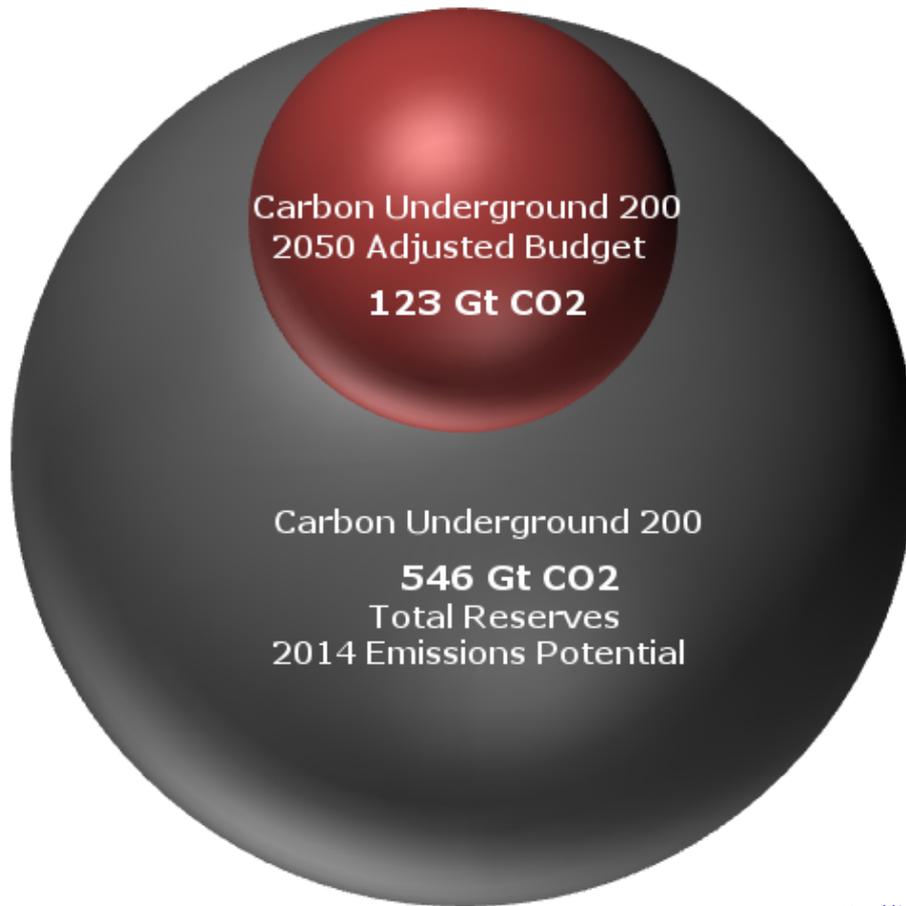


The Fossil Fuel Divestment Landscape

Eric Becker, CFA
Clean Yield Asset Management
Norwich, Vermont
December 10, 2015

The Carbon Bubble



IEA: To keep
warming < 2° C
“65% to 80% of
listed companies’
reserves cannot be
burned
unmitigated.”

<http://fossilfreeindexes.com/2014/05/06/the-allocated-carbon-budget/>

“Unburnable Carbon 2013: Wasted capital and stranded assets.” Carbon Tracker Initiative in collaboration with Grantham Research Institute on Climate Change and the Environment.

The Carbon Bubble

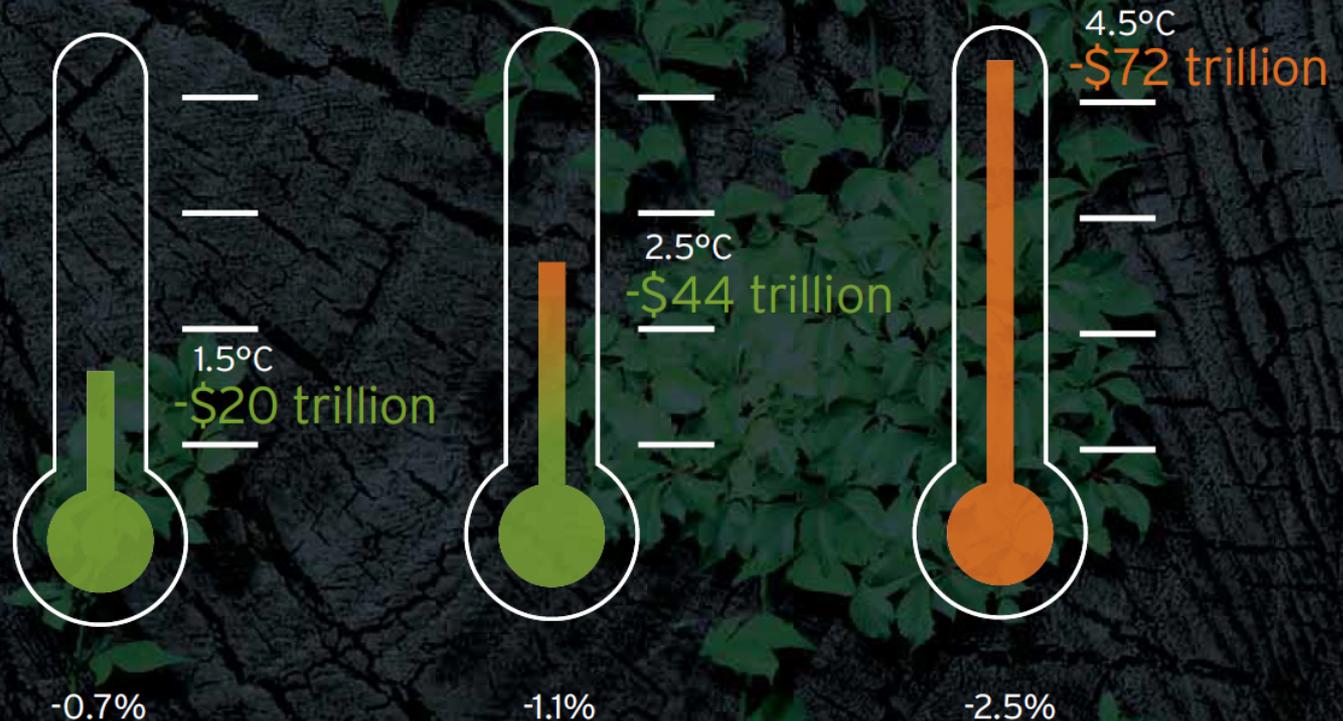
“In financial terms, we estimate that the value of unburnable reserves could amount to over \$100 trillion out to 2050.”

– Citi Equity Research, August 2015

The Economic Incentive for Action

BUT THE DAMAGE TO GDP FROM THE NEGATIVE EFFECTS OF CLIMATE CHANGE IS SUBSTANTIAL

0% discount rate



Change in global GDP

-0.7%

-1.1%

-2.5%

Source: OECD

The Carbon Budget

Since there is a hard limit to how much carbon can be emitted without catastrophic results (both ecologically and economically), the global community is moving toward imposing a carbon budget. This budget entails significant risks for owners of fossil fuel reserves.

Generation Investment Management identifies the primary risks as:

- Regulation (including mandates for efficiency and clean energy)
- Market Forces (e.g. cheaper clean energy)
- Sociopolitical Pressures

Risk/Return Impacts of Divestment



US Fossil Free Index Risk/Return

Research Analysis on Theoretical Historical Returns						
	Economic Environment		FFIUS	S&P500	FFIUST	S&P500TR
Annualized Change	2-Jan-04 to 30-Sep-15	Since Inception	5.25%	4.76%	7.38%	6.92%
	2-Jan-04 to 9-Oct-07	Pre-crisis	9.21%	9.52%	11.13%	11.53%
	10-Oct-07 to 23-Apr-10	Crisis & Recovery	-8.60%	-9.32%	-6.52%	-7.23%
	26-Apr-10 to 30-Sep-15	Expansion	9.71%	8.77%	12.00%	11.08%
Standard Deviation	2-Jan-04 to 30-Sep-15	Since Inception	19.54%	19.56%	19.54%	19.56%
	2-Jan-04 to 9-Oct-07	Pre-crisis	11.45%	11.40%	11.46%	11.41%
	10-Oct-07 to 23-Apr-10	Crisis & Recovery	31.89%	31.95%	31.88%	31.94%
	26-Apr-10 to 30-Sep-15	Expansion	16.10%	16.11%	16.11%	16.12%
Sharpe Ratio	2-Jan-04 to 30-Sep-15	Since Inception	0.19	0.16	0.30	0.27
	2-Jan-04 to 9-Oct-07	Pre-crisis	0.48	0.51	0.64	0.68
	10-Oct-07 to 23-Apr-10	Crisis & Recovery	-0.31	-0.33	-0.24	-0.27
	26-Apr-10 to 30-Sep-15	Expansion	0.59	0.53	0.73	0.68

EAFE Fossil Free Index Risk/Return

	S&P 500 PORTFOLIOS				MSCI EAFE PORTFOLIOS		
	S&P 500 Index	Screened: Energy	Screened: Fossil Free	Tracking: Fossil Free Index US	MSCI EAFE Index	Screened: Energy	Screened: Fossil Free
JAN 2004 - DEC 2014							
Average Return	7.60%	7.32%	7.42%	8.37%	5.96%	6.02%	6.07%
Average Volatility	14.31%	14.48%	14.55%	14.54%	17.58%	17.63%	17.44%
Tracking Error		1.84%	1.39%	1.50%		1.07%	0.93%

\$2.6 Trillion committed to divestment

COLLEGES/UNIVERSITIES

College of the Atlantic
Georgetown University
Green Mountain College
Hampshire College
Naropa University
Pitzer College
Prescott College
San Francisco State University
Stanford University
Sterling College
Syracuse University
Unity College

CITIES

Seattle, WA
San Francisco, CA
Portland, OR
Eugene, OR
Berkeley, CA
Boulder, CO
Santa Fe, NM
Madison, WI
State College, PA
Ithaca, NY
Provincetown, MA
Providence, RI
Cambridge, MA
Northampton, MA

RELIGIOUS INSTITUTIONS

United Church of Christ – National
Massachusetts United Church of Christ
Minnesota United Church of Christ
Evangelical Lutheran Church of Oregon
First Unitarian Church of Salt Lake City
First Parish Unitarian Universalist Church
in Cambridge, MA
Portsmouth South Church Unitarian
First Unitarian Church of Pittsfield, ME
First Unitarian Society of Milwaukee, WI
First Presbyterian Palo Alto, CA
Dover Friends Meeting, Dover, NH
Unitarian Universalist Society of
Amherst, MA
Society for Community Work
Episcopal Diocese of Massachusetts, MA
Maine Council of Churches, ME

PENSION FUNDS

California Public Employees' Retirement
System (CalPERS)
California State Teachers' Retirement
System (CalSTRS)
City of Providence, RI
United Methodist Church General Board
of Pension and Health Benefits

FOUNDATIONS

Divest-Invest Philanthropic Group
Rockefeller Brothers Fund
Sierra Club Foundation
Wallace Global Fund
Jubitz Family Foundation
Educational Foundation of America
Park Foundation
Russell Family Foundation
Compton Foundation
KL Felicitas Foundation
The Chorus Foundation
Singing Field Foundation
Nia Community Foundation
John Merck Fund
Joseph Rowntree Charitable Trust
Solidago Foundation
Jessie Smith Noyes Foundation
Granary Foundation
The Schmidt Family Foundation
Ben & Jerry's Foundation
Pax Fund
Threshold Foundation

Investment Options

Indexes have rolled out over past 18 months

- S&P 500 Fossil Fuel Free Index
- FTSE/Blackrock – N. America and All-World Indexes
- MSCI ACWI (All Country World Index)
- Fossil Free Indexes (Former S&P executives)

Managed accounts

- Blackrock (FTSE ex-Fossil Fuels Index Series)
- Parametric (Fossil Free Indexes US and EAFE)
- Aperio Group (custom screening)
- Trillium Asset Management (custom screening)

ETFs

- SPYX – S&P 500 Fossil Fuel Free SPDR – 0.20% exp. ratio

Summary

The Carbon Bubble presents significant risks to owner of fossil fuel reserves as pressure increases to limit the burning of fossil fuels.

There is no evidence of a return penalty for divesting from fossil fuel companies.

Fossil fuel free index returns show comparable or lower risk than their benchmarks.

436 institutions with \$2.6 trillion in assets have committed to divest.

Fossil free investment options are quickly emerging for institutional investors.