S&P Global Ratings Green Evaluation:

Time to Turn Over a New Leaf?
Green finance is a major opportunity. By ensuring that capital flows finance long-term projects in countries where growth is most carbon intensive, financial stability can be promoted. By allocating capital to green technologies, the prospects for an environmentally sustainable recovery in global growth will increase.

Mark Carney  
Governor of the Bank of England  
and Chairman of the G20's Financial Stability Board
Going Green—why now?

Green issuance and investment is on a firm upward trajectory, propelled by the 2015 Paris Climate Agreement, and the impetus it created to finance $1 trillion a year in investments for renewable energy and other initiatives to limit global warming.

At the same time, long-term investors are also recognizing the threat from greenhouse gases and have begun to diversify portfolios away from carbon-based investment. The final push is coming from corporations as they start to contend with the consequences of increasingly extreme and violent weather and flooding. Many are starting to see that managing environmental exposure may be more than risk management; it may be good for business.

So how green or resilient are your financing initiatives?

Benefits for Issuers

- Diversify your investor base
- Potential to enjoy long term pricing advantages
- Send a strong, pro-active message to customers and stakeholders
- Appeal to millennials as employees and customers
- Internally benchmark your green performance Y-O-Y

Benefits for Investors

- Meet your clients’ needs / requests and satisfy your green mandates
- Reduce time to evaluate a complex and growing investment type
- Balance risk-adjusted financial returns with sustainability benefits
Why S&P Global Ratings?

An S&P Global Ratings Green Evaluation is an analysis of a security or asset which aims to provide market participants with a comprehensive picture of the environmental impact and climate risk attributes of the security/asset and can offer a second party opinion on a security or asset’s alignment with the Green Bond Principles (GBP).

What else sets S&P Global Ratings apart?

- We provide **Second Party Opinion** as defined by the Climate Bond Initiative.

- We are **not limited to issuer self-labeled green bonds**. We can also evaluate unlabeled bonds, equity transactions, bank loans, private placements, project finance debt, hybrids, portfolios, asset-backed securities, and other financial transaction types.

- Our Green Evaluation can be applied at **pre- and post-issuance stage** and on a **confidential or public basis**.

- Our environmental performance data and analysis is provided by **Trucost** who have been helping investors calibrate their buy-side reporting for ESG since 2000.

- We have been a **long-standing source of benchmarks** and other insights to assist institutional investors with their decision-making, which makes us a leading choice for issuers and intermediaries.

- We go beyond other External Reviewers to provide a **relative green impact score** which considers variables such as sector, technology, location of the assets, and funding allocation.

- We also consider a variety of **environmental key performance indicators (eKPIs)**, such as carbon, water, and waste.

- **Limited administrative burden** on issuer - our analytical process is purposefully “light touch” (majority of information we can obtain from website and prospectus)

- GE and credit rating can be done at same time and often by same team

- Quicker procurement process if company is already rated by us

- No surveillance required – we provide a point-in-time score

- Our final score is provided on a scale of 0-100 and then mapped to a scale of E1-E4 or R1-R4 based on quartiles. This level of granularity makes it easy for investors to **compare and benchmark** individual investments within their portfolio.

- Through our extensive outreach and well-established relationships with market participants we are in a unique position to provide **research and insights** in this rapidly evolving marketplace.
Our Green Evaluation Approach

Weighted aggregate of three:

- Transparency
  - Use of proceeds reporting
  - Reporting comprehensiveness

- Governance
  - Management of proceeds
  - Impact Assessment Structure

- Mitigation
  - Buildings, industrial efficiencies, energy infrastructure, transport, and water

- Adaptation
  - Resilience capex such as flood defenses, asset protection etc.

Net Benefit Ranking
- eKPI’s: Carbon, Waste, Water Use

Cost Benefit Ranking
- Resilience benefit ratio: Estimate of reduction in damages if event occurs

Hierarchy Applied

Environmental Impact

Resilience Level

Mitigation Score

Adaptation Score

Final Green Evaluation (E1- E4 or R1- R4)

eKPI – Environmental Key Performance Indicator

Common approach used amongst second opinion providers

Unique to S&P Global Ratings
### Carbon Hierarchy

The Mitigation or Adaptation categories account for 60% of the final score. In recognition of the varying levels of contribution to avoiding climate change by different technologies, we consider each technology's overall contribution to decarbonization that would otherwise not be fully captured by our regional net benefit calculation alone. This gives us the overall score.

<table>
<thead>
<tr>
<th>Role in Green Transition</th>
<th>Carbon Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Systematic decarbonization of economies</strong></td>
<td>- Green energy</td>
</tr>
<tr>
<td></td>
<td>- Cogeneration (Biomass based)</td>
</tr>
<tr>
<td><strong>Significant decarbonization of key sectors through low-carbon solutions</strong></td>
<td>- Green transport without fossil fuel combustion</td>
</tr>
<tr>
<td></td>
<td>- Green buildings - new</td>
</tr>
<tr>
<td><strong>Decarbonization by alleviating emissions in intensive industries</strong></td>
<td>- Energy efficiency in industry</td>
</tr>
<tr>
<td></td>
<td>- Green transport with fossil fuel combustion</td>
</tr>
<tr>
<td></td>
<td>- Green building refurbishment</td>
</tr>
<tr>
<td><strong>Decarbonization technologies with significant environmental hazards</strong></td>
<td>- Nuclear</td>
</tr>
<tr>
<td></td>
<td>- Large Hydro in tropical areas</td>
</tr>
<tr>
<td><strong>Improvement of fossil fuel based activities' environmental efficiency &amp; impact</strong></td>
<td>- Coal to gas, Cleaner fuels, Cogeneration (FF based), Oil refinery efficiency and flaring reduction, Flue gas desulfurization</td>
</tr>
</tbody>
</table>

### Water Hierarchy

For water projects we consider each technology's overall contribution to sustainable water use that would not be fully captured by our net-benefit calculation alone:

<table>
<thead>
<tr>
<th>Role in Green Transition</th>
<th>Water Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System enhancements</strong></td>
<td>- Recycling wastewater for different uses</td>
</tr>
<tr>
<td></td>
<td>- Wastewater treatment</td>
</tr>
<tr>
<td></td>
<td>- Wastewater treatment with bio-filtration</td>
</tr>
<tr>
<td></td>
<td>- Wastewater treatment with energy recovery</td>
</tr>
<tr>
<td></td>
<td>- Wastewater treatment with energy recovery and bio-filtration</td>
</tr>
<tr>
<td><strong>Marginal system enhancements</strong></td>
<td>- Reducing water losses in the water distribution network</td>
</tr>
<tr>
<td></td>
<td>- Improved irrigation</td>
</tr>
<tr>
<td><strong>System enhancements with significant negative impacts</strong></td>
<td>- Desalination</td>
</tr>
<tr>
<td><strong>Demand-side improvements</strong></td>
<td>- Conservation in buildings</td>
</tr>
<tr>
<td></td>
<td>- Smart meters in residential buildings</td>
</tr>
</tbody>
</table>
### Land Use Hierarchy

For land use projects we consider each technology’s overall contribution to sustainable land use that would not be fully captured by our net-benefit calculation alone:

<table>
<thead>
<tr>
<th>Role in Green Transition</th>
<th>Agriculture &amp; Forestry Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance of Natural State</td>
<td>- Land restoration to natural state</td>
</tr>
<tr>
<td></td>
<td>- Forest protection and restoration</td>
</tr>
<tr>
<td>Low human intervention</td>
<td>- Low tillage</td>
</tr>
<tr>
<td></td>
<td>- Forestry expansion for non-timber forest products</td>
</tr>
<tr>
<td></td>
<td>- Forestry protection</td>
</tr>
<tr>
<td>Alternative farming</td>
<td>- Sustainable fertilizers</td>
</tr>
<tr>
<td></td>
<td>- Organic farming</td>
</tr>
<tr>
<td></td>
<td>- Drought-resistant Crops</td>
</tr>
<tr>
<td></td>
<td>- Rotational grazing</td>
</tr>
<tr>
<td>Improvements in conventional agriculture</td>
<td>- System of rice intensification</td>
</tr>
<tr>
<td>and forestry</td>
<td>- Precision Agriculture &amp; Livestock</td>
</tr>
<tr>
<td></td>
<td>- Sustainable Forest Management for timber production</td>
</tr>
<tr>
<td>Intensive land use</td>
<td>- Plantation forestry</td>
</tr>
<tr>
<td></td>
<td>- Crop-based products (Biofuels)</td>
</tr>
<tr>
<td></td>
<td>- Land restoration to agriculture</td>
</tr>
</tbody>
</table>

### Waste Hierarchy

For waste projects we consider each technology’s overall contribution to sustainable waste management that would not be fully captured by our net-benefit calculation alone:

<table>
<thead>
<tr>
<th>Role in Green Transition</th>
<th>Waste Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste Reduction</td>
<td>- Reduction in Food Loss</td>
</tr>
<tr>
<td>Waste management with material reuse</td>
<td>- Aerobic composting with fertilizer reuse</td>
</tr>
<tr>
<td></td>
<td>- Anaerobic digestion</td>
</tr>
<tr>
<td></td>
<td>- Gasification/pyrolysis with waste feedstock</td>
</tr>
<tr>
<td>Waste management for energy recovery</td>
<td>- Waste to energy</td>
</tr>
<tr>
<td>Waste management improvements</td>
<td>- Hazardous waste management</td>
</tr>
</tbody>
</table>
Surely we have a responsibility to leave for future generations a planet that it is healthy and habitable by all species.

Sir David Attenborough
Broadcaster and Natural Historian

What We Assess

Current Modules

- Water
- Renewable Energy
- Transport
- Energy Efficiency
- Buildings
- Fossil Fuels & Nuclear

New Modules

Waste
- Food loss reduction
- Hazardous waste management
- Gasification
- Waste to energy
- Aerobic composting
- Anaerobic digestion

Agriculture & Forestry
- Forestry Protection
- Forestry Expansion
- Sustainable Farming
- Smart Farming
- Crop-based Products
- Land Restoration
The potential is tenfold, because 20% of investments in China need to be green to meet our national objectives. So we expect the green bond market to continue to have very strong growth.

Dr. Ma Jun
Chief Economist, Research Bureau,
People's Bank of China
For more information please visit spratings.com/greenevaluation or contact us

SALES

Americas
Enrique Gutierrez
+1-212-438-0328
enrique.gutierrez@spglobal.com

EMEA
Julien Thomas
+33-14-420-7358
julien.thomas@spglobal.com

APAC
Denis O'Sullivan
+852-2533-3522
denis.osullivan@spglobal.com

BUSINESS & PRODUCT MANAGEMENT

Americas
Kim Cincala
+1-212-438-6521
kim.cincala@spglobal.com

EMEA
Jaclyn Bouchard
+44-20-7176-0446
jaclyn.bouchard@spglobal.com

APAC
Alan Kwan
+852-2532-8016
alan.kwan@spglobal.com

No content (including ratings, credit-related analyses and data, valuations, model, software or other application or output therefrom) or any part thereof (Content) may be modified, reverse engineered, reproduced or distributed in any form by any means, or stored in a database or retrieval system, without the prior written permission of Standard & Poor’s Financial Services LLC or its affiliates (collectively, S&P). The Content shall not be used for any unlawful or unauthorized purposes. S&P and any third-party providers, as well as their directors, officers, shareholders, employees or agents (collectively S&P Parties) do not guarantee the accuracy, completeness, timeliness or availability of the Content. S&P Parties are not responsible for any errors or omissions (negligent or otherwise), regardless of the cause, for the results obtained from the use of the Content, or for the security or maintenance of any data input by the user. The Content is provided on an “as is” basis. S&P PARTIES DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, FREEDOM FROM BUGS, SOFTWARE ERRORS OR DEFECTS, THAT THE CONTENT’S FUNCTIONING WILL BE UNINTERRUPTED OR THAT THE CONTENT WILL OPERATE WITH ANY SOFTWARE OR HARDWARE CONFIGURATION. In no event shall S&P Parties be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs or losses caused by negligence) in connection with any use of the Content even if advised of the possibility of such damages.

Credit-related and other analyses, including ratings, and statements in the Content are statements of opinion as of the date they are expressed and not statements of fact. S&P’s opinions, analyses and rating acknowledgment decisions (described below) are not recommendations to purchase, hold, or sell any securities or to make any investment decisions, and do not address the suitability of any security. S&P assumes no obligation to update the Content following publication in any form or format. The Content should not be relied on and is not a substitute for the skill, judgment and experience of the user, its management, employees, advisors and/or clients when making investment and other business decisions. S&P does not act as a fiduciary or an investment advisor except where registered as such. While S&P has obtained information from sources it believes to be reliable, S&P does not perform an audit and undertakes no duty of due diligence or independent verification of any information it receives.

To the extent that regulatory authorities allow a rating agency to acknowledge in one jurisdiction a rating issued in another jurisdiction for certain regulatory purposes, S&P reserves the right to assign, withdraw or suspend such acknowledgement at any time and in its sole discretion. S&P Parties disclaim any duty whatsoever arising out of the assignment, withdrawal or suspension of an acknowledgment as well as any liability for any damage alleged to have been suffered on account thereof.

S&P keeps certain activities of its business units separate from each other in order to preserve the independence and objectivity of their respective activities. As a result, certain business units of S&P may have information that is not available to other S&P business units. S&P has established policies and procedures to maintain the confidentiality of certain non-public information received in connection with each analytical process.

S&P may receive compensation for its ratings and certain analyses, normally from issuers or underwriters of securities or from obligors. S&P reserves the right to disseminate its opinions and analyses. S&P’s public ratings and analyses are made available on its Web sites, www.standardandpoors.com (free of charge), and www.ratingsdirect.com and www.globalcreditportal.com (subscription), and may be distributed through other means, including via S&P publications and third-party redistributors. Additional information about our ratings fees is available at www.standardandpoors.com/usratingsfees.

Copyright © 2019 Standard & Poor’s LLC. All rights reserved. STANDARD & POOR’S, S&P and RATINGSDIRECT are registered trademarks of Standard & Poor’s Financial Services LLC.

spglobal.com/ratings