CLIMATE CHANGE: EMERGING STANDARDS AND BEST PRACTICES

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Agenda

UNFCCC Updates
- Paris Agreement
- Focus on sustainable energy

Financing to support 1.5 °C goal
- Financial industry interest
- Green / climate bonds

Standards development for climate change
- Next steps for climate change standards
- About ISO standards
OVERVIEW OF PARIS AGREEMENT
Why a Global Agreement is Important

Global Temperature 1916

Global Temperature 2016

Global Temperature Change (1850 – 2017)

Summary of the Paris Agreement

- First universal climate deal and crucial instrument to mitigate negative impacts of climate change
- Keep global temperature rise <2°C and drive efforts to limit even further to 1.5°C above pre-industrial levels
- Peak countrywide emissions ASAP
- Submit updated Nationally Determined Contributions by 2020 and then every five years
- Engage in UNFCCC process to enhance mitigation and adaptation efforts
- Mobilize $100 billion in climate finance annually by 2020
- Implement transparent accounting system to clarify implementation efforts
- Not the end point, but a tipping point for climate movement
- Without continuous and ambitious measures from big emitter countries, combat against climate change can not succeed
Paris Agreement – Long-term Goal

Paris Agreement governments committed to net-zero GHGs well before end of the century. Five commitments comprise the goal:

- Hold increase in global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit temperature increase to 1.5°C above pre-industrial levels
- Reach global peak of emissions ASAP and undertake rapid reductions thereafter in accordance with best available science
- Achieve balance between anthropogenic emissions by sources and removals by sinks of GHGs
- Deliver this in second half of this century
- Deliver this on basis of equity
Key Provisions of the Paris Agreement

Long Term Climate Agreement

- Self-defined national climate action plans should outline mitigation pledges and should increase over time.
- All nations from 2020 will present Intended Nationally Determined Contributions every five years.

Loss and Damage

Article No. 9

- Cases of “Loss and Damage” will be addressed through various means, including “risk insurance facilities, climate risk pooling and other insurance solutions.”
Key Provisions of the Paris Agreement

Climate Finance
Article No. 9.3.9.2
- Developed countries lead finance, and finance supply, should grow over time
- Developing countries can voluntarily provide climate finance
- $100B annual minimum for finance going forward, beyond 2020

Transparency Issues
Article Nos. 12.1, 13.7
- “Enhanced transparency framework” for mitigation and financial support
- Almost all countries “regularly” measure emissions and report progress against Intended Nationally Determined Contributions
- Reporting at least every two years
Benefits of Paris Agreement

Level Playing Field, all Countries Actively Engaged

The commitment to climate action is universal, involving all major economies and a total of 196 Parties

- For the first time U.S. and China both committed to emissions reductions
- Global business now knows all geographies spanning entire value chain will be committed to regulatory environment supportive of low carbon development
- Some of the most long-standing political arguments against climate action undermined; the idea that the U.S. would only act if China acted has been broken, along with idea that only industrialized countries should reduce emissions
Limitations

- No mention of specific measures for Parties to decarbonize economies
- Countries pledge to “reach global peaking of GHG emissions as soon as possible,” but the text doesn’t specify a date
- No legal actions can be taken on potential adaptation costs as well as loss and damage liabilities
Update of Paris Agreement

- Paris Agreement Went into Force – November, 2016 at COP 22 (Marrakech)
- Partial Funding of the Green Climate Fund (GCF)
  - Goal is $100 billion by 2020 ($10.3 billion pledged so far)
- Creation of an Adaptation Fund
  - Goal is to equal the GCF in size and overall scope
- Support by the International Civil Aviation Org. (ICAO)
- Many Challenges Identified to Progress
- U.S. Administration is seriously considering pulling out of the Paris Agreement
- Many U.S. companies and asset managers support the Agreement
Outcomes of COP21

For Mitigation

- Based on Nationally Determined Contributions (bottom-up)
- Legal commitment to submit Nationally Determined Contributions every five years
- Public registry of Nationally Determined Contributions
- Principle of progressive increase in levels of ambition (top-down)

For Adaptation

- Global challenge of adaptation linked to mitigation ambition levels
- Recognition of adaptation as a global contribution
- “Should” strengthen adaptation cooperation
- National Adaptation Plans and communicate these internationally (bottom-up)
- Public registry for adaptation contributions
- Report internationally (top-down)

For Finance

- Developed countries “shall” provide finance for mitigation and adaptation (top-down)
- Biennial communication of finance contributions

FINANCING TO SUPPORT 1.5°C GOAL
Financial Industry Participation in COP21

- Surge of participation in climate change discussions by the financial industry compared to previous years
- Focus on funding for ‘green’ (or climate-friendly) projects
- Recognize we will never be able to achieve 2°C goal without significant investments in renewable energy
- Financing mechanisms such as certified Green Bonds (i.e., Climate Bonds) and grant funding (i.e., Green Climate Fund, Adaptation Fund, etc.) more in demand
International Climate Finance

- Global Climate Fund works with “Accredited Entities” (development banks and approved financing authorities)
- Approximately $10.2 billion raised to date
- Eight projects funded for $168 million
- Projects cover water access, disaster risk management, land-use management, energy efficiency, and small-scale renewables
- Resources shared equally between mitigation and adaptation
Green/Climate Bonds

- Emergence of the Green Bond Principles and Climate Bonds Standard
- Private sector beginning to realize opportunities in this area
  - Investors demand is growing rapidly potentially driving down the cost of project capital.
- Implementing mechanisms to expand on funds
  - BlackRock and others launch green bond index funds
- Green bond market growing quickly
- For first time, investors have project eligibility, technical specifications and 3rd-party verification defining certified Climate Bonds
Green/Climate Bond Market

- Significant potential
- $600+ billion climate-related bonds issued in past decade*
- Green sectors typically include:
  - water efficiency
  - alternative energy
  - real estate
  - energy efficiency
- Issuers include:
  - development banks
  - corporations
  - municipalities
  - utilities
- New buyers
  - Responsible and impact investors
  - Pensions funds
  - Insurance companies
Green/Climate Bond Market

**Drawbacks**
- Additional transaction costs
- Potential risks (e.g., greenwashing)
- Market uncertainties, including evolving standards and expectations
- Lack of preparedness to emerging standards (i.e., Climate Bonds Standard)

**Benefits**
- Access to new investors
- Enhanced green reputation for issuer and buyers
- Resilience/adaptation acceptable categories
- Increased demand resulting in pricing premium
Green/Climate Bond – DC Water

July, 2015, AA+, $350 million*

- DC Water Authority issued first 100-year term green bond to expand and upgrade its water infrastructure
- Environmental benefits included improving water quality, climate resilience, and overall environmental quality of life (biodiversity, recreational river use, etc.)
- Financial benefits included locking in historically low interest rates for a century while attracting a new group of buyers
- Mark Kim, DC Water CFO, stated he believed by issuing a green bond, cost of capital was lowered by “two to five basis points (bps)”

February, 2017, Additional $100 million

- Additional green bond issued to help finance a 25-year project to reduce sewerage overflows into D.C. waterways and flooding.

*Has undergone Climate Bond Pre and Post-issuance Certification process

NJ Water & Environment Association
May 2017
## Green/Climate Bonds

### Highlights of U.S. Muni Green Bonds Last 60 Days

<table>
<thead>
<tr>
<th>Agency</th>
<th>Date Issued / Anticipated</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BART San Francisco</td>
<td>May 2017</td>
<td>$388M</td>
</tr>
<tr>
<td>Renovate America/Hero Funding</td>
<td>April 2017</td>
<td>$232M</td>
</tr>
<tr>
<td>Commonwealth of Massachusetts</td>
<td>April 2017</td>
<td>$100M</td>
</tr>
<tr>
<td>Massachusetts Clean Water Trust</td>
<td>April 2017</td>
<td>$207M</td>
</tr>
<tr>
<td>Rhode Island Infrastructure Bank</td>
<td>April 2017</td>
<td>$28M</td>
</tr>
<tr>
<td>City of St. Paul</td>
<td>April 2017</td>
<td>$8M</td>
</tr>
<tr>
<td>California Infrastructure and Economic Development Bank</td>
<td>March 2017</td>
<td>$450M</td>
</tr>
<tr>
<td>New York State Housing Finance</td>
<td>March 2017</td>
<td>$56M</td>
</tr>
<tr>
<td>New York MTA</td>
<td>March 2017</td>
<td>$325M</td>
</tr>
</tbody>
</table>
Green Bond Fact Sheet

Green bonds are one of the fastest growing classes of fixed-income investments. They offer the same features as regular bonds, but proceeds must be used to achieve a recognized environmental benefit (i.e., reduction of greenhouse gas emissions). First Environment is quickly becoming a leader in verifying green bond offerings to emerging guidelines and standards, and is working with the Climate Bonds Initiative and World Business Council for Sustainable Development to further standards development.

The International Capital Market Association’s Green Bond Principles are the most widely accepted financial industry guidelines for developing green bonds. In addition, bundlers meet these requirements and help communities advance toward a low-carbon economy so eligible for credit under the Climate Bonds Initiative certification program. As the first U.S.-based approved verifier for Climate Bond Standards 2.0, we are qualified to assess the “readiness” of green bond offerings to meet all requirement.

Green Bond Verification

We are currently working with the Climate Bonds Initiative and the World Business Council for Sustainable Development to further standards development and thought leadership for green bonds. As the first U.S.-based approved verifier for the Climate Bond Standards 2.0, First Environment is qualified to assess the “readiness” of a green bond offering to meet the requirements of the newly released standard. Once a green bond has been issued, First Environment verifies the annual report, resulting in certification to the Climate Bonds Initiative ensuring the bond meets all necessary requirements and increased investor confidence.

Areas of Expertise

- Environmental impact assessment
- Green bond risk assessment and management
- Greenhouse gas emission quantification
- Greenhouse gas report verification
- Green bond principles in practice
- Climate change adaptation and resilience
- Climate Bond Standards compliance
- Life cycle analysis assessment
- Litigation support
- Sustainable cities and green infrastructure
- International environmental program review

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See back for Green Bond FAQs!

G R E E N B O N D S

Your Questions Answered

What is a Green Bond?

Green bonds are one of the fastest growing classes of fixed-income investments. They offer the same features as regular bonds, but proceeds must be used to achieve a recognized environmental benefit (i.e., reduction of greenhouse gas emissions). The Green Bond Principles (GBPs) are the most widely accepted guidelines for developing green bonds. Under these principles, green projects are defined as those that promote progress on environmental goals. Projects must be verified to ensure they meet the requirements.

What are some examples of Green Bonds?

With the emergence of the recognition of Green Bond Principles and Climate Bonds Standard in 2015, the public and private sectors are beginning to make the transition to green bonds. In 2015, the green bond market exceeded $4 billion in 2015. The following are excellent examples of recent high-profile green bonds that have stepped up the U.S. market:

- DC Water (May 2015, A+ 350 million)
- NY Metropolitan Transportation Authority (Feb. 2016, A+ 550 million)
- Apple (Feb. 2016, A+ 5.5 billion)

What are the benefits of going green?

Green bonds offer many unique advantages both financial and non-financial. Benefits must be considered. They include the following:

- Economic Update
- Increased transparency
- Improved brand reputation
- Increased investment

Reputation Benefits

In general, quality labeled Green Bonds have received favorable press coverage—especially if the bond is from a green industry or organization. For bond underwriters and banks, green bonds offer an opportunity to grow their renewable or high-value service stream. For example, certified green bonds have been third-party verified after a simple way to buy a simple asset class with a transparent transaction.

Environmental Attributes

There is potential for increased value to the environmental attributes associated with green bonds. For example, value related to renewable resources (i.e., energy, water, forestry, etc.) is enhanced as an environmental attribute. Similarly, green bonds could fund carbon reductions, resulting in additional financial yields to issuers and/or investors from the sale of carbon credits.

First Mover Advantage

As the latest (Green) Bond market grows, the opportunity exists for “first movers” to capitalize on market share and customer demand. Opportunities that start early can have more time than competitors to accumulate and master business, knowledge in issuing, implementing, and verifying green bonds.

Are there any unique risks to consider?

As with all investments, investors must take advantage of the good practices. This includes assessing the financial, credit, environmental, and market risks and opportunities. The investor must confirm that the information is reliable and accurate to ensure investment in the issuer.

Greenwashing

Dilute the investment or misrepresent the environmental or financial benefits. Be certain the issuer and/or investor can provide sufficient information and be transparent. As investors, you must determine what new financial activities are responsible.

Green Fraud

Although related to greenwashing, green fraud is an even greater concern. Investors are often“greenwashed” when their investments do not suit the investor’s interests. This is not uncommon. In any industry, there is a risk of fraud.

Non- Disclosure Risks

It can be argued that the GBPs have become accepted standard of care for issuing a listed green bond. Issuing documents should be thoroughly checked by the issuer. Non-disclosure risks are common and should be considered.

Reimbursement Risks

Although “independence and completeness concerns can lead to regulatory risks, it is not exclusion of providing support. Green bonds (i.e., greenwashing) that have not met best regulatory actions (i.e., highest green bonds) can be difficult to discern. This includes misrepresentation, either directly or indirectly by omission, that an environmental benefit will be delivered.

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STANDARDS DEVELOPMENT FOR CLIMATE CHANGE
Standards Development for Climate Change

- Consensus reached between UNFCCC & International Organization of Standardization (ISO) that internationally accepted standards will be promoted to organizations and governments around the world
- Include processes for inventories, 3rd party verification, competency, etc. to ensure accurate GHG emission reductions
- Establish best management practices for climate adaptation planning
- Create common guide for jurisdictions worldwide to aid in developing requirements to meet country, municipal and private commitments
International Organization of Standardization (ISO)

About ISO

- Largest developer of voluntary international standards
- Made up of 162 member countries from all regions
- All sectors – agriculture, construction, engineering, manufacturing, transport, healthcare, environment, energy, safety, technology, etc.

Importance of Standards:

- Facilitate trade
- Disseminate advancements in technology
- Inform regulations
## Existing Climate Change Standards

<table>
<thead>
<tr>
<th>ISO Standard</th>
<th>Technical Area</th>
</tr>
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<tbody>
<tr>
<td>ISO 14063</td>
<td>Life cycle interpretation</td>
</tr>
<tr>
<td>ISO 14064</td>
<td>Greenhouse gas emission measurement, verification, and reporting</td>
</tr>
<tr>
<td>ISO 14065</td>
<td>Greenhouse gas verification accreditation</td>
</tr>
<tr>
<td>ISO 14066</td>
<td>Competency requirements for verifiers</td>
</tr>
<tr>
<td>ISO 14067</td>
<td>Carbon footprinting</td>
</tr>
</tbody>
</table>
## Emerging Climate Change Standards

<table>
<thead>
<tr>
<th>ISO Proposal</th>
<th>Technical Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiative Forcing Management</td>
<td>Guidance for the quantification and reporting of radiative forcing-based climate footprints and mitigation efforts</td>
</tr>
<tr>
<td>Green Bonds</td>
<td>Environmental performance of nominated projects and assets</td>
</tr>
<tr>
<td>Financial Disclosure</td>
<td>Framework and principles for assessing and reporting investments and financing activities related to climate change</td>
</tr>
</tbody>
</table>
Standards Development for Climate Change

Why?

- Municipalities need flexible and cost-effective ways to providing evidence of positive environmental impact
- Responsible Investors want to know what they are getting in terms of environmental impact
- Internationally accepted standards provide framework for achieving and verifying reductions, allowing flexibility for municipalities to implement projects in ways that make sense for their budgets and with their stakeholders
Standards Development for Climate Change

How?

- It will take time and a strategic, methodical approach to develop (or, in some cases, update) standards that are integrated, consistent, and functional.

- Next steps include designation of ISO to develop standards, working with United Nations Framework Convention on Climate Change toward common goals.

- ISO’s Climate Change Coordinating Committee (CCCC) already engaging stakeholders, conducting gap assessments, and communicating recommendations to ISO’s Technical Management Board (TMB).
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