

Environmental Risks and their increasing relevance to Credit Ratings

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Agenda

Climate Change Clouds Creditworthiness:



Insurance



Sovereign



Corporate

Markets Go Green:



**Carbon
Markets**

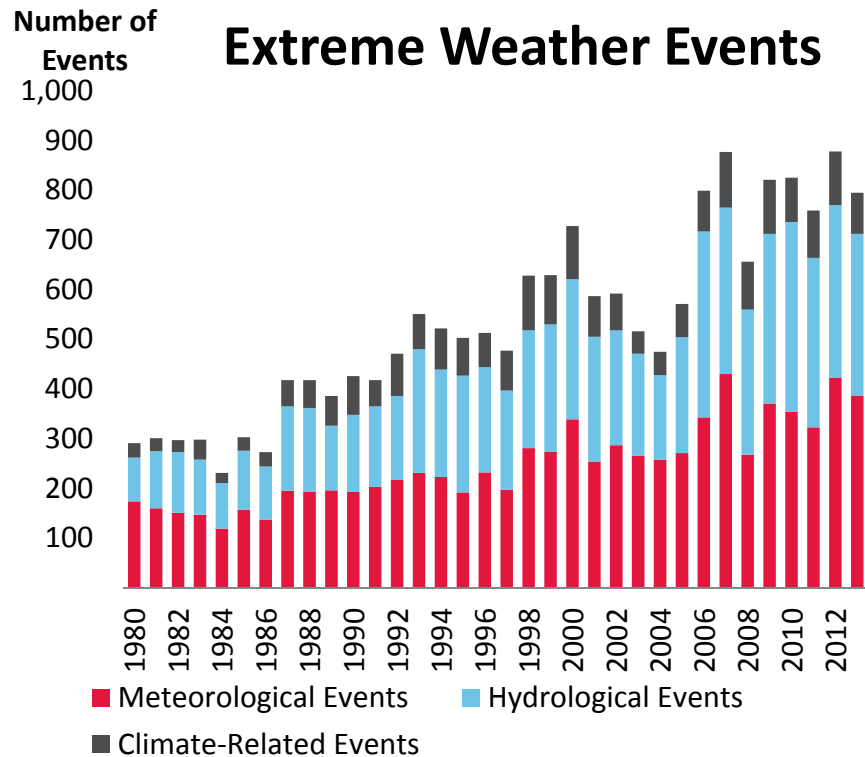


**Green Bond
Markets**

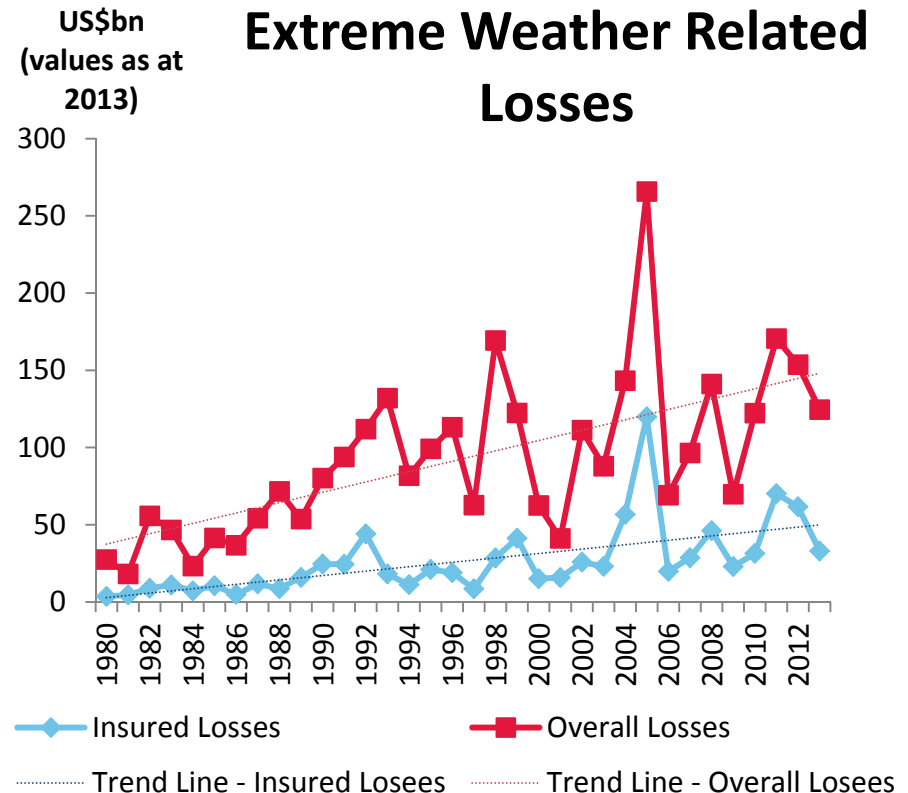


**Green Bond
Indices**

Climate Change: Rising Frequency And Severity



Source: Munich Re



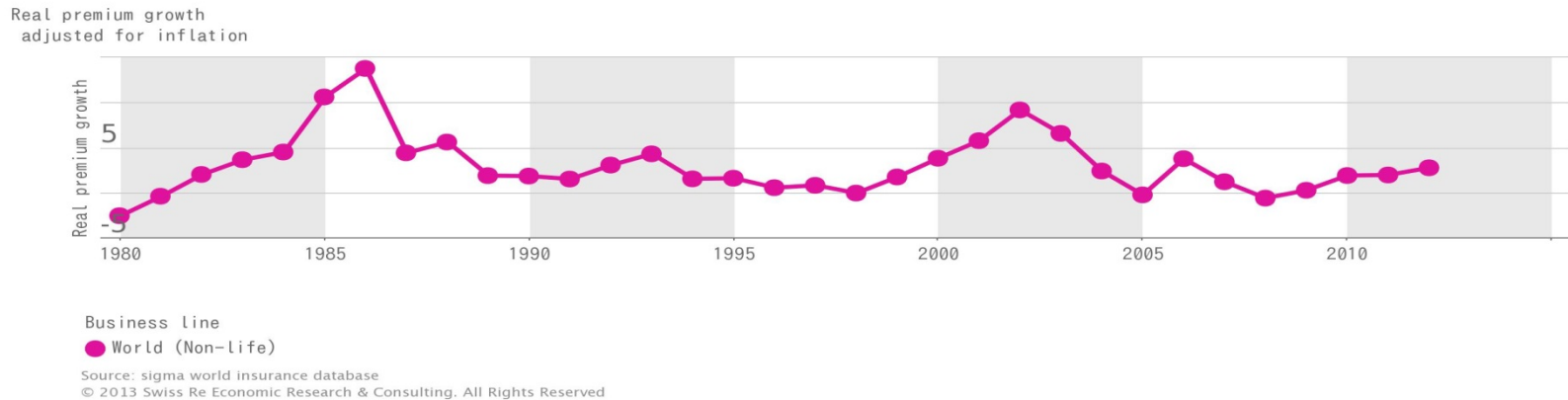
In 2012, weather and climate affected **\$5.7 trillion** of the U.S. economy (**30% of GDP**), and **\$5.9 trillion** of EU economy (**35.8% of GDP**). In 2013, weather events accounted for **90%** of natural catastrophe losses in 2013, causing over **\$120 billion** of losses.

Source: Allianz, Munich Re

Climate Change: Are Insurers Well Prepared?

- **Impact on creditworthiness:**

- Business Profile: Diversification & inherent risk of insurance market
- Financial Profile: Capital adequacy

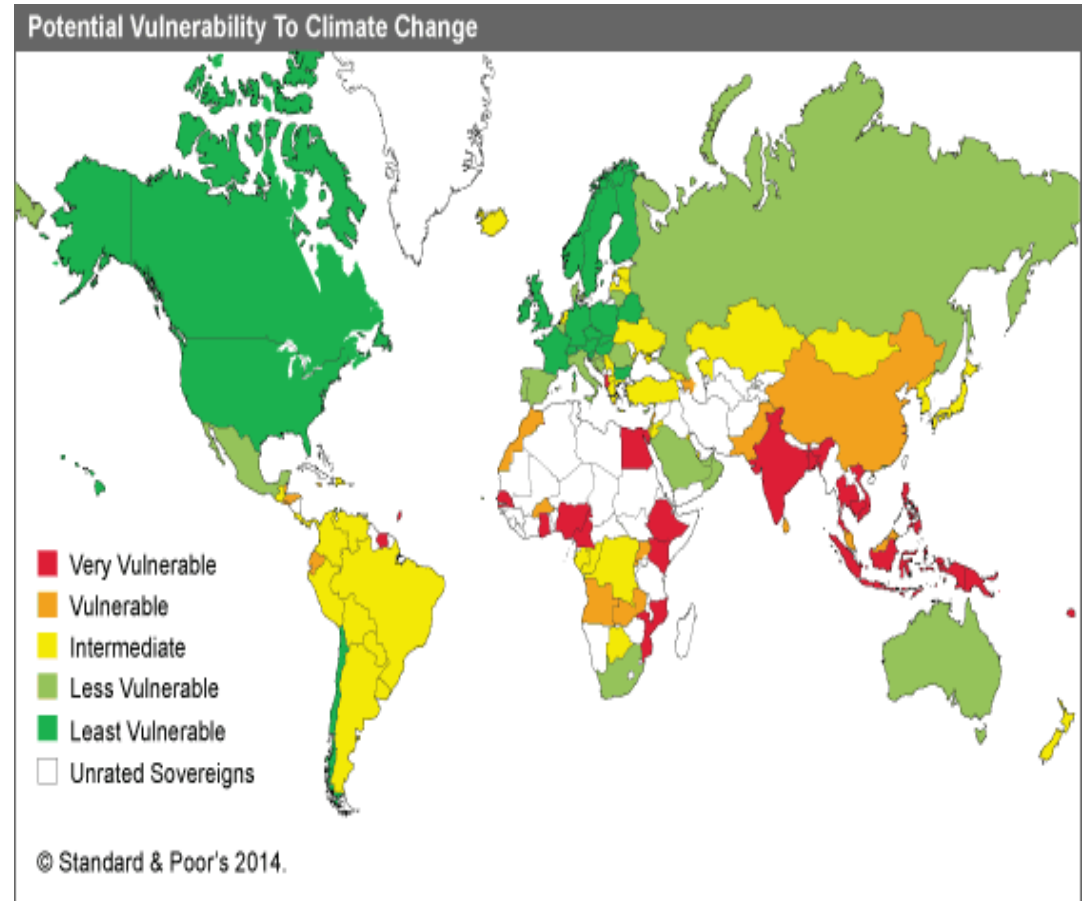


- **Limited effect on rating :**

- Many insurers are already monitoring the risks
- Negative rating changes could be triggered, especially if capital severely weakens

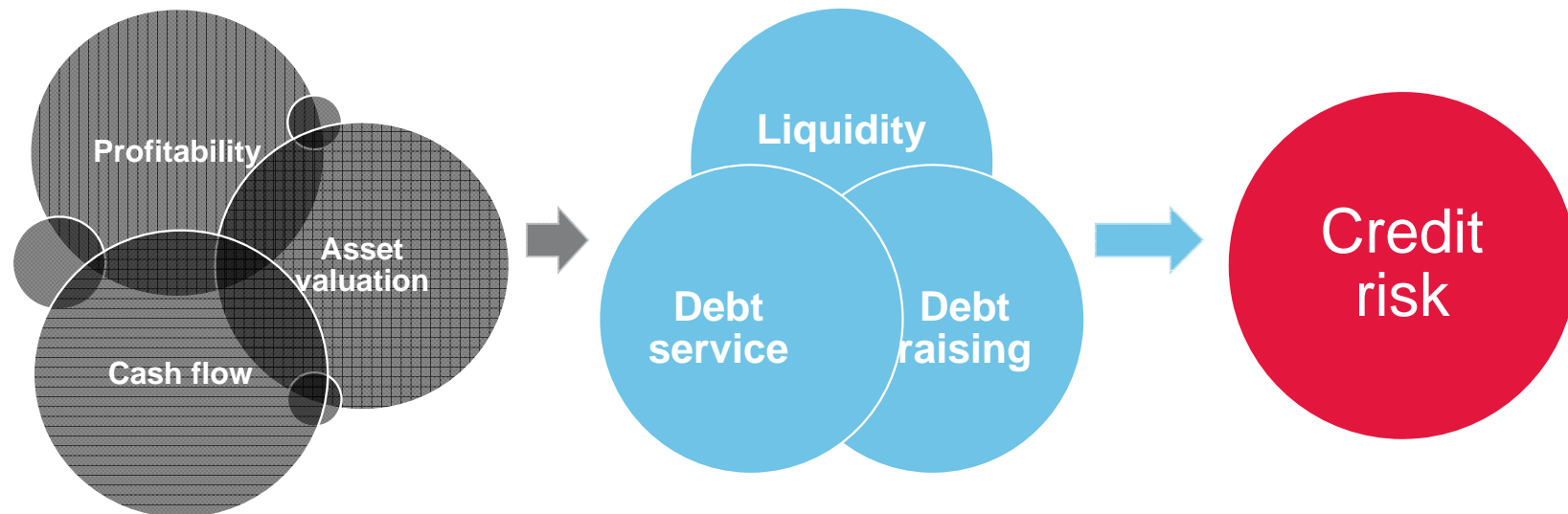
Climate Change: A Global Mega-Trend For Sovereigns

- **Impact on creditworthiness:**
 - Economic performance
 - Fiscal performance
 - External performance
- **Uneven effect on rating:**
 - Poorer and lower rated sovereigns hit hardest
 - Could contribute to rising global rating inequality



Climate Change: Corporates Start To Assess Climate Event Risk

Impact on creditworthiness:

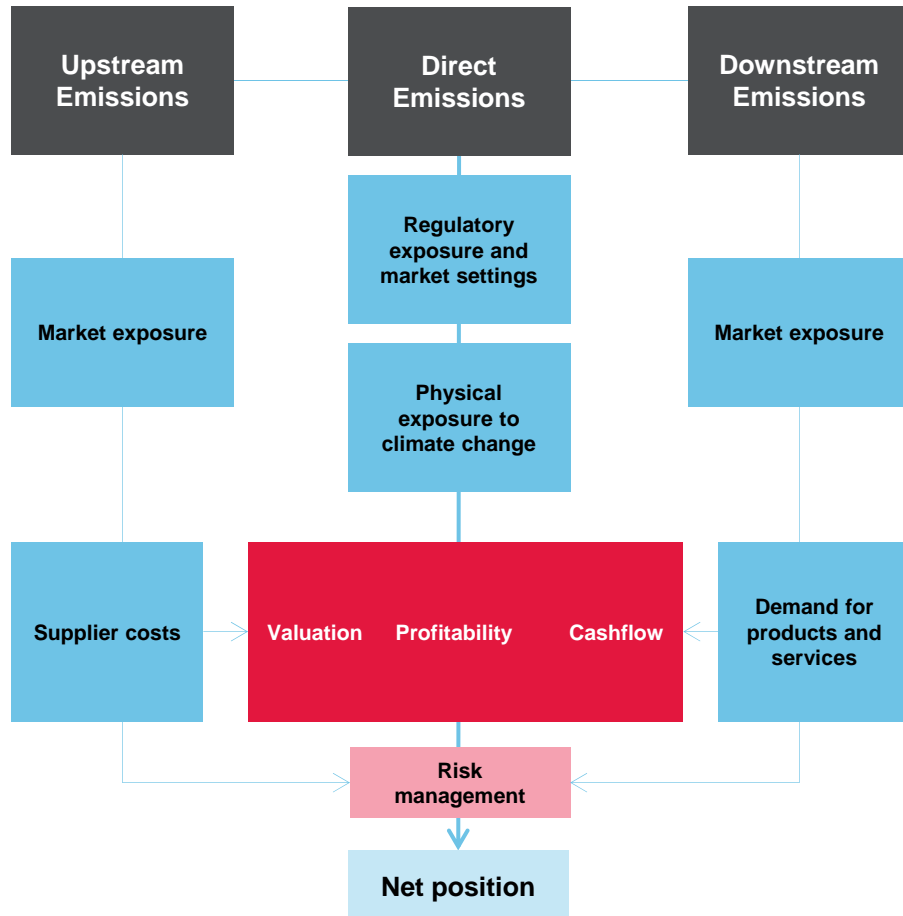


Key factors for risk assessment:

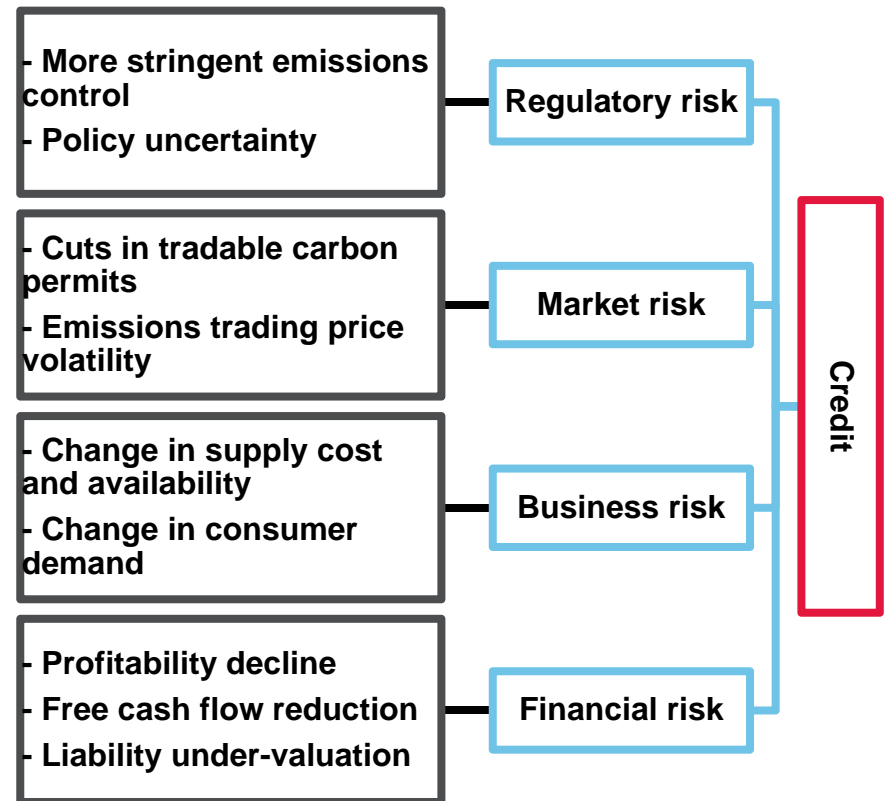
- Corporates: Implement effective risk management
- Investors: Push for disclosure & understand financial impact

Climate Change: Carbon Price Risk Is Beyond Regulated Liability

Carbon Price Risk: Full Picture



Credit Risk Impact Chain



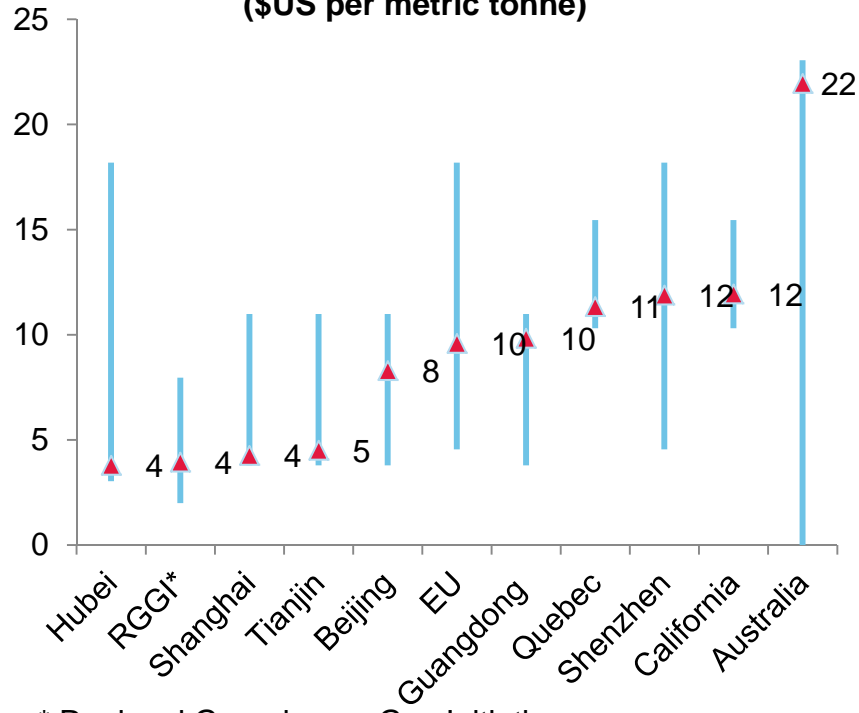
Source: Reputex Carbon Analytics

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The Rise Of Carbon Markets

Carbon Market Prices Across Globe

(\$US per metric tonne)

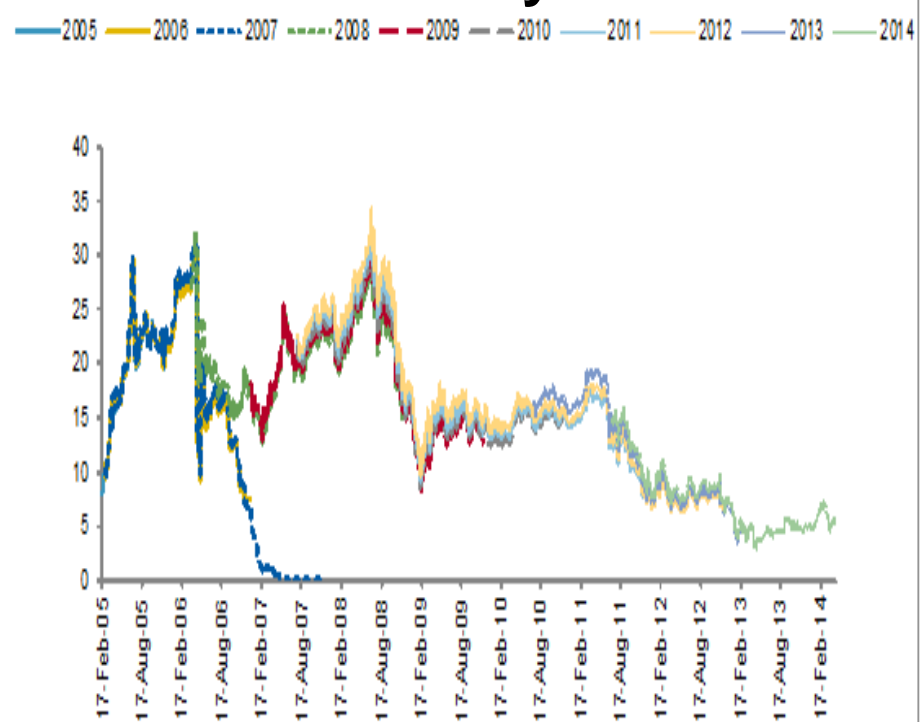


* Regional Greenhouse Gas Initiative

Price range forecasted from 2015 to 2020 based on spot price information and RepuTex Carbon Analytics forecasts. Marker represents trading price as of May 5, 2014.

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European Union Allowance Full Price History



EU CO2 allowances for delivery in December 2005 to 2014, under the EU ETS. Source: Platts

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The Greening Of Bond Markets

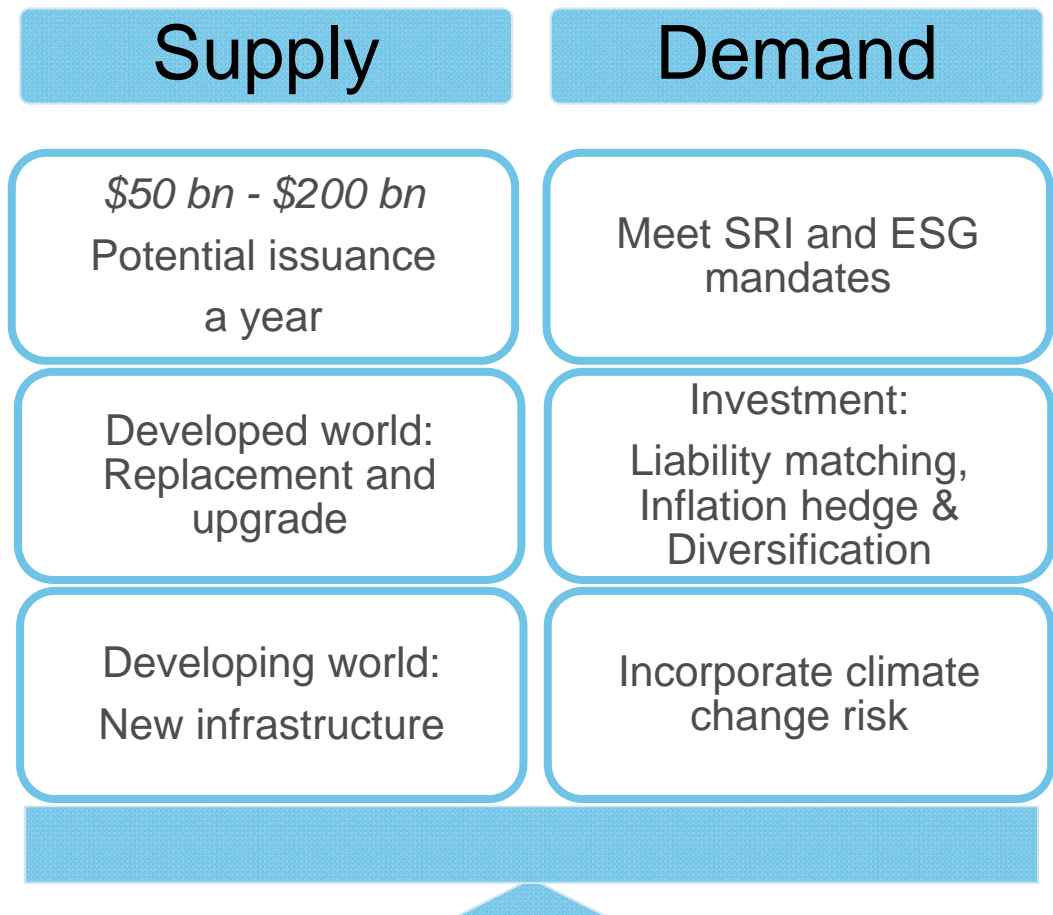
Green bond will emerge as a distinct asset class

Market growth:

- \$11 bn in 2013, 50%+ CAGR
- \$30 bn in 2014

Converging trends:

- Awareness of climate change and impact
- Recognition that a low-carbon pathway requires vast amounts of long-term cost-effective capital
- Development of criteria and standards



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A Closer Look: Corporate Bond Markets

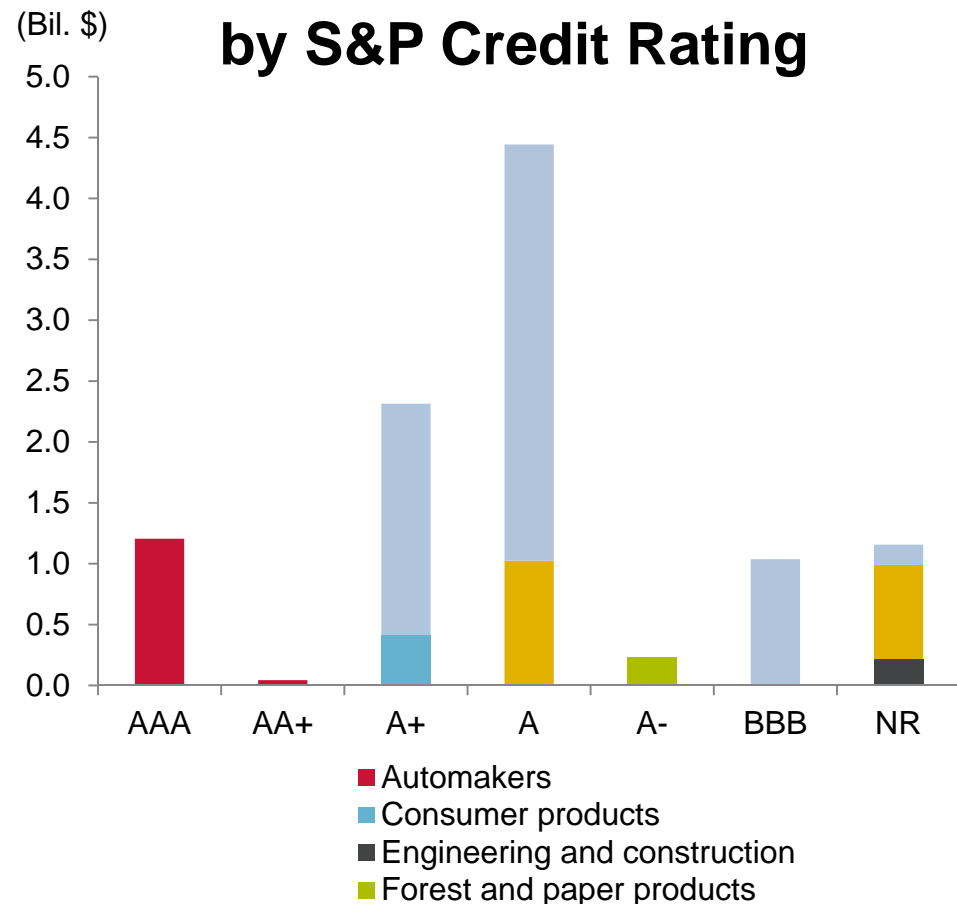
Market make-up:

- Industry: Led by utilities
- \$ 36bn outstanding bonds by mid-2014
- Maturity: 4 - 8 years
- Ratings: Investment grade

Future prospects:

- Investment aggregation/pooling
- Structure to enhance credit support
- Move to green project finance

Distribution of Green Bonds by S&P Credit Rating



NR--Not rated. Source: Bloomberg Professional.

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Green Indices Are The Next Phase

Green indices on demand to:

- Achieve transparency, simplicity and commoditization of asset class
- Attract debt capital committed to green assets, lowering cost of capital

Potential evolution of green indices:

- Mirror that of the green bond market
- Pattern themselves after their general fixed-income counterparts

S&P Dow Jones Indices:

- S&P Green Bond Index (GBI)
- S&P Green Project Bond Index (GPBI)

BOVESPA

- Corporate Sustainability Index (ISE)
- Carbon Efficient Index - ICO2



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In Closing

Climate change results in increasing frequency of extreme weather events, causing large and volatile losses

We expect climate change to have a varying impact on creditworthiness:

- Insurance: Limited effect due to high levels of capital
- Sovereigns: Contributes to ratings divergence
- Corporates: Probably negative, calls for comprehensive analysis

We expect climate change to impact markets:

- Carbon markets expansion across globe
- Green bond markets on the rise which is partly driven by the emerging corporate green bond market, leading to evolution of green indices



Thank You

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