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Environmental Risks
and their increasing relevance to
Credit Ratings

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Agenda

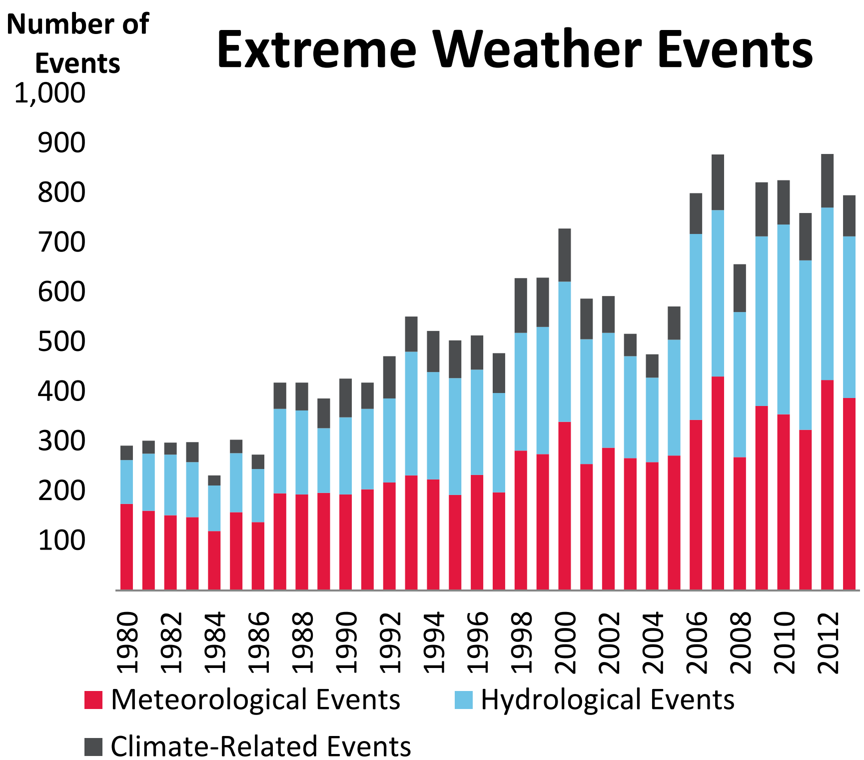
Climate Change Clouds Creditworthiness:

- Insurance
- Sovereign
- Corporate

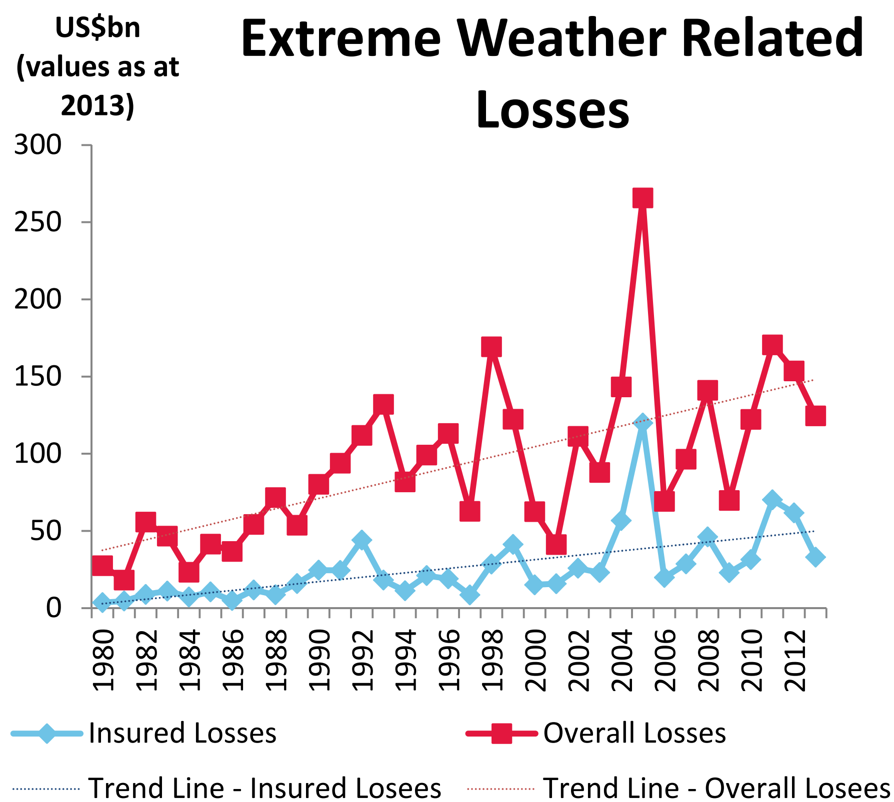
Markets Go Green:

- 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

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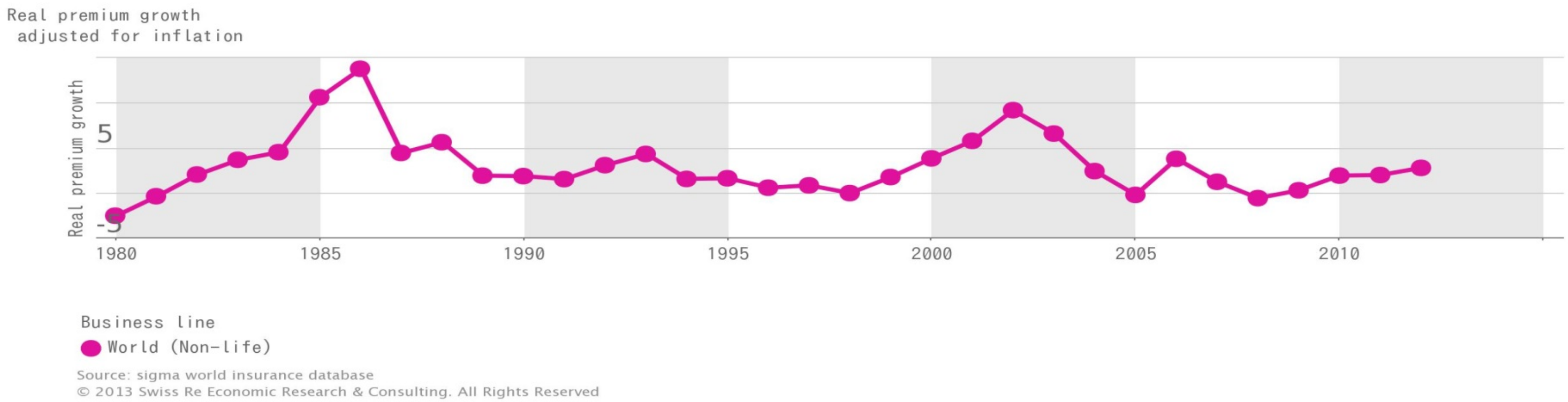
Climate Change:
Are Insurers Well Prepared?

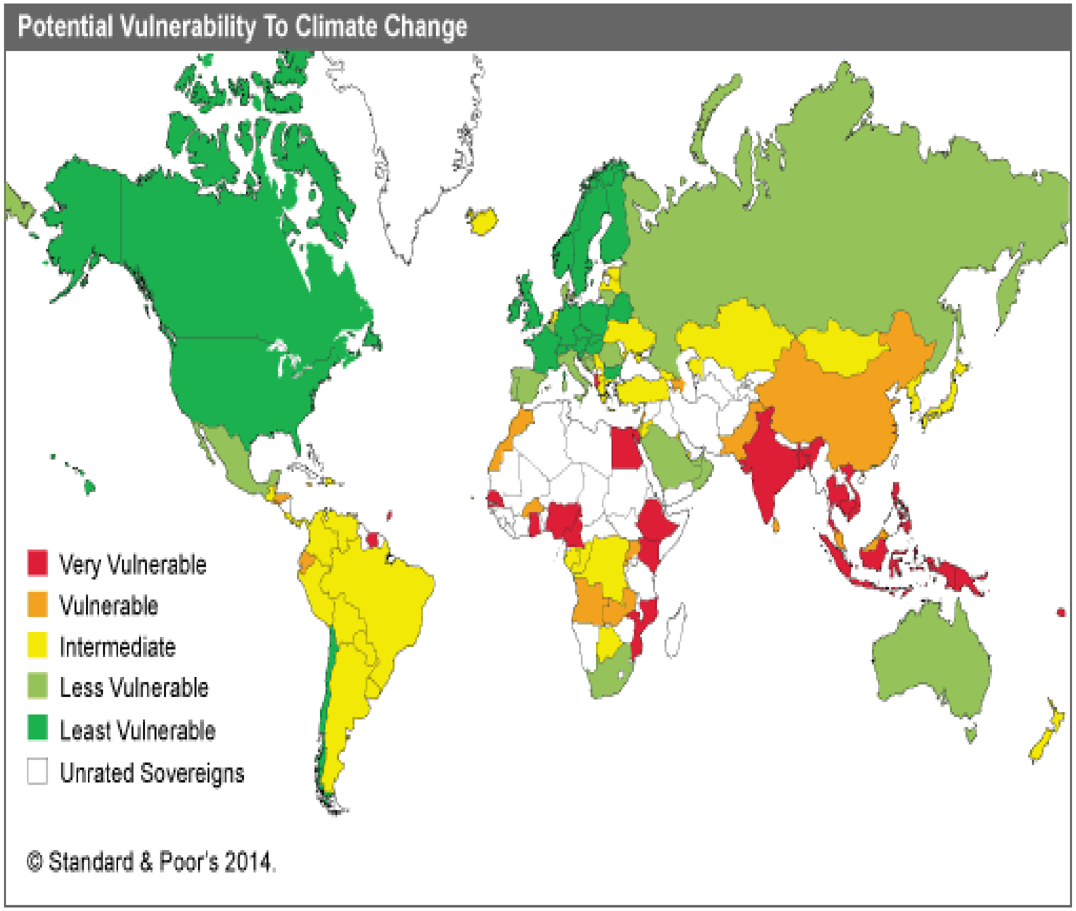
- **Impact on creditworthiness**:
  - Business Profile: Diversification & inherent risk of insurance market
  - Financial Profile: Capital adequacy



- **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



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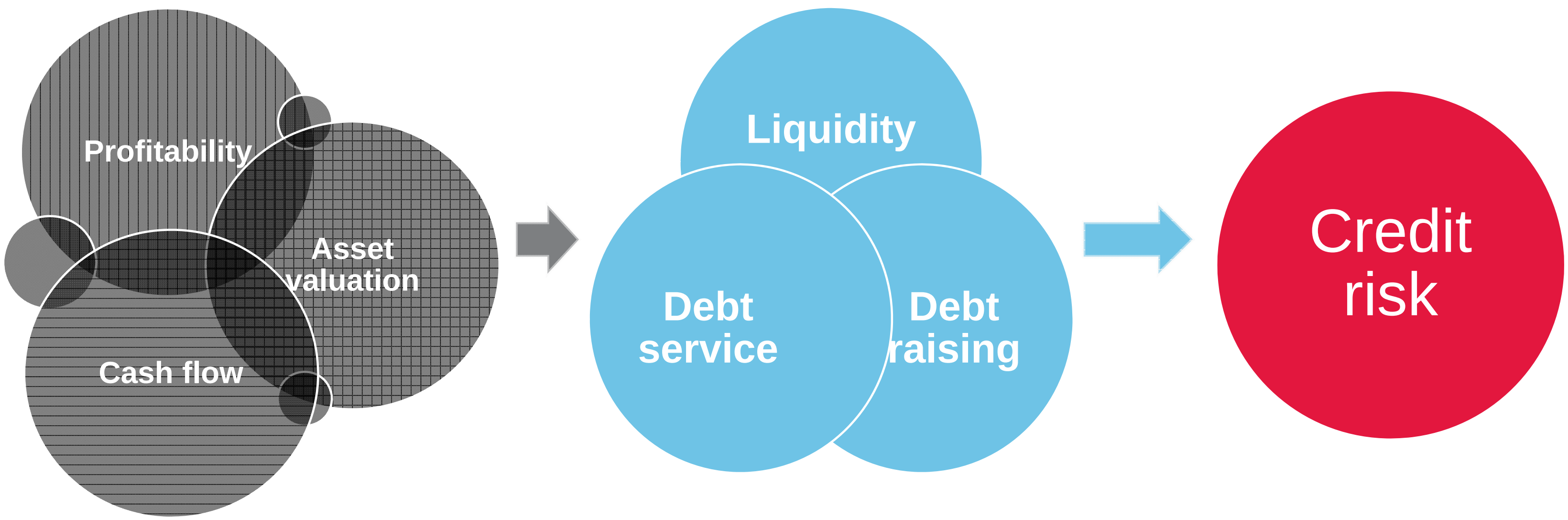
Climate Change:
Corporates Start To Assess Climate Event Risk

Impact on creditworthiness:

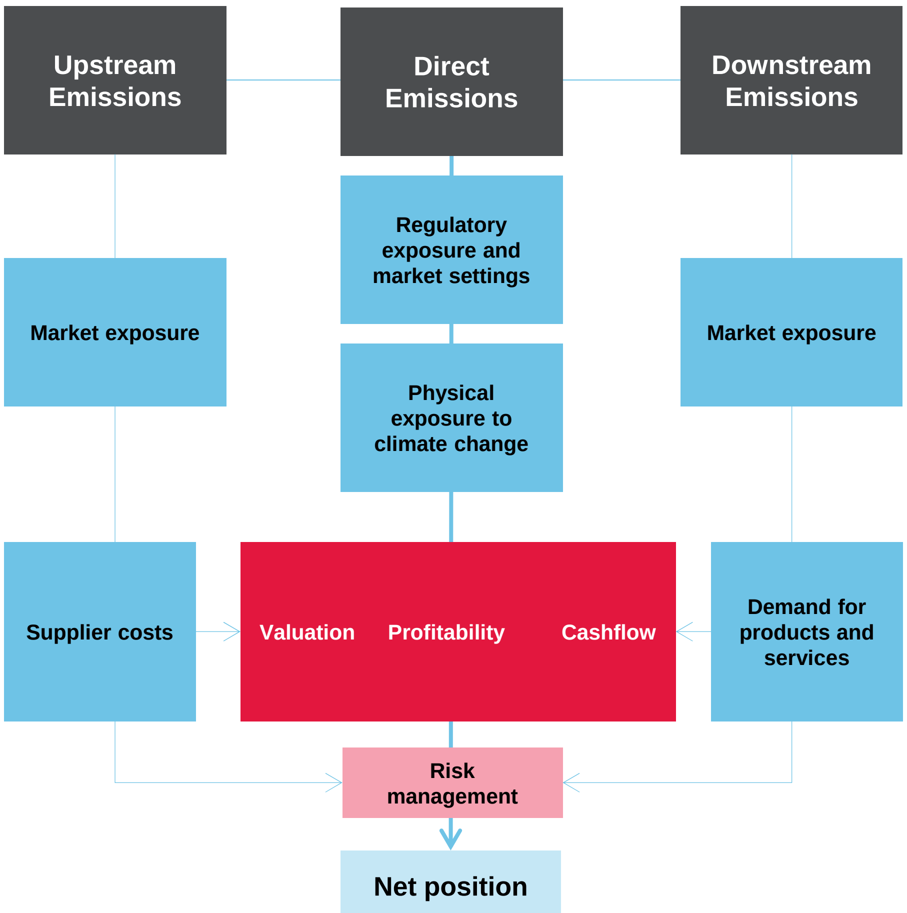


Key factors for risk assessment:

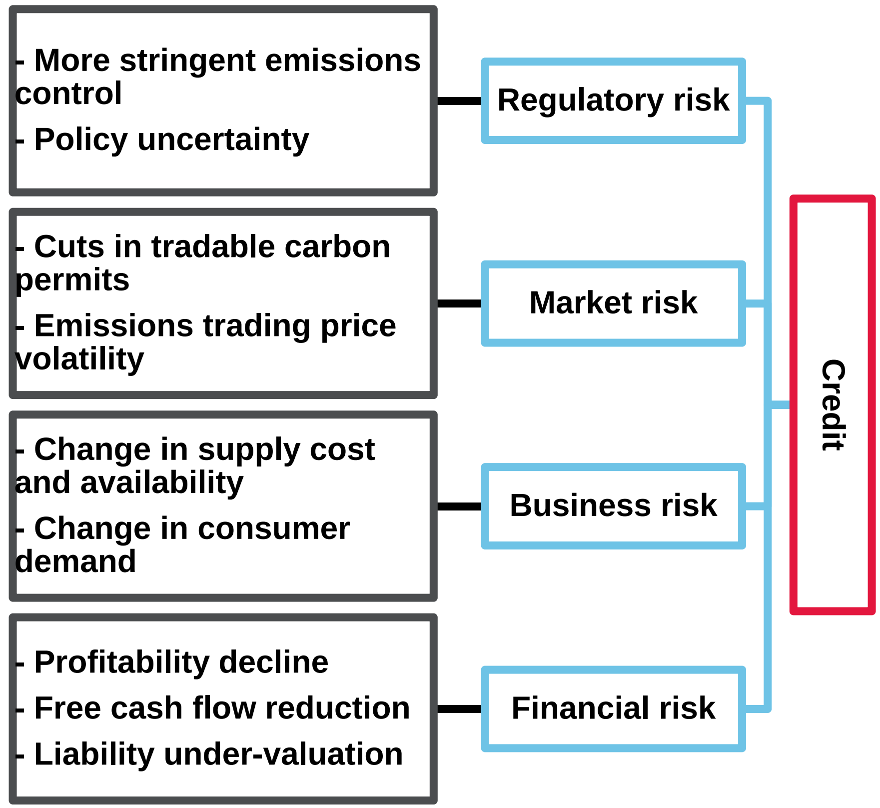
- Corporates: Implement effective risk management
- Investors: Push for disclosure & understand financial impact

Climate Change:
Carbon Price Risk Is Beyond Regulated Liability

Carbon Price Risk: Full Picture



Credit Risk Impact Chain

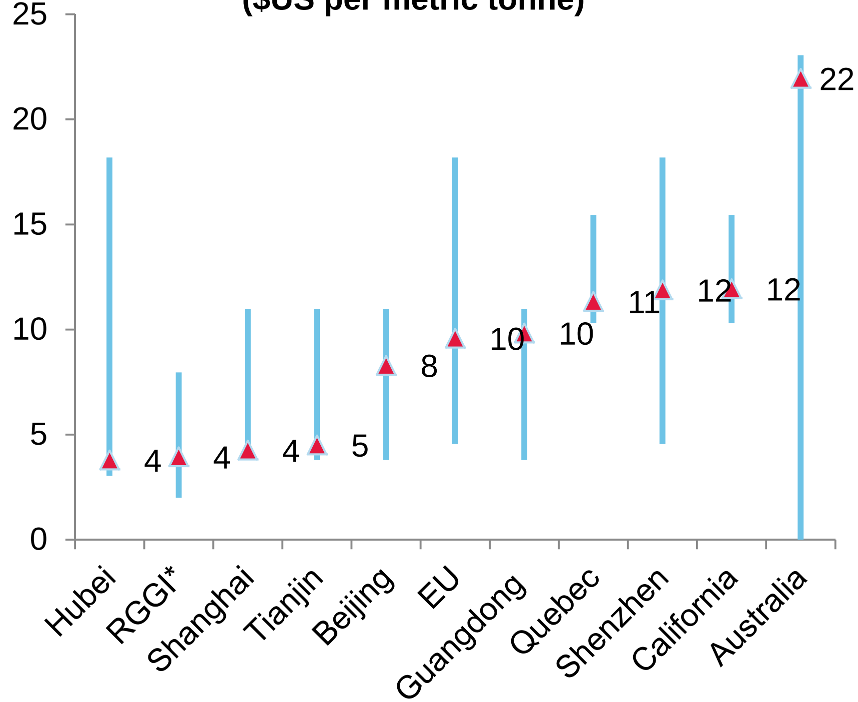


Source: RepuTex Carbon Analytics

The Rise Of Carbon Markets

Carbon Market Prices Across Globe

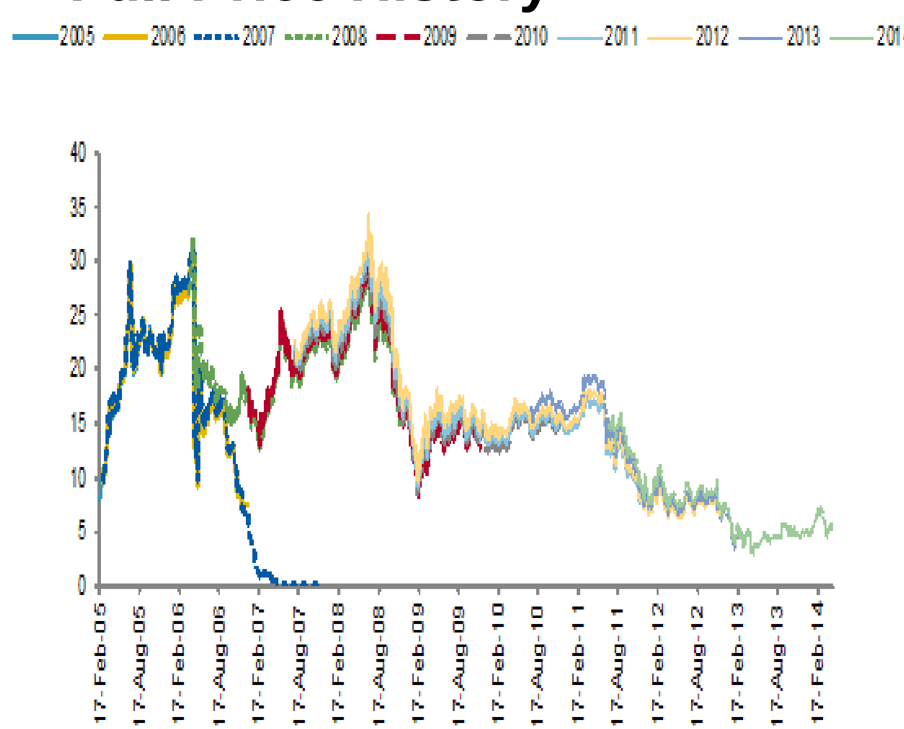
($US per metric tonne)



* 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.

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

Supply	Demand
$50 bn - $200 bn Potential issuance a year	Meet SRI and ESG mandates
Developed world: Replacement and upgrade	Investment: Liability matching, Inflation hedge & Diversification
Developing world: New infrastructure	Incorporate climate change risk

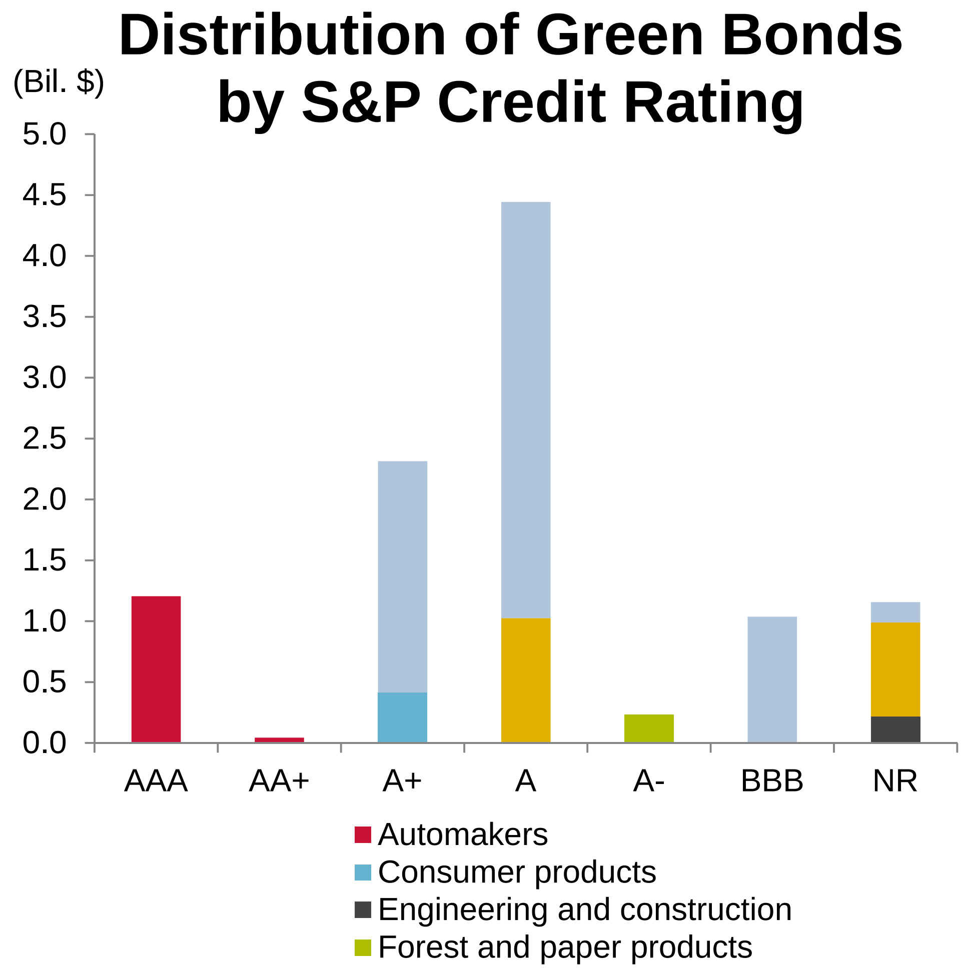
A Closer Look: Corporate Bond Markets

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



NR--Not rated. Source: Bloomberg Professional.

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

- Global labeled, universal green
- Corporate
- U.S. municipal
- Sovereign
- Green project
- Green bank loan
- Green ABS

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

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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