Session 2B: Climate Change: Assessing Risks and Finding Opportunities

greenchip

Blue Chip Investing in the Green Economy

Society of Actuaries – Annual Meeting

October 27, 2019

Agenda

- Thematic investing in the Great Energy Transition
- Why ESG integration is not enough
- Current thematic opportunities
- Sectors we’re less excited about
- Game changers – what we still don’t know

Background Beliefs

1

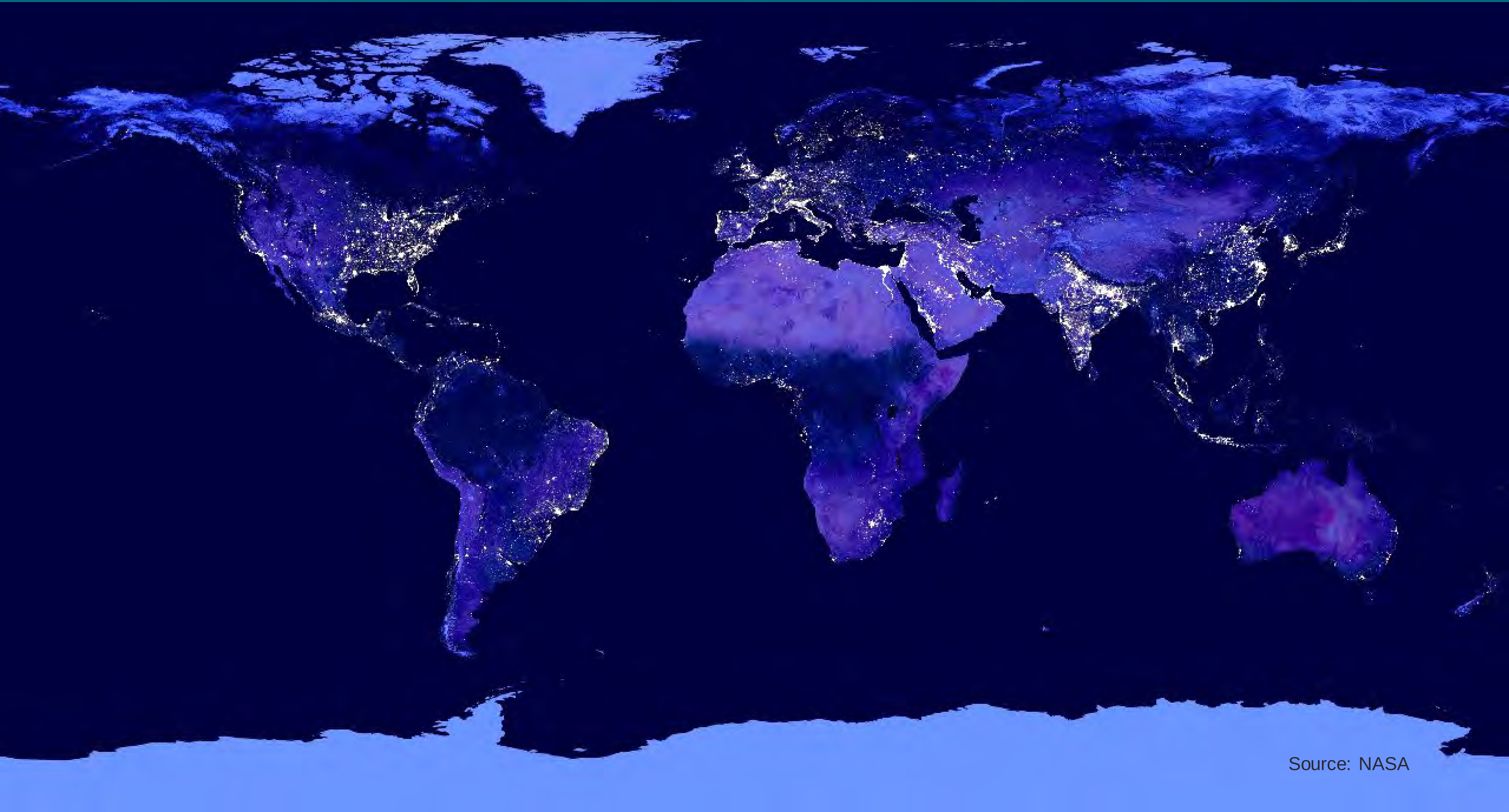
An historic **“Great” Energy Transition** is underway, creating a tailwind behind environmental sectors and significant new risks for unprepared investors

2

Environmental sector growth, technologies, and regulatory policies are often misunderstood and, as a result, securities may be mispriced

3

A global perspective, value strategy and bottom-up process is optimal for this space


Source: NASA

INVESTING IN A TIME OF CLIMATE CHANGE – THE SEQUEL

PRESENTATION TO THE SOA

OCTOBER 27 2019

Gilles Lavoie, Senior Consultant

AN EVOLUTION OF THINKING AND PRACTICE

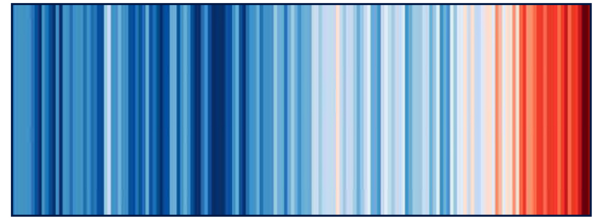
2011

2015

2019

WHY IS CLIMATE CHANGE IMPORTANT?
FROM AN INVESTOR PERSPECTIVE

- **It needs to be addressed now not later**
  - The current trajectory of at least 3°C by 2100 could put us **beyond the realm of human experience sometime in the next 30 years**.
  - To avoid that, **annual emissions need to decrease by 25% by 2030** for a reasonable chance of staying below 2°C or a 50% chance of 1.5°C



Source – Ed Hawkins climate lab book - https://www.climate-lab-book.ac.uk/2018/warming-stripes/

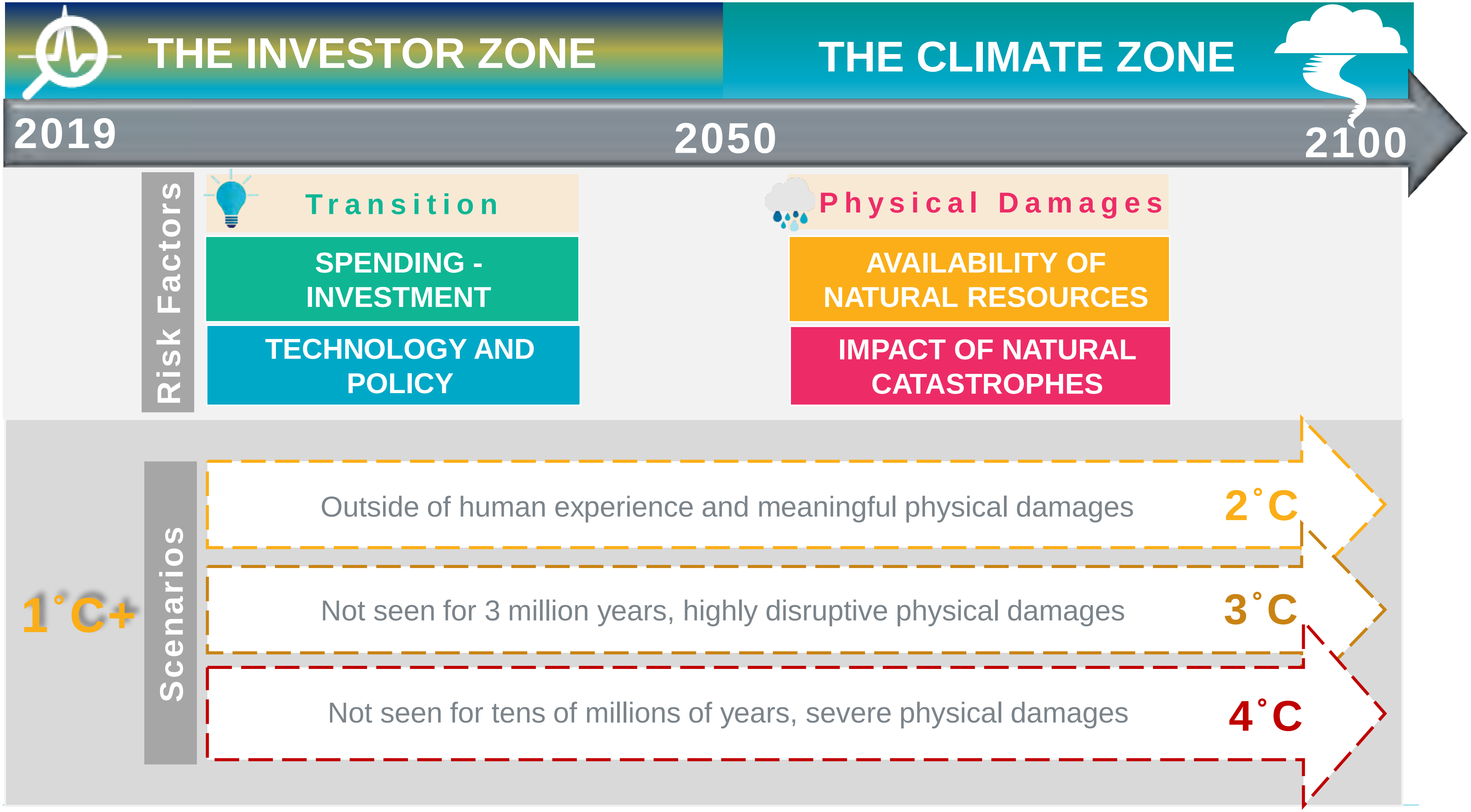
- **It's a fiduciary issue**
  - **Financial regulators, particularly for pension funds**, are also increasingly asking investors to consider the financial materiality of climate-related risks and manage them accordingly.
  - **Laws and litigation also continue to develop.**

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

- **The risks of physical damages and the transition to a low-carbon economy can't be ignored**
  - **The key milestones and assumptions in the Mercer scenarios** highlight the different degrees of physical damages risks and the changes required to transition to a low-carbon economy and reduce fossil fuel emissions.

CLIMATE RISK FACTORS AND SCENARIOS

Significant increases in Greenhouse Gas (GHG) emissions are raising average temperatures and changing the Earth's climate



KEY FINDINGS

- 2 Degrees is both an imperative and an opportunity
  - Imperative: a 2DC scenario leads to better financial outcomes for almost all asset classes and sectors versus 3DC and 4DC
  - Opportunity: in a 2DC scenario there are “winners and losers” at the asset class level; mostly losers in 3DC and 4DC
- Expected annual return impacts are most meaningful at sector level
  - Sector: significant variations by scenario, particularly for energy, utilities, consumer staples and telecoms.
  - Asset Class: returns can also vary significantly by scenario for infrastructure, property and equities in particular.

WHAT ACTIONS CAN INVESTORS TAKE?
CLIMATE SPECIFIC PORTFOLIO ACTIONS

	PORTFOLIO			ENGAGEMENT	
	Integrate	**Decarbonize**	**Invest**	**Capital Market**	**Company**
Definition	Integrate a consideration of climate related risks and opportunities into investment analysis, decision making, monitoring and reporting.	Tilt portfolio away from carbon intensive holdings, fossil fuel reserve owners and laggards on climate strategy.	Allocate to climate related sustainability themes (e.g. renewable energy, energy efficiency, water, waste, agriculture, timber).	Engage with regulators, policy makers, and other industry bodies to promote policies and standards which encourage/require disclosure and enable the efficient allocation of capital in the context of climate change.	Exercise voting rights and undertake public and/or private company engagement to promote the effective management of climate related risks and opportunities.
Main Objective	Enhance risk-adjusted returns through broader perspective on investing.	Hedge against impacts of climate policies and regulations (e.g. stranded asset risk).	Improve long-term growth and/or achieve a positive environmental or social impact.	Create more effective capital markets regarding the disclosure, pricing, and management of climate related risks and opportunities.	Protect and enhance value within investee companies (public and private).

SUSTAINABILITY BY ASSET CLASS

Passive Equities	Active Equities	Private Equity	Infrastructure
▪ Low-carbon, fossil free, ESG, sustainability options	▪ Broad based sustainability, environmental and some social	▪ Primarily renewable energy, water, waste, and ag value chains	▪ Primarily renewable energy, water and waste development

Natural Resources	Property	Fixed Income	Hedge Funds
▪ Sustainable timber and agriculture	▪ High ESG property and some social housing	▪ High ESG and some green bonds	▪ Some thematic funds

WHAT'S NEXT FOR INVESTORS?
INTEGRATED APPROACH

What will it take?

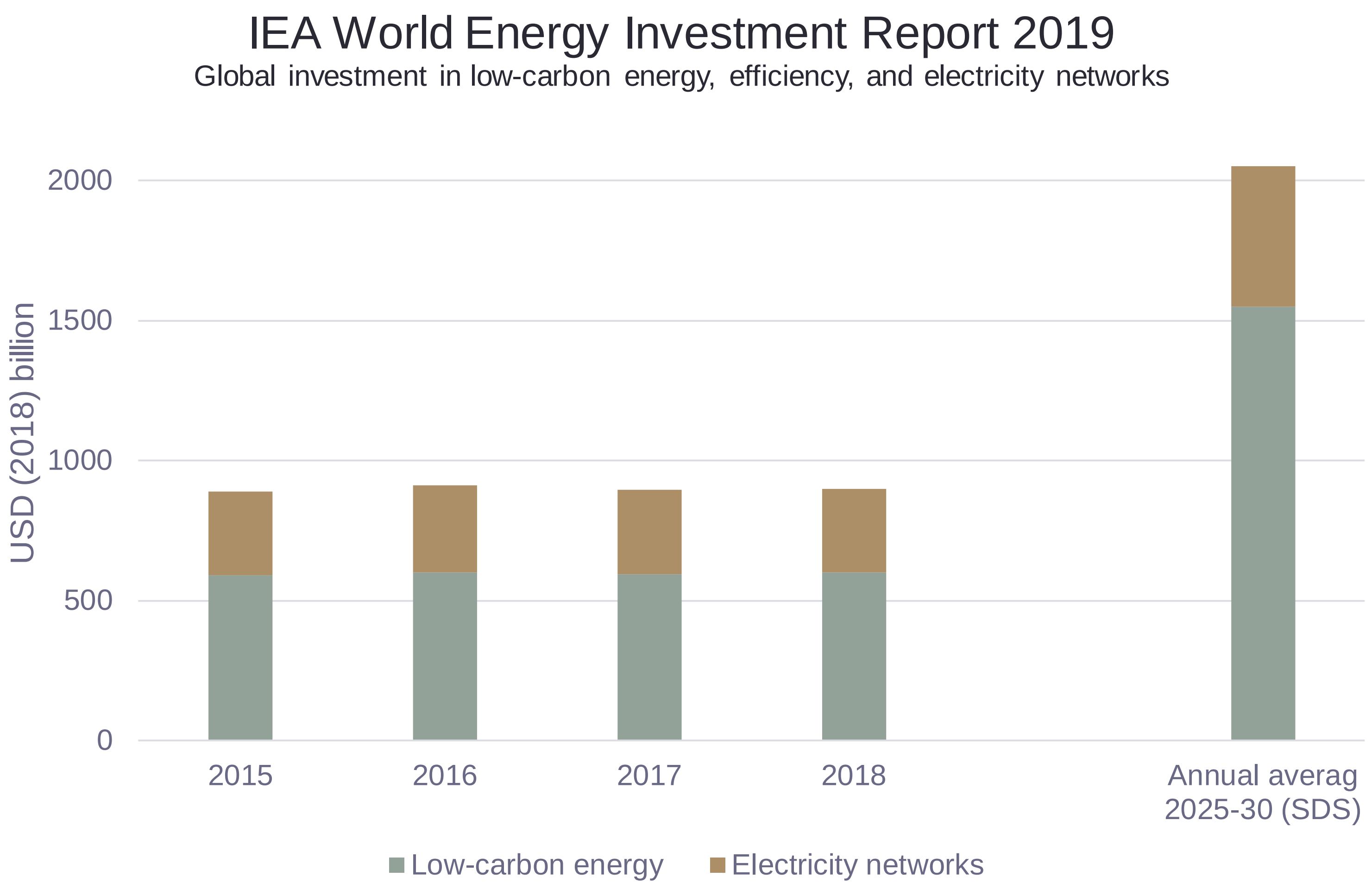
“$2.5 trillion annual investment needed by 2030 to finance a more sustainable future”

Greg Payne at the 2007 *Greenchip Launch Event*

“$6.9 trillion infrastructure investment needed annually to meet the Paris Agreement goals”

OECD/The World Bank/UN Environment (2018), *Financing Climate Futures*

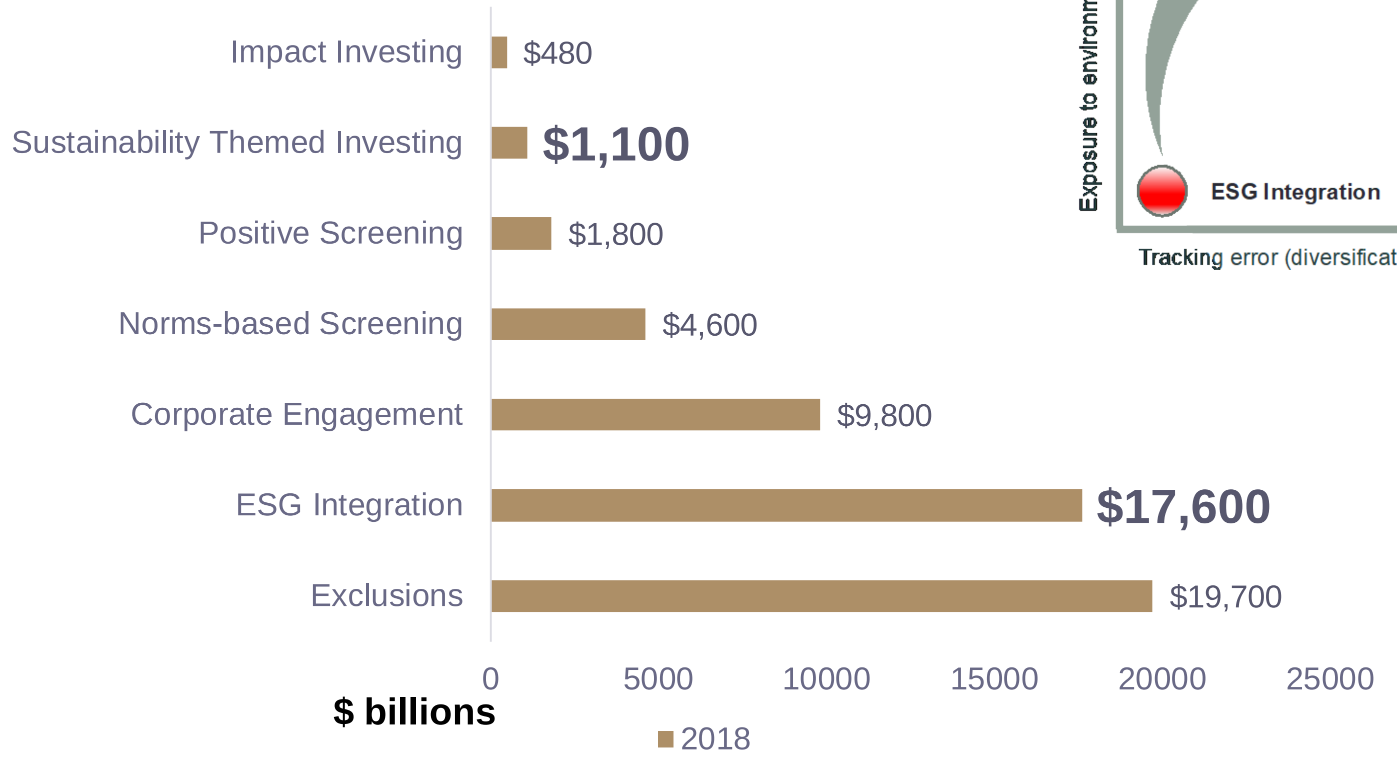
Annual investment across low-carbon energy – including supply and efficiency – needs a rapid boost to $2.1 trillion keep Paris in sight

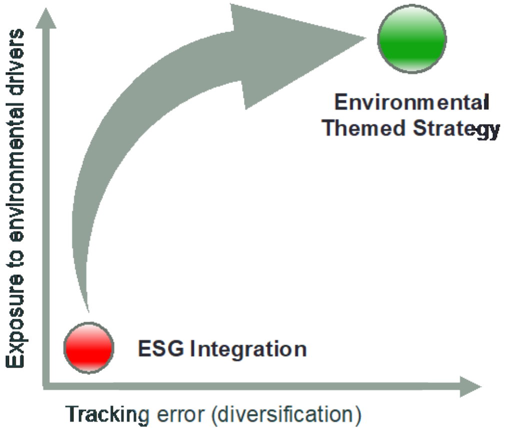


Note: Low-carbon energy investment includes energy efficiency, renewable power, renewables for transport and heat, nuclear, battery storage and carbon capture utilisation and storage. SDS = Sustainable Development Scenario.

Source: IEA World Energy Investment 2019

ESG is insufficient to capture climate opportunities and diversify from climate risk





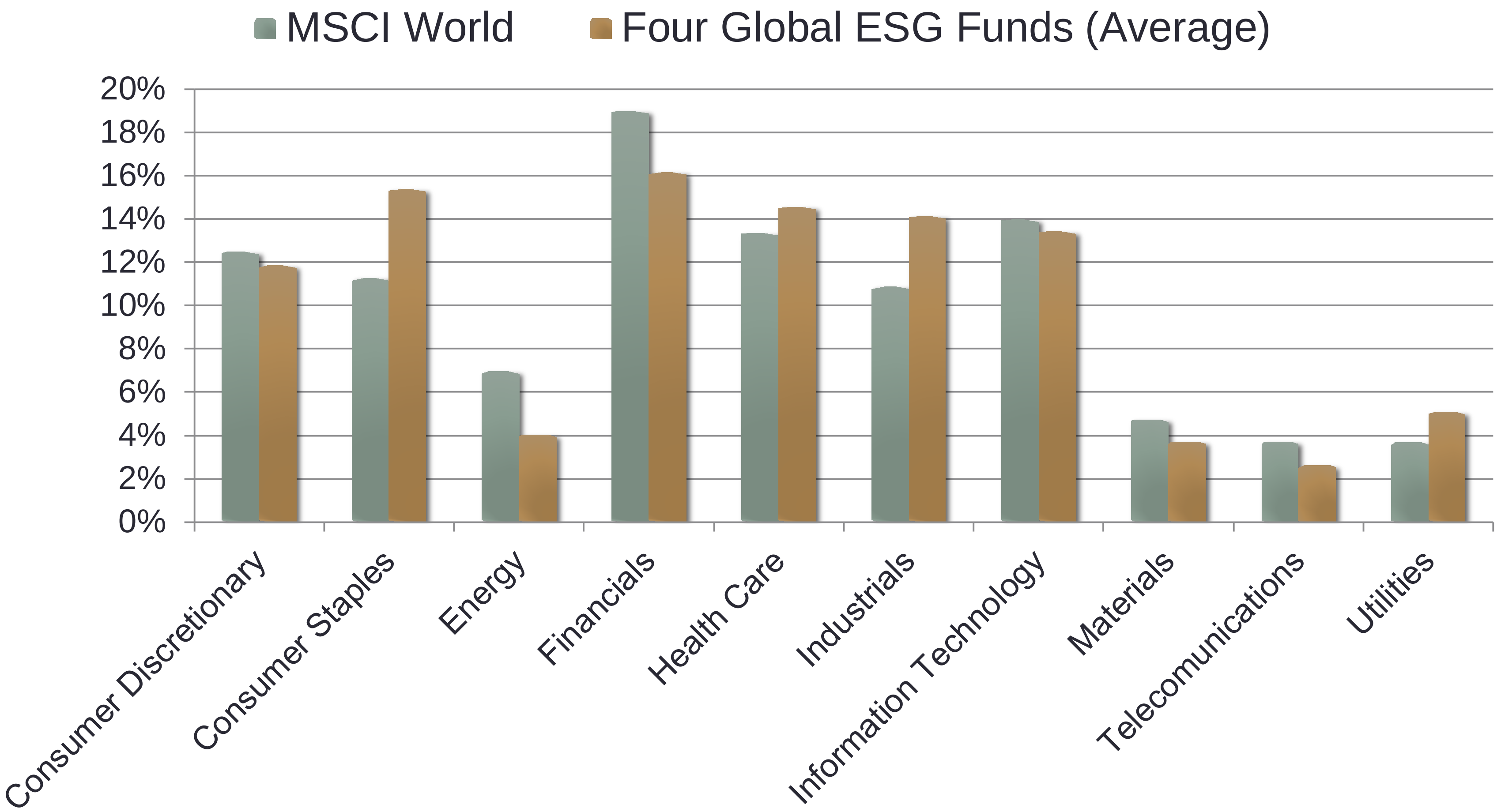
*Generally, ESG integration focuses on **how companies behave**, while environmental sector investing focuses on **what companies produce and sell**.*

ESG strategies have high correlations to benchmarks and are less exposed to environmental drivers.

Source: 2018 Global Sustainable Investment Alliance Review

Four Global ESG Funds vs. MSCI World

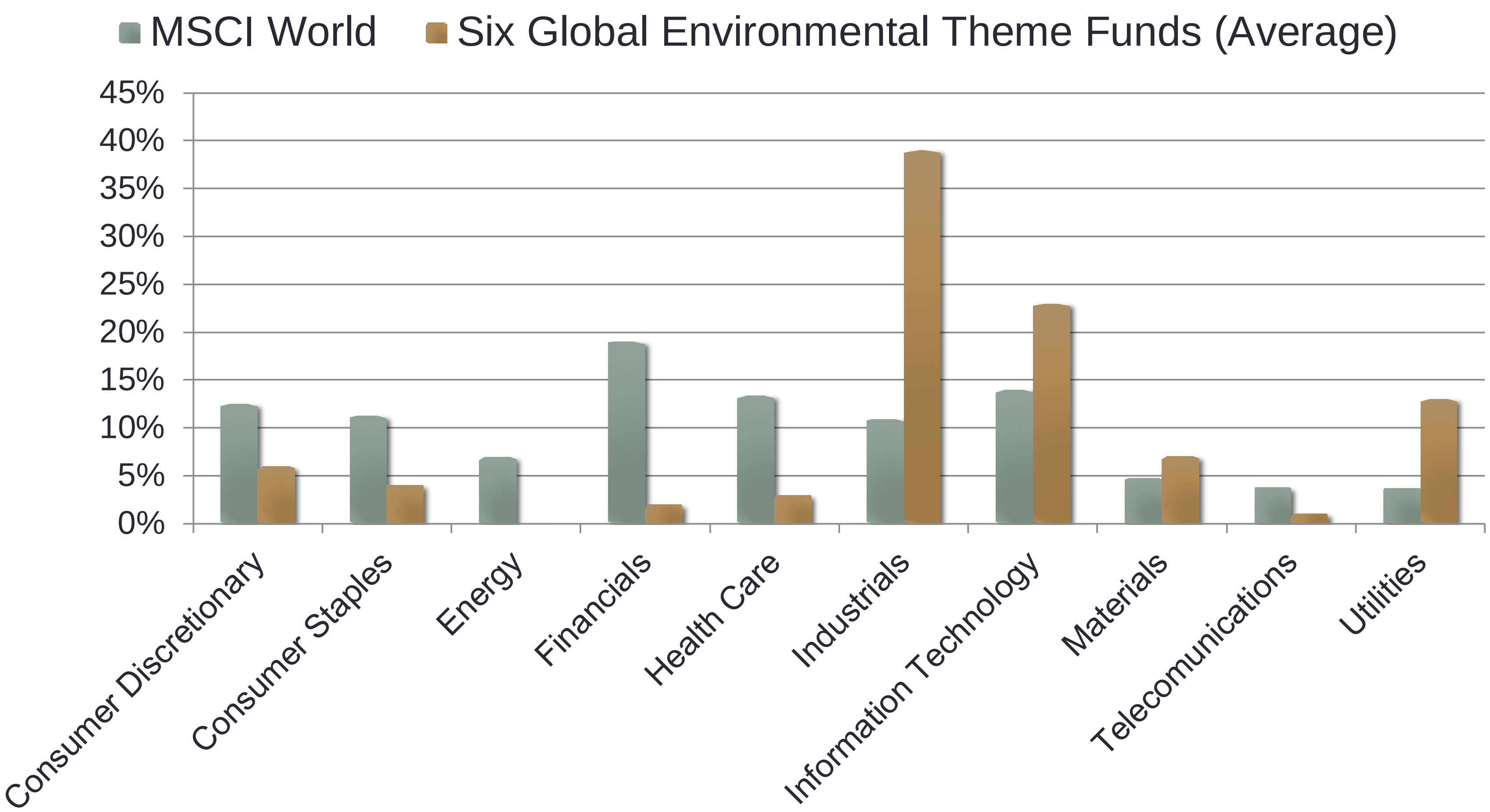
By General Industry Classification



1) RBC Vision Global (formerly Jantzi)
2) iShares Sustainable MSCI Global Impact
3) iShares MSCI Low Carbon Fund
4) Vanguard SRI Global Stock Fund

Source: Globe Funds 8/16, Corporate websites

Six Environmental Theme Funds vs. MSCI World
By General Industry Classification



1) AGF Sustainable Growth Equity
2) NEI (Impax) Environmental Leaders
3) Greenchip Global Equity
4) Desjardins Societerra Cleantech
5) Essex Global Environmental Opportunities
6) Powershares Cleantech

Source: Globe Funds 8/16, Corporate websites

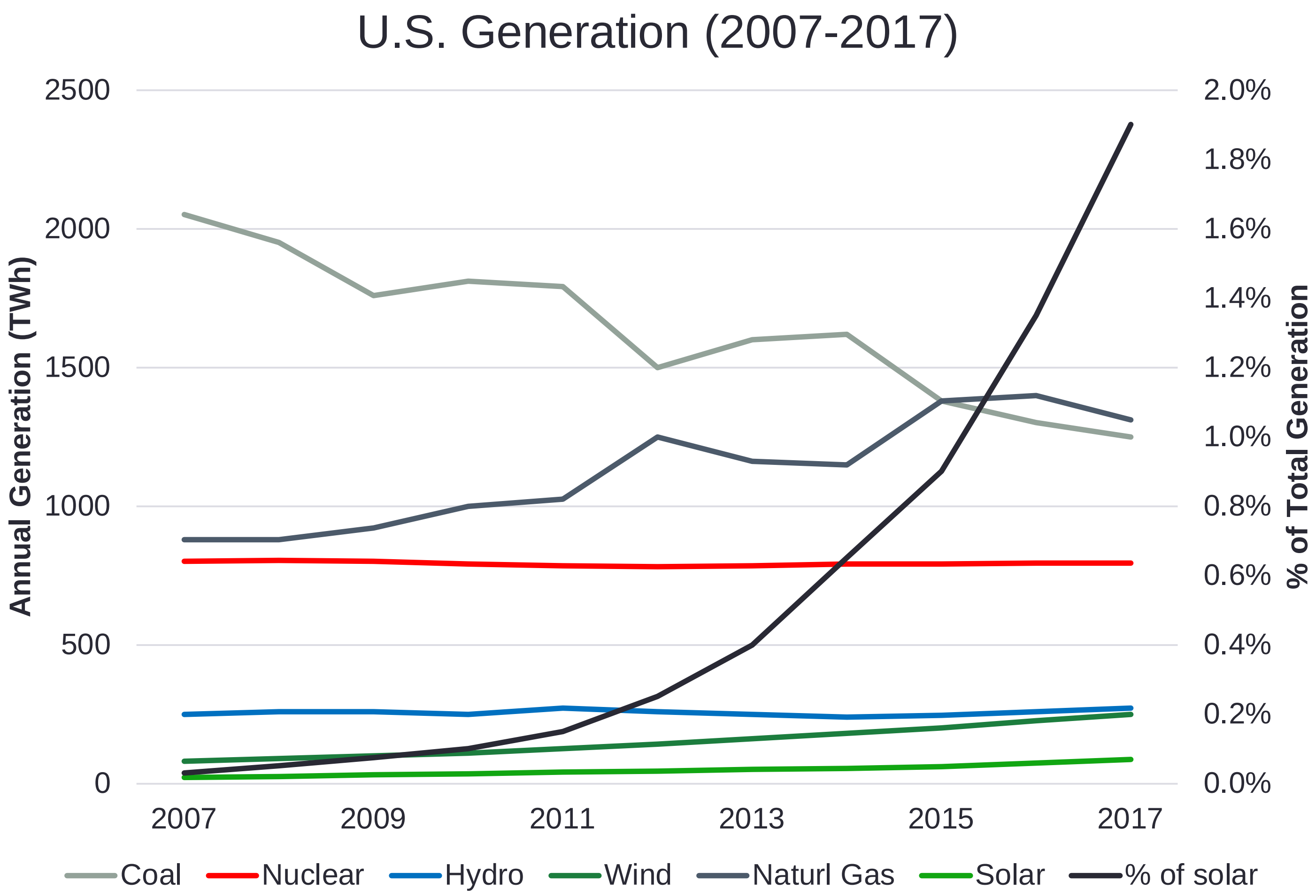
Environmental Theme Sectors

Over 600 companies with a cumulative $6 trillion market cap

Clean Energy	Energy Efficiency	Clean Technology	Sustainable Agriculture	Water	Transportation
Renewable utilities	Building management and efficiency	Waste management and pollution controls	Food processing/ logistics	Water utilities	Transportation operators
Renewable equipment	Lighting	Software and logistics	Agricultural inputs	Water equipment	Transportation equipment
Electric infrastructure	Engineering/ consulting	Advanced materials	Sustainable food retail		
Energy storage equipment	Power management	Metering and monitoring	Sustainable forestry		
Renewable fuels	Automation and drives	Industrial efficiency			

Diversified Environmental Leaders

Energy transition evident in power production



- Coal and natural gas have been heading in opposite directions
- The percentage of electricity generated by fossil fuels has dropped from 72% to 61%, while renewable generation has increased from 8% to 17%
- The percentage of solar generation has increased a whopping 59X since 2007

Source: NREL, EIA

Renewable Utilities - *clean* outperforms *dirty*

Performance of five of the cleanest power utilities versus five of the dirtiest*

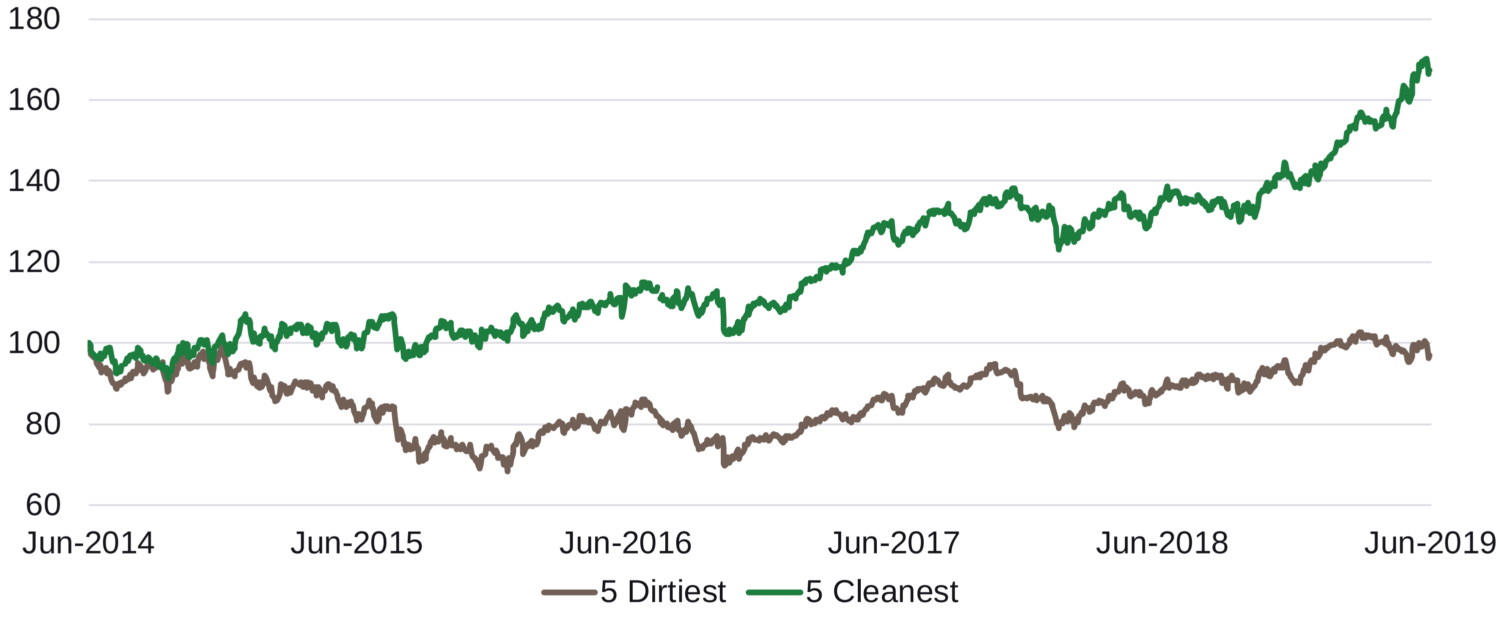


Chart compares

Five of the cleanest power utilities: Nextera, Consolidated Edison, Iberdrola, EDP, and ENEL

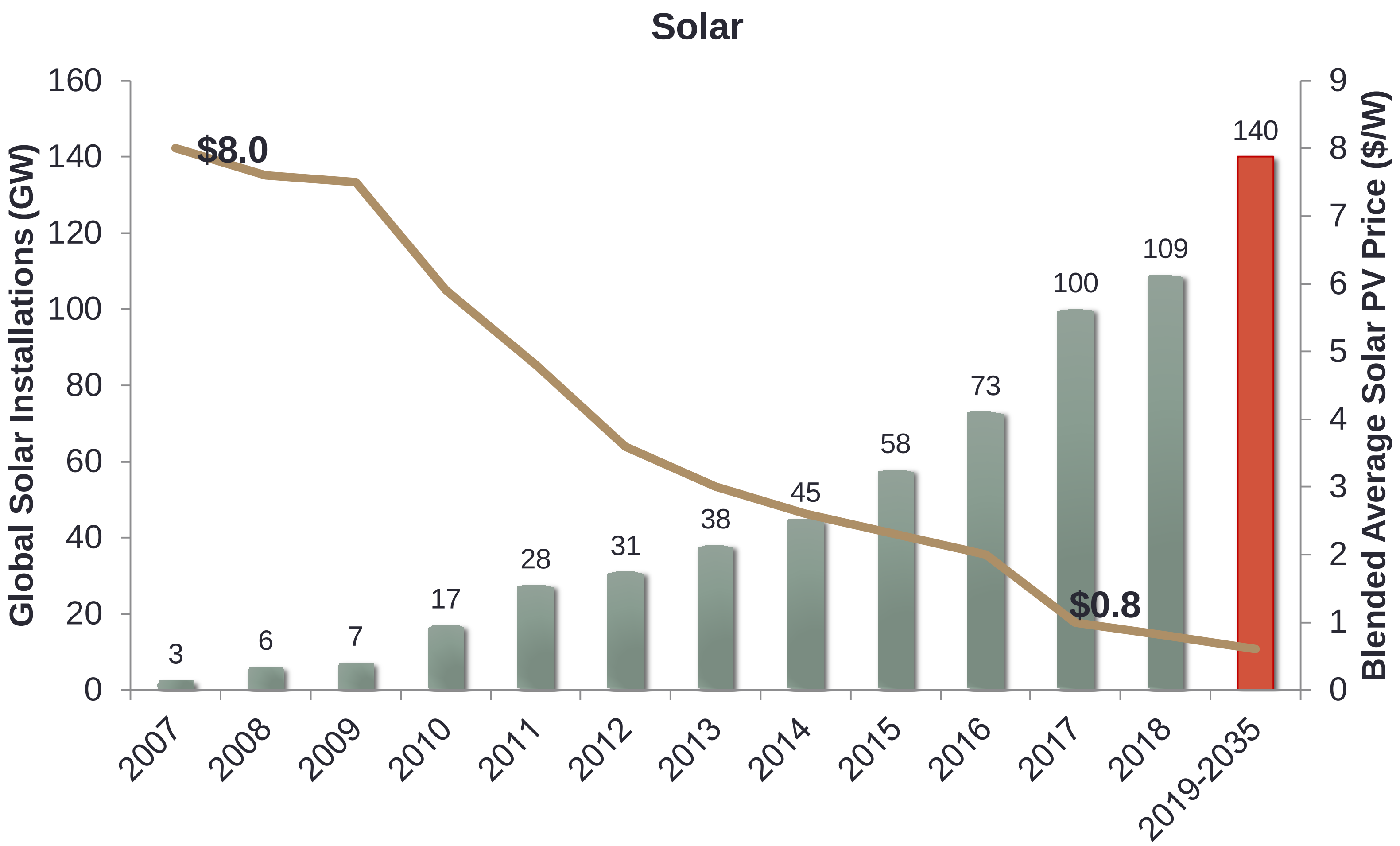
vs.

Five of the dirtiest: NRG, PPL, Exelon, RWE, and Engie

Source: Bloomberg, June 2014 to June 2019. Stock price performance for each grouping of stocks is market cap weighted based on the current market capitalizations. Return excludes dividends.

*EDP, ENEL and Iberdrola are leaders in renewable energy development, both in their home markets (Portugal, Italy, and Spain, respectively) and abroad, with EDP and ENEL operating major renewable portfolios in North America and Latin America, respectively. Nextera is a Florida-based utility that is the largest US developer and operator of renewable energy. In general, while the clean group does still have thermal generation, renewable generation is typically equal or higher than thermal, and thermal is more gas than coal. For the dirty group the opposite is the case.

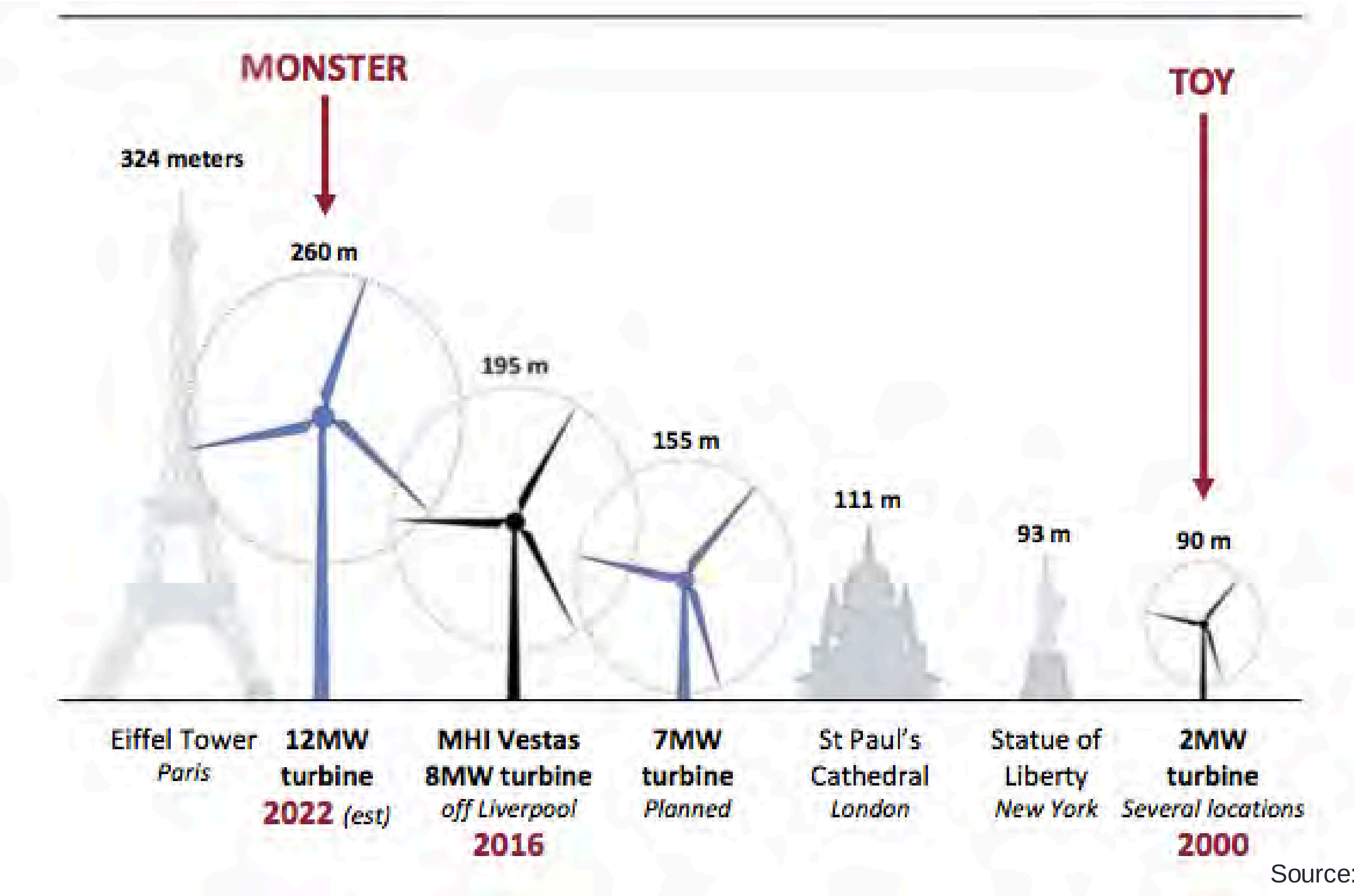
Solar is a misunderstood opportunity



1. Growth is underestimated
2. Misunderstood manufacturing consolidation
3. Value opportunities

Source: Mercom, BNEF

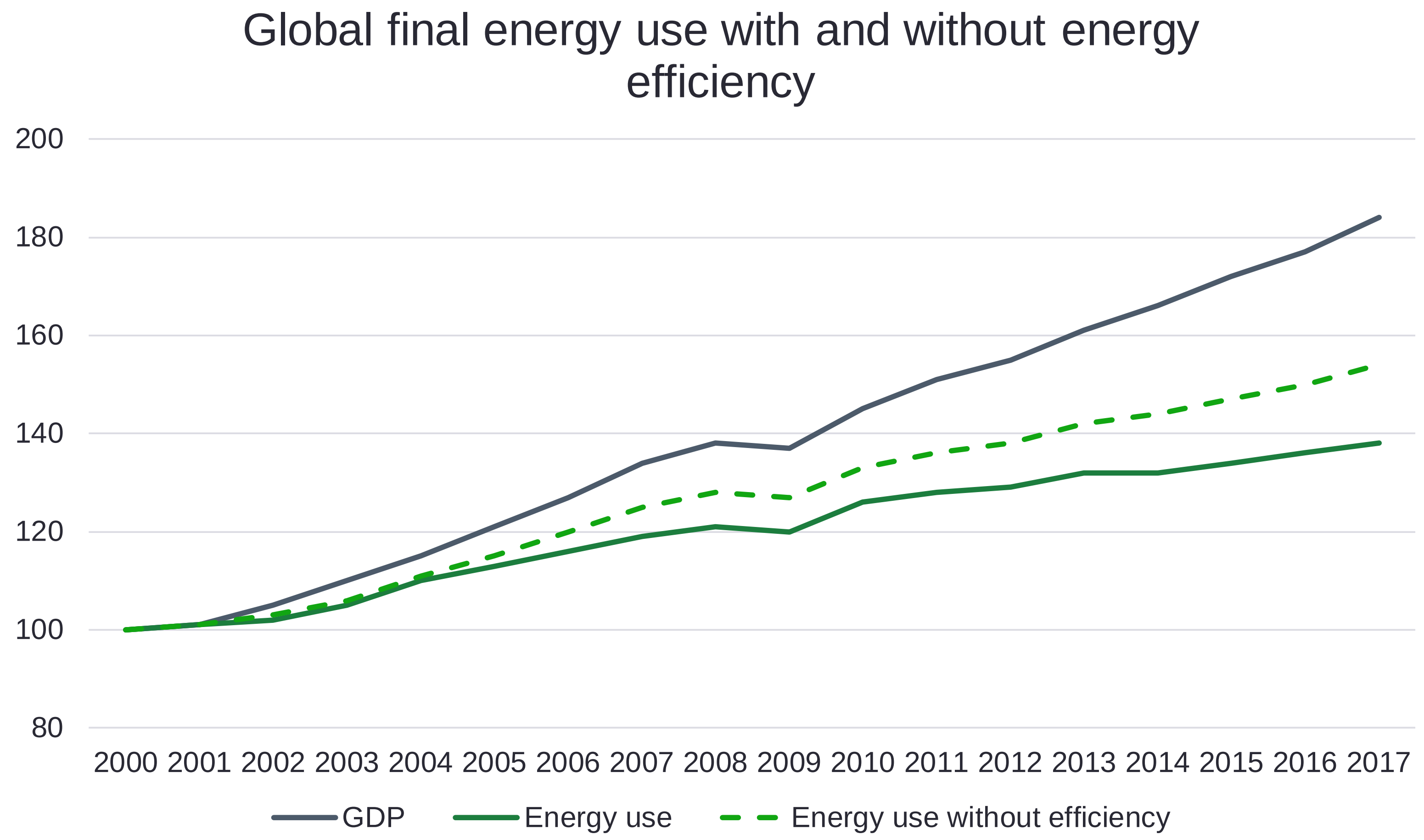
Wind may have peaked?



1. Intermittency and operating costs have been underestimated
2. Growth curve has plateaued
3. Cost curve decline has flattened
4. Fewer value opportunities

Source: GMO, Thinking outside the box, April 2019

Energy Efficiency – improving at almost 3% a year

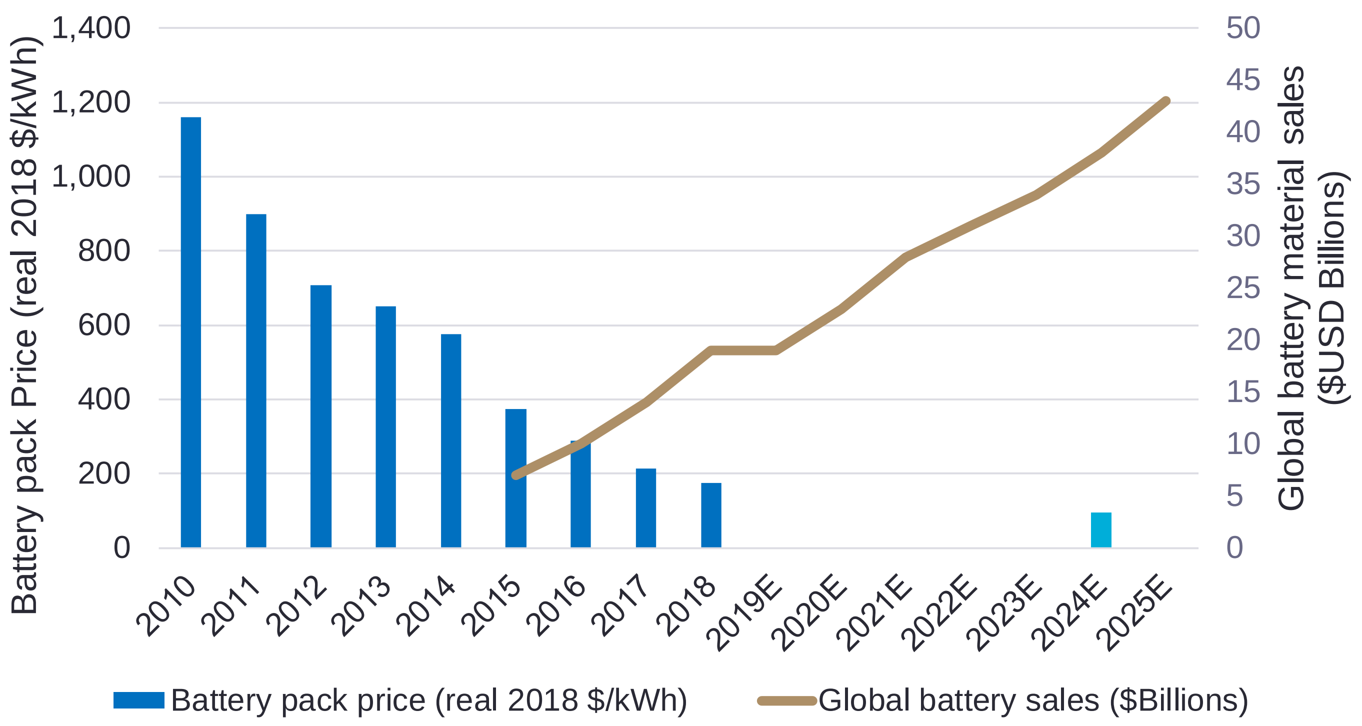


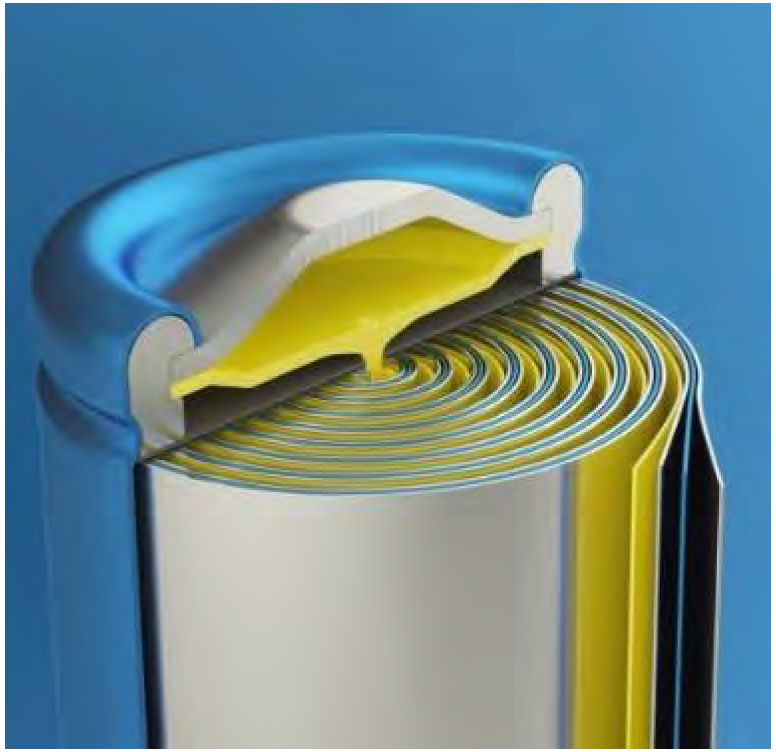
Efficiency technologies we're excited about:

- Power management electronics
- LED Lighting
- Heat and pressure recapture
- Advanced manufacturing
- Precision agriculture

Source: 2018 EIA, Report on Efficiency

The game changer - Storage - what we don't know yet



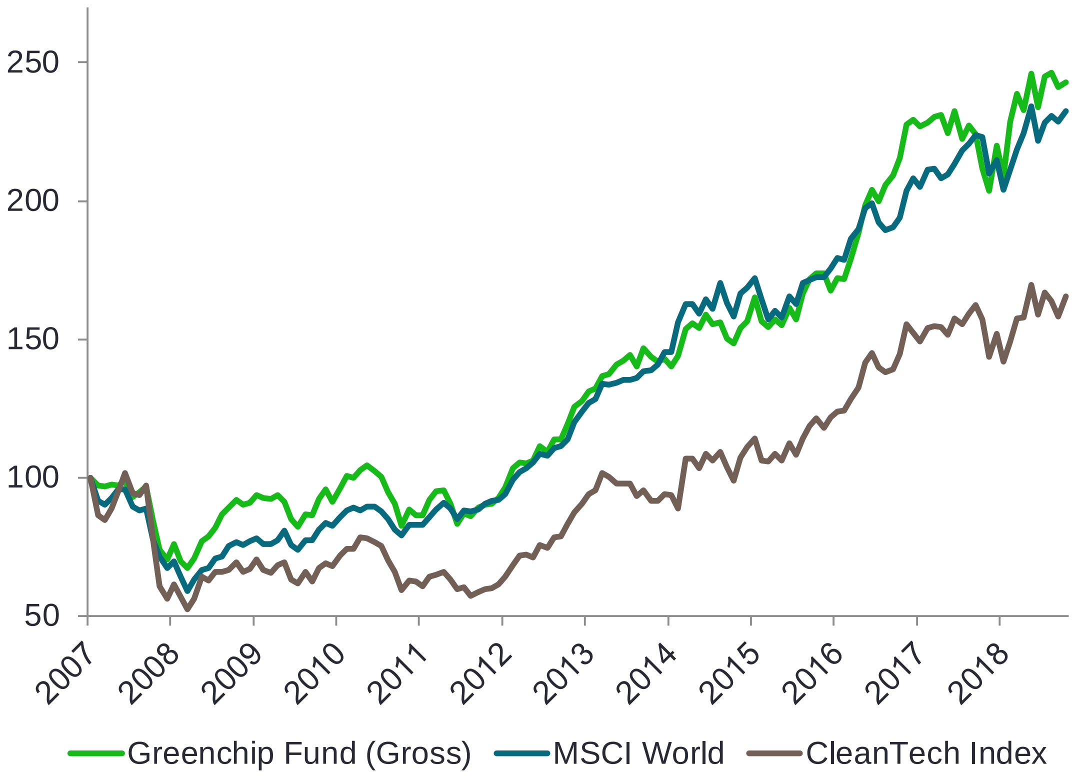


Bloomberg estimates that for every doubling of volume history has shown an 18% decline in cost. Based on this they estimate $94 by 2024 and $62 by 2030.

Source: BNE Finance March 2019, JP Morgan July 2019

Environmental Theme can outperform

Greenchip (Gross) returns vs. MSCI World and Cleantech Indexes
Jan. 2, 2008 – Sep. 30, 2019, $CAD



"Anyone who believes that exponential growth can go on forever in a finite world is either a madman or an economist."

Kenneth Boulding, economist

Source: RBC IS, Greenchip, Bloomberg, MSCI

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