

MSCI

We power investors globally
with objective insight

An Analysis of Risk and Return in Fossil Fuel Free Investing

Boston Carbon Risk Forum

Cambridge, MA

September 29, 2014

Leading Brands Worldwide



MSCI



MSCI

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InvestorForce provides the institutional investment consultant community with integrated solutions for daily monitoring, analysis and reporting on institutional assets. Their technology leverages automated data collection to provide clients with real time insight, transparency and deeper analysis.

MSCI ESG Research

- **Over 70 asset owners with \$2.3 trillion in assets depend on MSCI ESG Research**
- **Over 650 clients with \$15 trillion in assets globally**
- ESG ratings and research produced 100% in-house
- One of the largest ESG providers with a global staff of over 200
- Over 40 years experience in ESG (IRRC, KLD, Innovest)
- MSCI is a signatory to the Principles for Responsible Investment (PRI)

MSCI ESG Research Locations



Investment Benchmarks

Objectives

- Accurate and objective
- Replicable and investible
- Fair to all investors
- Representative
- Current and reliable
- Cost effective

Best Practice

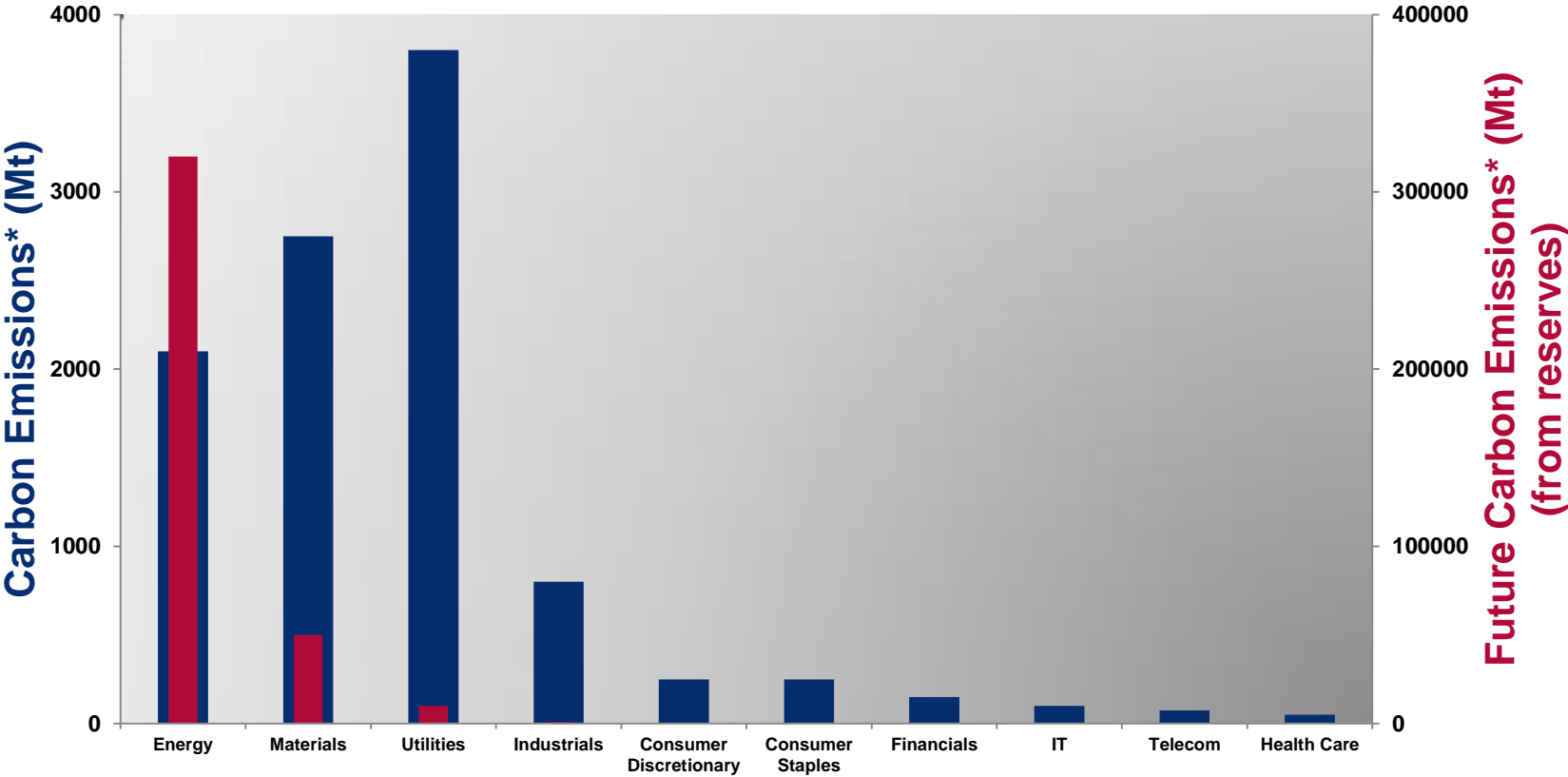
- Robust governance
- High transparency
- Broad consultation
- Advanced methodology
- Continuous innovation
- Superior client service

Use Cases

- Asset allocation
- Performance measurement
- Passive products

Ex Fossil Fuels

Carbon Exposure is Concentrated in A Few Sectors



*As of June 2, 2014
 Source – MSCI ESG Research



MSCI Fossil Fuel Free Screen

- MSCI's fossil fuel screen is designed to identify companies that own fossil fuel reserves (e.g. reserves of coal, oil sands, petroleum, natural gas and shale gas)
 - The screen is not intended to exclude companies that own metallurgical coal reserves, nor companies that consume fossil fuels to produce energy
- The MSCI Fossil Fuel screen excludes companies in the following GICS sub-industries that also owns fossil fuel reserves*:
 - Oil & Gas Drilling (Energy Sector)
 - Integrated Oil & Gas (Energy Sector)
 - Oil & Gas Exploration & Production (Energy Sector)
 - Coal & Consumable Fuels (Energy Sector)
 - Diversified Metals & Mining (Materials Sector)

*MSCI carbon reserves data is gathered from company documents (including web sites) as well as from third-party sources, including GlobalData (www.globaldata.com)

Simulation of Fossil Fuel Free Indexes

- MSCI calculated the performance and risk generated by the exclusion of fossil fuel companies from MSCI All Country World Index (ACWI)
- Period: June 2004-May 2014
- The simulation analyzes the performance of the current list of companies
- The analysis does not take transaction costs into account

- Performance
 - *Under-performance* for the 10-year period
 - *Out-performance* for the 1-, 3- and 5-year periods
- Tracking error
 - 1.4% for the 10-year period

MSCI World Fossil Fuel Free Index – Key Metrics

Key Metrics

	MSCI ACWI Index	MSCI ACWI Fossil Fuel Free Index
Total Return* (%)	8.0	7.7
Total Risk* (%)	16.6	16.5
Return/Risk	0.48	0.47
Sharpe Ratio	0.44	0.42
Active Return* (%)	0.0	-0.3
Tracking Error* (%)	0.0	1.4
Information Ratio	NaN	-0.22
Historical Beta	1.00	0.99
Turnover** (%)	2.7	3.0
Price to Book***	2.0	2.0
Price to Earnings***	15.7	16.4
Div. Yield*** (%)	2.5	2.5

* Gross returns annualized in USD for the 05/31/2004 to 05/30/2014 period

** Annualized one-way Index turnover for the 05/31/2004 to 05/30/2014 period

*** Monthly averages for the 05/31/2004 to 05/30/2014 period

The definitions of all statistical parameters are available in the Appendix

Performance (%)

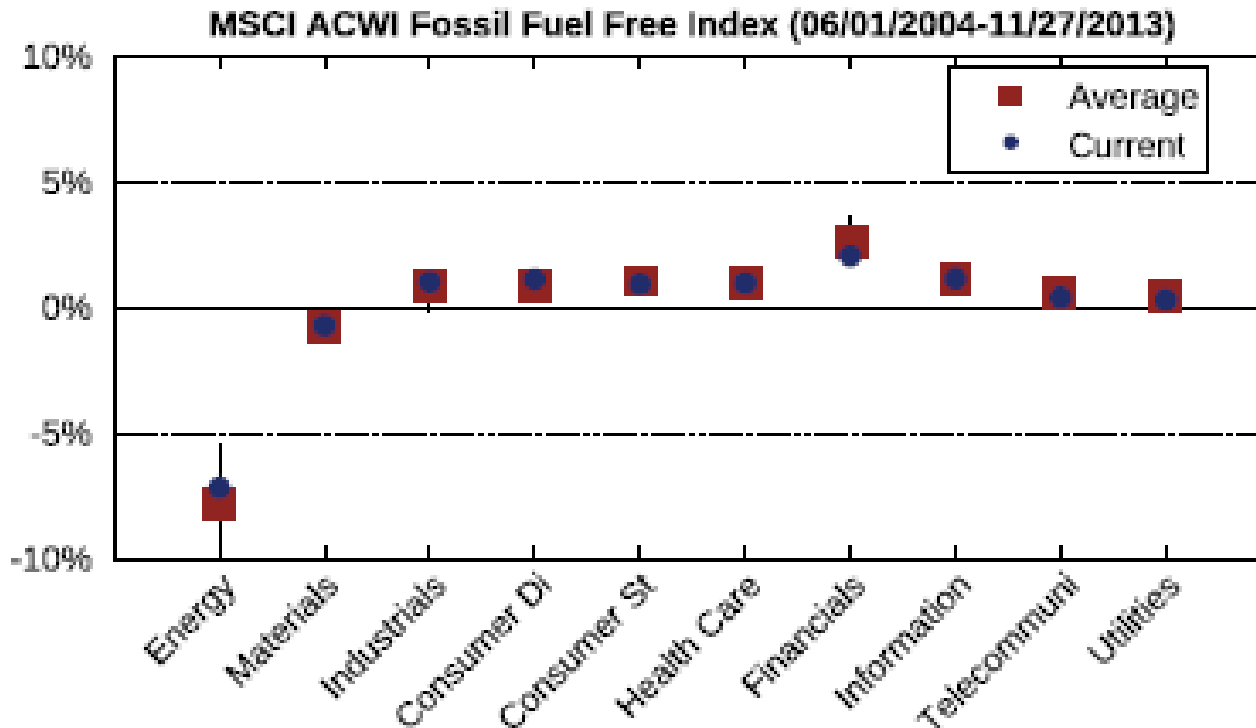
	MSCI ACWI Index	MSCI ACWI Fossil Fuel Free Index
YTD	4.5	4.3
1 Yr	16.3	16.4
3 Yr	10.1	11.0
5 Yr	14.3	15.0

Gross returns in USD for the period ending 05/30/2014

Returns are annualized for periods longer than one year

Active Sector Exposures

- 95% of the Active Risk (i.e. TE) is from underexposure to Energy



Low Carbon



MSCI Global Low Carbon Indexes

- **First standard indexes to address two dimensions of carbon exposure**

1

**Direct & Indirect
Carbon Emissions**

2

Fossil Fuel Reserves

- **Objectives**

1. **Reduce carbon footprint of a portfolio compared to the benchmark**
2. **Manage two risks dimensions**

- **Long Term:** Reduce exposure to the energy-related assets most vulnerable to stranding
- **Short Term:** Minimize the tracking error relative to the parent standard indexes

MSCI Global Low Carbon Indexes : Two Variants

	MSCI Global Low Carbon Target Indexes	MSCI Global Low Carbon Leaders Indexes
Description	<p>Re-weight all securities in the universe to reduce the carbon exposure of the index based on emission intensity and reserves relative to market cap while keeping Tracking Error close to budget</p>	<p>Exclude companies based on emission intensity and reserves relative to market cap, and then minimize Tracking Error while constraining the carbon exposure to a maximum value</p>
Goals	<ul style="list-style-type: none"> •High carbon exposure reduction for both emission intensity and reserves relative to market cap •Managed Tracking Error •Maintain some sector balance 	<ul style="list-style-type: none"> •Includes companies that have the highest carbon exposure efficiency •Facilitated communication around exclusions •Significant reduction in carbon exposure

MSCI ACWI Low Carbon Indexes: Key Metrics

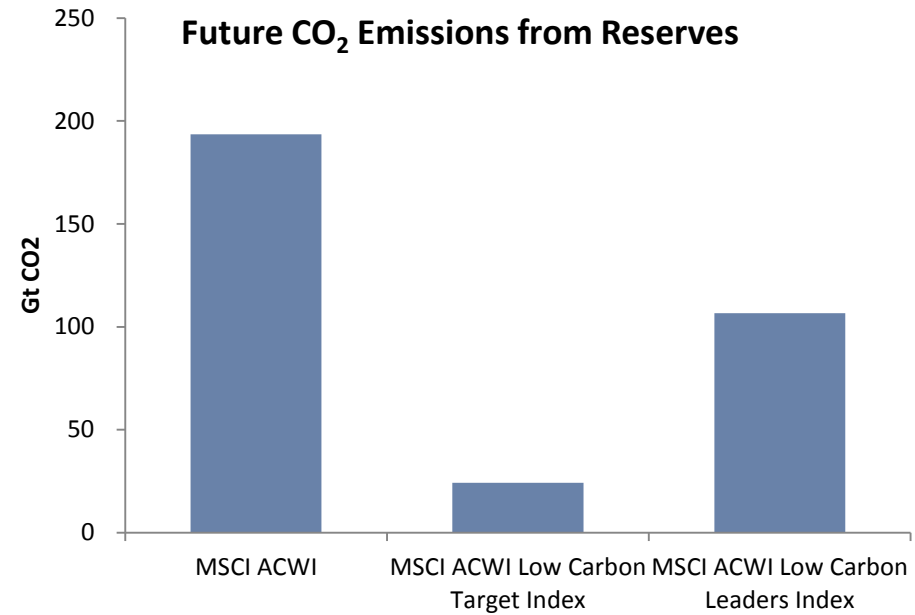
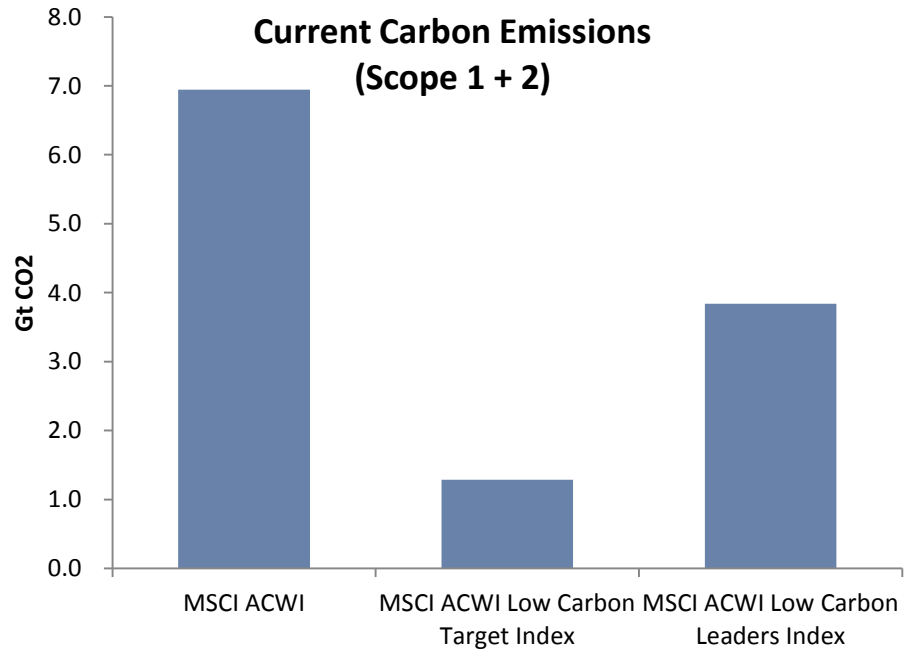
Key Metrics	1	2	3
	MSCI ACWI	MSCI ACWI Low Carbon Target Index	MSCI ACWI Low Carbon Leaders
Total Return* (%)	12.4	12.7	12.7
Total Risk* (%)	13.5	13.5	13.5
Return/Risk	0.92	0.95	0.94
Sharpe Ratio	0.90	0.93	0.92
Active Return* (%)	0.0	0.3	0.3
Realized Tracking Error* (%)	0.0	0.4	0.5
Information Ratio	NA	0.75	0.52
Historical Beta	1.00	1.00	1.00
Turnover** (%)	2.0	12.8	6.2
Active Share (%)^	NA	21.1	15.7
#securities excluded	NA	0	492
% market cap excluded	NA	0.0	15.3
Carbon emissions (Gt)^	6.9	1.4	3.8
Reduction from benchmark		80%	45%
Carbon reserves (Gt)	193	10	107
Reduction from benchmark		95%	45%
Carbon Emission Intensity (t CO2/mm USD)	248	57	124
Reduction from benchmark		77%	50%
Carbon Reserves Intensity (t CO2/mm USD)	6,900	430	3,450
Reduction from benchmark		94%	50%

* Gross returns annualized in USD for the 11/30/2010 to 08/29/2014 period

** Annualized one-way index turnover for the 11/30/2010 to 08/29/2014 period

^ At the most recent index rebalancing

MSCI ACWI Low Carbon Indexes: Carbon Risk Reduction



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