

FS Bioenergia

PROGRAMMATIC PRE-ISSUANCE VERIFICATION LETTER

BIOENERGY CRITERIA OF THE CLIMATE BONDS STANDARD

Type of engagement: Assurance Engagement

Period engagement was carried out: June 2021

Approved verifier: Sustainalytics

Contact address for engagement: 125 Maiden Lane, Suite 602, New York NY 10038, U.S.A.

Pre-issuance Engagement Leader: Zach Margolis, zach.margolis@sustainalytics.com, (+1) 647 695 4341

Scope and Objectives

In June 2021, FS Bioenergia ("FS") engaged Sustainalytics to review and verify that FS' green debt instruments, which will be issued under its Green Bond Framework, meet the Programmatic Pre-Issuance Requirements under the Bioenergy criteria¹ of the Climate Bonds Standard Version 3.0.² Through issuances under the programmatic certifications, FS may finance investments in relation to the production of ethanol from corn, including working capital or financing/refinancing of facility capex and related activities. FS used the Climate Bonds Standard Agriculture criteria³ as a proxy to fulfil the feedstock certification requirements under the Bioenergy criteria. Please refer to Schedule 3 for further details on compliance with this criterion.

FS' corporate purpose is to add socio-environmental benefits to the biofuel production chain. It is the first plant in Brazil to produce 100% corn ethanol through a sustainable business model, with the goal of promoting global demand for renewable energy sources and lowering greenhouse gas emissions.

Climate Bonds Standard Criteria

Pre-issuance requirements under Version 3.0⁴:

- Bioenergy Criteria
 - Nominated projects includes:
 - CAPEX investments in relation to the production of corn ethanol
 - Working Capital in relation to the production of corn ethanol
 - Refinancing of any of the above

Issuing Entity's Responsibility

FS was responsible for providing information and documents relating to:

- The details concerning the selection process for the Nominated Projects
- The details of the Nominated Projects
- The management systems for internal processes and controls for Nominated Projects, including: tracking of proceeds, managing unallocated proceeds and Earmarking funds to Nominated Projects
- The details of commitments for reporting prior to issuance, including: investment areas, management of unallocated proceeds and frequency of periodic Assurance Engagements

¹ Climate Bonds Initiative, Bioenergy Criteria under the Climate Bonds Standard. See more, at: <https://www.climatebonds.net/files/files/Bioenergy%20Criteria%20Document%20July%202020.pdf>

² Climate Bonds Initiative, Climate Bonds Standard Version 3.0. See more, at: https://www.climatebonds.net/files/files/Climate%20Bonds_Standard_Version%203_0_December%202017.pdf

³ This approach was approved by the Climate Bond Standards Board. For more details on the Agriculture Criteria, please see here: <https://www.climatebonds.net/files/files/standards/agriculture/agriculture-criteria-v2-20210622.pdf>

⁴ Climate Bonds Standard, Climate Bonds Standard Version 3.0. See more, at: https://www.climatebonds.net/files/files/Climate%20Bonds_Standard_Version%203_0_December%202017.pdf

Independence and Quality Control

Sustainalytics, a leading provider of ESG and corporate governance research and ratings to investors, conducted the verification of FS's green debt instruments, issued to finance Nominated Projects, and provided an independent opinion informing FS as to the conformance of the green debt instruments with the Pre-Issuance requirements and Bioenergy criteria of the Climate Bonds Standard.

Sustainalytics has relied on the information and the facts presented by FS with respect to the Nominated Project. Sustainalytics is not responsible nor shall it be held liable if any of the opinions, findings, or conclusions it has set forth herein are not correct due to incorrect or incomplete data provided by FS.

Sustainalytics makes all efforts to ensure the highest quality and rigor during its assessment process and enlisted its Sustainability Bonds Review Committee to provide oversight over the assessment of the bond.

Verifier's Responsibility

The work undertaken as part of this engagement included conversations with relevant FS employees and review of relevant documentation to confirm the green bond's conformance with the Climate Bonds Certification Pre-Issuance Requirements, which include:

- Conformance of FS' green debt instruments with the Climate Bonds Standard Version 3.0;
- Conformance with the Bioenergy Technical Criteria;
- Conformance with the Internal Processes & Controls requirements;
- Conformance with Reporting Prior to Issuance requirements

Basis of the Opinion

Sustainalytics conducted the verification in accordance with the Climate Bonds Standard Version 3.0 and with International Standard on Assurance Engagements 3000 – Assurance Engagements other than Audits or Reviews of Historical Information.

Sustainalytics planned and performed the verification by obtaining evidence and other information and explanations that Sustainalytics considers necessary to give limited assurance that FS' green bond meets the requirements of the Climate Bonds Standard. Upon reviewing evidence and other information, Sustainalytics is of the opinion that FS will ensure compliance with Climates Bonds Standards requirements.

Exceptions

No exceptions were identified. The project aligned with the Pre-Issuance Requirements of the Climate Bonds Standard and was in conformance with the Bioenergy criteria.

Conclusion

Based on the limited assurance procedures conducted, nothing has come to Sustainalytics' attention that causes us to believe that, in all material respects, FS' green debt instruments, are not in conformance with the Pre-Issuance Requirements of the Climate Bonds Standard.

Schedule 1

Schedule 1A: Pre-Issuance General Requirements

Sustainalytics has conducted this verification using the following Pre-Issuance Requirements under Climate Bonds Standard Version 3.0:

<p>1. Use of Proceeds</p>	<p>1.1 The Issuer shall document the Nominated Projects & Assets which are proposed to be associated with the Bond and which have been assessed as likely to be Eligible Projects & Assets. The Issuer shall establish a list of Nominated Projects & Assets which can be kept up-to-date during the term of the Bond.</p> <p>1.2 The expected Net Proceeds of the Bond shall be no greater than the Issuer’s total investment exposure to the proposed Nominated Projects & Assets, or the relevant proportion of the total Market Value of the proposed Nominated Projects & Assets which are owned or funded by the Issuer.</p> <p>1.3 Nominated Projects & Assets shall not be nominated to other Certified Climate Bonds, Certified Climate Loans, Certified Climate Debt Instruments, green bonds, green loans or other labelled instruments (such as social bonds or SDG bonds) unless it is demonstrated by the Issuer that:</p> <p>1.3.1 distinct portions of the Nominated Projects & Assets are being funded by different Certified Climate Bonds, Certified Climate Loans, Certified Climate Debt Instruments, green bonds , green loans or other labelled instruments; or,</p> <p>1.3.2 the existing Certified Climate Bond, Certified Climate Loan or Certified Climate Debt Instrument is being refinanced via another Certified Climate Bond, Certified Climate Loan or Certified Climate Debt Instrument.</p>
<p>2. Process for Evaluation and Selection of Projects & Assets</p>	<p>2.1 The Issuer shall establish, document and maintain a decision-making process which it uses to determine the eligibility of the Nominated Projects & Assets. The decision-making process shall include, without limitation:</p> <p>2.1.1 A statement on the climate-related objectives of the Bond;</p> <p>2.1.2 How the climate-related objectives of the Bond are positioned within the context of the Issuer’s overarching objectives, strategy, policy and/or processes relating to environmental sustainability;</p> <p>2.1.3 The Issuer’s rationale for issuing the Bond;</p> <p>2.1.4 A process to determine whether the Nominated Projects & Assets meet the eligibility requirements specified in Part C of the Climate Bonds Standard.</p> <p><i>Note to 2.1: A wide variety of climate-related objectives are possible. These can vary from increasing the installed capacity of low carbon assets, such as solar power facilities, to having a specific objective focused on the operations or indirect effects of the projects & assets, such as emissions reductions.</i></p>

	<p><i>The climate-related objectives of the Bond, as stated by the Issuer, have implications for the reporting requirements under the Climate Bonds Standard. See Clauses 2.3, 5.2, 5.8, 6.1.1 and 8.4.</i></p> <p>2.2 The Issuer should include under Clause 2.1 further aspects of the decision-making process, including:</p> <p>2.2.1 related eligibility criteria, including, if applicable, exclusion criteria or any other process, applied to identify and manage potentially material environmental, social or governance risks associated with the Nominated Projects & Assets;</p> <p>2.2.2 any green standards or certifications referenced in the selection of Nominated Projects & Assets.</p> <p>2.3 The Issuer shall assess that all proposed Nominated Projects & Assets to be associated with the Bond meet the documented objectives as stated under Clause 2.1.1 and are likely to conform to the relevant eligibility requirements under Part C of the Climate Bonds Standard.</p>
<p>3. Management of Proceeds</p>	<p>3.1 The systems, policies and processes to be used for management of the Net Proceeds shall be documented by the Issuer and disclosed to the Verifier, and shall include arrangements for the following activities:</p> <p>3.1.1 Tracking of proceeds: The Net Proceeds of the Bond can be credited to a sub-account, moved to a sub-portfolio, or otherwise tracked by the Issuer in an appropriate manner and documented.</p> <p>3.1.2 Managing unallocated proceeds: The balance of unallocated Net Proceeds can be managed as per the requirements in Clause 7.3.</p> <p>3.1.3 Earmarking funds to Nominated Projects & Assets: An earmarking process can be used to manage and account for funding to the Nominated Projects & Assets and enables estimation of the share of the Net Proceeds being used for financing and refinancing.</p>
<p>4. Reporting</p>	<p>4.1 The Issuer shall prepare a Green Bond Framework and make it publicly available prior to Issuance or at the time of Issuance. The Green Bond Framework shall include, without limitation:</p> <p>4.1.1 Confirmation that the Bonds issued under the Green Bond Framework are aligned with the Climate Bonds Standard. This may include statements of alignment with other applicable standards, such as the EU Green Bond Standard, the ASEAN Green Bond Standard, Chinese domestic regulations, Japanese Green Bond Guidelines, etc.;</p> <p>4.1.2 A summary of the expected use of proceeds, as defined under Clause 1.1, and the expected contribution of the relevant sectors or sub-sectors to the rapid transition required to achieve the goals of the Paris Climate Agreement;</p> <p>4.1.3 A description of the decision-making process, as defined under Clause 2.1, with particular reference to the requirements in Clause 2.1.2;</p> <p>4.1.4 Information on the methodology and assumptions to be used for: confirming, where required by relevant Sector Eligibility Criteria, the characteristics or performance of Nominated Projects & Assets required to conform to the relevant eligibility requirements under Part C of the Climate Bonds Standard; and any other additional impact metrics that the issuer will define.</p> <p>4.1.5 A summary of the approach to the management of unallocated Net Proceeds in accordance with Clause 3.1;</p>

	<p>4.1.6 The intended approach to providing Update Reports to reaffirm conformance with the Climate Bonds Standard while the Bond remains outstanding;</p> <p>4.1.7 The list of proposed Nominated Projects & Assets associated with the Bond and the investment areas, as provided in Clause 9.1, into which the Nominated Projects & Assets fall. Where there are limits on the amount of detail that can be made available about specific Nominated Projects & Assets, information shall be presented on the investment areas which the Nominated Projects & Assets fall into, as provided in Clause 9.1, and the Issuer shall provide an explanation of why detail on Nominated Projects & Assets is limited;</p> <p>4.1.8 Where a proportion of the Net Proceeds are used for refinancing, an estimate of the share of the Net Proceeds used for financing and refinancing, and the relevant Nominated Projects & Assets or investment areas which may be refinanced. This may also include the expected look-back period for refinanced Nominated Projects & Assets.</p> <p><i>Note: Issuers are encouraged to disclose as much information as possible with respect to Nominated Projects & Assets. However, in many cases it is not possible for the Issuer to disclose detailed information about specific projects & assets prior to the issuance of the Bond. This limitation may be due to confidentiality arrangements with owners of projects & assets, the dynamic nature of the project portfolio, competitive considerations, or other legal provisions which limit the disclosure of detailed information.</i></p> <p>4.2 The Issuer shall include in the Disclosure Documentation:</p> <p>4.2.1 The investment areas, as provided in Clause 9.1, into which the Nominated Projects & Assets fall;</p> <p>4.2.2 The intended types of temporary investment instruments for the management of unallocated Net Proceeds in accordance with Clause 7.3;</p> <p>4.2.3 The Verifier engaged by the Issuer for the mandatory verification engagements;</p> <p>4.2.4 The intended approach to providing Update Reports to reaffirm conformance with the Climate Bonds Standard while the Bond remains outstanding, including the location of the published documents;</p> <p>4.2.5 The Climate Bonds Initiative Disclaimer provided in the Certification Agreement.</p> <p><i>Note to 4.2.4: Issuers are encouraged to provide their Update Reports through existing reporting channels for the bond markets, such as the Electronic Municipal Market Access (EMMA) website for the US Municipality sector.</i></p>
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Schedule 1B: Conformance to the Pre-Issuance Requirements

Details of FS's internal processes and controls as per the Pre-Issuance Requirements are provided below:

Procedure Performed	Factual Findings	Error or Exceptions Identified
1. Use of Proceeds	<p>1.1 FS has developed a list of proposed Nominated Projects & Assets which comply with the Bioenergy sector criteria of the Climate Bonds Standard. FS intends to keep this list updated with all the financed projects that fall within the scope of its green debt instruments program and Framework. The proposed Nominated Projects and Assets include:</p> <ul style="list-style-type: none"> • CAPEX investments in relation to the production of corn ethanol • Working Capital in relation to the production of corn ethanol • Refinancing of any of the above <p>1.2 FS' management confirms that the net proceeds of the future bond will not be greater than the total investment exposure to the proposed Nominated Projects & Assets.</p> <p>1.3 FS' management confirms that the Nominated Projects & Assets will not be nominated to other Certified Climate Bonds, Certified Climate Loans, Certified Climate Debt Instrument, green bonds, green loans, or other labelled instruments unless it is demonstrated by FS that distinct portions of the Nominated Projects & Assets are being funded by different instruments or that the existing instrument is being refinanced via another labelled instrument.</p>	None
2. Process for Evaluation and Selection of Projects & Assets	<p>2.1.1. The FS Green Bond Framework states that the intention of the green bonds is to support its ongoing efforts to develop the Brazilian agribusiness production chain.</p> <p>2.1.2. FS' environmental objectives are summarized in the FS Green Bond Framework.</p> <p>2.1.3. FS' rationale for issuing green debt instruments is to create sustainable value within Brazil's agriculture frontier.</p> <p>2.1.4. The FS Green Bond Framework includes a process for project evaluation and selection in which FS conducts a socioenvironmental analysis to verify the corn it purchases, as well as a strict risk management and monitoring process to ensure that suppliers continue to meet its requirements.</p> <p>2.2.1. FS has sufficient measures in place to manage and mitigate environmental and social risks that are commonly associated with the eligible category.</p> <p>2.2.2. N/A</p> <p>2.2.3. FS' sustainability department will verify that all proposed Nominated Projects & Assets conform to the Climate Bonds Taxonomy and Bioenergy sector criteria.</p>	
3. Management of Proceeds	<p>3.1.1 The FS Green Bond Framework outlines a process by which proceeds will be tracked.</p>	

	<p>3.1.2 Pending full allocation, funds will be 100% invested in low-risk commitments or used to repay outstanding debt.</p> <p>3.1.3 The FS Green Bond Framework details the process FS will use to allocate and manage green bonds proceeds. This will enable the estimation of the share of the Net Proceeds being used for financing and refinancing.</p>	
<p>Reporting Prior to Issuance</p>	<p>4.1.1. Bonds issued under the FS Green Bond Framework are intended to align with the Climate Bonds Standard.</p> <p>4.1.2. The FS Green Bond Framework indicates that green bond proceeds will be used, as defined under Clause 1.1, and the expected contribution of the relevant sectors or sub-sectors to the rapid transition required to achieve the goals of the Paris Climate Agreement.</p> <p>4.1.3. The FS Green Bond Framework provides detail on its decision-making process, including a risk management and socioenvironmental monitoring process as well as ongoing monitoring, in addition to evaluating the cultivation of corn and biomass producers in protected areas in compliance with Brazilian national environmental laws.</p> <p>4.1.4. FS' Nominated Projects & Assets will conform with the Bioenergy sector criteria.</p> <p>4.1.5. FS will manage unallocated net proceeds in accordance with Clause 3.1.</p> <p>4.1.6. FS will provide allocation and impact reporting to investors and on its website on an annual basis, until full maturity. The report will include a description of conformance with the Climate Bonds Standards criteria.</p> <p>4.1.7. FS' Nominated Projects & Assets fall under Bioenergy sector criteria. FS will report on the investment areas which the Nominated Projects & Assets fall into by reporting on the share of proceeds allocated to each eligible category.</p> <p>4.1.8. FS will provide more details regarding the amount used for financing and refinancing in the annual report.</p> <p>4.2.1. FS' Nominated Projects & Assets will conform with the Bioenergy sector criteria.</p> <p>4.2.2. The intended types of temporary investment instruments for the management of unallocated Net Proceeds are in accordance with Clause 7.3 of the Climate Bonds Standard.</p> <p>4.2.3. No third-party verifier has been appointed yet to conduct the Post-Issuance assurance exercise. Post-issuance will be carried out 12 months after issuance. However, conducting periodic Assurance Engagements over the term of the bond is at the discretion of the bond issuer, as per CBI guidelines.</p> <p>4.2.4. FS will provide allocation and impact reporting on its website in its annual Sustainability Report.</p> <p>4.2.5. Sustainalytics notes that under the terms of its certification, FS must include the CBI Disclaimer provided in the Certification Agreement in disclosure documentation.</p>	

Appendices

Appendix 1: Bioenergy Criteria - Mitigation Requirements

Item	Assessment
<p>Meet the established GHG emissions threshold</p> <ul style="list-style-type: none"> Facilities producing biofuel for transport (18.8g CO₂e/MJ) 	<p>FS meets this threshold</p> <p>Anhydrous bioethanol: 16.7gCO₂e/MJ Hydrated bioethanol: 16.3gCO₂e/MJ</p>
<p>Reducing the risk of indirect land-use impact</p>	<p>FS Bioenergia has not certified its feedstock using the RSB iLUC module. However, the Issuer has provided documentation to demonstrate that it meets low iLUC risk biomass criteria and compliance, based on the principle of “Yield Increase”.</p> <p>Grain used as feedstock for the eligible facilities will be sourced from second-crop corn produced in Brazil, and in particular the state of Matto Grosso. There has been a rapid expansion of grain production in Mato Grosso State between 2006/2007 to 2016/2017. Total maize production increased from 4 million tons to 29 million tons in MT. 99% of this additional maize is produced as a double crop. This peer-reviewed research⁵ therefore supports the claim that the supplementary maize production can be largely attributed to yield increase due to the implementation of double-cropping techniques and that therefore second crop corn ethanol from the state of Mato Grosso has negative indirect land-use impact.</p>

⁵ Moreira et al, (2020), “Socio-environmental and land-use impacts of double-cropped maize ethanol in Brazil”, at: <https://doi.org/10.1038/s41893-019-0456-2>

Appendix 2: Bioenergy Criteria - Adaptation and Resilience Requirements

Item	Assessment
<p>Processes are in place (as part of both the asset design and ongoing management) to assess key risks to the assets from a changing climate.</p> <p>These key risks should include the following, plus any others felt to be of concern for the operation of these assets. The risks should be identified and interpreted in terms of the impact on the asset and the related effects for the business – e.g. impact on operating feasibility and schedules and potential system outages, impact on maintenance requirements etc.</p> <p>N.B. This list taken from World Banks Climate and Disaster Risk Assessment Tool</p> <ul style="list-style-type: none"> ● Temperature changes, and extremes in temperature ● Extreme precipitation and flooding ● Drought ● Sea level rise and storm surge ● Strong winds <p>How these affect the asset or site in question will be highly variable and will be for the issuer to identify and relate to their operations. These assessments should use climate information, modelling and scenarios from a peer reviewed source.</p> <p>This assessment should be done regularly. The frequency of the assessment will depend on the nature of the climate related risks and vulnerabilities, and should be specified by the issuer and reporting against in subsequent annual reporting.</p>	<p>FS conducted its first climate risk study in 2020 to evaluate the following risks: temperature changes, extreme precipitation, and drought. Several actions were suggested and FS is working on an implementation and monitoring plan for these actions. FS intends to review the plan every 5 years.</p>
<p>Processes are in place (as part of both the asset design and ongoing management) to assess the impact of the bioenergy asset on the climate resilience of other stakeholders in the social, economic and environmental system in which it operates and how to mitigate or reduce any negative impacts These assessments address:</p> <ul style="list-style-type: none"> ● Any ways in which bioenergy facilities might affect the climate resilience of other users/stakeholders? ● Any ways in which bioenergy facilities improve the adaptation capacity of other users/stakeholders? <p>For example, they may include:</p> <ul style="list-style-type: none"> ● Impact on water quality and quantity for other users in the basin 	<p>FS's Climate Risk Analysis and Climate Change Adaptation Plan was recently expanded and it is currently in the process of structuring its actions and next steps. Therefore, at present, it does not have such processes in place but it commits to establishing such plans in the future. Sustainalytics recognizes FS's intent and notes that the implementation of these processes is crucial to ensuring systems resiliency in the regions in which FS operates and for ensuring ongoing compliance with the CBI Criteria.</p>

<ul style="list-style-type: none"> ● Waste and pollution emitted ● Fire hazards 	
<p>An adaptation plan has been designed and is being implemented to address the risks identified in assessments above</p> <p>The issuer has designed or amended investment and maintenance plans for the assets or projects and the broader ecosystem and its stakeholders. This is to ensure that the asset and its scheduled maintenance is sufficient to cope with the ongoing impacts of climate change and a plan has been established to govern how they approach emergency maintenance needs arising from sudden climate change impacts (e.g. extreme storms)</p> <p>The issue has training, capacity and governance arrangements in place for how the organization will deal with the impacts of exception events (e.g. droughts, floods, severe pollution events, extreme storms, winds etc.)</p> <p>The issuer has monitoring and reporting systems and processes to identify high risk scenarios The issuer has contingency plans to address disruption to operations or loss of the asset and any resulting broader environmental or social damage</p> <p>The issuer has processes for feeding risk assessment back into decision making.</p> <p>The issuer has a budget allocated to implementing the adaptation plan and has a named member of staff responsible for its implementation.</p> <p>The issuer complies with any existing broader or higher-level adaption plans, such as NAPAs.</p>	<p>The investment selection process was adjusted at the end of 2019 for direct suppliers of corn and biomass (producers), including a broad decision flow that includes in summary (see Framework)</p> <p>Once the contracts have deadlines (period) for the delivery of the products (corn), after the purchase approval, a monitoring system is implemented through the interpretation of satellite images throughout the delivery period, and a socio-environmental statement (with date and time) is generated for each new corn receiving. In this way, FS maintains strict risk management and socioenvironmental monitoring processes applied to the field's origination operations, using tools based on geoprocessing. FS also monitors all consultation and monitoring management through the Agrotools SAFE tool, which guarantees the quality of analysis and independent storage of evidence from consultations, necessary for an MRV process (measurable, reportable and verifiable).</p> <p>To ensure the safety of its employees and third parties working in our plants and minimize the risk of accidents, FS has adopted several tools and controls. Since 2017, safety training has exceeded 20 thousand hours and involved hundreds of employees and suppliers. In the last crop year, FS identified an increase of 18 percentage points in the Safe Practice Index, one of its key indicators to assess the teams' adherence to our safety culture.</p> <p>The specific budget for the implementation of the adaptation plan is still under construction. The FS employee responsible for overseeing this process is Rubiane Jacobowsky (Sustainability Supervisor).</p> <p>FS conducts its work in accordance with Brazil's national plans.</p> <p>Overall, Sustainalytics considers the programmes and actions of FS to be in line with the intents of the Criteria in this area.</p>
<p>Feedstocks certified under approved best practice standards</p>	<p>Please see Appendix 3A, 3B, and 3C.</p>
<p>Addressing food security risk</p>	<p>FS Bioenergia has confirmed that it sources feedstocks solely from Brazil, which has been deemed to have low food insecurity based on</p>

	the most recent publication of the Global Hunger Index.
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Appendix 3: Agriculture Criteria – 3.3.1. Mitigation criteria for an agricultural production unit

Criteria	CBI Requirements	FS Bioenergia
<p>M1: No conversion of high carbon stock lands</p> <p>Critério M1: Nenhuma conversão de terras com alto estoque de carbono</p>	<p>Please confirm that the production unit is not operating on land that has been converted from high carbon stock (HCS) lands spanning more than one hectare after Jan 1, 2010 or according to the cut-off date required in national law in the country of issuance or as defined by regional green financing initiatives if this is prior to 2010. This includes wetlands, peatlands, forested areas or other designated HCS areas, as defined by the threshold of 35 tC/ha.</p> <p><i>Compliance can be demonstrated by submission of maps (see Global Forest Watch maps), georeferenced photographs or satellite imagery of land use change and burning for example. Forest inventory surveys or other formal government data can also be used.</i></p>	<p>FS Bioenergia uses a digital platform (Agrotools) to ensure that its suppliers are not operating on land that has been converted from HCS lands. Agrotools specializes in socio-environmental analysis through satellite images and consultation of available public databases. FS Bioenergia has established specific criteria for the monitoring efforts of each type of supplier, according to the input, planting area, biomass, etc.</p> <p>The Forest Code sets a cutoff date for deforestation at 22 July 2008, with different percentages across Brazil's biomes. The main data set is verified through PRODES – Brazil's deforestation monitoring system – which monitors the Amazon biome since 2008 and for the Cerrado since 2018. The monitoring helps generate an environmental report on the deforested areas throughout the years, as well as embargoed areas and blocks suppliers that are not compliant. FS Bioenergia assess whether suppliers are included in the Federal Government's Employment "Blacklist", which identifies locations in which working conditions have slave labor aspects. In addition to this analysis, supply contracts have specific clauses that prohibit degrading work practices, including child labor, and our Code of Conduct for Suppliers and Partners strictly rejects these types of employment conditions.</p> <p>*All producers must comply to national legislation and FS' Policy. Rural producers that are not in compliance with FS' Policy are suspended from the supplier list.</p>
<p>M2: Land use status</p> <p>Critério M2: Status de uso da terra</p>	<p>Please confirm there is no clearing of woody vegetation over 3 metres in height after 2020 on the production unit in question.</p> <p><i>Compliance can be demonstrated by submission of maps (see Global Forest Watch maps), georeferenced</i></p>	<p>Satellite images enable FS Bioenergia to detect the occurrence of deforestation and possible overlap with indigenous lands, quilombolas or conservation units. Compliance has been demonstrated through the submission of sample satellite imagery and disclosures around the Issuer's processes in using this data.</p>

	<i>photographs or satellite imagery of land use change and burning for example. Forest inventory surveys or other formal government data can also be used.</i>	
M3.2: Evidence of following low-emission best practices for crop production Opção M3.2: Prova de que a unidade adota boas práticas de baixas emissões para sua produção agrícola	In order to demonstrate that the production unit is deploying low emission practices on an ongoing basis, the relevant table from the Sector Criteria document must be completed, and all core practices must be met.	Refer to Appendix 4, below.

Appendix 4: Agriculture Criteria - 3.9 Best practices for low emissions agriculture

Best practice requirements: Crop production

Category	Core Practices	Optional Practices	Exclusions	Disclosures provided	Sustainalytics Assessment
Fertilizer use Usos de fertilizantes	<ul style="list-style-type: none"> A nutrient management plan is in place that identifies the right rate of N fertilizer use for the production unit <p><i>plus</i> at least three optional practices</p>	<ul style="list-style-type: none"> The nutrient management plan also identifies the right source of fertilizer The nutrient management plan also identifies the right timing of fertilizer Right placement of fertilizer Deep urea or other subsurface placement Agronomic practices that produce yields in top 25% for the agroecosystem Fertilizer produced with energy-efficient methods (e.g. steam methane reforming (SMR), green ammonia, or process using <36 gigajoules/t ammonia) 	None	<ul style="list-style-type: none"> FS does not own any areas for planting corn. It buys all the corn for its production process from producers surrounding its plants. Currently there are more than 500 direct partner suppliers. Optional practices: <ul style="list-style-type: none"> “The nutrient management plan also identifies the right source of fertilizer”: FS is part of the RenovaBio program (Brazilian Biofuel Program), in which we can 	<p>Compliant.</p> <p>While FS does not own any of the areas for planting it corn, it is a RenovaBio certified company and aims to only purchase corn from producers certified under RenovaBio. Sustainalytics views the criteria of RenovaBio to be aligned with the Core Practices. From 2020, suppliers under RenovaBio have been monitored for their annual productivity (tons per hectare) and are required to present data on fertilizer consumption. In addition, the Mato Grosso</p>

		<ul style="list-style-type: none"> • Controlled release fertilizer • Biological N-fixation as the source of nitrogen inputs • Any practice that reduces or offsets N₂O emissions by 20% 		<p>gain visibility into the use of fertilizers by producers. We undertake the identification of the sources of the nutrients used by producers participating in the RenovaBio certification.</p> <ul style="list-style-type: none"> • “The nutrient management plan also identifies the right timing of fertilizer”: There are several other regional institutions (Embrapa, Fundação MT) that carry out research and development tools to guide the best management of nutrients for the cultivation of corn and undertake research related to the right timing of fertilizer application. Also, there are precision agriculture companies (variable rate) to reach the right rate or correct dose of fertilizer at the indicated location. 	<p>Institute for Agricultural Economics monitors and measures the use and impacts of fertilizers in the region and carries out an analysis in different municipalities.</p> <p>In addition to the listed optional practices, Sustainalytics notes that the Renovabio program identifies the right placement of fertilizer use and therefore FS is compliant with that requirement.</p>
<p>Management of soil for net carbon sequestration</p> <p>Manejo do solo para sequestro</p>	<ul style="list-style-type: none"> • Project length of at least five years • Reduced tillage • Avoided erosion • No open burning 	<ul style="list-style-type: none"> • Increase in aboveground biomass (cover crops, agroforestry) and residue retention • Organic matter amendments to 	<ul style="list-style-type: none"> • While FS intends to increase soil organic carbon over the long term through its 	<p>Confirmed:</p> <ul style="list-style-type: none"> • FS has confirmed that the project length is at least five years long (the project has 	<p>Partially compliant – see exclusion.</p>

<p>líquido de carbono</p>	<ul style="list-style-type: none"> • Evidence that soil carbon sequestration is likely to be maintained for 20 years or more (secure land rights, low threat of conversion, contractual commitments) or demonstrate 50% higher level of sequestration. <p><i>plus</i> at least three optional practices</p>	<p>the soil (compost)</p> <ul style="list-style-type: none"> • Any practice that increases soil organic carbon or above-ground or below-ground carbon by 20% over ten years 	<p>activities, it cannot demonstrate that it will meet the 20% requirement over 10 years.</p>	<p>been running for 11 years)</p> <ul style="list-style-type: none"> • The producers have all adopted no-tillage practices. • Erosion has been avoided. • FS has confirmed that there is low threat of land conversion. <p>Optional practices:</p> <ul style="list-style-type: none"> • The corn FS purchases supports an increase in aboveground biomass and residue retention and organic matter amendments to the soil. • FS' practice of practice of direct planting of second-crop corn contributes to the carbon stock in the soil. In addition to the two plants already installed in Mato Grosso, FS has plans to install four more plants by 2030, with the intention to promote second crop corn over the long term. 	
<p>Management of biomass for net carbon sequestration</p> <p>Manejo da biomassa para sequestro</p>	<ul style="list-style-type: none"> • Increase in aboveground biomass (grassland/pasture productivity, cover crops, agroforestry) by at least 20% 		<p>None</p>	<ul style="list-style-type: none"> • FS achieved a 28% increase in second-crop productivity between 2005 and 2016. Specifically, the area cultivated with 	<p>Compliant</p> <p>Sustainalytics views this level of disclosure to be aligned with the criteria's requirements.</p>

líquido de carbono	<ul style="list-style-type: none"> Evidence that aboveground biomass carbon sequestration is likely to be maintained for 20 years or more (secure land rights, low threat of conversion, contractual commitments) or demonstrate 50% higher level of sequestration. 			<ul style="list-style-type: none"> double-crop systems increased from 6.58 to 8.43 million hectares during 2005 to 2016. FS confirmed that it meets the requirement of a 20% increase over ten years. 	
<p>Energy, including energy embedded in inputs</p> <p>Energia, incluindo a energia incorporada aos insumos</p>	<ul style="list-style-type: none"> Energy efficient traction, irrigation, and storage (falls in top 25% of energy efficiency rates for equipment available in country) OR Use of only renewable energy 		None	<ul style="list-style-type: none"> FS has confirmed that it only uses renewable biomass sources. Rural Producers in the region where FS plants are installed have been following innovations and technology in relation to efficient machinery, with better performance and lower fuel consumption. Agriculture Equipment Companies frequently launch new equipment and implements. FS has confirmed that it does not use irrigation due to the favourable weather conditions in the State of Mato Grosso. 	<p>Compliant</p> <p>Sustainalytics views this level of disclosure to be aligned with the criteria's requirements.</p>
<p>Residue Management</p> <p>Manejo de Resíduos</p>	<ul style="list-style-type: none"> Sustainable use of residues 		None	<ul style="list-style-type: none"> Confirmed - FS only purchases crops that adhere to Brazil's 	<p>Compliant.</p> <p>Sustainalytics views this level of disclosure to</p>

				<p>overarching legislation for chemical use. This includes Ordinance No. 84 which oversees environmental monitoring regarding pesticides.⁶ The Normative Instruction No. 4 sets a requirement for environmental risk assessment for the use of any new pesticides. At the state level, the Mato Grosso Institute for Agricultural Economics monitors and measures the use and impacts of fertilizers in the region.</p>	<p>be aligned with the criteria's requirements.</p>
<p>Food loss Perda de alimentos</p>	<p>• No mycotoxins or other contaminated growing conditions that could result in reduced yields.</p>		<p>None</p>	<p>Confirmed - In the field, producers are instructed to carry out fungicide applications guided by institutions and suppliers. These fungicides protect the plant against pathogens (fungi) like those that produce mycotoxins. In addition, FS performs analysis of quality classification in the receipt</p>	<p>Compliant. Sustainalytics views this level of disclosure to be aligned with the criteria's requirements.</p>

⁶ Brazilian Pesticide Regulation Overview: <https://agrochemical.chemlinked.com/chempedia/brazilian-pesticide-regulation-overview>

				of grains; we carry out quality control in storage (temperature and humidity) and we monitor the final products with laboratory analyzes that guarantee the quality of all our products.	
Flooded rice (if applicable) Arroz irrigado por inundaç�o (se aplic�vel)	• Days of flooding reduced by 10%		None	N/A	
Peatlands (if applicable) Turfeiras (se aplic�vel)	• Peatland restoration		None	N/A	

Appendix 5: Adaptation and Resilience Criteria for a crop production unit

Adaptation and resilience checklist for assessment of the whole agricultural production unit

Adaptation and resilience checklist for the whole agricultural production unit		Submitted
1. Clear boundaries and critical interdependencies between the farm holding and the system it operates within are identified.		
1.1	Boundaries of the production unit(s) are defined using (1) a listing of all farm holdings and associated assets and activities associated with the use of the bond proceeds, (2) a map of their location, and (3) identification of the expected operational life of the activity, asset or project.	Submitted - FS uses Agrottools to check and identify all the areas its suppliers are located in Mato Grosso. The platform includes a map of each suppliers' location.
1.2	Critical interdependencies between the farm holding and the system within which it operates are identified. Identification of these interdependencies should consider the potential for adverse impacts arising from: (1) the effects of water use or pollution on other water users or erosion in the watershed; (2) relationships of the asset/project to nearby flood zones; (3) introduction of pests and diseases; S (4) reduction in pollinating insects and birds; (5) reduction in biodiversity or High Conservation Value habitat; (6) damage or reduction in value of neighbours' property due to boundary trees, other structures at risk of falling during storm events, agricultural pests and disease; (7) fire and other practices that affect air quality; (8) market influences, such as excess supply which drives down prices;	Submitted – Climate Risk Analysis and Climate Change Adaptation Plan FS Bioenergia (Section 5.5 – page 40) FS has conducted an analysis of the potential effects of the assets on climate risk and other actors. This analysis considered impacts that can arise from lack of vegetation, extreme and concentrated rainfall, and the loss of soil ecological functions. FS' collaboration with its suppliers (through courses and lectures on the potential effects of its assets on climate risk) is viewed to be essential and interdependent.

	(9) appropriation of land or economic assets from nearby vulnerable groups; and (10) overuse of inputs	
2. An assessment has been undertaken to identify the key physical climate hazards to which the production unit will be exposed and vulnerable to over its operating life.		
	<p>Key physical climate risks and indicators of these risks are identified in line with the following guidelines.</p> <ul style="list-style-type: none"> • Risks are identified based on (a) a range of climate hazards, and (b) information about risks in the current local context, including reference to any previously identified relevant hazard zones, e.g., flood zones. <p>A full list of potential physical climate risks that may be considered is given in Table 6. At a minimum, risks in each of the following categories must be considered:</p> <ol style="list-style-type: none"> 1. Temperature: High/low temperature, change in number of hot nights, heat spell duration, cold waves, frost. 2. Water <ol style="list-style-type: none"> 2.1 Precipitation: High precipitation, intense rainfall events; waterlogging, flood, drought, freezing rain (hail, freezing rain, ice). 2.2 Water stress: Crop water stress (reflecting combination of temperature, precipitation and wind), ratio of water withdrawals to availability. 2.3 Sea-level: inundation, flooding or storm surges, salinization due to salt water intrusion or changing water regimes. 2.4 Glacial melting and lake outbursts: flood, body of water contained by glacier overflows or glacial melts. 3. Wind: cyclones (hurricanes, tornadoes, typhoons), dust and sandstorms, blizzards, wind patterns. 4. Soil: erosion (including coastal erosion), landslides, avalanches, degradation. 5. Seasonality: Rain onset, change in seeding date, length of growing season, change in frost-free days in season, other phenological risks specific to crop-type. 6. Pests and disease: new pest and disease patterns, changes in pest and disease vectors. 7. Fire: increased incidence and extent of wildfires or control of agricultural fires. 8. CO2 concentrations: generally expected to create positive effect due to CO2 fertilization and stimulate growth and carbohydrate production, but risks changes in nutritional content and density, such as protein, sugars and essential minerals, for example in wheat, rice, and potatoes.³³ 	Submitted – Climate Risk Analysis and Climate Change Adaptation Plan FS Bioenergia (Section 4.1, page 8)
3. The measures that have or will be taken to address those risks mitigate them to a level so that the production unit(s) are suitable to climate change conditions over its operational life.		
3.1	Risk reduction measures are implemented for all key risks to the production unit. These should enable the production unit to meet an average annual productivity threshold under a range of expected climate hazards for the duration of the investment period. The minimum productivity threshold is determined by the average level of yield loss, compared to average production over five years, for at least three comparable holdings with five years or more of production. Where comparable holdings are not available, the minimum productivity threshold will be calculated as 10% less than the mean annual productivity over five previous years where no extreme climate events occurred.	Submitted – Climate Risk Analysis and Climate Change Adaptation Plan FS Bioenergia (Table 12 – page 44). While FS has not specified a minimum productivity threshold, this level of disclosure is viewed to be satisfactory.
3.2	Risk reduction measures must be tolerant to a range of climate hazards and not lock-in conditions that could result in maladaptation.	Submitted – Climate Risk Analysis and Climate Change Adaptation Plan FS Bioenergia (Table 13 – page 46)

<p>4. The measures that have or will be taken do no harm to the resilience of the defined system they operate within, as indicated by the boundaries of and critical interdependencies with that system as identified in item 1 in this checklist</p>		
<p>4.1</p>	<p>An assessment is conducted to demonstrate that the production unit does not pose significant risk of harm to others' natural, social or financial assets according to the principle of best available evidence during the investment period taking into account the production unit's boundaries and critical interdependencies as defined in Criteria 1. Harm is defined as an adverse effect on any of the following: (1) the effects of water use or pollution on other water users or erosion in the watershed; (2) increased risk of flooding; (3) introduction of pests and diseases; (4) reduction in pollinating insects and birds; (5) reduction in biodiversity or High Conservation Value habitat (6) damage or reduction in value of neighbours' property due to boundary trees, other structures at risk of falling during storm events, agricultural pests and disease; (7) fire and other practices that affect air quality, (8) market influences, such as flooding a market with a commodity and driving down prices, (9) appropriation of land or economic assets from nearby vulnerable groups , (10) overuse of inputs, (11) decline in the productivity of an asset, or (12) decline in conditions below an applicable policy standard, (13) no use of chemicals listed in the Stockholm Convention or 1a or 1b in the WHO classification of pesticides by hazard or not in compliance with the Rotterdam Convention</p>	<p>Submitted – Climate Risk Analysis and Climate Change Adaptation Plan FS Bioenergia (Section 5.5 – page 40)</p> <p>FS conducted an analysis of the potential effects of its assets on the climate risks of other actors.</p>
<p>5. The issuer is required to demonstrate that there will be ongoing monitoring and evaluation of the relevance of the risks and resilience measures and related adjustments to those measures will be taken as needed.</p>		
<p>5.1</p>	<p>Indicators for risks identified under item 2 in this checklist are provided.</p>	<p>Submitted – Climate Risk Analysis and Climate Change Adaptation Plan FS Bioenergia (Table 13 – page 46)</p>
<p>5.2</p>	<p>Indicators for resilience measures identified under item 3 in this checklist are provided</p>	<p>Submitted – Climate Risk Analysis and Climate Change Adaptation Plan FS Bioenergia (Table 12 – page 44)</p>
<p>5.3</p>	<p>Indicators for “no harm” to relevant system assets identified under item 3 in this checklist are provided.</p>	<p>Submitted – Climate Risk Analysis and Climate Change Adaptation Plan FS Bioenergia (Section 5.5 – page 40)</p>
<p>5.4</p>	<p>Issuers have a viable plan to annually monitor (a) climate risks linked to the production unit, (b) climate resilience performance, (c) appropriateness of climate resilience intervention(s) and to adjust as necessary to address evolving climate risks.</p>	<p>Submitted – Climate Risk Analysis and Climate Change Adaptation Plan FS Bioenergia (Section 5.7 – page 43 and Table 12 – page 44)</p> <p>FS has established an internal climate-focused team to oversee this process and adjust as needed to evolving climate risks.</p>
<p>5.5</p>	<p>Issuers have a process for monitoring and evaluation and this is done annually.</p>	<p>Submitted – Climate Risk Analysis and Climate Change Adaptation Plan FS Bioenergia (Section 5.7 – page 43)</p>

		FS currently aims to update its Climate Risk Analysis plan every five years with the help of an independent third-party and is structuring itself to monitor the plan's actions annually.
5.6	A grievance redress mechanism is in place to enable stakeholders to identify unanticipated adverse impacts, including biases of investments away from high risk locations and assets.	Submitted – Climate Risk Analysis and Climate Change Adaptation Plan FS Bioenergia (Section 4.1.2– page 10)

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