

# Financial risk implications of climate change: Stranded assets and credit ratings

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Lauren Smart  
Managing Director  
Trucost, Part of S&P Dow Jones Indices



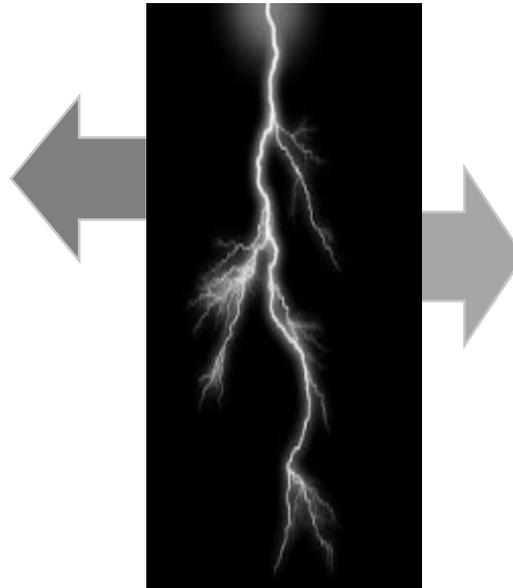
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# Macro-Economic Trends: The Resource Revolution

## Demand Side

- **Population increase to 9bn by 2040:** Since 1900 the population has increased from 1.6 billion to 6 billion in 2000 and projected to hit 9 billion by 2040
- **2bn more middle class consumers expected by 2030**
- **1/5th of the world's population live in water stressed areas &**  
Water demand per year increased from 500 cubic km in 1900 to 3,830 cubic km in 2000

## Resource Pressures The Perfect Storm



## Supply Side

- **Erosion of Natural Resources:**  
Pollution, over exploitation
- **Climate Change:** More extreme & unpredictable weather events, more severe weather events e.g. droughts, floods, hurricanes

### SOURCES:

United Nations DESA/Population Division: <https://esa.un.org/unpd/wpp/Graphs/Probabilistic/POP/TOT/>

United Nations: <http://www.un.org/waterforlifedecade/scarcity.shtml>

Brookings Institute: [https://www.brookings.edu/wp-content/uploads/2017/02/global\\_20170228\\_global-middle-class.pdf](https://www.brookings.edu/wp-content/uploads/2017/02/global_20170228_global-middle-class.pdf)



# Carbon & Climate Change: Why Does it Matter to the Finance Industry?



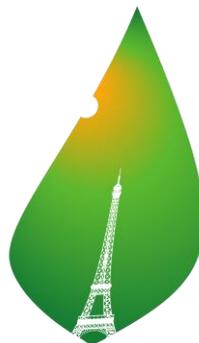
BANK OF ENGLAND

**“Shifts in our climate bring potentially profound implications for insurers, financial stability & the economy” (Carney 2015)**



**Breaking the tragedy of the horizon:  
climate change & financial stability  
Sept. 2015 speech to Lloyds of London**

**“The past is not prologue and the catastrophic norms of the future can be seen in the tail risks of today....Risks to financial stability will be minimised if the transition begins early and follows a predictable path, thereby helping the market anticipate the transition to a 2 degree world”.**



PARIS2015  
UN CLIMATE CHANGE CONFERENCE  
COP21·CMP11

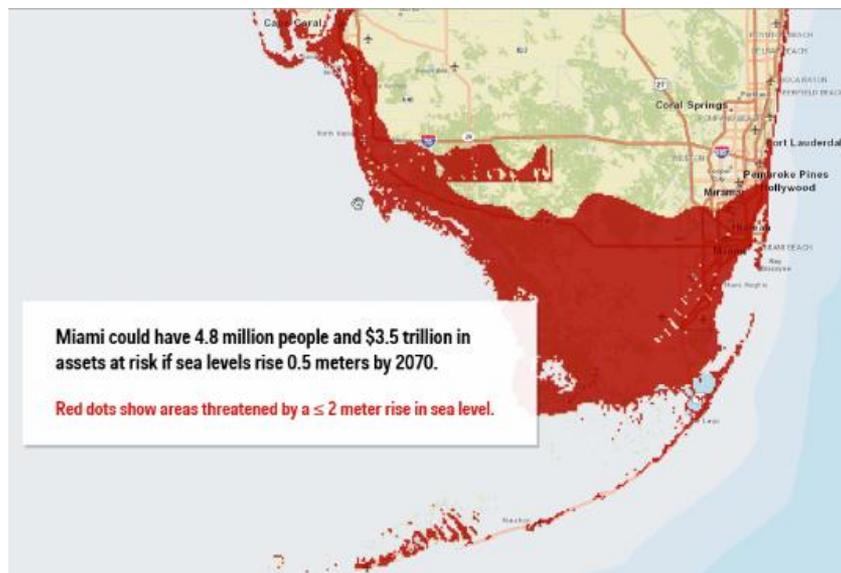
## The **Paris Agreement** entered into force globally in 2015 ratified by **131 countries**.

Commitment to hold the increase in the global average temperature to below 2 °C & “make finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development”.

**A rise in temperature of 6C could, by 2100, result in losses for global assets of USD 43tn – or 30% of the world’s entire stock of managed assets.**

# Physical Risk

“The challenges currently posed by climate change pale in significance compared with what might come” (Mark Carney 2015)



- In the U.S. **\$238-507bn** worth of coastal property could be **below sea level by 2100** (*Risky Business 2014*)
- Since the 1980s the number of weather related loss events has tripled to **\$50bn**.
- It is estimated that the 20cm rise in sea levels at the tip of Manhattan since the 1950s increased **insured losses from Superstorm Sandy by 20%** (*Lloyds*)
- **Hurricane Andrew**: price of reinsuring weather events spiked, lead to a rise of up to **40% in premiums** in some parts of Florida.

Source: <http://www.businessinsider.com/map-of-miami-when-sea-levels-rise-2014>

Source: Bank of England Prudential Regulation Authority: “The impact of climate change on the UK insurance sector” Sept 2015/

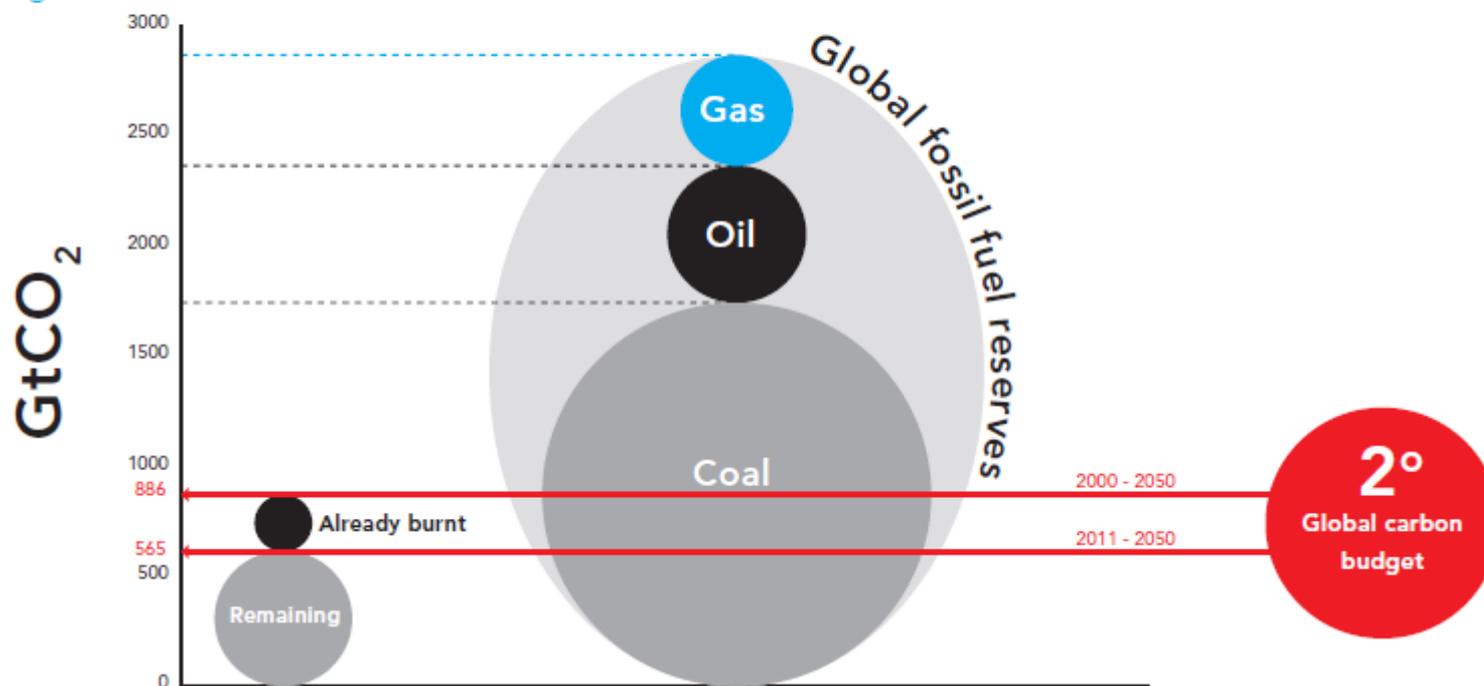
# Transition Risk



# What are “stranded assets”?

Comparison of the global 2°C carbon budget with fossil fuel reserves CO<sub>2</sub> emissions potential

Fig.1



Source: Carbon Tracker “Unburnable Carbon” - <https://www.carbontracker.org/wp-content/uploads/2014/09/Unburnable-Carbon-Full-rev2-1.pdf>

# Climate Change: A Different Kind of Risk

Trucost by  
S&P Dow Jones Indices  
ESG Analysis



“Climate risk is inevitable – **Some impacts on investment returns is inevitable**... Investors can improve outcomes by **being prepared**”

- “Climate Risk is more complex and longer-term than most investment risks”
- “Managing climate risk is outside the average investor focus areas”
- **“Some action will lead to better investment outcomes than no action”**
- “Uncertainty about the future should not be a barrier to action”

# Government & Investor Action Mounts



- Article 173, France
- Swedish Funds Association
- Dutch Pension Fund Initiatives
- Norwegian Sovereign Wealth Divestment
- California divestment & transparency
- UNPRI Montreal Pledge
- UNEPFI Portfolio Decarbonisation Initiative
- FSB TCFD TaskForce supported by G20



# Transition: A \$93trn Opportunity?

What we need for the transition to a more resource efficient, lower carbon world....

## Clean Energy



## Sustainable Agriculture



## Water Efficiency



## Low Carbon Transport Infrastructure



## Smart Technology



## Waste Reduction/ Recycling

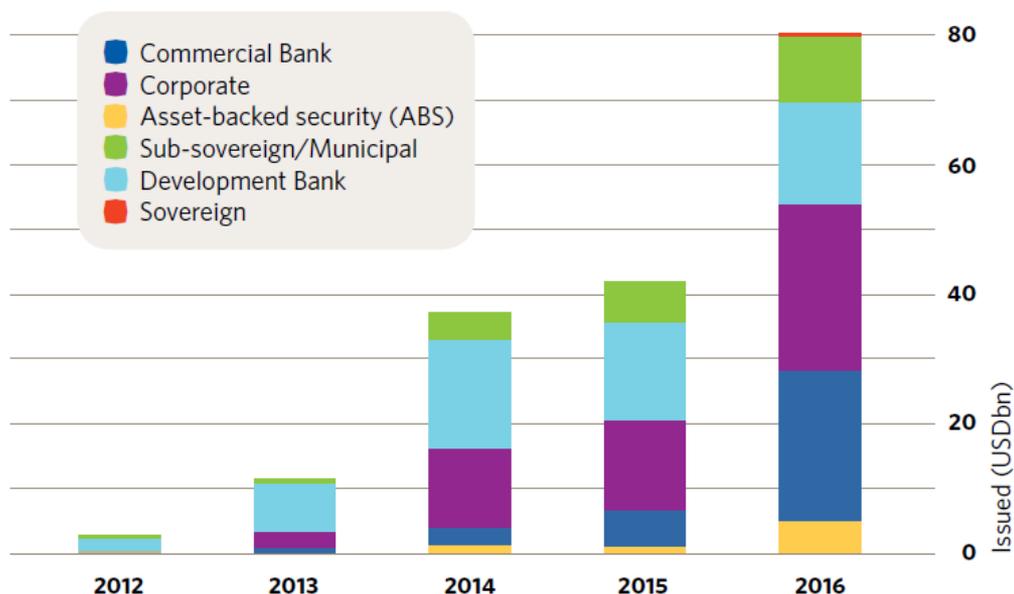


Over the next 15 years, approximately **\$93 trillion** will be needed for investment in low carbon infrastructure across the world

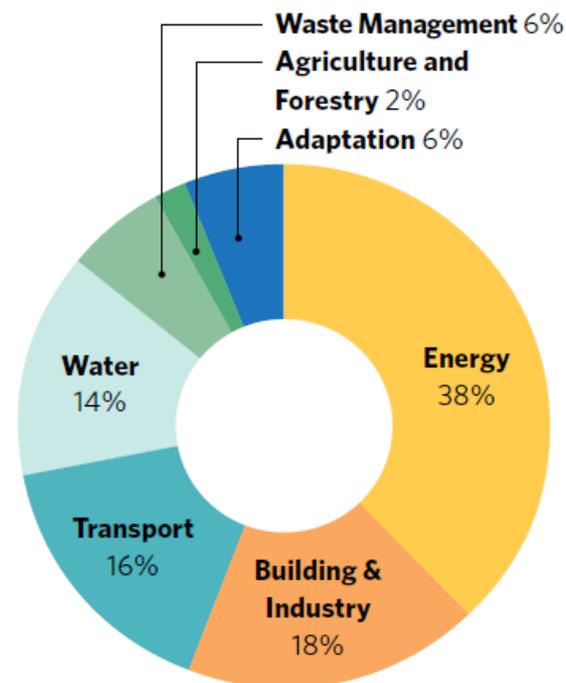
# Transition Opportunities: Green Bonds

**\$694bn** of climate-aligned bonds, includes (an increase of **\$96bn** on last year),  
**\$118bn** of labelled green bonds  
**3,590** bonds from **780** issuers

## The green bond market 2012-2016



## There was a broad range of use of proceeds in 2016



# Quantifying the Positives

## CARBON FOOTPRINT

- Listed equities
- Corporate fixed income



## CARBON SAVINGS

- Green bonds
- Green real estate
- Green infrastructure

**AMBITION: BALANCE PORTFOLIO  
FOOTPRINT**

Source: Trucost. Chart is provided for illustrative purposes.

# Contact Us:

## Lauren Smart

Managing Director  
Global Head of Financial Institutions | Trucost

20 Canada Square  
Canary Wharf, London, E14 5LH

T +44 (0) 20 7176 9814  
[lauren.smart@spglobal.com](mailto:lauren.smart@spglobal.com)

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