An S&P Global Ratings Post-Issuance Review (PIR) includes S&P Global Ratings' assessment of an Issuer's post-issuance sustainable financing reporting, where proceeds are allocated to environmental and/or social use-of-proceeds projects. A PIR provides a point-in-time opinion, reflecting the information provided to us at the time the PIR was created and published, and is not surveilled. We assume no obligation to update or supplement the PIR to reflect any facts or circumstances that may come to our attention in the future. A PIR is not a second party opinion (SPO) on pre-issuance financing, or a comment on the alignment of allocations with third-party published sustainable finance principles. A PIR is not a credit rating, and does not consider credit quality or factor into our credit ratings.
See Analytical Approach: Sustainable Financing Post-Issuance Reviews.

Post-Issuance Review: Allocation And Impact Reporting And Climate Bonds Standard

FS Indústria de Biocombustíveis Green Bond Annual Review

July 31, 2026

Primary contact

Bryan Popoola
Washington, D.C.
+1-202-615-5962
bryan.popoola
@spglobal.com

Assessment Summary

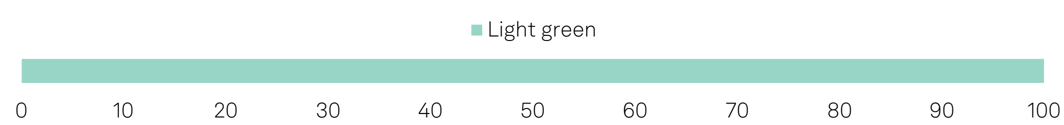
Consistency Opinion (jump to section)

✓ Allocations are consistent with pre-issuance commitments.

Allocation Analysis (jump to section)

As of March 2026, allocations consist of investments related to the corn ethanol value chain. Because of their low lifecycle emissions and low risk of land use change, these projects are representative of a Light green shade.

Environmental: Allocations to projects as of March 2026 (% of allocation per shade)



Reporting Quality Assessment (jump to section)

✓ The report meets the requirements for allocation and impact reporting contained in the ICMA Green Bond Principles and firm commitments in FS's framework relating to allocation and impact reporting.

Climate Bonds Initiative External Review Summary (jump to section)

✓ We assess FS's allocations in 2025/2026 as aligned with the Climate Bonds Standard and the Bioenergy criteria. Eligible projects include investments for second-crop corn ethanol production and financed proceeds contribute to FS's objective of climate change mitigation.

Strengths	Weaknesses	Areas to watch
FS has comprehensive safeguards to mitigate risks around land management, pollution, greenhouse gas emissions, and socioeconomic conditions for employees and suppliers. These safeguards include the use of satellite imagery, adherence to international best practices around mitigating land use change, and crop rotation practices.	No weaknesses to report.	**Food/feed crop-based bioenergy may present direct and indirect land use change risks**. FS mitigates these risks through the use of second-crop corn cultivated in existing agricultural areas and active engagement and stewardship approach with its feedstock suppliers aligned with CBI, RenovaBio and ISCC CORSIA Low LUC risk requirements.

Issuer Description

Location: Brazil **Sector:** Energy

FS Indústria de Biocombustíveis Ltda. (FS) is a Brazilian biofuels producer specializing in corn-based ethanol and related coproducts. The company produces ethanol, animal nutrition products, corn oil, and bioenergy from biomass. Founded in 2016, FS operates production facilities in Mato Grosso and is headquartered in Lucas do Rio Verde, Brazil.

The company published its Green Bond Framework in January 2024. S&P Global Ratings has not provided a Second Party Opinion on the framework.

Consistency Opinion

This section provides our opinion on the consistency of allocations described in the report with the issuer's commitments made at pre-issuance.

Relevant issuances

Type	Date	Amount issued (BRL)	Amount allocated (%)
CRA (CBI)	Sep. 2021	300,000,000	100%
CRA	Nov. 2021	80,008,502	100%
CRA (CBI)	Feb. 2022	508,077,000	100%
CRA (CBI)	Feb. 2022	507,876,000	100%
CRA (CBI)	May. 2022	287,879,000	100%
CRA (CBI)	May. 2022	462,121,000	100%
CRA (CBI)	Apr. 2023	750,000,000	100%
CRA (CBI)	Dec. 2023	1,000,000,000	100%
CRA (CBI)	Jan. 2024	868,000,000	100%
Bond	Feb. 2024	2,485,850,000	100%
Bond	Mar. 2025	574,190,000	100%
Bond	Jun. 2025	2,746,900,000	50%
Bond	Feb. 2026	2,601,050,000	42.3%
Ecoinvest	Aug. 2025	150,000,000	0%
Ecoinvest	Aug. 2025	150,000,000	0%
Ecoinvest	Dec. 2025	85,000,000	0%

N.A.—Not applicable. Source: FS Green Bonds Annual Review, S&P Global Ratings.

Climate Bonds Initiative (CBI) External Review Summary

FS is seeking post-issuance external review for its projects related to the production of hydrous and anhydrous corn-ethanol biofuels in Brazil. We assess that these projects align with the Climate Bonds Standard (CBS) use of proceeds post-issuance requirements, as well as the sector criteria.

Economic activity	Sector	CBS post-issuance requirements	Sector criteria	Overall alignment
Bioenergy: production of hydrous and anhydrous corn-ethanol biofuel	Bioenergy	✓	✓	✓

Aligned = ✓ Not aligned = ✕ Not applicable = **N.A.**

✓ Allocation consistency with pre-issuance commitments

Allocations to environmental projects are consistent with the issuer's pre-issuance commitments.

Allocation Analysis

This section provides information on the allocation of proceeds, incorporating the conclusions that led to our consistency opinion.

Environmental projects

- As of March 2026, FS has allocated 55% of proceeds for all active issuances.
- FS's total outstanding instruments represent R$12.75 billion (USD $2.47 billion), the majority of which will finance projects related to bioenergy production from anhydrous and hydrated corn ethanol or the purchase of corn feedstock for biofuel production.
- The company exclusively uses second-crop corn for biofuel production, which is cultivated after the soy harvest in existing agricultural areas using crop rotation practices. According to the U.S. Department of Agriculture (USDA) and the Brazilian National Supply Agency, this second-crop corn represents the largest share of corn production in Brazil, accounting for 79% of total corn produced during the 2025-2026 harvest. This production system takes advantage of the complementary nature of corn and soy production, increasing overall agricultural production while also removing the necessity to increase local land use footprint for agriculture, thus abating risks related to land use change.
- All of FS's units maintained their certification with Brazil's RenovaBio program, which aims to promote the increased use of biofuels in the energy matrix. To participate in Renovabio, producers must ensure that their raw materials originate from areas with no deforestation of native vegetation since November 2018 and are subject to legal designation for agricultural use. Furthermore, the raw materials must come from land registered in the Rural Environmental Registry (CAR). Registration in the CAR is a fundamental step for compliance with Brazil's Forest Code, which requires that at least 20% of agricultural land be designated as protected area (native vegetation), varying according to the property's location and biome. The importance of land registration in the CAR is highlighted by the fact that

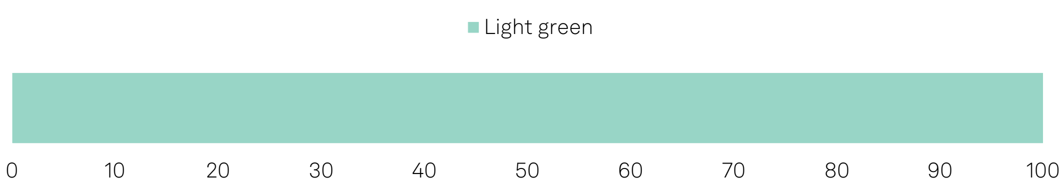
approximately 17% of the land in Brazil remains unregistered, according to the Land Use Policy journal.

- Moreover, the program establishes annual decarbonization thresholds that become more stringent each year, in line with Brazil's Nationally Determined Contribution (NDC) to the Paris Agreement. We believe the certification scheme supports the transition of Brazil's transportation value chain to a lower-carbon economy in the near term.
- In May 2026, the International Maritime Organization ratified the default value of Brazilian corn ethanol's carbon footprint at 20.8 grams of carbon dioxide-equivalent per megajoule (gCO2e/MJ), specifically referring to biofuel produced from the country's second harvest crop. The current average greenhouse gas fuel intensity in shipping is 93.3 gCO2e/MJ, according to the IMO. This is an important regulatory step given that a significant scale up of low-carbon fuel production is needed to decarbonize the maritime shipping sector. The International Energy Agency (IEA) projects that biofuels will account for half of all low-emission shipping fuel use in 2030.

Shades of Green

- The issuer has allocated its green bond proceeds towards financing and refinancing eligible expenditures under its framework related to the second-crop corn ethanol value chain. In addition to the lower lifecycle emissions compared to conventional fossil-based transport fuels, crop rotation practices with soy reduces the land use footprint of the corn feedstock production. As a result, these projects are representative of a Light green shade.

Environmental allocations as of March 2026 (% of allocation per shade)



Source: S&P Global Ratings.

Climate Bonds Standard – Bioenergy sector criteria

- **FS's lifecycle emissions meet mitigation thresholds.** Lifecycle emissions for its anhydrous bioethanol are 18.75 gCO2e/MJ, while its hydrated bioethanol has lifecycle emissions of 18.60 gCO2e/MJ. Both levels are below the 2030 thresholds outlined in the CBI Bioenergy sector criteria for biomass-based fuels (37.6 gCO2e/MJ for road transport, 28.8 for maritime) and are even just below the 2040 thresholds (18.8 gCO2e/MJ for both road and maritime transport).
- **FS meets the sustainable biomass feedstock criteria** through its robust supplier engagement practices, as well as its extensive socioenvironmental risk management strategies. Due to FS's more than 1,000 rural feedstock suppliers, achieving certification for each one would be unfeasible. However, it meets all ten principles for agricultural biomass outlined in the CBI Bioenergy sector criteria and background document.
- To mitigate risks around indirect land use change, FS has clarified that its biomass was produced through an increase in yield. Specifically, FS acquires its feedstock grown through multicrop practices that reduce the risk of direct and indirect land use change. In addition, RenovaBio also requires compliance with a zero-deforestation policy.

- For risks related to land management and conservation (soil quality and soil carbon management, conserving high carbon-stock land, peatlands, high biodiversity areas, and water resources), FS's experimental agricultural research initiative Bio's (Farm Station) conducts studies and shares technical reports on sustainable agricultural practices with feedstock suppliers. These reports include best practices and technical recommendations for feedstock suppliers on topics including soil fertility, regenerative agriculture, cover crops, and reduction of emissions and pollutants. In addition, some of the issuer's feedstock suppliers adhere to international certification schemes such as the International Sustainability & Carbon Certification (ISCC) EU, which include additional criteria around land management and conservation.
- With regards to water, FS continues to reduce its relative water consumption by more than 5% annually, and the company boasts a no-irrigation corn supply chain, eliminating groundwater use.
- FS also uses a geospatial monitoring platform called Agrotools to ensure that its suppliers are not operating land with high carbon stocks. This tool combines satellite imagery and available public databases to establish specific criteria for the monitoring efforts of each type of supplier according to a range of indicators, including planting area and biomass type. Brazil also has a deforestation monitoring system covering two of primary biomes in which FS's suppliers operate (Amazon and Cerrado). This generates environmental reports that identify suppliers that are not compliant with the country's commitments around preventing deforestation.
- To mitigate risks related to pollution, producers need to adhere to Brazil's legislation on chemical use in agriculture, which include ordinances on environmental management regarding pesticides. For feedstock suppliers covered by certification schemes such as RenovaBio and ISCC, FS obtains information on agricultural inputs. These certification schemes include requirements related to agricultural practices, including pesticide use.
- FS sources feedstock solely from Brazil, which has low food insecurity based on the Global Hunger Index. To ensure high standards in terms of mitigating socioeconomic risks, FS assesses whether suppliers are included in the federal government's employment practices blacklist. In addition, the company does not acquire its feedstock from embargoed areas nor those overlapping onto protected regions such as Indigenous or Restricted Use Lands, as evidenced by satellite imagery.
- For risks related to circularity, FS has a target to reduce landfill waste by 40% by 2030. This target was achieved in the 2023-2024 harvest year and continues to improve annually.
- **FS has conducted a Climate Risk Analysis and adopted a Climate Adaptation Plan** carried out by a third-party organization to meet CBI criteria around effective abatement of risks related to adaptation and resilience. These outline boundaries and interdependencies between production facilities and the systems in which they operate, identify key physical climate hazards and measures to address those climate hazards, confirm that the facilities do not harm the climate resilience of the systems in which they operate, and demonstrate ongoing monitoring and evaluation for these risks and mitigation strategies.

Climate Bonds Standard - Process for project selection and evaluation

- FS confirms that the process for project selection outlined in the green finance framework was applied to all allocations seeking CBI certifications as well. This includes collaboration between its sustainability and commercial departments, as well as senior management to develop stringent rules and an approval process for purchasing decisions.
- FS's Green Bond framework includes a comprehensive statement around the climate-related objectives of its investments, in addition to how these investments align with the company's overall strategy. FS's business strategy is based on the view that biofuels will play a relevant role for future decarbonization, and a key pillar of the company's strategy is balance sustainable energy and food production.

- The framework also includes the company's rationale for issuing the bond, as well as its process to determine whether the eligible projects meet the requirements listed in the Climate Bonds Standard. FS produces biofuels that will be used primarily in the road transport sector, though the company is also exploring use cases in the maritime and aviation industries.

Climate Bonds Standard - Management of proceeds

- According FS's framework, all funds will be 100% invested in low-risk commitments or used to repay outstanding debt (refinance) while pending full allocation.
- FS also maintains a process to earmark, manage, and account for allocations of net proceeds to eligible projects and assets. These funds are placed in a sub-account or sub-portfolio pending allocation.

Reporting Quality Assessment

This section provides an opinion on the quality of the issuer's post-issuance allocation and impact reporting.

✔ Alignment with reporting requirements

The report aligns with the requirements for allocation and impact reporting contained in the ICMA's Green Bond Principles and Climate Bond Standard.

Additional reporting considerations

Comprehensiveness of allocation reporting

- Allocation reporting is generally comprehensive. The issuer discloses individual green bond issuances, including issuance dates, amounts raised, allocation status, eligible categories, and certification, where relevant.
- The report distinguishes between capital expenditure, operating expenditure, and refinancing, and identifies whether individual instruments remain active or have been fully allocated. It also reports allocated and outstanding balances for each issuance, supporting transparency on proceeds allocation. In our view, the company's reporting enhances transparency and supports consistency with the CBI's recommendations for allocation reporting.

Linking allocations and issuer level sustainability performance, targets, and strategy

- The issuer presents its allocation reporting in the context of its broader decarbonization strategy. The report explains that proceeds support the expansion of second-crop corn ethanol production capacity, renewable fuel production, and investments intended to support the decarbonization of transport sector. In our view, linking proceeds allocation to the issuer's strategy to expand renewable fuel production and lower-carbon technologies provides useful context for understanding how green financing supports broader environmental objectives.

Relevance and materiality of metrics

- The reported impact metrics are relevant to the financed bioenergy project. The issuer reports carbon intensity of anhydrous and hydrous ethanol, greenhouse gas emission reductions relative to fossil gasoline, and ethanol production volume, which are relevant indicators for assessing the environmental performance of renewable fuel production. In our view, the reported metrics demonstrate the environmental outcomes associated with the financed projects.

Transparency on methodology and assumptions

- We believe the report provides an appropriate level of transparency regarding the methodology used to calculate the reported carbon intensity and greenhouse gas emission reduction metrics. The issuer references the RenovaBio policy and certification program as the basis for reported impact metrics. In our view, disclosing the methodology underpinning the reported metrics supports the credibility and comparability of the reported environmental impacts.

S&P Global Ratings' Shades of Green

	Dark green	Medium green	Light green	Yellow	Orange	Red
Description	Activities that correspond to the long-term vision of an LCCR future.	Activities that represent significant steps towards an LCCR future but will require further improvement to be long-term LCCR solutions.	Activities representing transition steps in the near-term that avoid emissions lock-in but do not represent long-term LCCR solutions.	Activities that do not have a material impact on the transition to an LCCR future, or, Activities that have some potential inconsistency with the transition to an LCCR future, albeit tempered by existing transition measures.	Activities that are not currently consistent with the transition to an LCCR future. These include activities with moderate potential for emissions lock-in and risk of stranded assets.	Activities that are inconsistent with, and likely to impede, the transition required to achieve the long-term LCCR future. These activities have the highest emissions intensity, with the most potential for emissions lock-in and risk of stranded assets.
Example projects	Wind power	Certified forestry	New energy efficient buildings	Fossil fuel buses	Conventional steel production	Oil and gas exploration

Note: For us to consider use of proceeds aligned with ICMA Principles for a green project, we require project categories directly funded by the financing to be assigned one of the three green Shades.

LCCR--Low-carbon climate resilient. An LCCR future is a future aligned with the Paris Agreement; where the global average temperature increase is held below 2 degrees Celsius (2 C), with efforts to limit it to 1.5 C, above pre-industrial levels, while building resilience to the adverse impact of climate change and achieving sustainable outcomes across both climate and non-climate environmental objectives. Long term and near term--For the purpose of this analysis, we consider the long term to be beyond the middle of the 21st century and the near term to be within the next decade. Emissions lock-in--Where an activity delays or prevents the transition to low-carbon alternatives by perpetuating assets or processes (often fossil fuel use and its corresponding greenhouse gas emissions) that are not aligned with, or cannot adapt to, an LCCR future. Stranded assets--Assets that have suffered from unanticipated or premature write-downs, devaluations, or conversion to liabilities (as defined by the University of Oxford).

Related Research

- Analytical Approach: Climate Bonds Initiative External Reviews, Dec. 9, 2025
- Analytical Approach: Sustainable Financing Post-Issuance Reviews, June 30, 2025
- FAQ: Applying Our Analytical Approach for Post Issuance-Reviews, June 30, 2025
- Analytical Approach: Second Party Opinions, March 6, 2025
- FAQ: Applying Our Integrated Analytical Approach For Second Party Opinions, March 6, 2025
- Analytical Approach: Shades Of Green Assessments, July 27, 2023

Analytical Contacts

Primary contact

Bryan Popoola
Washington, D.C.
+1-202-615-5962
bryan.popoola
@spglobal.com

Secondary contact

Rafael Janequine
São Paulo
+55-11-3039-9786
rafael.janequine
@spglobal.com

Research contributor

Sachin Powani
Mumbai