Trucost Green Bond Data

Methodology

S&P Global Sustainable 1 – May 2022

S&P Global

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Introduction and Context

Green bonds are specifically used to raise financing for projects with environmental benefits such as renewable energy, energy efficiency, water conservation and climate change adaptation.

Policy developments and increased client awareness means that investors are under increasing pressure to better manage and report on their positive environmental and societal impacts. For example, the French Energy Transition Law explicitly requires the asset management industry to explain how they contribute positively to environmental issues. While the investment community has demonstrated appetite for instruments which meet positive environmental criteria, there are limited solutions in the market to help them systematically assess and quantify the positive impacts of green bonds.

S&P Global's measurement of the positive environmental impacts of green bonds will help address the growing market concern regarding the number of self-proclaimed "green financial assets", which are either not audited at all or assessed inconsistently in the market. S&P Global has developed a Green Bond dataset that is designed to estimate the potential positive impacts and avoided carbon emissions from green bond investments.

The quantification of absolute and avoided carbon emissions offers issuers and investors the opportunity to develop a green bond market that is robust, credible and transparent. By quantifying the environmental benefits of green bonds, all market participants will be able to compare the performance of different issuances on a like-for-like basis and investors will be able to report the positive impact of their green bond portfolio in a consistent manner.

Methodology Overview

Indicators & Project Data

The Trucost Green Bond dataset provides robust and comprehensive environmental data and analytics that supports the assessment of the potential positive impacts of projects financed by green or sustainable bonds.

The dataset includes the following data points:
- General issuer information (e.g., ISIN, bond size)
- Labelling of bonds (e.g., Green, Social)
- Use of proceeds by region, project types and technology (%)
- Physical quantities (e.g., Total energy production or savings in MWh)
- Annual and Lifetime Greenhouse Gas emissions and intensities (e.g., tCO_2e per GWh)
- Avoided Greenhouse Gas emissions reported by the issuer (tCO_2e)
- Avoided Greenhouse Gas emissions estimated for Green Energy, Green Building, Green Transport and Energy Efficiency covering 130 technologies using full life cycle assessment (tCO_2e)
- Issuer, Impact and Governance scores
- Links to source documents

The table below describes the classification of key metrics available in the dataset:

Table 1: Classification of key metrics in the Dataset

Metric Type	Number of Metrics	Example	Unit
Labelling	1	Green/ Social/ Sustainable	—
Use of Proceeds	31	Renewable Electricity and Heat Production	% of UOP
Physical Quantity	4	Total Energy Production	GWh
Environmental	12	Avoided carbon emissions	tCO_2e
Green Bond Scores	7	Issuer score	%

Source: S&P Global Sustainable1 (2021)

For more information on the above metrics, please refer to the Appendix section.

Public disclosures from issuers, such as green bond reports, environmental data sources (corporate social responsibility, sustainability, or environmental reports), and data published on company websites or other public sources are collected and analyzed. Bond currency, currency rates, issuer names, identifiers and bond size are sourced from S&P Global Market Intelligence. Best-in class life cycle analysis databases are also used to model the carbon/environmental impact of projects and derive its potential benefits.

In order to analyze green bond impacts, the following data is required from the issuer:
- Project type (e.g., wind power, residential building)
- Project size (e.g., 200 MW, 500 m^2)
- Project location (e.g., Spain, Nebraska)
- Quantity of assets (e.g., number of turbines, number of trains)

- Asset life (e.g., 25 years)
- Investment value & Total project value (e.g., USD 200 million)
- Year of deployment (e.g., 2020)

The Green Bond dataset is updated annually to incorporate any newly available data. It is common for an issuer's data disclosure to contain useful information relating to previous bond issuances (time-series performance), allowing the assessment to be refined.

With respect to the use of proceeds data, projects have been classified according to the Green Bond Principles and Climate Bonds Initiative (CBI) Taxonomy.

Assumptions, methodologies and limitations for the estimation of avoided carbon emissions are detailed in the next sections.

This report also includes a separate section on Green Bond Scores described below:

a) **An issuer score:** A relative scoring of issuers globally, based on their environmental footprint per unit of revenue.
b) **An impact score:** A relative scoring of projects financing globally, based on their expected lifetime environmental impact in their respective region, relative to a local business as usual scenario.
c) **A governance score:** An evaluation of an issuer's transparency and governance policy's alignment with the Green Bonds Principles.

A Green Bond Score is a point-in-time evaluation, based on the scores obtained on these three pillars: an issuer score, an impact score and a governance score.

Avoided Emissions Calculation

The life cycle impacts of each project are calculated in comparison to a location-specific business-as-usual (BAU) scenario. Life cycle impacts include the emissions from the construction, operation, and decommissioning of the project(s).

Figure 1: Steps in the calculation process

Source: S&P Global Sustainable1 (2021)

The BAU scenario impacts include the emissions that occur during the normal operations of the technology or project that the new investment is expected to replace. For instance, for an investment in onshore wind power in Spain, the BAU scenario would be purchased electricity from the Spanish national grid which would include carbon emissions from operations. The investment scenario would include the lifetime emissions from the wind power construction or manufacture, operation, and disposal. The net benefit is the difference between the emissions from the project financed and the avoided BAU emissions.

Lifetime Avoided Emissions (tCO$_2$e) = [Alternative Project Construction Lifetime GHG Emissions (tCO$_2$e) + Alternative Project Operational Lifetime GHG Emissions (tCO$_2$e)] - BAU Operational Lifetime GHG Emissions (tCO$_2$e)

Both project refinancing and the investment contributing to the project by the bond are considered to estimate the green bond financed avoided emissions. For refinancing, the annual avoided emissions that are allocated would represent the full life cycle of the project. However, the lifetime avoided emissions are allocated only for the duration of the bond. The impacts are then apportioned according to the issuer's stake in the project (as a percentage of the total project value, i.e., equity and debt). For example, if the issuer owns 50% of the total project value then the issuer will be held accountable for 50% of the net impact generated by the project.

The avoided emissions have been calculated for over 130 technologies:

Table 2: Technologies included in the dataset

Category	Green Energy	Green Transport	Green Buildings	Energy Efficiency
Single technologies Available	43	32	18	38
Type	• Onshore & Offshore Wind Power • Solar PV • Hydro Power • Anaerobic Digestion	• Electric Cars • Trucks • National Rail • Urban Rail • Buses • Trams	• Warehouses • Offices • Residential Housing • Factories • Retail Outlets	• LED Lighting • Electronics • Insulation • Industrial

Source: S&P Global Sustainable1 (2021)

In the final step of the calculation process, the avoided emissions are aggregated at the green bond level.

Impacts based on issuer disclosure of the use of proceeds and of relevant project-related data, as well as life-cycle analysis (LCA) data are estimated. Data comes from a variety of sources that can either be technology specific, country specific or regional average values.

Green Bond Scores

ISSUER SCORE

Each issuer covered in the Trucost Core Plus Universe is assessed against every other issuer based on a combination of its direct and indirect impact ratio.

Corporate Issuers

The Trucost environmental impact ratio is the external environmental costs of the company (direct and indirect) divided by the company's turnover/revenue. In other words, it is a standard measure of the environmental efficiency of a company's business per unit of revenue generated, which allows easy comparison between companies, regardless of size, sector or geography. The lower the impact ratio, the higher the efficiency and hence, the higher the score.

Different sectors have different environmental impact profiles. To account for this, the issuer score for corporates is made up of two scores, the issuer sector score weighted at 70% and the issuer global score weighted at 30%:

a) **Issuer sector score:** Each issuer's direct impact ratio is scored against all issuers belonging to the same GICS Sub Industry. This accounts for an issuer's performance relative to its peers.
b) **Issuer global score:** Each issuer's total impact ratio (direct and indirect impact) is scored against all issuers in the Trucost Core Plus Universe, regardless of industry. This accounts for an issuer's total environmental impact in the entire global economy (including impacts originating in the supply chain).

A corporate issuer impact ratio covers greenhouse gases, water use, waste generation, air pollutants, land and water pollutants, and natural resources use. Each corporate issuer is assessed annually, helping to track an issuer's performance against the economy over time.

Sovereign Issuers
Different economies have different environmental impact profiles depending on their income level, as defined by the World Bank[1]. To account for this, the issuer score for sovereigns is made up of two scores, the issuer income group score weighted at 70% and the issuer global score weighted at 30%:

a) **Issuer income group score:** Each issuer's territorial emissions intensity is scored against all issuers belonging to the same World Bank income group. This accounts for an economy's performance relative to its peers.
b) **Issuer global score:** Each issuer's total emissions intensity (territorial and imports) is scored against all issuers in the Trucost universe of sovereign issuers, regardless of income level. This accounts for an issuer's total greenhouse gas impact globally (including impacts originating in the supply chain via imports).

Coverage
We currently cover over 15,000+ corporate issuers, as well as 170 sovereign states. For issuers not currently covered, we provide 77 corporate proxies based on regional GICS sector averages, as well as 32 sovereign proxies based on regional income level averages.

IMPACT SCORE

The impact score reflects the environmental impact of the use of proceeds over the life of the assets. It takes into consideration variables such as sector, technology, location of the assets (region), and funding allocation. It considers a variety of environmental key performance indicators (eKPIs), such as carbon, water, and waste as per Table 3 below. The impact score uses the same methodology as the Mitigation Score in S&P Global Ratings Green Evaluation including the hierarchy.

Table 3: EKPIs considered in impact scoring

Technology	Greenhouse gases	Water use	Waste
Green Power Generation	+	+	+
Green Power Technology	+	+	+
Energy Efficiency	+		
Green Building	+	+	
Green Transport	+		
Water	+	+	

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[1] https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html

Source: S&P Global Ratings (2019)

Weighting eKPIs and determining the score

The environmental impact calculation is done on a net benefit basis, meaning we consider each project's negative and positive environmental impact relative to the regional baseline (for example, the net benefit of a new renewable energy project compared with production from the conventional grid) for relevant eKPIs.

- The net benefit for each eKPI is compared against a range of modelled net benefit outcomes derived from relevant regional data to determine a relative score based on its decile ranking in the sample. To derive the representative range, net benefit calculations use all the available project types in the peer group and a group of relevant countries. For example, within the renewable energy sector, we refer to the 61 countries responsible for 95% of power generation capacity, according to the Shift Project, the U.S. Energy Information Administration, and IEA statistics.
- Each eKPI for a given sector has a weighting, informed by the Trucost Environmental Valuations to understand the most material environmental impact of a particular activity. For example, carbon may be weighted at 70%, water at 20%, and waste at 10% for a particular sector. The resulting score is a weighted average across the eKPIs applicable to that sector and is referred to as a net benefit score against the best-in-class technology within that sector or technology peer group.
- For financings that involve multiple technologies, we calculate the net benefit scores based on funds allocated to each project to derive their respective net benefit score. If a financing covers multiple projects in different sectors and geographies, we repeat this process for each project.

Sector hierarchy and environmental impact

We then determine the overall environmental impact for each project based on where it fits within our carbon or water hierarchy[2]. This indicates the project's relative contribution to avoiding and coping with climate change.

- To derive the final impact score for the project financing or portfolio of projects, we then calculate the environmental impact of each sector based on funds allocated to that sector.

Table 4: Carbon, water and waste: Hierarchy scores and weighting

Sector	Tier	Description	Hierarchy score (0-100)	Weighting hierarchy score (%)	Weighting of net benefit ranking (%)
Carbon					
	1	Systemic decarbonization	100	75	25
	2	Significant decarbonization through low-carbon solutions	90	70	30
	3	Decarbonization by alleviating emissions of	80	65	35

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[2] For more information on the carbon and water hierarchies, please visit
https://www.spglobal.com/ratings/en/research/articles/191204-environmental-social-and-governance-green-evaluation-analytical-approach-11266963

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Sector	Tier	Description	Hierarchy score (0-100)	Weighting hierarchy score (%)	Weighting of net benefit ranking (%)
		carbon-intensive industries			
	4	Decarbonization technologies with significant environmental hazards	50	60	40
	5	Improvement of fossil-fueled activities' environmental efficiency	0	60	40
Water					
	1	System enhancements	100	75	25
	2	Marginal system enhancements	75	70	30
	3	System enhancements with significant negative impacts	62.5	70	30
	4	Demand-side improvements	50	65	35

Source: S&P Global Ratings (2019)

Each project type or technology is classified according to its overall contribution to systemic change, such as decarbonization in the case of the carbon hierarchy, as per Table 5 below.

Table 5: Technologies mapped to the hierarchy

Sector	Technology
Carbon	
Tier 1: Systemic decarbonization	Green energy: Wind power
	Green energy: Solar power
	Green energy: Small hydro
	Green energy: Large hydro (excluding tropical areas)
	Energy efficiency: Energy management and control
Tier 2: Significant decarbonization of key sectors through low-carbon solutions	Green transport without fossil fuel combustion
	Green buildings – new build
Tier 3: Decarbonization by alleviating emissions in carbon-intensive industries	Energy efficient projects (industrial efficiencies and energy star products)
	Green transport with fossil fuel combustion
	Green buildings refurbishment
Tier 4: Decarbonization technologies with significant environmental hazards	Green energy: Large hydro in tropical areas

Sector	Technology
Water	
Tier 1: System enhancements	Recycling wastewater to supply potable municipal water
	Recycling wastewater to supply non-potable water for agricultural uses
	Recycling wastewater to supply non-potable water for other industries
	Wastewater treatment with no energy recovery
	Wastewater treatment with energy recovery
Tier 2: Marginal system enhancements	Reducing water losses in the water distribution network
	Enhanced irrigation
Tier 3: System enhancements with significant negative impacts	Water desalination to supply potable municipal water
Tier 4: Demand-side improvements Conservation measure in residential buildings	Conservation measure in commercial buildings
	Conservation measure in industrial buildings
	Conservation measure in residential buildings
	Smart metering in residential buildings

Source: S&P Global Ratings (2019)

As mentioned above, the impact score is currently only estimated for 6 technologies: Green Power Generation, Green Power Technology, Energy Efficiency, Green Building, Green Transport and Water. Therefore, this score is scaled to represent the value associated with the use of proceeds covered by these technologies.

GOVERNANCE SCORE

An issuer's alignment with the Green Bonds Principles (GBPs) is assessed via a governance score or pillar, which covers four categories through nine qualitative questions:

1. Use of Proceeds
2. Process for Evaluation
3. Management of Proceeds
4. Reporting

The overall governance score is calculated as a simple average of the scores obtained in each category.

In each category, responses are assessed using a scoring system based on predefined criteria. The specific criteria may vary by category to ensure that they align with the Green Bonds Principles. The category scores are then averaged to derive the overall governance score, providing a comprehensive measure of an issuer's adherence to these principles. This methodology ensures consistency in evaluation while allowing for flexibility to account for category-specific considerations.

Table 6: Governance Assessment Criteria

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Use of Proceeds

- What is the percentage of the use of proceeds for which there is disclosure at a project-by-project level and country level?
- What is the percentage of the use of proceeds for which there is disclosure at the aggregate level?
- What percentage of projects are eligible to be green according to the Green Bond Principles?

Process for Project Evaluation and Selection

- Does the issuer have a defined project framework to evaluate projects based on the environmental objectives of the transaction?
- Does the issuer disclose the selection criteria used within this framework?

Management of Proceeds

- Does the issuer provide evidence that the proceeds are or will be ringfenced solely for the financing of eligible project types identified in the financing documentation?
- Does the issuer have or plan to have, an independent third-party verification or audit of the allocation of proceeds to the eligible project types identified in the financing documentation?

Reporting

- Does the issuer quantify and disclose (or commit to quantifying and disclosing) the actual or expected environmental impacts of its eligible projects publicly?
- Does the issuer's reporting cover the relevant impact indicators for projects being financed by the transaction?

Assumptions and Limitations

Avoided Emissions

Assumptions

A number of key assumptions are taken when calculating the environmental performance of a project. These are summarized below:

- The emissions are estimated only for projects relating to Green Energy, Green Buildings, Energy Efficiency and Green Transport covering over 130 technologies using full life cycle assessment.
- After the end of the asset life, the asset is deemed to be decommissioned and the benefits from this asset end. For instance, if a solar PV plant is decommissioned in 2040, the company would then revert to purchasing the equivalent amount of electricity from the national grid.
- The energy produced by the asset directly replaces energy produced by another source, such as the national grid. Therefore, no additional electricity is produced.
- However, the planned evolution of the national grid is taken into account including increases in capacity and changes in the generation mix.
- The efficiency of the asset being deployed, and the asset being replaced do not change over time (with the exception of the national grid).
- The regional granularity for the assessment only goes up to the country-level from global/regional levels but not further into sub-regions within the country.
- Due to data availability, the planned evolution of the national grid in each country is forecasted up until 2050. Beyond that year, the grid mix is deemed constant. Similarly, the grid mix before 2000 is assumed to be the same as for year 2000.

Limitations

Given the assumptions that have been taken, there are also some limitations in calculating the environmental performance of a project. These are summarized below:

- For emissions from the national grid, each country has a unique factor up until 2050 that accounts for the anticipated changes in grid mix – normally a shift towards the deployment of more renewable technologies. As there is no forecast data beyond this point, the grid mix beyond 2050 is assumed to remain the same.
- Estimated avoided emissions may not be directly replicated in the real world. This can be due to increasing or decreasing efficiencies of project performance, or changing external factors, such as the amount of sunlight a solar farm receives for instance.

Green Bond Scores

Assumptions

A number of key assumptions are taken when calculating the environmental performance of a project. These are summarized below:

- The emissions are estimated only for projects relating to Green energy, Green Buildings, Energy Efficiency, Green Transport and Water covering approximately 100 technologies.
- The granularity of the impact assessment is at the regional level, where scores are calculated as the average of assessments for countries available in the sample for each region: Asia and Oceania, Africa, Central and South America, Eurasia, Europe, Middle East, North America, Global

Appendix I: Green Bond Dataset – List of Metrics

Name	Short Description	Description
Green Bond ISIN	Bond ISIN	International Securities Identification Number (ISIN) is a 12 character alpha-numerical code that uniquely identifies a security listed on a stock exchange.
Green Bond Name	Green Bond Name	Issuer/Bond name connected to the ISIN provided by S&P CAPITAL IQ.
Trucost Issuer ID	Trucost Unique Identifier	Trucost Unique Identifier (TCUID). TCUIDs are Trucost Unique identification numbers created and assigned to each unique company in the Trucost dataset. Each company with TCUID is researched and analysed separately. The bond issuance is mapped to the immediate issuer in TC datasets. In the absence of the issuer within the TC dataset, then the issuance is mapped to the Ultimate Parent.
Issuer Name	Issuer name	Listed name of the company issuing the bond (excluding share class information, but including business-related abbreviations such as 'PLC', 'LTD' etc.).
Issuer GICS Sector / Category	Global Industry Classification Standard (GICS) sector name	The Global Industry Classification Standard (GICS®) was developed by MSCI and Standard & Poor's (S&P) to enhance the investment research and asset management process for financial professionals worldwide. The GICS structure consists of 11 sectors, 24 industry groups, 67 industries and 156 sub-industries. The taxonomy and structure of the classification system are available in the public domain.
Issuer Country of Origin	Country	Country of headquarter. For dual listed companies, only one country is displayed.
Issue Date	Date of issuance	Date the bond was issued/priced to market. (Day-Month-Year)
Creation Date	Creation Date	Date the bond was first researched and included in the Green Bond Database.
Latest Analysis Date	Latest Analysis or Disclosure Check by Trucost	Latest assessment update by Trucost. (Day-Month-Year)
Nominal Amount	Bond nominal amount	Amount issued in the denominated currency.
Currency	Issuance Currency	Bond denominated currency.
USD Reported Currency Exchange Rate	USD Reported Currency Exchange Rate	USD Currency Exchange Rate on the date of issuance as reported by ICE data services.

Maturity Date	Maturity Date	Date at which the principle amount of bond is due. (Day-Month-Year)
Coupon (%)	Coupon	Coupon (%)
Labelling	Bond Labels	Type of projects the bond is financing. The bonds can finance green projects (Green Bond), social projects (Social Bond),or a combination of the two (Sustainability Bond), projects covering the Sustainable Development Goals(SDGs, SDG Bond), projects that help the transition of high GHG emissions companies to become more sustainable (Transition Bond), projects that are not green (Not Green).
Africa (% of UOP)	Location of green bond project	Percentage of the proceeds used in Africa.
Asia (% of UOP)	Location of green bond project	Percentage of the proceeds used in Asia.
Europe (% of UOP)	Location of green bond project	Percentage of the proceeds used in Europe.
North America (% of UOP)	Location of green bond project	Percentage of the proceeds used in North America.
Oceania (% of UOP)	Location of green bond project	Percentage of the proceeds used in Pacific.
South America (% of UOP)	Location of green bond project	Percentage of the proceeds used in South America.
Undisclosed region (% of UOP)	Undisclosed region	Percentage of proceeds for which the geographical destination is not disclosed.
CBI Category	Project type that receives the largest proportion of the green bond proceeds according to the Climate Bonds Initiative (CBI) Taxonomy	This is a tag for easy identification of the major project type that the green bond is financing. Only one project type will be listed for tagging each green bond. Categories are based on the Green Bond Principles and according to the Climate Bonds Initiative (CBI) Taxonomy with the projects reported by issuers and covered by Trucost.
CBI - Green Proceeds (% of UOP)	Percentage of proceeds	Aggregated share of green proceeds as a percentage of total proceeds (Renewable Energy, Alternative Energy, Energy Distribution & Management, Green Building, Green Industry, Green Transport, Water Management, Waste & Pollutants Management, Others Green)
CBI - Renewable Electricity and Heat Production (% of UOP)	Percentage of proceeds	Includes projects involving the generation of Solar, Wind, Geothermal, Bioenergy, Hydropower, Marine Renewables (Tide, Wave Energy) energy, as well as Transmission and Distribution, Storage of power according to the Climate Bonds Initiative (CBI) Taxonomy.
CBI - Other Electricity and Heat Production (% of UOP)	Percentage of proceeds	Includes projects involving the generation of power from other sources, including Fossil Fuel energy according to the Climate Bonds Initiative (CBI) Taxonomy.

CBI - Nuclear Energy (% of UOP)	Percentage of proceeds	Includes projects involving the generation of Nuclear energy according to the Climate Bonds Initiative (CBI) Taxonomy.
CBI - Transmission, distribution & storage (% of UOP)	Percentage of proceeds	Includes projects involving the Transmission, Distribution and Storage of power according to the Climate Bonds Initiative (CBI) Taxonomy.
CBI - Transport (% of UOP)	Percentage of proceeds	Includes Private transport, Public Passenger Transport, Freight rail, Aviation, Water borne projects according to the Climate Bonds Initiative (CBI) Taxonomy.
CBI - Water (% of UOP)	Percentage of proceeds	Includes Water Monitoring, Water Storage, Water Treatment, Water Distribution, Flood Defence, Nature-Based Water Solutions projects according to the Climate Bonds Initiative (CBI) Taxonomy.
CBI - Buildings (% of UOP)	Percentage of proceeds	Includes Residential, Commercial, Products and systems for efficiency, Urban development projects according to the Climate Bonds Initiative (CBI) Taxonomy.
CBI - Land Use and Marine Resources (% of UOP)	Percentage of proceeds	Includes Agriculture, Commercial Forestry, Ecosystem conservation and restoration, Fisheries and Aquaculture, Supply Chain management projects according to the Climate Bonds Initiative (CBI) Taxonomy.
CBI - Industry (% of UOP)	Percentage of proceeds	Includes Cement Production, Steel, Iron & Aluminium Production, Glass production, Chemical Production, Fuel Production projects according to the Climate Bonds Initiative (CBI) Taxonomy.
CBI - Waste (% of UOP)	Percentage of proceeds	Includes Preparation, Reuse, Recycling, Biological Treatment, Waste to energy, Landfill, Radioactive waste management projects according to the Climate Bonds Initiative (CBI) Taxonomy.
CBI - ICT (% of UOP)	Percentage of proceeds	Includes Broadband Networks, Telecommuting software and services, Data hubs, Power Management projects according to the Climate Bonds Initiative (CBI) Taxonomy.
CBI - Others Green (% of UOP)	Percentage of proceeds	Includes climate adaptation projects, such as Early warning systems or biodiversity Conservation projects not already covered by the other categories.
CBI - Undisclosed/Not disbursed proceeds (% of UOP)	Percentage of proceeds that are undisclosed or not distributed	Percentage of proceeds which use is undisclosed or not disbursed at the time of research.
CBI - Proceeds that are Not Green (% of UOP)	Percentage of proceeds that are not green	Includes fossil fuel projects such as Coal, Oil and Gas extraction and exploration and Uranium mining.
Wind Energy (% of UOP)	Type of energy project	Percentage of Wind energy projects including on-shore and off-shore.

Solar Energy (% of UOP)	Type of energy project	Percentage of Solar energy projects including PV and Solar thermal.
Hydro Energy (% of UOP)	Type of energy project	Percentage of Hydroelectric energy projects.
Geothermal Energy (% of UOP)	Type of energy project	Percentage of Geothermal energy projects.
Wave/Tidal Energy (% of UOP)	Type of energy project	Percentage of Wave/Tidal energy projects.
Cogeneration Energy (% of UOP)	Type of energy project	Percentage of CHP (Combined Heat and Power) energy projects.
Bioenergy (% of UOP)	Type of energy project	Percentage of Biomass energy projects.
Residential Buildings (% of UOP)	Type of building project	Percentage of Residential buildings projects.
Commercial Buildings (% of UOP)	Type of building project	Percentage of Commercial buildings projects.
Energy Efficient Products (% of UOP)	Type of building project	Percentage of Energy Efficient Products-related projects.
Industrial Efficiencies (% of UOP)	Type of industry project	Percentage of Industrial Efficiencies projects.
National Rail (% of UOP)	Type of transport project	Percentage of National Rail projects.
Urban Rail (% of UOP)	Type of transport project	Percentage of Urban Rail projects.
Public Road Transport (% of UOP)	Type of transport project	Percentage of Public Road Transport projects.
Private Road Transport (% of UOP)	Type of transport project	Percentage of Private Road Transport projects.
Social (% of UOP)	Percentage of social projects	Percentage of Social projects.
Total (GWh)	Total GWh	Total GWh produced by energy projects.
Total Area (m^2)	Total Area (m^2)	Total area of buildings funded by in building projects.
Total Passenger (km)	Total Passenger (km)	Total Passenger km funded by transport projects.
Total Energy savings (MWh)	Total Energy savings (MWh)	Total Energy saved by energy efficiency projects.
CBI - Renewable Electricity and Heat Production (GWh)	CBI - Green GWh	Energy produced in GWh by renewable energy projects according to the CBI taxonomy.
CBI - Area (m^2)	CBI - Area (m^2)	Total area of buildings funded by building projects according to the CBI taxonomy.
CBI - Passenger (km)	CBI - Passenger (km)	Total Passenger km funded by transport projects according to the CBI taxonomy.
CBI - Energy savings (MWh)	CBI - Energy savings (MWh)	Total Energy saved by energy efficiency projects according to the CBI taxonomy.
Annual Construction & Disposal emissions (tCO_2e)	Annual Construction & Disposal emissions (tCO_2e)	Estimated annual GHG emissions (tCO_2e) associated with the construction and disposal of the project.
Annual Operational emissions (tCO_2e)	Annual Operational emissions (tCO_2e)(tCO_2e)	Estimated annual GHG emissions (tCO_2e) associated with the operations of the project.
Lifetime Construction & Disposal emissions (tCO_2e)	Lifetime Construction & Disposal emissions (tCO_2e)	GHG emissions (tCO_2e) associated with the construction and disposal of the project over its lifetime.

Lifetime Operational emissions (tCO$_2$e)	Lifetime Operational emissions (tCO$_2$e)	GHG emissions (tCO$_2$e) associated with the operations of the project over its lifetime.
Lifetime emission intensity (tCO2e per GWh)	Lifetime emission intensity (tCO$_2$e per Green GWh)	Intensity of emissions (tCO$_2$e) of renewable energy projects per Green GWh produced over the lifetime of the project.
Lifetime emission intensity (tCO$_2$e per Area m^2)	Lifetime emission intensity (tCO$_2$e per Area m2)	Intensity of emissions (tCO$_2$e) of green buildings per Area m^2 over the lifetime of the project.
Lifetime emission intensity (tCO$_2$e per passenger km)	Lifetime emission intensity (tCO$_2$e per passenger km)	Intensity of emissions (tCO$_2$e) of green transport projects per passenger km over the lifetime of the project.
Lifetime emission intensity (tCO$_2$e per energy savings MWh)	Lifetime emission intensity (tCO$_2$e per energy savings MWh)	Intensity of emissions (tCO$_2$e) energy efficiency projects per energy savings MWh over the lifetime of the project.
SDG 13 (13.2) Calculated Avoided Emissions Intensity (tCO$_2$e/USD million invested)	Calculated Avoided Emissions Intensity (tCO$_2$-eq/USD million invested)	The estimated amount of avoided carbon emissions that can be achieved by the bond within a year (tCO$_2$-eq) per Million of USD invested. This value covers SDG 13: Climate action.
SDG 13 (13.2) Calculated Avoided Emissions Attributable to the bond (tCO$_2$e)	Calculated Avoided Emissions Attributable to the bond (tCO$_2$-eq)	The estimated amount of avoided carbon emissions that can be achieved by the bond within a year (tCO$_2$-eq). This value covers SDG 13: Climate action.
Use of Proceeds Covered by Calculated Avoided Emissions (%)	Use of Proceeds Covered by Calculated Avoided Emissions (%)	The percentage of proceeds covered by calculated avoided emissions.
SDG 13 (13.2) Disclosed Avoided Emissions Intensity (tCO$_2$e/USD million invested)	SDG 13 (13.2) Disclosed Avoided Emissions Intensity (tCO$_2$e/USD million invested)	The amount of avoided carbon emissions that can be achieved by the bond within a year (tCO$_2$-eq) per Million of USD invested as disclosed by the issuer. This value covers SDG 13: Climate action.
SDG 13 (13.2) Disclosed Avoided Emissions (tCO$_2$e)	SDG 13 (13.2) Disclosed Avoided Emissions (tCO$_2$e)	The amount of avoided carbon emissions that can be achieved by the bond within a year (tCO2-eq) as disclosed by the issuer. This value covers SDG 13: Climate action.
Use of Proceeds Covered by Disclosed Avoided Emissions (%)	Use of Proceeds Covered by Disclosed Avoided Emissions (%)	The percentage of proceeds covered by disclosed avoided emissions.
Calculated Avoided Emissions - Confidence Level	Calculated Avoided Emissions - Confidence Level	The level of confidence (Low, Moderate and High) relates to avoided emissions calculated based on assumptions taken into consideration.
Issuer Score	Score based on the issuer sector or country.	The Issuer Score is made up of the Issuers Sector Score (70%) and the Issuer Global Score (30%). Issuer Sector Score is based on the rank of each issuer in their respective GICS Sub Industry for corporates and World Bank Country Classification for sovereign issuers. Issuer Global score is based on the sum of direct and indirect environmental impact ratio for corporates and the sum of total

territorial and imported emissions intensity for sovereign issuers.

Impact Score	Score based on the projects financed by the security.	The Impact Score reflects the environmental impact of the use of proceeds over the life of the assets. It takes into consideration variables such as sector, technology, location of the assets (region), and funding allocation. It considers a variety of environmental key performance indicators (eKPIs), such as carbon, water, and waste.
Use of Proceeds Covered by Impact Score (%)	Use of Proceeds Covered by Impact Score (%)	The percentage of proceeds covered by impact score.
Overall Governance Score	Score based on the Use of Proceeds, Issuance process and Management Process	Issuer's alignment with the Green Bonds Principles (GBPs) assessed in four categories through nine qualitative questions on Use of Proceeds, Process for Evaluation, Management of Proceeds and Reporting.
Governance/UOP Score (%)	Governance score on the Use of Proceeds (UOP)	This score is based on the following questions: 1. What is the percentage of the use of proceeds for which there is disclosure at a project-by-project level and country level? 2. What is the percentage of the use of proceeds for which there is disclosure at the aggregate level? 3. What percentage of projects are eligible to be green according to the Green Bond Principles?
Governance/Process Score (%)	Governance score on the process for project evaluation and selection	This score is based on the following questions: 1. Does the issuer have a defined project framework to evaluate projects based on the environmental objectives of the transaction? 2. Does the issuer disclose the selection criteria used within this framework?
Governance/Management Score (%)	Governance score on the management of proceeds	This score is based on the following questions: 1. Does the issuer provide evidence that the proceeds are or will be ringfenced solely for the financing of eligible project types identified in the financing documentation? 2. Does the issuer have or plan to have, an independent third-party verification or audit of the allocation of proceeds to the eligible project types identified in the financing documentation?
Governance/Reporting Score (%)	Governance score on reporting	This score is based on the following questions: 1. Does the issuer quantify and disclose (or commit to quantifying and disclosing) the actual or expected environmental impacts of

		its eligible projects publicly? 2. Does the issuer's reporting cover the relevant impact indicators for projects being financed by the transaction?
Sources	Link to sources	Link to sources collected: public disclosures from issuers, such as green bond reports, environmental data sources (corporate social responsibility, sustainability, or environmental reports), and data published on company websites or other public sources.

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