Green Bond Market Update

Mats Olausson
Senior Advisor
SEB Climate & Sustainable Financial Solutions
mats.olausson@seb.se
A decade of Green Bonds

Launches its first Green Bonds
SEK 2,325,000,000
6-year 3.5% Green Bonds
Investing to reduce global warming

Sole Lead Manager
SEB

Key Investors

Senior Co-Manager
CREDIT SUISSE

Co-Manager
LB EW
Green Bond market ecosystem and investor sentiment

Drivers overview

**Economic**
- Climate stress a financial risk
- Action vs. business as usual
- Allocation to resource efficiency

**Regulatory environment**
- Increasing focus on the need of climate financing
- Recognition of financial stability risk
- Market incentives

**Regional benchmarks**
- Challenges and opportunities differ
- Regions are at different stages in the transition

**International initiatives**
- UNPRI
- COP21
- G20 Green Finance Study Group

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Investor engagement continues to grow through UNPRI® signatories

**Number of investors**
- Number of signatories
- Assets under management (USDtn) (right axis)

**Green Bond Funds - examples**
- SSgA
- AXA
- Calvert
- Mirova
- Storebrand / SPP
- SEB
- BlackRock
- Allianz
- Amundi
- Colombia Threadneedle
- Erste AM
- NN

**Green Bond listings**
- Oslo
- Nasdaq Stockholm
- London
- Luxembourg
- Shenzhen
- Paris
- Amsterdam
- Borsa Italia
- Johannesburg
- Mexico City
- Riga
- Lisbon

**Green Bond indices**
- Solactive
- Bloomberg/ MSCI
- S&P/Dow Jones
- BAML
- Shenzhen / Luxembourg
- Various China Green Bond indices

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Source: SEB analysis
Global Green Bonds issuance: 2017 (YTD) and cumulative

Figure 1. Periodic issuance (USD Bn) and % change YoY

- 2016
- 2017
- % change YoY

January: 103%
February: 110%
March: 77%
April: 95%
May: 119%
June: 87%
July: 78%
August: 65%
September: 36%

Figure 2. Total cumulative issuance (USD Bn) and # of issuers

Source: SEB analysis based on Bloomberg/BNEF and SEB data.

Issuance by year and by sector

**Figure 11. Issuance evolution by sector 2010-2017**

**Figure 12. Sector shares, issuance 2010-2017**

Source: SEB analysis based on Bloomberg/BNEF and SEB data. YTD through October 10.

League table for global Green Bond underwriting

Selected Green Bond issues underwritten by SEB

- **SEK 2,100m 3.000% fixed bond April 2019** Joint Lead
- **USD 500m 0.750% fixed bond October 2016** Joint Lead
- **USD 300m 0.875% fixed bond January 2017** Joint Lead
- **USD 250m 1.625% fixed bond April 2018** Joint Lead
- **USD 1 billion 0.625% fixed bond November 2016** Joint Lead
- **SEK 1,300m 1.774% FRN May 2016** Sole Lead
- **SEK 3,250m 3.500% fixed bond November 2014** Sole Lead
- **USD 500m 1.750% fixed bond February 2018** Joint Lead

Top 10 Green Bond Underwriters 1 Jan 2016 – 31 Aug 2017 (USD bn)

Source: Bloomberg

Top 10 Green Bond underwriters 1 Jan 2007 – 31 Aug 2017 (USD bn)

Source: Bloomberg

- BAML
- CA-CIB
- JP Morgan
- HSBC
- SEB
- BNPP
- Barclays
- CHI
- So.Gen.
- CITIC
Green Bond issuance by currency

**Figure 9. Currency split, cumulative issuance 2007-2017**

- USD: 41.1%
- EUR: 30.0%
- CNY: 14.3%
- SEK: 4.5%
- GBP: 2.6%
- CAD: 2.0%
- AUD: 1.9%
- INR: 0.7%
- NOK: 0.4%
- Other: 2.6%

**Figure 10. Currency split of issuance in 2017 YTD**

- USD: 30.6%
- EUR: 42.8%
- CNY: 17.9%
- SEK: 3.4%
- CAD: 2.1%
- AUD: 0.6%
- INR: 0.5%
- NOK: 0.3%
- Other: 1.4%

Source: SEB analysis based on Bloomberg/BNEF and SEB data. YTD through August.
Country league table 2017

Figure 5. Geographic distribution of green bond issuance in 2017 (USD Bn)

Figure 3. Top 10 countries in 2017, Incl. Supranational (USD Bn)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Region</th>
<th>Issuance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>UNITED STATES</td>
<td>25.4</td>
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<tr>
<td>2</td>
<td>CHINA</td>
<td>19.0</td>
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<tr>
<td>3</td>
<td>FRANCE</td>
<td>17.0</td>
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<tr>
<td>4</td>
<td>SNAT</td>
<td>8.0</td>
</tr>
<tr>
<td>5</td>
<td>GERMANY</td>
<td>6.7</td>
</tr>
<tr>
<td>6</td>
<td>MEXICO</td>
<td>4.0</td>
</tr>
<tr>
<td>7</td>
<td>SWEDEN</td>
<td>3.3</td>
</tr>
<tr>
<td>8</td>
<td>NETHERLANDS</td>
<td>3.3</td>
</tr>
<tr>
<td>9</td>
<td>SPAIN</td>
<td>3.1</td>
</tr>
<tr>
<td>10</td>
<td>INDIA</td>
<td>2.8</td>
</tr>
</tbody>
</table>

Source: SEB analysis based on Bloomberg/BNEF and SEB data. YTD through October 10.
## Market drivers

### Drivers of green infrastructure investments and green bond financing

<table>
<thead>
<tr>
<th>Drivers</th>
<th>Details</th>
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</table>
| **Investors** |  - ESG integration and sustainable investments demand  
- Risk-adjusted return (alpha, beta, or hedging strategies) |
| **Economic Forces** |  - Local air and water pollution across Emerging and Developing Economies as well as OECD  
- Avoided health care costs, labour market and productivity benefits, fuel savings, trade benefits |
| **Technology Forces** |  - Cost-down curves in renewables, batteries, IT, fintech  
- Scaling up of electric vehicles and enabling infrastructure (smart grid, HDVC, charging, storage, etc.) |
| **Security** |  - Energy security (investing in renewables to lessen import needs or to protect military supply chains)  
- National security (climate stress as a threat multiplier) |
| **Bankable Pipelines** |  - Green infrastructure investment demand to meet challenges of the 21st century  
(population growth, growth of middle class, rural to urban, resource efficiency and circular economy)  
- Green investment policy frameworks (price on CO₂, removal of Fossil Fuel subsidies, support for green projects, green infrastructure banks) |
| **Policy Alignment** |  - Green infrastructure policies driven by national interest – bottom up (NDCs, 114 countries have renewable energy policies, 66 for transport)  
- Top down environmental agreements COP21, SDGs, ICAO, Montreal Protocol  
- Attention to climate risk and green finance from Financial Stability Board, Central Banks, G20, Finance Ministries, Departments of Defense  
- EU High Level Expert Group report on Sustainable Finance |
| **Social Forces** |  - Sustainability preferences of millennials  
- Divestment movement  
- Civil society initiatives and pressure |
| **Green Bond Specific** |  - Market-led or government initiatives (ICMA, CBI, G20, EC + China, India, Japan, Indonesia, Singapore, etc.)  
- Financial sector innovation (investors, banks, ratings agencies, issuers, data providers, market ecosystem) |

Source: SEB analysis
Global Green Bond Market Evolution & Scenarios for Q4 2017 (USD Bn)

Source: SEB analysis based on Bloomberg and SEB data

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Mats Olausson
Senior Advisor
Climate & Sustainable Financial Solutions
+46 8 50 62 32 62, mats.olausson@seb.se

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