by the company
- Scope 3 Indirect GHG emissions as a consequence of the activities of the company, but occur from sources not owned or controlled by the company

Emission data divided into

- Reported data = data voluntarily provided by companies to CDP
- Estimated data = carbon emissions are estimated by ISS Ethix

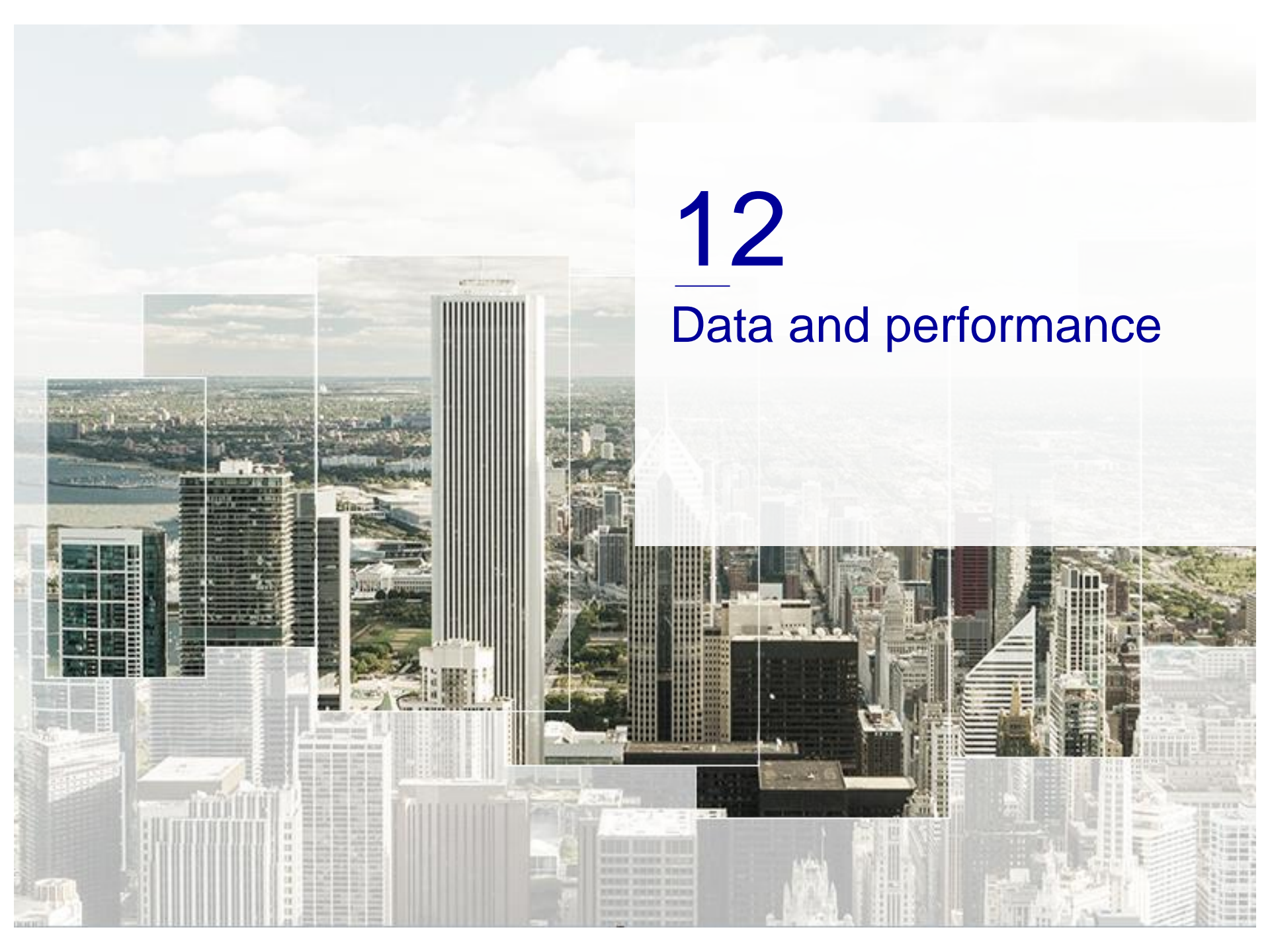


Recognized and regarded data providers with high quality carbon intensity data

1) Source: <http://www.co2benchmark.com/wri-ghg-protocol-scope-definitions>

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Data and performance



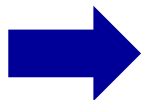
EURO STOXX 50 Low Carbon

Risk and return overview

Risk and return characteristics¹⁾²⁾

	EURO STOXX 50 Low Carbon	EURO STOXX 50
Return 1y	6.3%	7.1%
Return 3y	12.3%	12.0%
Return 5y	5.7%	5.2%
Volatility 1y	13.6%	13.3%
Volatility 3y	13.0%	12.7%
Volatility 5y	18.1%	17.9%
SR 1y ³⁾	0.55	0.61
SR 3y ³⁾	0.99	0.98
SR 5y ³⁾	0.41	0.39
Max. Drawdown (overall)	-27.7%	-27.8%
Tracking error (overall)	0.96%	

Index performance¹⁾



The EURO STOXX 50 Low Carbon Index has a 64% lower carbon footprint than the EURO STOXX 50 index

1) Source: STOXX, EUR GR daily data, 19.12.2011 to 28.06.2019.

2) Annualised: returns, volatility, Sharpe ratio and tracking error figures used. Relative figures calculated against EURO STOXX 50 Index. Overall: 19.12.2011 to 28.06.2019; 1y: 28.06.2018 to 28.06.2019; 3y: 28.06.2016 to 28.06.2019; 5y: 28.06.2014 to 28.06.2019.

3) EONIA rate used as proxy for riskless returns.

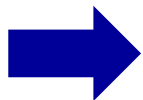
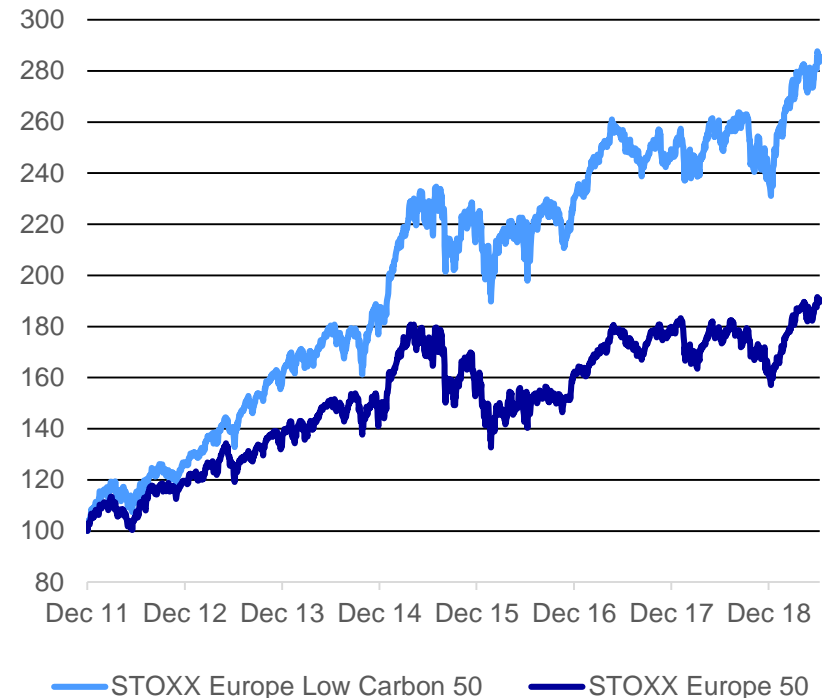
STOXX Europe Low Carbon 50

Risk and return overview

Risk and return characteristics¹⁾²⁾

	STOXX Europe Low Carbon 50	STOXX Europe 50
Return 1y	14.9%	9.7%
Return 3y	12.1%	10.0%
Return 5y	10.1%	5.2%
Volatility 1y	13.4%	11.8%
Volatility 3y	12.0%	11.2%
Volatility 5y	15.3%	15.8%
SR 1y ³⁾	1.13	0.88
SR 3y ³⁾	1.04	0.94
SR 5y ³⁾	0.72	0.42
Max. Drawdown (overall)	-19.1%	-26.6%
Tracking error (overall)	6.42%	

Index performance¹⁾



The STOXX Europe Low Carbon 50 Index has an 89% lower carbon footprint than the STOXX Europe 50 index

1) Source: STOXX, EUR GR daily data, 19.12.2011 to 28.06.2019.

2) Annualised: returns, volatility, Sharpe ratio and tracking error figures used. Relative figures calculated against EURO STOXX 50 Index. Overall: 19.12.2011 to 28.06.2019; 1y: 28.06.2018 to 28.06.2019; 3y: 28.06.2016 to 28.06.2019; 5y: 28.06.2014 to 28.06.2019.

3) EONIA rate used as proxy for riskless returns.

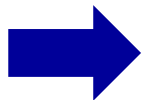
STOXX Europe Reported Low Carbon

Risk and return overview

Risk and return characteristics¹⁾²⁾

	STOXX Europe Reported Low Carbon	STOXX Europe 600
Return 1y	6.5%	5.9%
Return 3y	10.2%	10.6%
Return 5y	5.8%	6.0%
Volatility 1y	11.8%	12.0%
Volatility 3y	11.1%	11.2%
Volatility 5y	15.5%	15.6%
SR 1y ³⁾	0.62	0.57
SR 3y ³⁾	0.97	0.99
SR 5y ³⁾	0.46	0.47
Max. Drawdown (overall)	-24.9%	-24.9%
Tracking error (overall)	1.0%	

Index performance¹⁾



~2/3 of the STOXX Europe 600 constituents report, representing ~65% of the market cap of the index

1) Source: STOXX, EUR GR daily data, 19.12.2011 to 28.06.2019.

2) Annualised: returns, volatility, Sharpe ratio and tracking error figures used. Relative figures calculated against EURO STOXX 50 Index. Overall: 19.12.2011 to 28.06.2019; 1y: 28.06.2018 to 28.06.2019; 3y: 28.06.2016 to 28.06.2019; 5y: 28.06.2014 to 28.06.2019.

3) EONIA rate used as proxy for riskless returns.

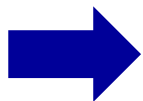
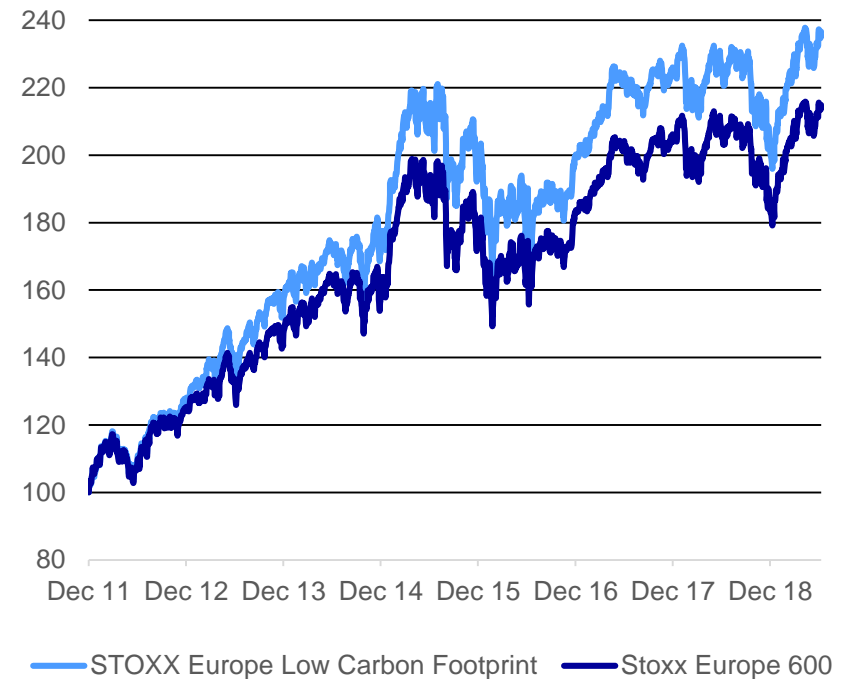
STOXX Europe Low Carbon Footprint

Risk and return overview

Risk and return characteristics¹⁾²⁾

	STOXX Europe Low Carbon Footprint	STOXX Europe 600
Return 1y	7.5%	5.9%
Return 3y	11.4%	10.6%
Return 5y	6.9%	6.0%
Volatility 1y	12.7%	12.0%
Volatility 3y	11.6%	11.2%
Volatility 5y	16.1%	15.6%
SR 1y ³⁾	0.66	0.57
SR 3y ³⁾	1.02	0.99
SR 5y ³⁾	0.51	0.47
Max. Drawdown (overall)	-25.4%	-24.9%
Tracking error (overall)	2.0%	

Index performance¹⁾



By excluding ~1/3 of the STOXX Europe 600 Index, the carbon footprint is reduced by 93%

1) Source: STOXX, EUR GR daily data, 19.12.2011 to 28.06.2019.

2) Annualised: returns, volatility, Sharpe ratio and tracking error figures used. Relative figures calculated against EURO STOXX 50 Index. Overall: 19.12.2011 to 28.06.2019; 1y: 28.06.2018 to 28.06.2019; 3y: 28.06.2016 to 28.06.2019; 5y: 28.06.2014 to 28.06.2019.

3) EONIA rate used as proxy for riskless returns.

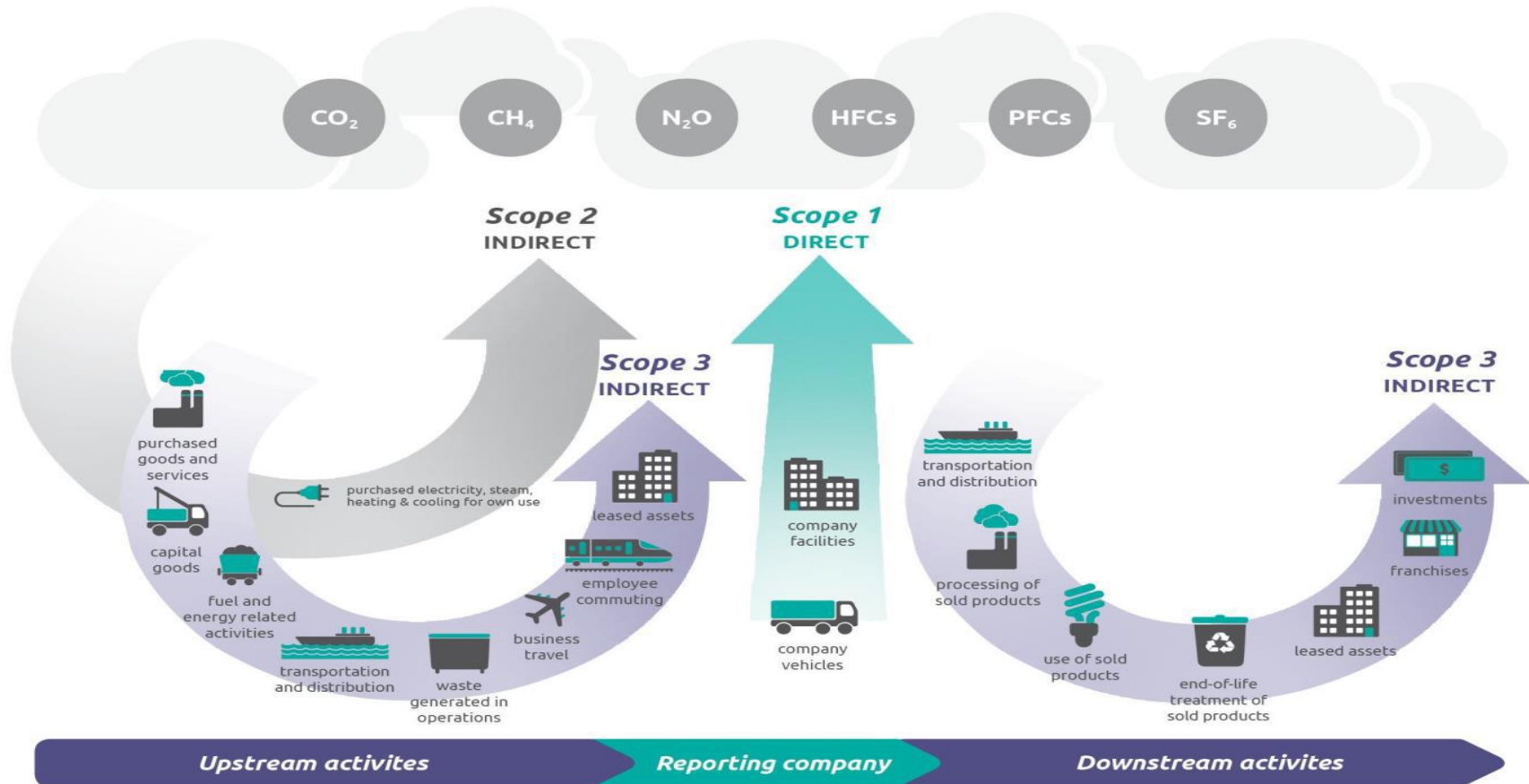


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Appendix

Additional information: Scope 1, 2 & 3 emissions¹⁾

Figure [1.1] Overview of GHG Protocol scopes and emissions across the value chain



1) Source: CDP

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STOXX Ltd. is an established and leading index specialist, which started in Europe. The launch of the first STOXX® indices in 1998, including the EURO STOXX 50® Index, marked the beginning of a unique success story, based on the company's neutrality and independence. Since then, STOXX has been at the forefront of market developments and has continuously expanded its portfolio of innovative indices. STOXX now operates globally across all asset classes.

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